



Test Report issued under the responsibility of:



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

Report Number.: C17O026-A0C0

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Total number of pages..... 54 pages

Applicant's name.....: Hanwha Techwin Co., Ltd.

Address: 1204, Changwondae-ro, Sungsan-gu, Changwon-si,
Gyeongsangnam-do, Korea

Test specification:

Standard: IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013

Test procedure: CB Scheme

Non-standard test method: N/A

Test Report Form No.: IEC60950_1F

Test Report Form(s) Originator: SGS Fimko Ltd

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

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

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Test item description.....: Network Storage		
Trade Mark.....: N/A		
Manufacturer Hanwha Techwin Co., Ltd. 1204, Changwondae-ro, Sungsan-gu, Changwon-si, Gyeongsangnam-do, Korea		
Model/Type reference.....: SRB-160S		
Ratings.....: Input : 100-240 V~, 50/60 Hz, 5.8-4 A, X2		
Testing procedure and testing location:		
☒	CB Testing Laboratory:	CTK Co., Ltd.
Testing location/ address		(Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-shi Gyeonggi-do KOREA, REPUBLIC OF
☐	Associated CB Testing Laboratory:	
Testing location/ address		N/A
Tested by (name + function + signature) ...:		KyeongSoo Seo, Project handler 
Approved by (name + function + signature):		KwangWon Lee, Reviewer 
☐	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address		N/A
Tested by (name + function + signature) ...:		N/A
Approved by (name + function + signature):		N/A
☐	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address		N/A
Tested by (name + function + signature) ...:		N/A
Witnessed by (name + function + signature):		N/A
Approved by (name + function + signature):		N/A
☐	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address		N/A
Tested by (name + function + signature) ...:		N/A
Witnessed by (name + function + signature):		N/A
Approved by (name + function + signature):		N/A
Supervised by (name + function + signature).....:		N/A

List of Attachments (including a total number of pages in each attachment): Attachment 1: 18 pages (European group differences and national differences (EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013)) Attachment 2: 26 pages (National differences as CB bulletin) Attachment 3: 12 pages (Photographs)	
Summary of testing:	
Tests performed (name of test and test clause): 1.6.2 Input test 1.7.11 Durability of marking test 2.1.1.7 Capacitance discharge test 2.5 Limited power source measurements 2.6.3.4 Resistance of earthing 2.9.2 Humidity test 4.1 Stability tests 4.2.2 - 4.2.4 Steady force tests 4.2.5 Impact test 4.3.2 Knob pull/handle loading test 4.3.8 Battery tests, Lithium battery reverse current measurement test 4.5.1 Heating test 5.1 Touch current test 5.2 Electric strength tests, impulse tests and voltage surge tests 5.3 Fault condition tests 5.3.1-5.3.8.2 Abnormal operation test 5.3.7 Connector overload test	Testing location: CTK Co., Ltd. (Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-shi Gyeonggi-do KOREA, REPUBLIC OF
Summary of compliance with National Differences List of countries addressed: Australia, Canada, Singapore, USA and European group differences and national differences ☒ The product fulfils the requirements of IEC 60950-1:2005 + Am 1:2009 + Am 2:2013 and/or EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013	

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.



Test item particulars..... :	
Equipment mobility..... :	☐ movable ☐ hand-held ☐ transportable ☒ stationary ☐ for building-in ☐ direct plug-in
Connection to the mains..... :	☒ pluggable equipment ☒ type A ☐ type B ☐ permanent connection ☒ detachable power supply cord ☐ non-detachable power supply cord ☐ not directly connected to the mains
Operating condition..... :	☒ continuous ☐ rated operating / resting time:
Access location	☒ operator accessible ☐ restricted access location
Over voltage category (OVC)	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other:
Mains supply tolerance (%) or absolute mains supply values	+10 %, -10 %
Tested for IT power systems	☐ Yes ☒ No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	☒ Class I ☐ Class II ☐ Class III ☐ Not classified
Considered current rating of protective device as part of the building installation (A)	16 A or 20 A
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3
IP protection class	IP X0
Altitude during operation (m)	Up to 2000
Altitude of test laboratory (m)	180
Mass of equipment (kg)	Max. 26 kg (with hard-disk)
Possible test case verdicts:	
- test case does not apply to the test object	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
Testing..... :	
Date of receipt of test item	2017-04-04
Date(s) of performance of tests	2017-04-04 to 2017-04-28
General remarks:	
"(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	

Manufacturer's Declaration per sub-clause 6.2.5 of IEC60950-1:			
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided		☐ Yes ☒ Not applicable	
When differences exist; they shall be identified in the General product information section.			
Name and address of factory (ies) : 1. CPRO Electronics Co., Ltd. #4F,5F, 214, Galmachiro, Jungwon-gu, Seongnam-si, Gyeonggi-do, 13216 Korea			
General product information:			
1. Test samples are pre-production without serial number. 2. Maximum Specified ambient temperature is 40 °C. 3. The equipment is Class I with certified SMPS used. 4. For tropical climates, humidity treatment test has done under 93 %, 40 °C for 120 h. 5. All test conducted with SRB-160S at condition as manufacturer provided below; USB port (2 EA): 5 Vdc, 0.5 A loaded as manufacturer request. Hard disk-drive (Seagate, ST3500414CS) 16 EA connected as manufacturer provided. LAN port (4 EA): Network cable connected. 6. The samples submitted for evaluation are representative of the final product and have the same quality in items of safety aspect from each factory.			
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 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.	P
1.5.3	Thermal controls	No thermal controls	N/A
1.5.4	Transformers	Evaluated during SMPS certification	N/A
1.5.5	Interconnecting cables		P
1.5.6	Capacitors bridging insulation	Evaluated during SMPS certification	N/A
1.5.7	Resistors bridging insulation		N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Evaluated during SMPS certification	N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	No resistors bridging double or reinforced insulation.	N/A
1.5.8	Components in equipment for IT power systems	Evaluated during SMPS certification	N/A
1.5.9	Surge suppressors	Evaluated during SMPS certification	N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

1.6	Power interface		P
1.6.1	AC power distribution systems	TN Power system	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	The equipment is not hand-held.	N/A
1.6.4	Neutral conductor	The neutral is not identified in the equipment. Basic insulation for rated voltage between earthed parts and primary phases. Reinforced insulation for rated voltage between secondary parts and primary phases.	P

1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	(see copy of marking plates)	P
1.7.1.1	Power rating marking	Power rating marking is located on the outside surface of the equipment.	P
	Multiple mains supply connections	(see copy of marking plates)	P
	Rated voltage(s) or voltage range(s) (V)	100-240 V	P
	Symbol for nature of supply, for d.c. only	AC Mains supply	N/A
	Rated frequency or rated frequency range (Hz) ...	50/60 Hz	P
	Rated current (mA or A)	5.8-4 A	P
1.7.1.2	Identification markings	Identification marking is located on the outside surface of the equipment.	P
	Manufacturer's name or trade-mark or identification mark	Hanwha Techwin	P
	Model identification or type reference	SRB-160S	P
	Symbol for Class II equipment only	Class I equipment	P
	Other markings and symbols	No markings and symbols give rise to misunderstanding. (see copy of marking plates)	P
1.7.1.3	Use of graphical symbols		P
1.7.2	Safety instructions and marking	User manual provided	P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Appliance inlet used	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.3	Overcurrent protective device		P
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool	No operator access area with tool.	N/A
1.7.7.6	Ozone		N/A
1.7.3	Short duty cycles	Continuous operation	N/A
1.7.4	Supply voltage adjustment	No voltage adjustment	N/A
	Methods and means of adjustment; reference to installation instructions		N/A
1.7.5	Power outlets on the equipment	No power outlet provided	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Evaluated during SMPS certification	P
1.7.7	Wiring terminals	Appliance inlet	P
1.7.7.1	Protective earthing and bonding terminals		P
1.7.7.2	Terminals for a.c. mains supply conductors	Appliance inlet	P
1.7.7.3	Terminals for d.c. mains supply conductors	AC mains supply	N/A
1.7.8	Controls and indicators	No controls and indicators which affects safety.	N/A
1.7.8.1	Identification, location and marking		N/A
1.7.8.2	Colours		N/A
1.7.8.3	Symbols according to IEC 60417		N/A
1.7.8.4	Markings using figures		N/A
1.7.9	Isolation of multiple power sources	Considered	P
1.7.10	Thermostats and other regulating devices	No adjustable thermostats or similar regulating devices	N/A
1.7.11	Durability	Rubbing the marking by hand for 15s with a piece of cloth soaked with water and n-hexane spirit	P
1.7.12	Removable parts	No marking on removable parts	P
1.7.13	Replaceable batteries	The lithium battery is not located in an Operator Access Area. The required warning is in the user manual.	P
	Language(s)	Only English language instructions reviewed.	—
1.7.14	Equipment for restricted access locations	Not limited to be used in restricted access location.	N/A
2	PROTECTION FROM HAZARDS		P

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

2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas		P
2.1.1.1	Access to energized parts	No access to energized parts	P
	Test by inspection		P
	Test with test finger (Figure 2A)		P
	Test with test pin (Figure 2B)		P
	Test with test probe (Figure 2C)		P
2.1.1.2	Battery compartments		N/A
2.1.1.3	Access to ELV wiring		N/A
	Working voltage (V_{peak} or V_{rms}); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	No access	N/A
2.1.1.5	Energy hazards	Evaluated during SMPS certification	N/A
2.1.1.6	Manual controls	No manual controls	N/A
2.1.1.7	Discharge of capacitors in equipment		P
	Measured voltage (V); time-constant (s).....	After 1 sec, line to neutral is measured as below; $V_o = 372 \text{ Vpk}$ $37 \% V_o = 137.64 \text{ Vpk}$ $V_{tc} = 12 \text{ Vpk}$	—
2.1.1.8	Energy hazards – d.c. mains supply	AC Mains supply	N/A
	a) Capacitor connected to the d.c. mains supply ..		N/A
	b) Internal battery connected to the d.c. mains supply		N/A
2.1.1.9	Audio amplifiers		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	The unit is not limited to be used in restricted access locations.	N/A

2.2	SELV circuits		N/A
2.2.1	General requirements	Evaluated during SMPS certification	N/A
2.2.2	Voltages under normal conditions (V)		N/A
2.2.3	Voltages under fault conditions (V)		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.2.4	Connection of SELV circuits to other circuits		N/A

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	No hazardous voltage in the equipment.	N/A
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits	No 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 during SMPS certification	N/A
2.4.2	Limit values		N/A
	Frequency (Hz)		—
	Measured current (mA)		—
	Measured voltage (V).....		—
	Measured circuit capacitance (nF or μ F)		—
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	Limited power sources		P
	a) Inherently limited output	(see appended table 2.5)	P
	b) Impedance limited output		N/A
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition	(see appended table 2.5)	P
	d) Overcurrent protective device limited output		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) :		—
	Use of integrated circuit (IC) current limiters	U25, U26 (see appended table 1.5.1)	P

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	One green/yellow wire is hook-in soldering in the PE pin of inlet and then fixed to the metal chassis by mechanical cramp terminal, star washer and nut.	P
2.6.2	Functional earthing	Functional earthing circuit is separated from parts at hazardous voltages by double or reinforced insulation.	P
	Use of symbol for functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General	Protective bonding terminals/conductors were subject to the bonding impedance test.	P
2.6.3.2	Size of protective earthing conductors	Power supply cord earthing conductor complies with Table 3B. For North America, protective earthing conductor for flexible cord sized in accordance with NEC/CEC.	P
	Rated current (A), cross-sectional area (mm ²), AWG..... :	5.8-4 A, Min. 0.75 mm ² , 18 AWG	—
2.6.3.3	Size of protective bonding conductors	Protective bonding conductors evaluated based on 2.6.3.3.	P
	Rated current (A), cross-sectional area (mm ²), AWG..... :	5.8-4 A, Min. 0.75 mm ² , 18 AWG	—
	Protective current rating (A), cross-sectional area (mm ²), AWG..... :	16 or 20 A, Min. 0.75 mm ² , 18 AWG	—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... :	Between AC inlet GND terminal and metal enclosure: 0.011 Ω , 0.352 V, 32 A, 2 min. 0.011 Ω , 0.440 V, 40 A, 2 min.	P
2.6.3.5	Colour of insulation	See 2.6.1	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.4	Terminals	The earthing terminal in the appliance inlet (in SMPS)	P
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals	The appliance inlet considered as main protective earthing terminal.	P
	Rated current (A), type, nominal thread diameter (mm)..... :	See 2.6.3.4	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used. Only one protective bonding conductor is provided in the equipment.	P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment	This unit has its own earthing connection. Any other units connected via the DC output connector shall provide SELV only.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No components in protective earthing conductors and protective bonding conductors	P
2.6.5.3	Disconnection of protective earth	Relevant hazard is removed at the same time with disconnection of protective earth	P
2.6.5.4	Parts that can be removed by an operator	No parts	P
2.6.5.5	Parts removed during servicing	No parts	P
2.6.5.6	Corrosion resistance	All safety earthing connections in compliance with Annex J.	P
2.6.5.7	Screws for protective bonding	No self-tapping screws are used. For the earth connection to the metal chassis a washer and a screw are used.	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

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Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	Basic requirements	Equipment relies on 16 A (20A North America) rated fuse or circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short circuit. Over current protection is provided by one built-in fuse.	P
	Instructions when protection relies on building installation	Not applicable for pluggable equipment type A.	N/A
2.7.2	Faults not simulated in 5.3.7	The protection devices are well dimensioned and mounted.	N/A
2.7.3	Short-circuit backup protection	The final system is considered as pluggable equipment type A, the building installation is considered as providing short circuit backup protection.	P
2.7.4	Number and location of protective devices	Over current protection by one built-in fuse.	P
2.7.5	Protection by several devices	Only one fuse provided.	N/A
2.7.6	Warning to service personnel	Service manual provided	P

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

2.9	Electrical insulation		P
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Clause	Requirement + Test	Result - Remark	Verdict
2.9.1	Properties of insulating materials	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation	P
2.9.2	Humidity conditioning	Humidity treatment performed for 120 h.	P
	Relative humidity (%), temperature (°C) :	93 %R.H., 40 °C	—
2.9.3	Grade of insulation	Basic, supplementary, double, reinforced or functional insulation.	P
2.9.4	Separation from hazardous voltages	Electrical strength test conducted after the humidity treatment, heating, fault test. No flash over or breakdown of insulation	P
	Method(s) used :	Methode 1 and Method 3	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	Evaluated during SMPS certification	N/A
2.10.1.1	Frequency :		N/A
2.10.1.2	Pollution degrees :		N/A
2.10.1.3	Reduced values for functional insulation		N/A
2.10.1.4	Intervening unconnected conductive parts		N/A
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage		N/A
2.10.2.1	General		N/A
2.10.2.2	RMS working voltage		N/A
2.10.2.3	Peak working voltage		N/A
2.10.3	Clearances	(see appended table 5.3)	P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages		N/A
	a) AC mains supply :		N/A
	b) Earthed d.c. mains supplies :	No d.c. mains supplies	N/A
	c) Unearthed d.c. mains supplies :	No d.c. mains supplies	N/A
	d) Battery operation :		N/A
2.10.3.3	Clearances in primary circuits		N/A
2.10.3.4	Clearances in secondary circuits		P

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply		N/A
2.10.3.7	Transients from d.c. mains supply	a.c. mains supply	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems	Not connected to telecommunication networks and cable distribution systems.	N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply	.	N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network ..		N/A
2.10.4	Creepage distances	(see appended table 5.3)	P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		N/A
	CTI tests		—
2.10.4.3	Minimum creepage distances		N/A
2.10.5	Solid insulation		N/A
2.10.5.1	General		N/A
2.10.5.2	Distances through insulation		N/A
2.10.5.3	Insulating compound as solid insulation	No such construction used	N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5	Cemented joints		N/A
2.10.5.6	Thin sheet material – General		N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs).....		—
2.10.5.8	Non-separable thin sheet material		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		N/A
	Electric strength test		—
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage		N/A
	a) Basic insulation not under stress		N/A
	b) Basic, supplementary, reinforced insulation		N/A
	c) Compliance with Annex U		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Two wires in contact inside wound component; angle between 45° and 90°		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test		—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage		N/A
	- Basic insulation not under stress		N/A
	- Supplementary, reinforced insulation		N/A
2.10.6	Construction of printed boards		N/A
2.10.6.1	Uncoated printed boards		N/A
2.10.6.2	Coated printed boards	No special coating used	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		N/A
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test		N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A

3	WIRING, CONNECTIONS AND SUPPLY	P
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3.1	General	P
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.1	Current rating and overcurrent protection	Internal wirings are UL recognized wiring which is PVC insulated, rated VW-1, 300V, min. 80 °C, the wiring gauge is suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	Wires do not touch sharp edges. Where they touch heatsinks additional tubing or cable tie is provided so that the heatsink cannot damage the insulation and cause hazard.	P
3.1.3	Securing of internal wiring	The wiring is so routed and fixed that there is not excessive strength on the wire and terminal connections. Damage of the conductor insulation or loosening of the terminal connection is unlikely.	P
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 sub-clause 3.1.1.	P
3.1.5	Beads and ceramic insulators		N/A
3.1.6	Screws for electrical contact pressure	To ensure proper earth connection through the PCB, screws and spring-washers are provided to compensate possible shrinkage of the PCB material.	P
3.1.7	Insulating materials in electrical connections	All connections are metal to metal or, where contact pressure is transmitted through PCB material for earthing purposes a combination of screw and spring-washer is provided.	P
3.1.8	Self-tapping and spaced thread screws	No self tapping screws are used.	N/A
3.1.9	Termination of conductors	All conductors are secured reliably by use of solder-pins or glue or other mechanical fixing means.	P
	10 N pull test	After test, no break away or pivot on its terminal.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.10	Sleeving on wiring	Heat shrinkable sleeving provided.	P

3.2	Connection to a mains supply		P
3.2.1	Means of connection		P
3.2.1.1	Connection to an a.c. mains supply	Appliance inlet used	P
3.2.1.2	Connection to a d.c. mains supply	The equipment is not for connection to a d.c. mains supply.	N/A
3.2.2	Multiple supply connections	Considered	P
3.2.3	Permanently connected equipment	The equipment is not permanently connected	N/A
	Number of conductors, diameter of cable and conduits (mm)		—
3.2.4	Appliance inlets	Appliance inlet complied with IEC 60320-1. The power cord can be inserted without difficulties and is not intended to support the equipment.	P
3.2.5	Power supply cords	AC power supply cords provided.	P
3.2.5.1	AC power supply cords		P
	Type	(see appended table 1.5.1)	—
	Rated current (A), cross-sectional area (mm ²), AWG	(see appended table 1.5.1)	—
3.2.5.2	DC power supply cords	No DC power supply cords are provided.	N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage		P
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	Appliance inlet used	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals	No 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		P
3.4.2	Disconnect devices	Appliance inlet used	N/A
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized	When power cord is removed from inlet (or wall socket) no remaining parts with hazardous voltage in the equipment.	P
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment	Appliance coupler used. The disconnect device disconnects both poles simultaneously.	N/A
3.4.7	Number of poles - three-phase equipment	No three-phase equipment	N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment	This equipment is intended for interconnection to other equipment only by its secondary output connector at SELV level.	N/A
3.4.11	Multiple power sources	Considered	P

3.5	Interconnection of equipment		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits	SELV and LCC circuit.	P
3.5.3	ELV circuits as interconnection circuits		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.5.4	Data ports for additional equipment	(see appended table 2.5)	P

4	PHYSICAL REQUIREMENTS		P
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4.1	Stability		P
	Angle of 10°	Mess: 26 kg No fall down.	P
	Test force (N)	Force test: 51 N; Downward Force test: 800 N; No fall down.	P

4.2	Mechanical strength		P
4.2.1	General		P
	Rack-mounted equipment.		N/A
4.2.2	Steady force test, 10 N	Evaluated during SMPS certification.	N/A
4.2.3	Steady force test, 30 N	SMPS enclosure; No damaged as below; - Top / near TA1 - Side / near TA1 - Bottom / near TA1	P
4.2.4	Steady force test, 250 N	Metal enclosure above SMPS; No damaged	P
4.2.5	Impact test		P
	Fall test	Metal enclosure above SMPS; No damaged	P
	Swing test	Metal enclosure above SMPS; No damaged	P
4.2.6	Drop test; height (mm)		N/A
4.2.7	Stress relief test	Metal enclosure	N/A
4.2.8	Cathode ray tubes	No CRT	N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps	No high pressure lamp	N/A
4.2.10	Wall or ceiling mounted equipment; force (N)	No wall or ceiling mounted equipment.	N/A

4.3	Design and construction		P
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IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.1	Edges and corners	All edges and corners are composed of rounded and smoothed	P
4.3.2	Handles and manual controls; force (N)	Tested for horizontal force of 50 N for 60 s. Handles are not dislocated. (UL test method) Tested by supporting at 104 kg (1020 N) for 2 handles for 60 s. Handles are not breakaged.	P
4.3.3	Adjustable controls	No adjustable controls which might create a hazard.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur.	N/A
4.3.5	Connection by plugs and sockets	SELV connectors do not comply with IEC 60320 or IEC 60083	N/A
4.3.6	Direct plug-in equipment		N/A
	Torque		—
	Compliance with the relevant mains plug standard		N/A
4.3.7	Heating elements in earthed equipment	No heating elements in equipment	N/A
4.3.8	Batteries		P
	- Overcharging of a rechargeable battery	Non-rechargeable battery used.	N/A
	- Unintentional charging of a non-rechargeable battery	(see appended table 4.3.8)	P
	- Reverse charging of a rechargeable battery	Non-rechargeable battery used.	N/A
	- Excessive discharging rate for any battery	(see appended table 4.3.8)	P
4.3.9	Oil and grease	No oil, greas or similar substances are used in the equipment.	N/A
4.3.10	Dust, powders, liquids and gases	Equipment does not produce dust and does not use powders, liquids or gases.	N/A
4.3.11	Containers for liquids or gases	No containers for liquids or gases.	N/A
4.3.12	Flammable liquids	No flammable liquid is used.	N/A
	Quantity of liquid (l)		N/A
	Flash point (°C)		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13	Radiation	No radiation hazard in the equipment.	N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N/A
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce significant UV radiation.	N/A
	Part, property, retention after test, flammability classification		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	Not using lasers and LEDs	N/A
4.3.13.5.1	Lasers (including laser diodes)		N/A
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)		N/A
4.3.13.6	Other types	The equipment does not generate other types of radiation.	N/A

4.4	Protection against hazardous moving parts		P
4.4.1	General	No hazardous moving part	N/A
4.4.2	Protection in operator access areas	No hazardous moving part	N/A
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas	No hazardous moving part	N/A
4.4.5	Protection against moving fan blades		P
4.4.5.1	General	Main DC Fan: N: 1 800 r/min, m: 0.114 kg, r: 53 mm, K: 622.519 ; DC Fan (attached on CPU): N: 4 000 r/min, m: 0.018 kg, r: 25 mm, K: 108	P
	Not considered to cause pain or injury. a)	Main DC Fan: 0.379 DC Fan (attached on CPU): 0.312	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Is considered to cause pain, not injury. b)		N/A
	Considered to cause injury. c)		N/A
4.4.5.2	Protection for users		P
	Use of symbol or warning		N/A
4.4.5.3	Protection for service persons		P
	Use of symbol or warning	The Fan is not considered to cause pain or injury. No symbol or warning required.	N/A

4.5	Thermal requirements		P
4.5.1	General		P
4.5.2	Temperature tests	(see appended table 4.5)	P
	Normal load condition per Annex L	L.7	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat	Appliance inlet is certified by IEC/EN 60320-1.	N/A

4.6	Openings in enclosures		P
4.6.1	Top and side openings	Openings in rear do not allow foreign objects entering the equipment to fall on bare parts. Also, openings are not located within 5° of fire hazardous parts.	P
	Dimensions (mm)	Numerous openings in area of backside, opening size is approximately 4.8 mm.	—
4.6.2	Bottoms of fire enclosures		P
	Construction of the bottom, dimensions (mm) ...	Fire enclosure (metal bottom) construction is considered to comply with the requirements and some openings covered with PCB (rated V-0).	—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment	Not transportable equipment	N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm)		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditioning temperature (°C), time (weeks):		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials	Materials with suitable flammability classes are use. See appended table 4.7.	P
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure	All parts located in metal enclosure	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General	Components and materials have adequate flammability classification (see appended table 1.5.1).	P
4.7.3.2	Materials for fire enclosures	The fire enclosure is constructed metal material. (see appended table 1.5.1).	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No parts outside the fire enclosure.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	All materials are mounded on PCB rated Min. V-1.	P
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
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5.1	Touch current and protective conductor current		P
5.1.1	General	(see appended Table 5.1)	P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply	Multiple power sources used.	N/A
5.1.2.2	Redundant multiple connections to an a.c. mains supply	Considered	P
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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.4	Application of measuring instrument	Tested using D.1 measuring instrument.	P
5.1.5	Test procedure	Tested using D.1 measuring instrument.	P
5.1.6	Test measurements		P
	Supply voltage (V)	264 Vac.	—
	Measured touch current (mA)	(see appended table 5.1)	—
	Max. allowed touch current (mA)	(see appended table 5.1)	—
	Measured protective conductor current (mA)	(see appended table 5.1)	—
	Max. allowed protective conductor current (mA) ...	(see appended table 5.1)	—
5.1.7	Equipment with touch current exceeding 3,5 mA	The touch current does not exceed 3.5 mA.	N/A
5.1.7.1	General		N/A
5.1.7.2	Simultaneous multiple connections to the supply	Considered	P
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	Not connected to a telecommunication network nor a cable distribution system.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks	No telecommunication network connection ports for connection of multiple items of other telecommunication equipment.	N/A
	a) EUT with earthed telecommunication ports		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

5.2	Electric strength		P
5.2.1	General	(See appended table 5.2)	P
5.2.2	Test procedure	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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.2	Motors	Certified DC FAN used	P
5.3.3	Transformers	Evaluated during SMPS certification	N/A
5.3.4	Functional insulation	Satisfy requirement c).	P
5.3.5	Electromechanical components	No electromechanical components	N/A
5.3.6	Audio amplifiers in ITE	No audio amplifier in the equipment.	N/A
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	No thermostats, temperature limiters or thermal cut-outs.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions		P
5.3.9.1	During the tests	No fire and molten metal or deformation	P
5.3.9.2	After the tests	Electric strength test	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS	N/A
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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 TNV circuit	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	No TNV circuit	N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A

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

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

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
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7.1	General		N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	No connection to cable distribution systems.	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).....		—
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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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)		P
B.1	General requirements	DC FAN	P
	Position	Internal center, Mainboard near CPU	—
	Manufacturer	(see appended table 1.5.1)	—
	Type	(see appended table 1.5.1)	—
	Rated values	(see appended table 1.5.1)	—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V)		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	Evaluated during SMPS certification	—
	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
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		N/A
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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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.2.1	AC mains supply		N/A
G.2.2	Earthed d.c. mains supplies		N/A
G.2.3	Unearthed d.c. mains supplies		N/A
G.2.4	Battery operation		N/A
G.3	Determination of telecommunication network transient voltage (V)		N/A
G.4	Determination of required withstand voltage (V)		N/A
G.4.1	Mains transients and internal repetitive peaks		N/A
G.4.2	Transients from telecommunication networks		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient voltages (V)		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances		N/A

H	ANNEX H, IONIZING RADIATION (see 4.3.13)	N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)	P
	Metal(s) used	Complied

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

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)	P
L.1	Typewriters	N/A
L.2	Adding machines and cash registers	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	Network Storage	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		—
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Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		N/A
	- Preferred climatic categories	Evaluated during SMPS certification	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

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

R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A

T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
			—

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
		Evaluated during SMPS certification	—

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

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

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

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

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
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
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BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—
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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		N/A
DD.1	General		N/A
DD.2	Mechanical strength test, variable N		N/A
DD.3	Mechanical strength test, 250N, including end stops		N/A
DD.4	Compliance		N/A

EE	ANNEX EE, Household and home/office document/media shredders		N/A
EE.1	General		N/A
EE.2	Markings and instructions		N/A
	Use of markings or symbols		N/A
	Information of user instructions, maintenance and/or servicing instructions		N/A
EE.3	Inadvertent reactivation test		N/A
EE.4	Disconnection of power to hazardous moving parts		N/A

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

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
- Description:					
Power cord set	YLCHESED Co.,Ltd.	SJP-516A/SJS-51	10 A, 250 V~	IEC/EN 60799:1 998	NEMKO (P11214859)
Power cord set (UL Only)	KOREA KDK CO LTD	KKP-30 and KKS-16A	10 A, 125 V~ 18 AWG	UL 817	UL (E58075SP)
Flexible cable	Sang Jin Electric Wire Co., Ltd.	H05VV-F	3 x 0.75 mm ²	IEC/EN 50525-2-11:2011	VDE (40002338)
Flexible cord (UL Only)	KOREA KDK CO LTD	SPT-2	3 x 0.75 mm ² 18 AWG	UL 62	UL (E58073)
Flexible cord (UL Only) (alternate)	KOREA KDK CO LTD	SPT-3	3 x 0.75 mm ² 18 AWG	UL 62	UL (E58073)
Flexible cord (UL Only) (alternate)	KOREA KDK CO LTD	SJT	3 x 0.75 mm ² 18 AWG	UL 62	UL (E58073)
Flexible cord (UL Only) (alternate)	KOREA KDK CO LTD	SVT	3 x 0.75 mm ² 18 AWG	UL 62	UL (E58073)
SMPS1, SMPS2 (2 EA SMPS provided)	3Y Power Technology Inc.	YM-6521B	Rated input: 100-240 V~, 50-60 Hz, 8.5-4 A Rated output: +5 Vdc, 25 A, +12 Vdc, 42 A, +3.3 Vdc, 24 A, -12 Vdc, 0.5 A, -5 Vdc, 0.2 A, +5 Vsb, 4 A	IEC/EN 60950-1 UL 60950-1	TUV-Rh (JPTUV-066488) UL (E142723)
Enclosure (Top)	Interchangeable	Metal	Min. 1.0 mm thickness.	IEC/EN 60950-1 UL 60950-1	Tested in equipment
Enclosure (Bottom)	Interchangeable	Metal	Min. 1.0 mm thickness.	IEC/EN 60950-1 UL 60950-1	Tested in equipment
Hard-disk frame	CHI MEI CORPORATION	PA-765(+)	ABS, V-0, 5VB, 60 °C, Min. 1.5 mm thickness	UL 94 UL 746	UL (E56070)
Main DC Fan	EVERCOOL TECH CO LTD	EC12025L12BA	12 Vdc, 0.25 A(max.), 3 W	UL 60950-1	UL (E199144)
DC Fan – attached on CPU	POWER LOGIC TECHNOLOGY INC	PLA05010B12L	12 Vdc, 0.08 A(max.), 0.96 W	UL 60950-1	UL (E192307)

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾
Coin Battery (BT1)	PANASONIC CORPORATION	CR1216	Lithium / manganese dioxide (Coin), Non- rechargeable, 3.0 V dc, 25 mAh	UL 1642	UL (MH12210)
USB Protection IC (U25 and U26)	MAXIM INTEGRATED INC	MAX1693	Rated 2.7 – 5.5 Vdc, 1.0 A (Protect current)	UL 2367	UL (E211395)
Internal Wiring (secondary)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 °C	UL 758	UL
Flat wire Cable (secondary)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 °C	UL 758	UL
Label	Interchangeable	Interchangeable	Min.70 °C if Max. surface temperature not specified.	UL 969	UL
PCB	Interchangeable	Interchangeable	Rated V-0, Min. 105 °C	UL796	UL
supplementary information:					
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

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

1.5.1	TABLE: Opto Electronic Devices	N/A
Manufacturer..... :		
Type :		
Separately tested :		
Bridging insulation :		
External creepage distance :		
Internal creepage distance :		
Distance through insulation :		
Tested under the following conditions :		
Input :		
Output :		
supplementary information		

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

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status
90	1.785	-	158.28	FA1	1.785	Rated output loaded at 50 Hz/ Continuous operation
100	1.617	5.8	157.41	FA1	1.617	Rated output loaded at 50 Hz/ Continuous operation
240	0.732	4	153.14	FA1	0.732	Rated output loaded at 50 Hz/ Continuous operation
264	0.674	-	152.76	FA1	0.674	Rated output loaded at 50 Hz/ Continuous operation
90	1.791	-	158.69	FA1	1.791	Rated output loaded at 60 Hz/ Continuous operation
100	1.613	5.8	157.64	FA1	1.613	Rated output loaded at 60 Hz/ Continuous operation
240	0.743	4	153.32	FA1	0.743	Rated output loaded at 60 Hz/ Continuous operation
264	0.692	-	152.89	FA1	0.692	Rated output loaded at 60 Hz/ Continuous operation
supplementary information:						
Rated output condition: Single power (SMPS1) connected. USB port (2 EA): 5 Vdc, 0.5 A loaded as manufacturer request. Hard disk-drive (Seagate, ST3500414CS) 16 EA connected as manufacturer provided. LAN port (4 EA): Network cable connected. Fuse(FA1) is located in SMPS.						
90	2.136	-	188.75	FA1	2.136	Rated output loaded at 50 Hz/ Continuous operation
100	1.921	5.8	187.24	FA1	1.921	Rated output loaded at 50 Hz/ Continuous operation
240	0.914	4	183.46	FA1	0.914	Rated output loaded at 50 Hz/ Continuous operation
264	0.865	-	183.48	FA1	0.865	Rated output loaded at 50 Hz/ Continuous operation
90	2.147	-	189.24	FA1	2.147	Rated output loaded at 60 Hz/ Continuous operation
100	1.927	5.8	187.83	FA1	1.927	Rated output loaded at 60 Hz/ Continuous operation
240	0.949	4	183.54	FA1	0.949	Rated output loaded at 60 Hz/ Continuous operation
264	0.897	-	183.60	FA1	0.897	Rated output loaded at 60 Hz/ Continuous operation
supplementary information:						
Rated output condition: Dual power (SMPS1 and SMPS2) connected.						

IEC 60950-1						
Clause	Requirement + Test				Result - Remark	Verdict
U (V)	I (A)	I _{rated} (A)	P (W)	Fuse #	I _{fuse} (A)	Condition/status
USB port (2 EA): 5 Vdc, 0.5 A loaded as manufacturer request. Hard disk-drive (Seagate, ST3500414CS) 16 EA connected as manufacturer provided. LAN port (4 EA): Network cable connected. Fuse(FA1) is located in SMPS.						

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:					
Evaluated during SMPS certification					

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

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			N/A
Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components	
	V peak	V d.c.		
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)			
supplementary information:				
Evaluated during SMPS certification				

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

2.5	TABLE: Limited power sources					P
Circuit output tested: USB1 port						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Test condition (Single fault)	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
Pin 1 to GND	Normal condition	5.12	0.91	8	3.51	100
Pin 1 to GND	U26 Pin 1-2, Sc	5.12	5.42	8	10.87	100
Pin 2,3,4 to GND	Normal condition	0	0	8	0	100
Circuit output tested: USB2 port						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Test condition (Single fault)	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
Pin 1 to GND	Normal condition	5.12	0.81	8	3.23	100
Pin 1 to GND	U25 Pin 1-2, Sc	5.12	5.63	8	11.85	100
Pin 2,3,4 to GND	Normal condition	0	0	8	0	100
Circuit output tested: Serial port						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Test condition (Single fault)	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
Pin 1-9	Normal condition	0	0	8	0	100
Circuit output tested: LAN1,2,3,4 port						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Test condition (Single fault)	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
Pin 1-4	Normal condition	0	0	8	0	100
supplementary information:						
Sc=Short circuit, Oc=Open circuit						

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

2.10.2	Table: working voltage measurement			N/A
Location		RMS voltage (V)	Peak voltage (V)	Comments
supplementary information:				
Evaluated during SMPS certification				

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements						N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)	
Functional:							
Basic/supplementary:							
Reinforced:							
supplementary information:							
Evaluated during SMPS certification							

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:						
Evaluated during SMPS certification						

IEC 60950-1									
Clause	Requirement + Test				Result - Remark				Verdict
4.3.8	TABLE: Batteries								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available					Yes				P
Is it possible to install the battery in a reverse polarity position?					No				P
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	0.01 mA	0.1 mA	-	-	-	-	-	-	-
Max. current during fault condition	0.1 mA (D1 pin1-3, short, 7 hr tested. No hazard)	N/A	2.4 mA (D1 pin2-3, short, 7 hr tested. No hazard)	-	-	-	-	-	-
Test results:									Verdict
- Chemical leaks					No leaks				P
- Explosion of the battery					No explosion				P
- Emission of flame or expulsion of molten metal					No emission				P
- Electric strength tests of equipment after completion of tests					No hazard				P
supplementary information:									

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.8	TABLE: Batteries		P
Battery category..... : Lithium / manganese dioxide (Coin) 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	N/A
Language(s)	English
Close to the battery	N/A
In the servicing instructions	No
In the operating instructions	Yes

IEC 60950-1							
Clause	Requirement + Test	Result - Remark					Verdict
4.5	TABLE: Thermal requirements						P
	Supply voltage (V) ,.....:	90 V 60 Hz	264 V 60 Hz	264 V 50 Hz	N/A	N/A	—
	Ambient T _{min} (°C)	N/A	N/A	N/A	N/A	N/A	—
	Ambient T _{max} (°C)	N/A	N/A	N/A	N/A	N/A	—
Maximum measured temperature T of part/at ...:		T (°C)					Allowed T _{max} (°C)
1. SMPS1 Inlet		42.3	43.0	42.6	N/A	N/A	70
2. LA1 coil – SMPS1		52.8	52.8	52.7	N/A	N/A	105
3. LA12 coil – SMPS1		52.8	53.1	52.8	N/A	N/A	105
4. LA2 coil – SMPS1		52.4	52.9	52.7	N/A	N/A	105
5. LA4 coil – SMPS1		59.1	56.6	56.3	N/A	N/A	105
6. LA5 coil – SMPS1		45.3	45.3	44.9	N/A	N/A	105
7. TA2 coil – SMPS1		53.6	54.4	54.1	N/A	N/A	105
8. TA2 core – SMPS1		54.1	55.0	54.6	N/A	N/A	105
9. TA3 coil – SMPS1		55.4	56.3	56.0	N/A	N/A	110
10. TA3 core – SMPS1		55.9	56.8	56.6	N/A	N/A	110
11. TA1 coil – SMPS1		53.1	54.0	53.7	N/A	N/A	105
12. TA1 core – SMPS1		53.1	53.8	53.5	N/A	N/A	105
13. LA7 coil – SMPS1		57.4	58.0	57.9	N/A	N/A	105
14. LA8 coil – SMPS1		47.5	48.1	47.9	N/A	N/A	105
15. LA10 coil – SMPS1		51.5	52.2	52.0	N/A	N/A	105
16. LA11 coil – SMPS1		52.0	52.8	52.6	N/A	N/A	105
17. DC fan left – SMPS1		54.6	55.1	54.7	N/A	N/A	100
18. DC fan right – SMPS1		54.5	54.3	54.0	N/A	N/A	100
19. SMPS2 Inlet – SMPS1		44.7	45.3	44.9	N/A	N/A	70
20. LA1 coil – SMPS2		46.6	47.9	47.5	N/A	N/A	105
21. LA12 coil – SMPS2		46.6	47.9	47.5	N/A	N/A	105
22. LA2 coil – SMPS2		47.1	48.3	48.0	N/A	N/A	105
23. LA4 coil – SMPS2		47.0	48.0	47.6	N/A	N/A	105
24. LA5 coil – SMPS2		47.4	48.7	48.2	N/A	N/A	105
25. TA2 coil – SMPS2		48.0	51.5	51.0	N/A	N/A	105
26. TA2 core – SMPS2		47.7	51.1	50.7	N/A	N/A	105
27. TA3 coil – SMPS2		48.9	51.3	50.9	N/A	N/A	110
28. TA3 core – SMPS2		48.3	50.3	50.1	N/A	N/A	110

IEC 60950-1							
Clause	Requirement + Test	Result - Remark				Verdict	
Maximum measured temperature T of part/at ...:		T (°C)				Allowed T _{max} (°C)	
29. TA1 coil – SMPS2		52.6	55.6	55.3	N/A	N/A	105
30. TA1 core – SMPS2		52.3	55.0	54.6	N/A	N/A	105
31. LA7 coil – SMPS2		47.4	49.5	49.3	N/A	N/A	105
32. LA8 coil – SMPS2		47.2	49.1	48.9	N/A	N/A	105
33. LA10 coil – SMPS2		47.8	49.9	49.6	N/A	N/A	105
34. LA11 coil – SMPS2		48.3	50.0	49.8	N/A	N/A	105
35. DC fan left – SMPS2		45.9	46.6	46.3	N/A	N/A	100
36. DC fan right – SMPS2		46.6	47.3	47.0	N/A	N/A	100
37. PCB near A1(CPU) – Mainboard		52.1	52.7	52.3	N/A	N/A	105
38. PCB near BT1 – Mainboard		49.8	50.4	50.1	N/A	N/A	105
39. L2 body – Mainboard		49.7	50.3	49.9	N/A	N/A	105
40. PCB near U2 – IOCARD board		65.1	65.4	65.0	N/A	N/A	105
41. Main DC fan-left body		51.7	52.2	52.1	N/A	N/A	100
42. Main DC fan-right body		53.1	53.8	53.5	N/A	N/A	100
43. DC fan (attached on CPU) body		48.3	48.9	48.6	N/A	N/A	100
44. Hard-disk frame body		40.0	40.3	40.2	N/A	N/A	60
45. Enclosure near SMPS		44.0	44.5	44.3	N/A	N/A	70
46. Ambient (t ₂)		40 (21.5 °C)	40 (19.8 °C)	40 (18.6 °C)	N/A	N/A	N/A
supplementary information:							
Maximum temperature T at Tma (40 °C) is calculated. (T at Tma = T- t ₂ +Tma)							
Temperature test was performed with thermo-couple.							
Single power (SMPS1) connected.							
USB port (2 EA): 5 Vdc, 0.5 A loaded as manufacturer request.							
Hard disk-drive (Seagate, ST3500414CS) 16 EA connected as manufacturer provided..							
	Supply voltage (V) ,.....:	90 V 60 Hz	264 V 60 Hz	264 V 50 Hz	N/A	N/A	—
	Ambient T _{min} (°C)	N/A	N/A	N/A	N/A	N/A	—
	Ambient T _{max} (°C)	N/A	N/A	N/A	N/A	N/A	—
Maximum measured temperature T of part/at ...:		T (°C)				Allowed T _{max} (°C)	
1. SMPS1 Inlet		41.9	41.3	41.8	N/A	N/A	70
2. LA1 coil – SMPS1		51.1	50.4	50.2	N/A	N/A	105
3. LA12 coil – SMPS1		52.3	51.6	51.3	N/A	N/A	105
4. LA2 coil – SMPS1		52.1	51.3	51.0	N/A	N/A	105

IEC 60950-1						
Clause	Requirement + Test		Result - Remark			Verdict
Maximum measured temperature T of part/at ...:		T (°C)				Allowed T _{max} (°C)
5. LA4 coil – SMPS1	58.0	53.7	53.5	N/A	N/A	105
6. LA5 coil – SMPS1	47.1	44.7	44.5	N/A	N/A	105
7. TA2 coil – SMPS1	53.6	52.9	52.6	N/A	N/A	105
8. TA2 core – SMPS1	54.0	53.2	53.1	N/A	N/A	105
9. TA3 coil – SMPS1	53.8	53.1	52.8	N/A	N/A	110
10. TA3 core – SMPS1	54.4	53.9	53.6	N/A	N/A	110
11. TA1 coil – SMPS1	51.7	51.2	51.0	N/A	N/A	105
12. TA1 core – SMPS1	51.8	51.3	51.2	N/A	N/A	105
13. LA7 coil – SMPS1	58.2	57.4	57.2	N/A	N/A	105
14. LA8 coil – SMPS1	48.2	47.6	47.5	N/A	N/A	105
15. LA10 coil – SMPS1	52.2	51.2	50.9	N/A	N/A	105
16. LA11 coil – SMPS1	51.1	50.7	50.4	N/A	N/A	105
17. DC fan left – SMPS1	54.2	53.4	53.3	N/A	N/A	100
18. DC fan right – SMPS1	53.3	52.4	52.2	N/A	N/A	100
19. SMPS2 Inlet – SMPS1	43.3	42.7	43.1	N/A	N/A	70
20. LA1 coil – SMPS2	53.5	52.3	52.1	N/A	N/A	105
21. LA12 coil – SMPS2	52.7	51.7	51.4	N/A	N/A	105
22. LA2 coil – SMPS2	52.1	51.2	50.9	N/A	N/A	105
23. LA4 coil – SMPS2	59.3	54.4	54.2	N/A	N/A	105
24. LA5 coil – SMPS2	56.5	53.6	53.5	N/A	N/A	105
25. TA2 coil – SMPS2	54.0	53.2	52.8	N/A	N/A	105
26. TA2 core – SMPS2	53.7	52.9	52.6	N/A	N/A	105
27. TA3 coil – SMPS2	55.6	54.9	54.5	N/A	N/A	110
28. TA3 core – SMPS2	55.2	54.7	54.4	N/A	N/A	110
29. TA1 coil – SMPS2	53.8	53.1	53.0	N/A	N/A	105
30. TA1 core – SMPS2	53.0	52.4	52.3	N/A	N/A	105
31. LA7 coil – SMPS2	60.1	59.3	59.0	N/A	N/A	105
32. LA8 coil – SMPS2	49.1	48.5	48.3	N/A	N/A	105
33. LA10 coil – SMPS2	50.8	50.2	49.8	N/A	N/A	105
34. LA11 coil – SMPS2	53.3	52.7	52.3	N/A	N/A	105
35. DC fan left – SMPS2	56.5	55.7	55.4	N/A	N/A	100
36. DC fan right – SMPS2	55.3	54.1	53.8	N/A	N/A	100
37. PCB near A1(CPU) – Mainboard	52.3	51.6	51.6	N/A	N/A	105

IEC 60950-1							
Clause	Requirement + Test			Result - Remark		Verdict	
Maximum measured temperature T of part/at ...:		T (°C)				Allowed T _{max} (°C)	
38. PCB near BT1 – Mainboard	50.1	49.4	49.4	N/A	N/A	105	
39. L2 body – Mainboard	51.0	50.5	50.3	N/A	N/A	105	
40. PCB near U2 – IOCard board	65.6	64.7	64.5	N/A	N/A	105	
41. Main DC fan-left body	52.3	51.6	51.5	N/A	N/A	100	
42. Main DC fan-right body	54.5	54.1	54.0	N/A	N/A	100	
43. DC fan (attached on CPU) body	48.9	48.3	48.3	N/A	N/A	100	
44. Hard-disk frame body	40.6	40.6	40.8	N/A	N/A	60	
45. Enclosure near SMPS	44.6	44.3	44.3	N/A	N/A	70	
46. Ambient (t ₂)	40 (20.1 °C)	40 (21.8 °C)	40 (22.5 °C)	N/A	N/A	N/A	
supplementary information:							
Maximum temperature T at Tma (40 °C) is calculated. (T at Tma = T- t2+Tma)							
Temperature test was performed with thermo-couple.							
Dual power (SMPS1 and SMPS2) connected.							
USB port (2 EA): 5 Vdc, 0.5 A loaded as manufacturer request.							
Hard disk-drive (Seagate, ST3500414CS) 16 EA connected as manufacturer provided.							
LAN port (4 EA): Network cable connected.							
Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
supplementary information:							

4.5.5	TABLE: Ball pressure test of thermoplastic parts			N/A
	Allowed impression diameter (mm) :	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
supplementary information:				
Evaluated during SMPS certification				

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
4.7	TABLE: Resistance to fire				N/A
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
supplementary information:					

5.1	TABLE: touch current measurement			P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions	
Metal enclosure (GND) – Single power	1.48	3.5	Switch “e” Position: Open Polarity “p1” Position: Normal	
Metal enclosure (GND) – Single power	1.48	3.5	Switch “e” Position: Open Polarity “p1” Position: Reverse	
Metal enclosure (GND) – Dual power	2.68	3.5	Switch “e” Position: Open Polarity “p1” Position: Normal	
Metal enclosure (GND) – Dual power	2.68	3.5	Switch “e” Position: Open Polarity “p1” Position: Reverse	
supplementary information:				
Test voltage: 264 V, 60 Hz Single power: SMPS1 connected. Dual power: SMPS1 and SMPS2 connected.				

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:				
-		-	-	-
Basic/supplementary:				
Primary circuit and Metal enclosure		AC	1 500	No
Primary circuit and Metal enclosure after humidity test		AC	1 500	No
Primary circuit and Metal enclosure after heating test		AC	1 500	No
Primary circuit and Metal enclosure after fault test		AC	1 500	No

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)
Reinforced:			Breakdown Yes / No
Primary and Secondary		AC	3 000
Primary and Secondary after humidity test		AC	3 000
Primary and Secondary after heating test		AC	3 000
Primary and Secondary after fault test		AC	3 000
supplementary information:			

5.3	TABLE: Fault condition tests					P
	Ambient temperature (°C) :					See below
	Power source for EUT: Manufacturer, model/type, output rating :					N/A
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
1. C244 - Mainboard	Short	264	20 min	FA1	10	FI: 0.31 A, Unit IP, NCD, NC, NT, NB, No hazard.
2. Q26 pin1-3 - Mainboard	Short	264	20 min	FA1	10	FI: 0.87 A, Normal operation, NCD, NC, NT, NB, No hazard.
3. U6 pin4-8 - Mainboard	Short	264	20 min	FA1	10	FI: 0.87 A, Normal operation, NCD, NC, NT, NB, No hazard.
4. C199 - IOCARD board	Short	264	20 min	FA1	10	FI: 0.88 A, Normal operation, NCD, NC, NT, NB, No hazard.
5. Ventilation opening *)	Blocked	264	2 hr	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 54.0 °C, TA3 coil: 54.1 °C, TA1 coil: 52.4 °C;,, SMPS2, TA2 coil: 54.9 °C, TA3 coil: 56.5 °C, TA1 coil: 54.9 °C;,, Ambient: 40.0(21.0) °C), NCD, NC, NT, NB, No hazard.
6. Main DC fan-left *)	Stalled	264	1 hr 36 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 56.3 °C, TA3 coil: 56.4 °C, TA1 coil: 54.0 °C;,, SMPS2, TA2 coil: 56.2 °C, TA3 coil: 57.4 °C, TA1 coil: 55.5 °C;,, Ambient: 40.0(22.5) °C), NCD, NC, NT, NB, No hazard.

IEC 60950-1						
Clause	Requirement + Test				Result - Remark	
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
7. Main DC fan-left *)	Stalled	264	1 hr 37 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 55.1 °C, TA3 coil: 55.9 °C, TA1 coil: 53.9 °C;; SMPS2, TA2 coil: 55.2 °C, TA3 coil: 57.4 °C, TA1 coil: 55.1 °C;; Ambient: 40.0(22.7) °C), NCD, NC, NT, NB, No hazard.
8. DC fan-attached on CPU *)	Stalled	264	1 hr 38 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 54.3 °C, TA3 coil: 54.4 °C, TA1 coil: 52.7 °C;; SMPS2, TA2 coil: 54.6 °C, TA3 coil: 56.0 °C, TA1 coil: 54.5 °C;; Ambient: 40.0(22.9) °C), NCD, NC, NT, NB, No hazard.
9. SMPS1 left fan *)	Stalled	264	2 hr 12 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 57.0 °C, TA3 coil: 57.9 °C, TA1 coil: 55.1 °C;; SMPS2, TA2 coil: 53.7 °C, TA3 coil: 55.4 °C, TA1 coil: 53.8 °C;; Ambient: 40.0(22.8) °C), NCD, NC, NT, NB, No hazard.
10. SMPS1 right fan *)	Stalled	264	1 hr 32 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 58.5 °C, TA3 coil: 59.0 °C, TA1 coil: 56.7 °C;; SMPS2, TA2 coil: 53.6 °C, TA3 coil: 55.3 °C, TA1 coil: 53.8 °C;; Ambient: 40.0(22.9) °C), NCD, NC, NT, NB, No hazard.
11. SMPS1 left fan *)	Stalled	264	2 hr 12 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 53.8 °C, TA3 coil: 53.9 °C, TA1 coil: 52.3 °C;; SMPS2, TA2 coil: 58.2 °C, TA3 coil: 60.2 °C, TA1 coil: 57.3 °C;; Ambient: 40.0(22.6) °C), NCD, NC, NT, NB, No hazard.
12. SMPS1 right fan *)	Stalled	264	3 hr 19 min	FA1	10	FI: 0.87 A, Unit normal operation, CT (SMPS1, TA2 coil: 53.5 °C, TA3 coil: 53.7 °C, TA1 coil: 52.1 °C;; SMPS2, TA2 coil: 58.9 °C, TA3 coil: 61.1 °C, TA1 coil: 61.2 °C;; Ambient: 40.0(22.2) °C), NCD, NC, NT, NB, No hazard.

IEC 60950-1						
Clause	Requirement + Test				Result - Remark	
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
13. Output (USB1 port) (*)	Overload	264	3 hr 15 min	FA1	10	Max. Temperature obtained at 0.7 A output load, FI: 0.90 A, CT (SMPS1, TA2 coil: 53.3 °C, TA3 coil: 53.6 °C, TA1 coil: 51.7 °C;,, SMPS2, TA2 coil: 53.6 °C, TA3 coil: 55.1 °C, TA1 coil: 53.5 °C;,, Ambient: 40.0(23.2) °C), NCD, NC, NT, NB.
13-1. Output (USB1 port) (*)	Overload	264	20 min	FA1	10	IP, NCD, NC, NT, NB.
14. Output (USB2 port) (*)	Overload	264	3 hr 21 min	FA1	10	Max. Temperature obtained at 0.7 A output load, FI: 0.90 A, CT (SMPS1, TA2 coil: 53.2 °C, TA3 coil: 53.3 °C, TA1 coil: 51.6 °C;,, SMPS2, TA2 coil: 53.4 °C, TA3 coil: 55.1 °C, TA1 coil: 53.3 °C;,, Ambient: 40.0(22.6) °C), NCD, NC, NT, NB.
14-1. Output (USB2 port) (*)	Overload	264	20 min	FA1	10	IP, NCD, NC, NT, NB.
supplementary information:						
*) means calculated value at Tma(40 °C) FI – Final Input Current; IP – Internal protection operated; CD – Component Damaged (list damaged components); NCD – No Component Damaged; CT – Constant temperatures were obtained (list components: temperature;); NB – No indication of dielectric breakdown; YB – Dielectric breakdown (indicate time and location); NC – Cheesecloth remained intact; YC – Cheesecloth charred or flamed; NT – Tissue paper remained intact; YT – Tissue paper charred or flamed;						

IEC 60950-1							
Clause	Requirement + Test			Result - Remark			Verdict
C.2	TABLE: transformers						N/A
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength/ V (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:							
Evaluated during SMPS certification							

C.2	TABLE: transformers	N/A
Manufacturer:		
Type:		

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to TMP/CTF stage 1 or WMT/CTF stage 2 procedure has been used.

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 60950-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Information technology equipment – Safety – Part 1: General requirements			
Differences according to : EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013			
Attachment Form No..... : EU_GD_IEC60950_1F			
Attachment Originator : SGS Fimko Ltd			
Master Attachment : Date 2014-02			
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EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"		P
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
(A2:2013)			
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	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
(A1:2010)			

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		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		P
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 *		P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A
1.7.2.1 (A12:2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.		N/A
	Zx Protection against excessive sound pressure from personal music players		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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. - 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.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		
	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 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		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	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 LAeq,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 LAeq,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.		

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: - the symbol of Figure 1 with a minimum height of 5 mm; and - the following wording, or similar: “To prevent possible hearing damage, do not listen at high volume levels for long periods.”  Figure 1 – Warning label (IEC 60417-6044) Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.		N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output LAeq,T, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output LAeq,T of the listening device shall be ≤ 100 dBA. This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.		N/A
	Zx.4.3 Wireless listening devices In wireless mode: - with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and - respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and - with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output LAeq,T of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.		N/A
	Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s. NOTE Test method for wireless equipment provided without listening device should be defined.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT									
Clause	Requirement + Test	Result - Remark	Verdict						
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; c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A						
2.7.2	This subclause has been declared 'void'.		P						
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A						
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: <table><tr><td>Up to and including 6 </td><td>0,75 ^{a)} </td></tr><tr><td>Over 6 up to and including 10 (0,75) ^{b)}</td><td>1,0 </td></tr><tr><td>Over 10 up to and including 16 (1,0) ^{c)}</td><td>1,5 </td></tr></table> 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.	Up to and including 6	0,75 ^{a)}	Over 6 up to and including 10 (0,75) ^{b)}	1,0	Over 10 up to and including 16 (1,0) ^{c)}	1,5		P
Up to and including 6	0,75 ^{a)}								
Over 6 up to and including 10 (0,75) ^{b)}	1,0								
Over 10 up to and including 16 (1,0) ^{c)}	1,5								

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N/A
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 Delete the fifth line: conductor sizes for 13 to 16 A		N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).		N/A
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.		N/A
Bibliography	Additional EN standards.		N/A

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

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
1.5.8	In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
1.5.9.4	In Finland, Norway and Sweden , the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A
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"		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.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	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).” 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.”		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.5	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.		N/A
1.7.5 (A11:2009)	For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
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		N/A
2.2.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In Finland, Norway and Sweden there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In Norway , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A
2.7.1	In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.13	In Finland, Norway and Sweden , there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
3.2.1.1	In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16 A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A		N/A
3.2.1.1	In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (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		N/A
3.2.1.1	In Spain, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.		N/A
3.2.1.1	In the United Kingdom, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In Ireland , apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.		N/A
3.2.4	In Switzerland , for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the United Kingdom , a power supply cord with conductor of 1,25 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N/A
3.3.4	In the United Kingdom , the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm ² to 1,5 mm ² nominal cross-sectional area.		N/A
4.3.6	In the United Kingdom , the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	In Ireland , DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that - is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and - has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and - is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A
6.1.2.1 (A1:2010)	In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In Finland, Norway and Sweden , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		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.		N/A

Attachment 1 – European Group Differences and National Differences

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

**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

Attachment 2 – National Differences for CB Bulletin

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
APPENDIX ZZ VARIATIONS TO IEC 60950-1, ED. 2.0 (2005) FOR APPLICATION IN AUSTRALIA AND NEW ZEALAND (Normative)			
ZZ1 INTRODUCTION This Appendix sets out variations and additional requirements to cover issues which have not been addressed by the International Standard. These variations indicate national variations for purposes of the IECEE CB System and will be published in the IECEE CB Bulletin.			
ZZ2 VARIATIONS The following variations apply to the source text.			
1.2	Insert the following between 'person, service' and 'range, rated frequency': POTENTIAL IGNITION SOURCE..... 1.2.12		P
1.2.12.201	Insert a new Clause 1.2.12.201 after Clause 1.2.12.15 as follows: 1.2.12.201 POTENTIAL IGNITION SOURCE Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s. current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in CONDUCTIVE PATTERNS on PRINTED BOARDS. NOTE 201 An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE. NOTE 202 This definition is from AS/NZS 60065:2003.		P
1.5.1	Add the following to the end of the first paragraph: 'or the relevant Australian/New Zealand Standard.' In NOTE 1, add the following after the word 'standard': 'or an Australian/New Zealand Standard'		P

Attachment 2 – National Differences for CB Bulletin

IEC60950_1F - ATTACHMENT																						
Clause	Requirement + Test	Result - Remark	Verdict																			
Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)																						
Clause	Requirement + Test	Result - Remark	Verdict																			
1.5.2	Add the following to the end of the first and third dash items: 'or the relevant Australian/New Zealand Standard'		P																			
3.2.5.1	Modify Table 3B as follows: Delete the first four rows and replace with the following: <table border="1"><thead><tr><th rowspan="3">RATED CURRENT of equipment A</th><th colspan="2">Minimum conductor sizes</th></tr><tr><th>Nominal cross-sectional area</th><th>AWG or kcmil [cross-sectional area in mm²]</th></tr><tr><th>mm²</th><th>see Note 2</th></tr></thead><tbody><tr><td>Over 0.2 up to and including 3</td><td>0,5 ^a</td><td>18 [0,8]</td></tr><tr><td>Over 3 up to and including 7.5</td><td>0,75</td><td>16 [1,3]</td></tr><tr><td>Over 7.5 up to and including 10</td><td>(0,75) ^b 1,00</td><td>16 [1,3]</td></tr><tr><td>Over 10 up to and including 16</td><td>(1,0) ^c 1,5</td><td>14 [2]</td></tr></tbody></table> Delete NOTE 1. Delete Footnote ^a and repase with the following: ^a This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0,5 mm2 three-core supply flexible cords are not permitted; see AS/NZS 3191).	RATED CURRENT of equipment A	Minimum conductor sizes		Nominal cross-sectional area	AWG or kcmil [cross-sectional area in mm ²]	mm ²	see Note 2	Over 0.2 up to and including 3	0,5 ^a	18 [0,8]	Over 3 up to and including 7.5	0,75	16 [1,3]	Over 7.5 up to and including 10	(0,75) ^b 1,00	16 [1,3]	Over 10 up to and including 16	(1,0) ^c 1,5	14 [2]		P
RATED CURRENT of equipment A	Minimum conductor sizes																					
	Nominal cross-sectional area		AWG or kcmil [cross-sectional area in mm ²]																			
	mm ²	see Note 2																				
Over 0.2 up to and including 3	0,5 ^a	18 [0,8]																				
Over 3 up to and including 7.5	0,75	16 [1,3]																				
Over 7.5 up to and including 10	(0,75) ^b 1,00	16 [1,3]																				
Over 10 up to and including 16	(1,0) ^c 1,5	14 [2]																				
4.1.201	Insert a new Clause 4.1.201 after Clause 4.1 as follows: 4.1.201 Display devices used for television purposes Display devices which may be used for television purposes, with a mass of 7 kg or more, shall comply with the requirements for stability and mechanical hazards, including the additional stability requirements for television receivers, specified in AS/NZS 60065.		N/A																			
4.3.6	Delete the third paragraph and replace with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flatpin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.		N/A																			

Attachment 2 – National Differences for CB Bulletin

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.5	Add the following to the end of the first paragraph: ' , or AS/NZS 2211.1'		N/A
4.7	Add the following new paragraph to the end of the clause: 'For alternate tests refer to Clause 4.7.201.'		N/A

Attachment 2 – National Differences for CB Bulletin

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201	Insert a new Clause 4.7.201 after Clause 4.7.3.6 as follows: 4.7.201 Resistance to fire – Alternative tests 4.7.201.1 General Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the apparatus, or the following: (a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1mm in width regardless of length. (b) The following parts which would contribute negligible fuel to a fire: - small mechanical parts, the mass of which does not exceed 4g, such as mounting parts, gears, cams, belts and bearings; - small electrical components, such as capacitors with a volume not exceeding 1,750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. NOTE In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another. Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5. For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5. The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring.	Metal Enclosure	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.2	Testing of non-metallic materials Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part.	Metal Enclosure	N/A

Attachment 2 – National Differences for CB Bulletin

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Australia- Differences to IEC 60950-1:2005													
(Test results according to last modification date 2011-05-06 in CB Bulletin)													
Clause	Requirement + Test	Result - Remark	Verdict										
4.7.201.3	Testing of insulating materials Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C. The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection. NOTE Contacts in components such as switch contacts are considered to be connections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested. The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications: <table><tr><th>Clause of AS/NZS 60695.11.5</th><th>Change</th></tr><tr><td colspan="2">9 Test procedure</td></tr><tr><td>9.2 Application of needle-flame</td><td> Replace the first paragraph with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner Replace the second paragraph with: The duration of application of the test flame shall be 30 s ±1 s. </td></tr><tr><td>9.3 Number of test specimens</td><td> Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test. </td></tr><tr><td>11 Evaluation of test results</td><td> Replace with: The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s. </td></tr></table> The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the sample tested was not thicker than the relevant part.	Clause of AS/NZS 60695.11.5	Change	9 Test procedure		9.2 Application of needle-flame	Replace the first paragraph with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner Replace the second paragraph with: The duration of application of the test flame shall be 30 s ±1 s.	9.3 Number of test specimens	Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.	11 Evaluation of test results	Replace with: The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.	Metal Enclosure	N/A
Clause of AS/NZS 60695.11.5	Change												
9 Test procedure													
9.2 Application of needle-flame	Replace the first paragraph with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner Replace the second paragraph with: The duration of application of the test flame shall be 30 s ±1 s.												
9.3 Number of test specimens	Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.												
11 Evaluation of test results	Replace with: The duration of burning (t_b) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.												

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IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.4	Testing in the event of non-extinguishing material If parts, other than enclosures, do not withstand the glow wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glowwire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1 If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 2 If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 3 Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.201.5	Testing of printed boards The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE. The test is not carried out if the — - Printed board does not carry any POTENTIAL IGNITION SOURCE; - Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or - Base material of printed boards, on which the available apparatus power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. Compliance shall be determined using the smallest thickness of the material. NOTE Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power for more than 2 min when the circuit supplied is disconnected	PWB UL V-0	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.2	For Australia only, delete the first paragraph and Note, and replace with the following: In Australia only, compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2.		N/A
6.2.2.1	For Australia only, delete the first paragraph including the Notes, and replace with the following: In Australia only, the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator reference 1 of Table N.1. The interval between successive impulses is 60 s and the initial voltage, U_c , is: (i) for 6.2.1 a): 7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and (ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 201 The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.		N/A
6.2.2.2	For Australia only, delete the second paragraph including the Note, and replace with the following: In Australia only, the a.c. test voltage is: (i) for 6.2.1 a): 3 kV; and (ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 201 Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Australia- Differences to IEC 60950-1:2005 (Test results according to last modification date 2011-05-06 in CB Bulletin)			
Clause	Requirement + Test	Result - Remark	Verdict
7.3	Add the following before the first paragraph: Equipment providing functions that fall only within the scope of AS/NZS 60065 and that incorporate a PSTN interface, are not required to comply with this Clause where the only ports provided on the equipment, in addition to a coaxial cable connection and a PSTN interface, are audio or video ports and analogue or data ports not intended to be used for telecommunications purposes.		N/A
Annex P	Add the following Normative References: AS/NZS 3191, Electric flexible cords AS/NZS 3112, Approval and test specification—Plugs and socket-outlets		P
Index	Insert the following between 'asbestos, not to be used as insulation' and 'attitude see orientation': AS/NZS 2211.1.....4.3.13.5 AS/NZS 3112.....4.3.6 AS/NZS 3191..... 3.2.5.1 (Table 3 B) AS/NZS 60064.....4.1.201 AS/NZS 60695.2.11..... 4.7.201.2, 4.7.201.3 AS/NZS 60695.11.10..... 4.7.201.1, 4.7.201.5 AS/NZS 60695.11.5.....4.7.201.3 Insert the following between 'positive temperature coefficient (PTC) device' and 'powder': potential ignition source 1.2.201, 4.7.201.3, 4.7.201.5		P

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Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1 with A1:2009 and A2:2013 CANADA NATIONAL DIFFERENCES Information technology equipment – Safety – Part 1: General requirements			
Differences according to : CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014			
Attachment Form No..... : CA_ND_IEC60950_1F			
Attachment Originator : CSA			
Master Attachment..... : Date (2015-05)			
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Canada – National Differences			
Clause	Requirement + Test	Result - Remark	Verdict
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.		N/A
1.1.2	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A:	Considered	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the CEC/NEC.		N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the CEC/NEC are required to have special construction features and identification markings.	(see appended table 1.5.1)	P
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings.	(see copy of marking plate)	P

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Clause	Requirement + Test	Result - Remark	Verdict
Canada – National Differences			
Clause	Requirement + Test	Result - Remark	Verdict
	A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." Likewise, a voltage rating shall not be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions."		P
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with CEC Part 1 or NEC shall be marked with the voltage rating and "Class 2" or equivalent. Marking shall be located adjacent to the terminals and shall be visible during wiring.	No class 2 output	N/A
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.	No such fuse	P
2.6	Equipment with isolated ground (earthing) receptacles are required to comply with NEC 250.146(D) and CEC 10-112 and 10-906(8).	Appliance inlet used	N/A
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Appliance inlet used	P
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	No Permanent connection	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Canada – National Differences			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.5	Power supply cords are required to be no longer than 4.5 m in length.		P
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement.		P
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0		N/A
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for US/Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).		N/A
3.3.5	First column of Table 3E revised to require "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration."		N/A
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position.		N/A
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Canada – National Differences			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13.5.1	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m ³ (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.	Metal and V-0 material (see appended table 1.5.1)	P
	Non-metallic enclosures of equipment for use in spaces used for environmental air (plenums) are required to comply with UL 2043.		N/A
Annex H	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No ionizing radiation	N/A

OTHER DIFFERENCES

The following key national differences are based on requirements other than national regulatory requirements.

Attachment 2 – National Differences for CB Bulletin

IEC60950_1F - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Canada – National Differences			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements. These components include: attachment plugs, battery packs (rechargeable type, used with transportable equipment), cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cutoffs, thermostats, (multi-layer) transformer winding wire, transient voltage surge suppressors, tubing, wire connectors, and wire and cables.	(see appended table 1.5.1)	P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as either a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply. This maximum operating voltage shall include consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment.	AC mains	N/A
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No TNV circuit	N/A
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.		N/A
2.6.2	Equipment with functional earthing is required to be marked with the functional earthing symbol (IEC 60417-6092).		N/A

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Canada – National Differences			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.	40 A conducted between GND pin of appliance inlet and Metal enclosure.	P
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT	N/A
4.3.2	Equipment with handles is required to comply with special loading tests.	Tested by supporting at 104 kg (1020 N) for 2 handles for 60 s. Handles are not breakaged.	P
4.3.8	Battery packs for both portable and stationary applications are required to comply with special component requirements.		N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded.	(see appended table 5.3)	P
	During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.		N/A
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No TNV circuit	N/A
Annex EE	UL articulated accessibility probe (Fig EE.3) required for assessing accessibility to document/media shredders instead of the Figure 2A test finger.		N/A
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX TO TEST REPORTS REGULATORY REQUIREMENTS FOR SINGAPORE	
Annex Form No.....	SG_RR_A
Annex Form Originator	TÜV SÜD PSB Pte Ltd
Master Annex Form.....	2008-03
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No	Items	Requirements	Result - Remark	Verdict
The following is the national differences in accordance with safety authority website www.spring.gov.sg/safety , ref. Singapore Consumer Protection (Safety Requirements) – Information Booklet – Chapter 7.				
7 SAFETY AUTHORITY'S REQUIREMENTS				
The Safety Authority monitors the safety of the controlled goods sold in Singapore by investigating all complaints, incidents and accidents reported to the authority. Experiences gained are translated into the Safety Authority's Requirements. These requirements are to be fulfilled in addition to the applicable safety standards.				
No	Items	Requirements	Result - Remark	Verdict
Applicable to all products				
1	Test certificate / Test report	Test certificate / Test report more than three (3) years old shall be rejected.		P
Applicable to all electrical products				
2	All appliances	All appliances must be tested to 230 VAC.		P
3	Voltage selector (voltage mis-match test)	Appliance fitted with voltage selector shall be tested as follows: Connect appliance to 230 VAC mains with voltage selector switch to settings not suitable for operation at 230 VAC.		P
4	Tropical condition test	All appliances (with tropical test requirements in applicable Standards) shall comply with the tropical condition test as stated in the relevant IEC Standards.		P
5	Class I appliances (3-pin mains plug)	All Class I appliances must be fitted with 3-pin mains plugs complied with SS 145/SS 472 that are registered with the Safety Authority.		P
6	Class II appliances (mains plug)	a) All Class II appliances must be fitted with 2-pin mains plug (Appendix T) complied with EN 50075.	Class I equipment	N/A

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IEC60950_1F - ATTACHMENT				
Clause	Requirement + Test		Result - Remark	Verdict
		b) Class II appliances that are fitted with 3-pin mains plugs must use plugs that are complied with SS 145 and registered with the Safety Authority.		
7	Appliances rated ≥ 3 kW or connected to fixed wiring	Electric appliance ≥ 3 kW must be connected to fixed wiring. All connection to fixed wiring must be in accordance with Code of Practice CP5.		P
8	Detachable power cord set (consists of mains plug, mains cord and appliance connector)	Detachable power cord set must be listed in the test report critical component list.		P
9	Circuit diagrams	Circuit diagrams must be indicated with component's values for products tested to IEC 60065 and IEC 60950.		P
10	Circuit diagrams of electronic modules in electrical appliances	Circuit diagrams of the electronic modules in the electrical appliances must be provided.		P
11	Controlled goods likely to be treated as toy by children	Controlled goods, having an enclosure, which is shaped and decorated so that it is likely to be treated as a toy by children, shall not be accepted for certification and registration.		P
No	Items	Requirements	Result - Remark	Verdict
Applicable to electric airport				
12	Reboil Switch	No part of the reboil switch is allowed to protrude into the water pot, even if it is located above the maximum water level mark.		N/A
Applicable to AC adaptor				
13	3-pin AC adaptor (Appendix V)	Test report showing that the 3-pin complied with sub-clauses 12.1 & 12.3 of SS 246 must be submitted.		N/A
14	2-pin AC adaptor (Appendix V)	The 2-pin (Appendix T) shall comply with EN 50075.		N/A
15	Detachable power supply cord set not supplied by Registered Supplier	Registered Supplier who is not supplying the detachable power supply cord set together with the AC Adaptor must provide written instruction to its customer on the type of approved detachable power cord set to use.		N/A
Applicable to computer products				
16	CD/DVD ROM (used in personal computer)	Test certificate showing that CD/DVD ROM has complied with IEC 825 must be provided.		N/A

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IEC60950_1F - ATTACHMENT				
Clause	Requirement + Test		Result - Remark	Verdict
17	Modem Card (used in personal computer)	Modem card incorporated in the personal computer must be tested at set level (sub-clauses 5.1 & 6 of IEC 60950) or at component level.		N/A
Applicable to ceiling fan and cycle fan				
18	Ceiling fan and cycle fan	a) These appliances must be tested to sub-clauses 5.7 and 5.8 of SS 360: 1992. b) Installation instruction must mention the 3 expansion bolts for fastening the main suspension, safety cord, expansion bolt with hook for fastening safety cord and mounting plate. (Appendix Q) c) Drawing (Appendix P) to show that the wires within the motor shaft are not stressed must be provided.		N/A
Applicable to portable/wall socket-outlet and portable cable reel				
19	Portable/wall socket-outlet and portable cable reel	a) If residual current device (RCD) is incorporated, its tripping current must be less than 30mA and operating time must be less than 0.1 second and testing to sub-clauses 9.9.2.1, 9.9.2.2, 9.9.2.3 and 9.16 of SS 97: Part 1: 2000 are required. b) The shutters screening the current-carrying socket contacts shall not be opened by the insertion of any corresponding SINGLE pin of the plug into any current-carrying socket aperture.		N/A
Applicable to roaster				
20	Roaster	A metal ring (Appendix U) must be provided to prevent the roaster from falling off in case the glass bowl shattered.		N/A
Applicable to Residual Current Circuit Breaker (RCCB)				
31	RCCB	Registration of RCCB is limited to 30 mA sensitivity and the operating time must be less than 0.1 second. Electronic RCCB will not be accepted for registration.		N/A
Applicable to electric instantaneous and storage water heater				
32	Instantaneous electric water heater and mains pressure electric storage water heater	Heating elements used must not be of the "bare-element" type.		N/A

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IEC60950_1F - ATTACHMENT				
Clause	Requirement + Test		Result - Remark	Verdict
33	Water heater incorporated with residual current device(RCD)	Testing to sub-clauses 9.9.2.1, 9.9.2.2, 9.9.2.3 and 9.16 of SS 97: Part 1: 2000 are required.		N/A
Applicable to multiway adaptor				
34	Multiway adaptor with 3-pin socket-outlets or combination of 3-pin and 2-pin socket-outlets	a) The socket contacts of the adaptor shall only accept 13A 3-pin mains plug complying with SS 145 and/or 2.5A 2-pin mains plug complying with EN 50075. b) The shutters screening the current-carrying socket contacts shall not be opened by the insertion of any corresponding SINGLE pin of the plug into any current-carrying socket aperture. c) A barrier or other acceptable means shall be provided on the engagement surface of the 2.5A 2-pin socket-outlet of the adaptor to PREVENT entry of any types of 2-pin mains plugs except those complying with EN 50075. (note: shutters cannot be regarded as barriers) d) Adaptor incorporates with switch would require additional test to sub-clauses 13.11, 17.1.3 and 18.1.3 of SS 145: Part 2: 1997.		N/A
Applicable to plasma/LCD display monitor				
35	Plasma/LCD display monitor with TV tuner	Plasma/LCD display monitor tested to IEC 60950 would require additional test to clauses 9 (related to antenna only), 10.1, 10.2, 10.3 and 12.5 of IEC 60065.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60950-1 with A1: 2009 and A2:2013 U.S.A. NATIONAL DIFFERENCES Information technology equipment – Safety – Part 1: General requirements			
Differences according to : UL 60950-1-07(Second Edition) + A1: 2011 + A2: 2014			
Attachment Form No. : US_ND_IEC60950_1F			
Attachment Originator : UL			
Master Attachment : Date 2014-07			
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	Special national conditions		
1.1.1	All equipment is designed as to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and if applicable, the National Electrical Safety Code, IEEE C2		N/A
	Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75		N/A
1.1.2	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A	Considered	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the /NEC		N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC are required to have special construction features and identification markings	(see appended table 1.5.1)	P
1.7.1	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings	(see copy of marking plate)	P
	A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and		P
	- if it is part of a range that extends into the Table 2 "Normal Operating Conditions"		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Likewise, a voltage rating is not to be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions"		P
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with NEC or CEC Part 1 or NEC are marked with the voltage rating and "Class 2" or equivalent	No class 2 output	N/A
	- Marking is located adjacent to the terminals		N/A
	- Marking is visible during wiring		N/A
2.5	Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable	No such fuse	N/A
2.6	Equipment with isolated ground (earthing) receptacles is in compliance with NEC 250.146(D) and CEC 10-112 and 10-906(8)	Appliance inlet used	P
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection		N/A
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC	Appliance inlet used	P
3.2.1	Attachment plugs of power supply cords are rated not less than 125 percent of the rated current of the equipment		P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment comply with special earthing, wiring, marking and installation instruction requirements		N/A
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs		N/A
3.2.5	Power supply cords are no longer than 4.5 m in length		P
	Minimum cord length is 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement		P

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

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9m ² (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less	Metal and V-0 material (see appended table 1.5.1)	N/A
	For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less		N/A
4.7.3.1	Non-metallic enclosures of equipment for use in spaces used for environmental air (plenums) are required to comply with UL 2043		N/A
Annex H	Equipment that produces ionizing radiation complies with U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370)		N/A
	Other National Differences		
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements. These components include: attachment plugs, battery backup systems, battery packs, cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cut-offs, thermostats, (multi-layer) transformer winding wire, surge protective devices, tubing, vehicle battery adapters, wire connectors, and wire and cables	(see appended table 1.5.1)	P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply		N/A
	This maximum operating voltage includes consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V _{peak} or 60 V _{d.c.} , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions	No TNV circuit	N/A
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts		N/A
2.6.2	Equipment with functional earthing marked with the functional earthing symbol (IEC 60417-6092)		N/A
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified	40 A conducted between GND pin of appliance inlet and Metal enclosure	P
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT	No CRT	N/A
4.3.2	Equipment with handles complies with special loading tests	Tested by supporting at 104 kg (1020 N) for 2 handles for 60 s. Handles are not breakaged.	P
4.3.8	Battery packs for both portable and stationary applications comply with special component requirements		N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals comply with a special touch current measurement tests		N/A
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are overloaded	(see appended table 5.3)	P
	During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test is repeated twice (three tests total) using new components as necessary		N/A
6.4	Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC	No TNV circuit	N/A
Annex EE	Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger		N/A
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear comply with special acoustic pressure requirements		N/A

Attachment 3 – Photographs

<Photo 1 > External view 1



<Photo 2 > External view 2



Attachment 3 – Photographs**<Photo 3 > Front side (cover open) view****<Photo 4 > Back side view**

Attachment 3 – Photographs

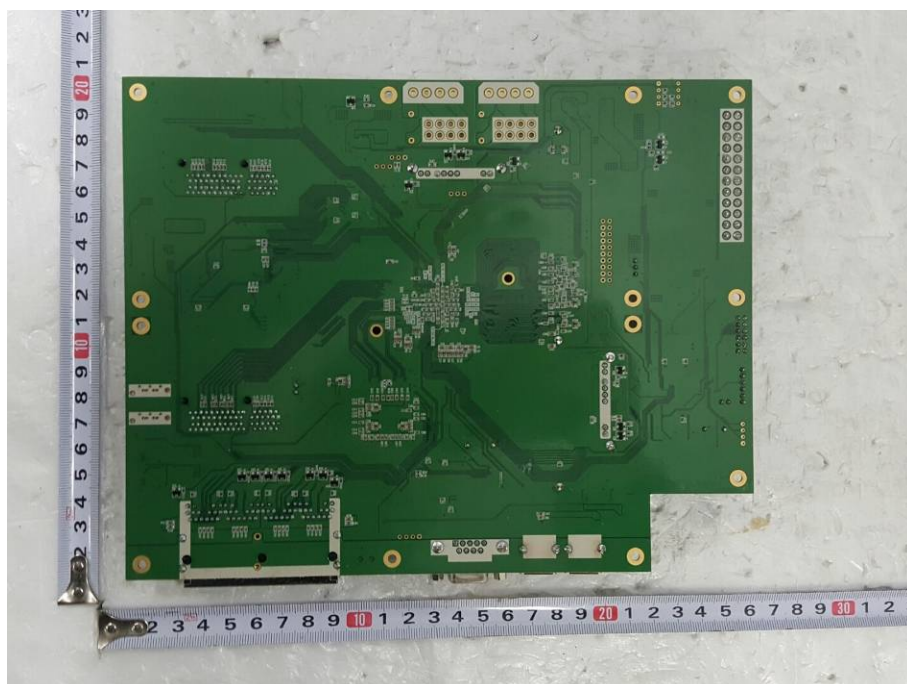
<Photo 5 > Internal view 1



<Photo 6 > Internal view 2



Attachment 3 – Photographs**<Photo 7 > Main board Top view 1****<Photo 8 > Main board Top view 2**

Attachment 3 – Photographs**<Photo 9 > Main board Bottom view****<Photo 10 > IOCard board Top view**

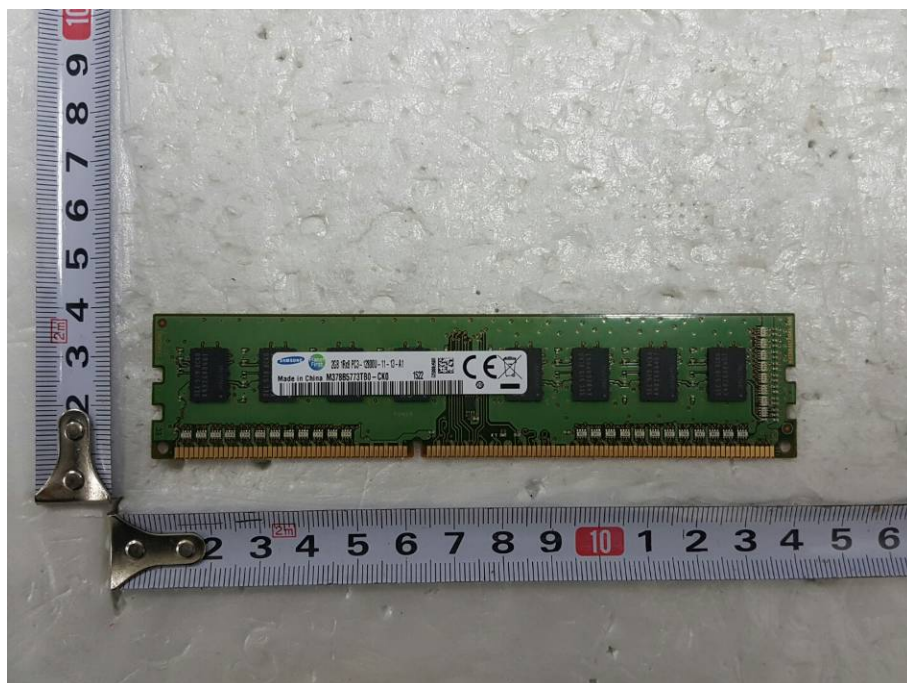
Attachment 3 – Photographs

<Photo 11 > IOCard board Bottom view



<Photo 12 > Backplane board Top view



Attachment 3 – Photographs**<Photo 13 > Backplane board Bottom view****<Photo 14 > DDR board Top view**

Attachment 3 – Photographs

<Photo 15 > DDR board Bottom view



<Photo 16 > Hard-disk frame view



Attachment 3 – Photographs**<Photo 17 > Main DC Fan****<Photo 18 > DC fan – attached on CPU**

Attachment 3 – Photographs

<Photo 19 > SMPS1 and SMPS2 external view 1



<Photo 20 > SMPS1 and SMPS2 external view 2

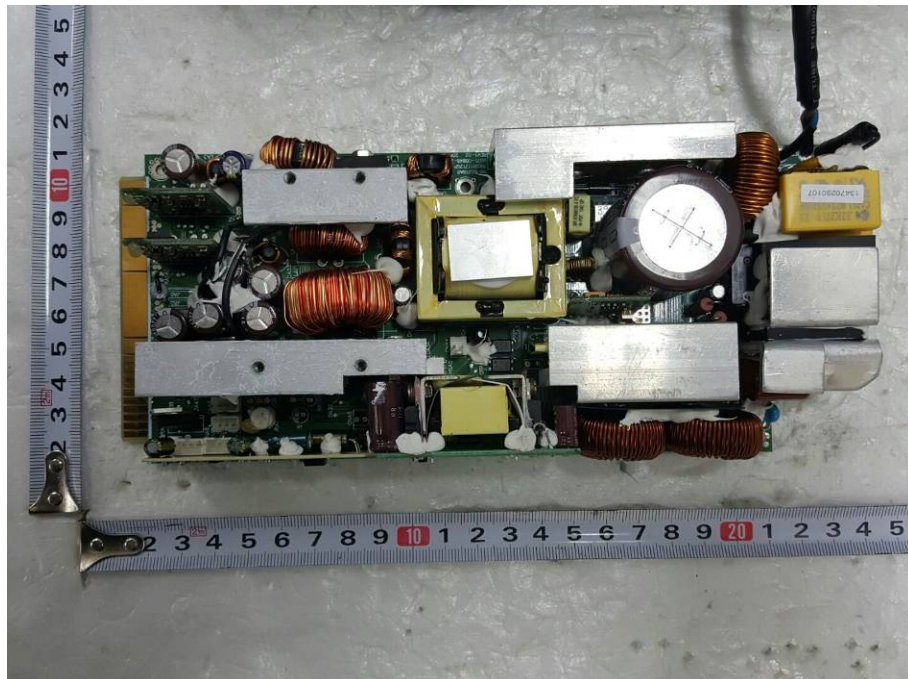


Attachment 3 – Photographs

<Photo 21 > SMPS1 and SMPS2 internal view



<Photo 22 > SMPS1 and SMPS2 Top view



Attachment 3 – Photographs

<Photo 23 > SMPS1 and SMPS2 Bottom view

