



Ref. Certif. No.

SG-OF-05585

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST  
CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE)  
CB SCHEMESYSTEME CEI D'ACCEPTATION MUTUELLE DE  
CERTIFICATS D'ESSAIS DES EQUIPEMENTS  
ELECTRIQUES (IECEE) METHODE OC**CB TEST CERTIFICATE**  
**CERTIFICAT D'ESSAI OC**Product  
ProduitNetwork equipment  
(Network Encoder)Name and address of the applicant  
Nom et adresse du demandeurSAMSUNG TECHWIN CO., LTD.  
42, Sungju-dong, Changwon-si,  
Gyeongsangnam-do 641-716, REPUBLIC OF KOREAName and address of the manufacturer  
Nom et adresse du fabricantSAMSUNG TECHWIN CO., LTD., 42, Sungju-dong, Changwon-si,,  
Gyeongsangnam-do 641-716, REPUBLIC OF KOREAName and address of the factory  
Nom et adresse de l'usineSAMSUNG TECHWIN CO., LTD., 42, Sungju-dong, Changwon-si,,  
Gyeongsangnam-do 641-716, REPUBLIC OF KOREARating and principal characteristics  
Valeurs nominales et caractéristiques principalesRated voltage: 100-240 V~  
Rated frequency: 50/60 Hz  
Rated current: 0.5 A  
Protection class: ITrade mark (if any)  
Marque de fabrique (si elle existe)

SAMSUNG

Model/type Ref.  
Ref. de type

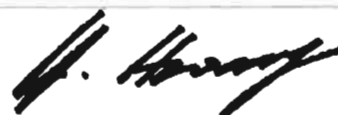
SPE-1600RP, SPE-1600RN

Additional information (if necessary)  
Information complémentaire (si nécessaire)

See Test Report for National and Group Differences

A sample of the product was tested and found  
to be in conformity with  
Un échantillon de ce produit a été essayé et a été  
considéré conforme à la

IEC 60950-1:2005

as shown in the Test Report Ref. No.  
which form part of this certificate  
comme indiqué dans le Rapport d'essais numéro  
de référence qui constitue une partie de ce  
certificatTÜV SÜD PSB Pte Ltd  
077-211121-000This CB Test Certificate is issued by the National Certification Body  
Ce Certificat d'essai OC est établi par l'Organisme National de CertificationDate, 2011-04-08  
CBS 11 04 40676 028  
( Ian Hwang )

TÜV SÜD PSB Pte Ltd · 1 Science Park Drive · Singapore 118221

PSB Singapore



PSB Singapore


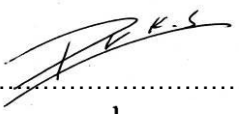
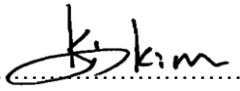
Test Report issued under the responsibility of:

NCB TÜV SÜD PSB Pte Ltd  
1 Science Park Drive, Singapore 118221

## TEST REPORT

### IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006 Information technology equipment – Safety – Part 1: General requirements

<b>Report Reference No.</b> .....	077-211121-000
<b>Date of issue</b> .....	2011-04-08
<b>Total number of pages</b> .....	Test Report: 50 pages Attachment 1: 12 pages (European group differences and national differences EN 60950-1:2006+A11:2009) Attachment 2: 6 pages (National Difference for Canada (CA)) Attachment 3: 7 pages (National Difference for USA (US)) Attachment 4: 5 pages (Photograph)
<b>Testing Laboratory</b> .....	TÜV SÜD Korea Laboratory (TKL)
<b>Address</b> .....	#315 and 316, MARIO Tower, 222-12, Guro-dong, Guro-Gu, Seoul, Korea
<b>Applicant's name</b> .....	SAMSUNG TECHWIN CO., LTD. (40676)
<b>Address</b> .....	42, Sungju-dong, Changwon-si, Gyeongsangnam-do, 641-716, Republic of Korea
<b>Manufacturer's name</b> .....	Same as applicant
<b>Address</b> .....	Same as applicant
<b>Factory's name</b> .....	Same as applicant
<b>Address</b> .....	Same as applicant
<b>Test specification:</b>	
<b>Standard</b> .....	<input checked="" type="checkbox"/> IEC 60950-1:2005 (2nd Edition) and/or <input checked="" type="checkbox"/> EN 60950-1:2006+A11:2009
<b>Test procedure</b> .....	CB
<b>Non-standard test method</b> .....	N/A
<b>Test Report Form No.</b> .....	IECEN60950_1C
<b>Test Report Form(s) Originator</b> .....	SGS Fimko Ltd
<b>Master TRF</b> .....	Dated 2007-06
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<b>Test item description .....</b>	Network Encoder	
<b>Trade Mark .....</b>		
<b>Manufacturer .....</b>	Same as applicant	
<b>Model/Type reference.....</b>	SPE-1600RP, SPE-1600RN	
<b>Ratings .....</b>	100-240 V~, 50/60 Hz, 0.5 A	
<b>Testing procedure and testing location:</b>		
<input checked="" type="checkbox"/> <b>Testing Laboratory:</b>	TÜV SÜD Korea Laboratory (TKL)	
Testing location/ address .....	#315 and 316, MARIO Tower, 222-12, Guro-dong, Guro-Gu, Seoul, Korea	
<input type="checkbox"/> <b>Associated CB Laboratory:</b>	N/A	
Testing location/ address .....	N/A	
Tested by (name + signature) .....	Kevin Park	
Approved by (+ signature) .....	Daniel Kim	
<input type="checkbox"/> Testing procedure: TMP		
Tested by (name + signature) .....	N/A	
Approved by (+ signature) .....	N/A	
Testing location/ address .....	N/A	
<input type="checkbox"/> Testing procedure: WMT		
Tested by (name + signature) .....	N/A	
Witnessed by (+ signature) .....	N/A	
Approved by (+ signature) .....	N/A	
Testing location/ address .....	N/A	
<input type="checkbox"/> Testing procedure: SMT		
Tested by (name + signature) .....	N/A	
Approved by (+ signature) .....	N/A	
Supervised by (+ signature) .....	N/A	
Testing location/ address .....	N/A	
<input type="checkbox"/> Testing procedure: RMT		
Tested by (name + signature) .....	N/A	
Approved by (+ signature) .....	N/A	
Supervised by (+ signature) .....	N/A	
Testing location/ address .....	N/A	

**Summary of testing:****Tests performed (name of test and test clause):**

All clauses

**Testing location:**

TÜV SÜD Korea Laboratory (TKL)  
 #315 and 316, MARIO Tower, 222-12, Guro-  
 dong, Guro-Gu, Seoul, Korea

**Summary of compliance with National Differences:**

The appliance fulfils the requirements of the standard IEC 60950-1:2005,  
 EN 60950-1:2006+A11:2009 and National Differences for Canada (CA) and USA (US).

**Copy of marking plate**

**"The above labels are drafts of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval"**

**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 %, +6 %

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 (A) .....: 16 A  
Canada and the United States: 20 A

Pollution degree (PD) .....: ☐ PD 1 ☒ PD 2 ☐ PD 3

IP protection class .....: IPX0

Altitude during operation (m) .....: Up to 2000 m

Altitude of test laboratory (m) .....: 70 m

Mass of equipment (kg) .....: 3.7 kg

**Possible test case verdicts:**

- test case does not apply to the test object.....: N/A

- test object does meet the requirement .....: P (Pass)

- test object does not meet the requirement .....: F (Fail)

**Testing:**

Date of receipt of test item .....: 2011-02-17

Date(s) of performance of tests .....: 2011-03-10 to 2011-03-23

**General remarks:**

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

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

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

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

**Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.**

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


**General product information:**

1. The maximum ambient temperature permitted by the manufacturer (Tma): 40 °C
2. The test samples are pre-production without serial number.

IEC/EN 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	<p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p> <p>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.</p> <p>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>	P
1.5.3	Thermal controls	No thermal controls.	N/A
1.5.4	Transformers	(see appended Annex C)	P
1.5.5	Interconnecting cables	The interconnecting cables contain only SELV.	P
1.5.6	Capacitors bridging insulation	(see appended table 1.5.1)	P
1.5.7	Resistors bridging insulation	No resistors bridging insulation.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems		N/A
1.5.9	Surge suppressors		P
1.5.9.1	General	(see appended table 1.5.1)	P
1.5.9.2	Protection of VDRs	A fuse is connected in series with the VDR.	P
1.5.9.3	Bridging of functional insulation by a VDR	Approved varistor (VR1) located between mains lines.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.4	Bridging of basic insulation by a VDR	Approved varistor (VR1) and surge absorber (AR1) located between phases and earth.	P
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		P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N/A
1.6.4	Neutral conductor	Neutral is insulated from earth with basic insulation throughout the equipment.	P

1.7	Marking and instructions		P
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V) .....	100-240 V~	P
	Symbol for nature of supply, for d.c. only .....	The equipment is for a.c. supply.	N/A
	Rated frequency or rated frequency range (Hz) ....	50/60 Hz	P
	Rated current (mA or A) .....	0.5 A	P
	Manufacturer's name or trade-mark or identification mark .....		P
	Model identification or type reference .....	SPE-1600RP, SPE-1600RN	P
	Symbol for Class II equipment only .....	Class I equipment.	N/A
	Other markings and symbols .....	(see the copy of marking plate)	P
1.7.2	Safety instructions and marking		P
1.7.2.1	General		P
1.7.2.2	Disconnect devices	Appliance inlet	P
1.7.2.3	Overcurrent protective device	Pluggable equipment type A	N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool		N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
1.7.4	Supply voltage adjustment .....	No voltage selector.	N/A
	Methods and means of adjustment; reference to installation instructions .....		N/A
1.7.5	Power outlets on the equipment .....		N/A



IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	Correct marking applied close to the fuse on SMPS: F1 250V T5AL F2 250V T5AL	P
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals .....	Terminal for connection of protective bonding conductor is marked with standard earth symbol (IEC 60417-5019) near the terminal.	P
1.7.7.2	Terminals for a.c. mains supply conductors	Appliance inlet used.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		P
1.7.8.1	Identification, location and marking .....	No indicator or control.	N/A
1.7.8.2	Colours .....	For functional indication a LED lights when the equipment is operating.	P
1.7.8.3	Symbols according to IEC 60417 .....	No switches provided.	N/A
1.7.8.4	Markings using figures .....	No controls.	N/A
1.7.9	Isolation of multiple power sources .....	Only one supply from the mains.	N/A
1.7.10	Thermostats and other regulating devices .....	No such devices	N/A
1.7.11	Durability	The marking withstand the required test.	P
1.7.12	Removable parts	No removable parts.	N/A
1.7.13	Replaceable batteries .....	The lithium battery is not placed in an operator access area. The required warning is in the installation/operation manual	P
	Language(s) .....	English	—
1.7.14	Equipment for restricted access locations.....	Equipment not intended for installation in restricted access locations.	N/A

2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas		P
2.1.1.1	Access to energized parts	No part of ELV or hazardous voltages are accessible.	P
	Test by inspection .....	No hazard.	P
	Test with test finger (Figure 2A) .....	No hazard.	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with test pin (Figure 2B) .....	No hazard.	P
	Test with test probe (Figure 2C) .....	No hazard.	P
2.1.1.2	Battery compartments	No battery compartments.	N/A
2.1.1.3	Access to ELV wiring	No internal wiring at ELV accessible to the operator.	N/A
	Working voltage ( $V_{peak}$ or $V_{rms}$ ); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring		N/A
2.1.1.5	Energy hazards .....	No energy hazard in operator access area.	P
2.1.1.6	Manual controls	No shafts of knobs etc. at ELV or hazardous voltage.	N/A
2.1.1.7	Discharge of capacitors in equipment		P
	Measured voltage (V); time-constant (s) .....	0 V d.c. at 1 s	—
2.1.1.8	Energy hazards – d.c. mains supply	Not for d.c. 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 .....	No audio amplifiers.	N/A
2.1.2	Protection in service access areas	Checked by inspection, unintentional contact is unlikely during service operations.	P
2.1.3	Protection in restricted access locations	Equipment not intended for installation in restricted access locations.	N/A

2.2	SELV circuits		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V) .....	Between any SELV circuits 42.4 V peak or 60 V d.c. are not exceeded.	P
2.2.3	Voltages under fault conditions (V) .....	Single fault did not cause excessive voltage in accessible SELV circuits. Limits of 71 V peak and 120 V d.c. were not exceed and SELV limits not for longer than 0.2 s.	P
2.2.4	Connection of SELV circuits to other circuits .....	SELV circuits are only connected to other SELV circuits.	P

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

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

2.4	Limited current circuits		N/A
2.4.1	General requirements	No limited current circuits	N/A
2.4.2	Limit values		N/A
	Frequency (Hz) .....		—
	Measured current (mA) .....		—
	Measured voltage (V) .....		—
	Measured circuit capacitance (nF or $\mu$ F).....		—
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	Limited power sources		P
	a) Inherently limited output		P
	b) Impedance limited output		N/A
	c) Regulating network limited output under normal operating and single fault condition		P
	d) Overcurrent protective device limited output		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Max. output voltage (V), max. output current (A), max. apparent power (VA) .....	SMPS 12 V output Uoc: 12.04 V, Isc: 6.8 A, S: 71 VA  Alam out: Gnd. to pin 1, 2, 3, 4 Uoc: 1.04 V, Isc: 0.27 mA  Alam In: Gnd. to pin 1, 2, 3, 4 Uoc: 2.048 V, Isc: 0.27 mA RS-485: Gnd. to pin 1,2,3,4,5,6,7,8 Uoc: 0.35 V	—
	Current rating of overcurrent protective device (A) ..		—

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	Accessible conductive parts are reliably connected to protective earth.	P
2.6.2	Functional earthing	Functional earthing is separated from hazardous voltages by basic insulation and protective earth.	P
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General		P
2.6.3.2	Size of protective earthing conductors		P
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....	0.5 A, Min. 0.75 mm <sup>2</sup> , Min. 18 AWG (see appended table 1.5.1)	—
2.6.3.3	Size of protective bonding conductors		P
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG.....	0.5 A, Min. 0.75 mm <sup>2</sup> , Min. 18 AWG (see appended table 1.5.1)	—
	Protective current rating (A), cross-sectional area (mm <sup>2</sup> ), AWG.....		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance ( $\Omega$ ), voltage drop (V), test current (A), duration (min) .....	From the appliance inlet to the accessible conductive parts: 0.003 $\Omega$ , 0.12 V, 40 A, 2 min	P
2.6.3.5	Colour of insulation.....	The color combination green-and-yellow is used.	P
2.6.4	Terminals		P
2.6.4.1	General		P
2.6.4.2	Protective earthing and bonding terminals		P

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

	Rated current (A), type, nominal thread diameter (mm).....:	0.5 A, Screw type, 3.9 mm diameter	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	Appliance inlet used.	P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	There are no switches or overcurrent protective devices in the protective earthing / bonding conductors.	P
2.6.5.3	Disconnection of protective earth	Appliance inlet used.	P
2.6.5.4	Parts that can be removed by an operator	No operator removable parts with protective earth connection except supply cord.	P
2.6.5.5	Parts removed during servicing	Protective earthed parts can not be removed in a way which impair safety.	P
2.6.5.6	Corrosion resistance	No risk of corrosion.	P
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Protective device is integrated in the equipment.	P
	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7		P
2.7.3	Short-circuit backup protection	Adequate protective device.	P
2.7.4	Number and location of protective devices .....	Two fuses provided, line and neutral.	P
2.7.5	Protection by several devices	Two fuses provided,	P
2.7.6	Warning to service personnel.....:	No unexpected hazard.	N/A

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
2.8.5	Moving parts		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm) ..... :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Insulation is considered to be functional, basic, supplementary, reinforced or double insulation.	P
2.9.2	Humidity conditioning	48 h	P
	Relative humidity (%), temperature (°C) ..... :	93 %, 25 °C	—
2.9.3	Grade of insulation	Insulation is considered to be functional, basic, supplementary, reinforced or double insulation.	P
2.9.4	Separation from hazardous voltages		P
	Method(s) used ..... :	Method 1	—

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General		P
2.10.1.1	Frequency ..... :	EUT Frequency under 30 kHz.	P
2.10.1.2	Pollution degrees ..... :	Pollution degree 2.	P
2.10.1.3	Reduced values for functional insulation	Function insulation verified by short-circuit tests according 5.3.4 c)	P
2.10.1.4	Intervening unconnected conductive parts		P
2.10.1.5	Insulation with varying dimensions	No such transformer used.	N/A
2.10.1.6	Special separation requirements	Special separation is not used.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No insulation in circuit generating starting pulses.	N/A
2.10.2	Determination of working voltage		P
2.10.2.1	General		P
2.10.2.2	RMS working voltage	(see appended table 2.10.3 and 2.10.4)	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.2.3	Peak working voltage	(see appended table 2.10.3 and 2.10.4)	P
2.10.3	Clearances		P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply .....	Overvoltage category II for primary circuit and transient voltage 2500 V peak.	P
	b) Earthed d.c. mains supplies .....		N/A
	c) Unearthed d.c. mains supplies .....		N/A
	d) Battery operation .....		N/A
2.10.3.3	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Clearances in secondary circuits	Function insulation verified by short-circuit tests according 5.3.4 c)	P
2.10.3.5	Clearances in circuits having starting pulses	No such circuit.	N/A
2.10.3.6	Transients from a.c. mains supply .....	Overvoltage Category II ; Mains transient voltage is 1500 V peak.	P
2.10.3.7	Transients from d.c. mains supply .....		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....	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	Measurement not relevant.	N/A
	For an a.c. mains supply .....		N/A
	For a d.c. mains supply .....		N/A
	b) Transients from a telecommunication network :	Not connected to telecommunication networks.	N/A
2.10.4	Creepage distances		P
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests .....	Material group IIIb is assumed to be used.	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation		P
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5)	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.3	Insulating compound as solid insulation	No such construction used.	N/A
2.10.5.4	Semiconductor devices	Certified optocoupler (see appended table 1.5.1)	P
2.10.5.5.	Cemented joints	Not used.	N/A
2.10.5.6	Thin sheet material – General		P
2.10.5.7	Separable thin sheet material	Insulation tape for transformer (T1)	P
	Number of layers (pcs) ..... :	3 layers.	—
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		P
	Electric strength test	3000 V a.c. of 2 layers.	—
2.10.5.11	Insulation in wound components	No insulation in wound components provided.	N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage ..... :		N/A
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation ..... :		N/A
	c) Compliance with Annex U ..... :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components	No 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	No additional insulation used.	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		P
2.10.6.1	Uncoated printed boards	Considered. (see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards		N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board		N/A



IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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	Coatings not used over terminations to increase effective creepage and clearance distances.	N/A
2.10.8	Tests on coated printed boards and coated components	No special coating in order to reduce distance.	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	No special insulation in order to reduce distance.	N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound	Certified optocoupler (see appended table 1.5.1)	P
2.10.11	Tests for semiconductor devices and cemented joints	No such device used.	N/A
2.10.12	Enclosed and sealed parts	Certified optocoupler (see appended table 1.5.1)	P

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring.	P
3.1.2	Protection against mechanical damage	Smooth and free of sharp edges.	P
3.1.3	Securing of internal wiring	Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulations.	P
3.1.4	Insulation of conductors	(see appended table 5.2) Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.6	Screws for electrical contact pressure		N/A
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating materials.	N/A
3.1.8	Self-tapping and spaced thread screws		N/A
3.1.9	Termination of conductors	Terminations can not become displaced so that clearances and creepage distances can be reduced.	P
	10 N pull test	Force of 10 N applied to the termination points of the conductors.	P
3.1.10	Sleeving on wiring	Sleeves can only be removed by breaking or cutting.	P

3.2	Connection to a mains supply		P
3.2.1	Means of connection	Appliance inlet.	P
3.2.1.1	Connection to an a.c. mains supply		P
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment		N/A
	Number of conductors, diameter of cable and conduits (mm) .....		—
3.2.4	Appliance inlets	(see appended table 1.5.1)	P
3.2.5	Power supply cords		P
3.2.5.1	AC power supply cords		P
	Type .....	(see appended table 1.5.1)	—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....	0.5 A, Min. 0.75 mm <sup>2</sup> , Min. 18 AWG (see appended table 1.5.1)	—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief	Equipment provided with an appliance inlet.	N/A
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm) .....		—
3.2.9	Supply wiring space		N/A

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

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals	No wiring terminals for connection of external conductors.	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ) .....		—
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.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N/A
3.4.4	Parts which remain energized	No parts remain energized.	N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment	The disconnect device disconnects both poles simultaneously.	P
3.4.7	Number of poles - three-phase equipment	Single 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	No interconnections using hazardous voltages.	N/A
3.4.11	Multiple power sources	Only one supply source.	N/A

3.5	Interconnection of equipment		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits .....	SELV circuit – SELV circuit.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnections.	N/A

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

3.5.4	Data ports for additional equipment	Alam out, Alam In, RS-485 port: see clause 2.5	P
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4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P
	Angle of 10°	Unit does not overbalance at 10°.	P
	Test force (N) .....		N/A

4.2	Mechanical strength		P
4.2.1	General		P
4.2.2	Steady force test, 10 N	No hazard.	P
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N	No hazard.	P
4.2.5	Impact test		P
	Fall test	No hazard.	P
	Swing test	Alternate fall test	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		N/A
	Picture tube separately certified .....		N/A
4.2.9	High pressure lamps	No high pressure lamps in the equipment.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....		N/A

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are rounded and smoothed.	P
4.3.2	Handles and manual controls; force (N)..... :		N/A
4.3.3	Adjustable controls	No adjustable controls.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur.	P
4.3.5	Connection by plugs and sockets		N/A
4.3.6	Direct plug-in equipment		N/A
	Torque .....		—
	Compliance with the relevant mains plug standard .....		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.7	Heating elements in earthed equipment		N/A
4.3.8	Batteries	(see appended table 4.3.8)	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease		N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N/A
4.3.12	Flammable liquids .....	The equipment does not contain flammable liquid.	N/A
	Quantity of liquid (l) .....		N/A
	Flash point (°C) .....		N/A
4.3.13	Radiation		N/A
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) .....		—
	Measured high-voltage (kV) .....		—
	Measured focus voltage (kV) .....		—
	CRT markings .....		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification .....		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....		N/A
4.3.13.5	Laser (including LEDs)	The LED used for functional indicator.	N/A
	Laser class .....		—
4.3.13.6	Other types .....		N/A
4.4	Protection against hazardous moving parts		N/A
4.4.1	General	No hazardous moving parts.	N/A
4.4.2	Protection in operator access areas .....		N/A
4.4.3	Protection in restricted access locations .....		N/A
4.4.4	Protection in service access areas		N/A
4.5	Thermal requirements		P

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

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 .....:	(see appended table 4.5.5)	P

4.6	Openings in enclosures		P
4.6.1	Top and side openings		P
	Dimensions (mm) .....:	No hazardous parts within 5° angle.	—
4.6.2	Bottoms of fire enclosures		P
	Construction of the bottom, dimensions (mm) ...:	No openings.	—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm) .....:		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks) .....:		—

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	(see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	(see appended table 5.3)	P
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts.	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General		P
4.7.3.2	Materials for fire enclosures	Components and materials have adequate flammability classification. (see appended table 1.5.1)	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.3	Materials for components and other parts outside fire enclosures		P
4.7.3.4	Materials for components and other parts inside fire enclosures		P
4.7.3.5	Materials for air filter assemblies	No air filters in the equipment.	N/A
4.7.3.6	Materials used in high-voltage components	No high-voltage components.	N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General		P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit		P
5.1.4	Application of measuring instrument	Measuring instrument D.1 is used.	P
5.1.5	Test procedure		P
5.1.6	Test measurements		P
	Supply voltage (V) .....	254.4 V a.c., 60 Hz	—
	Measured touch current (mA) .....	Accessible parts and circuits not connected to protective earth: 0.0 mA (Alam In/Out port) Equipment main protective earthing terminal: 0.13 mA	—
	Max. allowed touch current (mA) .....	Accessible parts and circuits not connected to protective earth: 0.25 mA Equipment main protective earthing terminal: 3.5 mA	—
	Measured protective conductor current (mA) .....		—
	Max. allowed protective conductor current (mA) ...		—
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		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	Not connected to a telecommunication network.	N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V) .....		—
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports .....		N/A
	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	(see appended table 5.2)	P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	Approved DC fan used.	N/A
5.3.3	Transformers	(see appended Annex C)	P
5.3.4	Functional insulation.....	c)	P
5.3.5	Electromechanical components	No electromechanical components.	N/A
5.3.6	Audio amplifiers in ITE .....		N/A
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	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, emission of molten metal or deformation was noted during the tests.	P
5.3.9.2	After the tests	No reduction of clearance and creepage distances. Electric strength test is made on reinforced insulation.	P
6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A



IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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 circuits.	N/A
	Supply voltage (V) .....		—
	Current in the test circuit (mA) .....		—
6.1.2.2	Exclusions .....		N/A
6.2	Protection of equipment users from overvoltages on telecommunication networks		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A
6.3	Protection of the telecommunication wiring system from overheating		N/A
	Max. output current (A) .....		—
	Current limiting method .....		—
7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
7.1	General	No cable distribution system.	N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A
7.4.3	Impulse test		N/A
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples .....		—
	Wall thickness (mm).....		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
A.1.2	Conditioning of samples; temperature (°C) .....		N/A
A.1.3	Mounting of samples .....		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D .....		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N/A
A.2.1	Samples, material.....		—
	Wall thickness (mm).....		—
A.2.2	Conditioning of samples; temperature (°C) .....		N/A
A.2.3	Mounting of samples .....		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C .....		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A
B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N/A
B.1	General requirements		N/A
	Position .....		—
	Manufacturer .....		—

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

	Type .....		—
	Rated values .....		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) .....		—
	Electric strength test: test voltage (V) .....		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V) .....		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V) .....		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V) .....		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position .....	Primary to Secondary (see appended table 1.5.1)	—
	Manufacturer .....	(see appended table 1.5.1)	—
	Type .....	(see appended table 1.5.1)	—
	Rated values .....	(see appended table 1.5.1)	—
	Method of protection.....	Regulating network	—
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation	(see appended table 5.2)	P
	Protection from displacement of windings.....	Barrier tape and bobbin	P

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		P
D.1	Measuring instrument		P
D.2	Alternative measuring instrument		N/A
E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
G.1	Clearances		N/A
G.1.1	General		N/A
G.1.2	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V)		N/A
G.2.1	AC mains supply .....		N/A
G.2.2	Earthed d.c. mains supplies .....		N/A
G.2.3	Unearthed d.c. mains supplies .....		N/A
G.2.4	Battery operation .....		N/A
G.3	Determination of telecommunication network transient voltage (V) .....		N/A
G.4	Determination of required withstand voltage (V)		N/A
G.4.1	Mains transients and internal repetitive peaks .....		N/A
G.4.2	Transients from telecommunication networks .....		N/A
G.4.3	Combination of transients		N/A
G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient voltages (V)		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances .....		N/A
H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A

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

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

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		P
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		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

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	ANNEX P, NORMATIVE REFERENCES		—
Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		P
	a) Preferred climatic categories .....	(see appended table 1.5.1)	P
	b) Maximum continuous voltage .....	(see appended table 1.5.1)	P
	c) Pulse current .....	(see appended table 1.5.1)	P
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
			—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
			—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		N/A
V.1	Introduction		N/A
V.2	TN power distribution systems		N/A
W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N/A
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N/A
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N/A
Y.1	Test apparatus .....		N/A
Y.2	Mounting of test samples .....		N/A
Y.3	Carbon-arc light-exposure apparatus .....		N/A
Y.4	Xenon-arc light exposure apparatus .....		N/A
Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N/A
AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
BB	ANNEX BB, CHANGES IN THE SECOND EDITION		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
EN 60950-1:2006 – CENELEC COMMON MODIFICATIONS			
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations		P
General	Delete all the “country” notes in the reference document 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
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
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC		P
1.7.2.1	Add the following NOTE: NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss		N/A



IEC/EN 60950-1															
Clause	Requirement + Test	Result - Remark	Verdict												
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		P												
2.7.2	This subclause has been declared 'void'.		N/A												
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		P												
3.2.5.1	<p>Replace "60245 IEC 53" by "H05 RR-F";</p> <p>"60227 IEC 52" by "H03 VV-F or H03 VVH2-F";</p> <p>"60227 IEC 53" by "H05 VV-F or H05 VVH2-F2".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table border="1"> <tr> <td>Up to and including 6</td><td></td><td>0,75 <sup>a)</sup></td><td></td></tr> <tr> <td>Over 6 up to and including 10</td><td>(0,75) <sup>b)</sup></td><td>1,0</td><td></td></tr> <tr> <td>Over 10 up to and including 16</td><td>(1,0) <sup>c)</sup></td><td>1,5</td><td></td></tr> </table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition <sup>a)</sup>.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6		0,75 <sup>a)</sup>		Over 6 up to and including 10	(0,75) <sup>b)</sup>	1,0		Over 10 up to and including 16	(1,0) <sup>c)</sup>	1,5			P
Up to and including 6		0,75 <sup>a)</sup>													
Over 6 up to and including 10	(0,75) <sup>b)</sup>	1,0													
Over 10 up to and including 16	(1,0) <sup>c)</sup>	1,5													
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table border="1"> <tr> <td>Over 10 up to and including 16</td><td>1,5 to 2,5</td><td>1,5 to 4</td><td></td></tr> </table> <p>Delete the fifth line: conductor sizes for 13 to 16 A.</p>	Over 10 up to and including 16	1,5 to 2,5	1,5 to 4			N/A								
Over 10 up to and including 16	1,5 to 2,5	1,5 to 4													
4.3.13.6	<p>Add the following NOTE:</p> <p>NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p>		N/A												

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 <math>\mu</math>Sv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N/A
Bibliography	Additional EN standards.		—



ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
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ZB	SPECIAL NATIONAL CONDITIONS	N/A
1.2.4.1	In <b>Denmark</b> , 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
1.5.7.1	In <b>Finland, Norway</b> and <b>Sweden</b> , resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.2.	N/A
1.5.8	In <b>Norway</b> , 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 <b>Finland, Norway</b> and <b>Sweden</b> , 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	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>	N/A
1.7.5	In <b>Denmark</b> , 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
2.2.4	In <b>Norway</b> , 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 <b>Finland, Norway</b> and <b>Sweden</b> 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 <b>Norway</b> , for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	N/A

IEC/EN 60950-1																											
Clause	Requirement + Test	Result - Remark	Verdict																								
2.6.3.3	In the <b>United Kingdom</b> , the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A																								
2.7.1	In the <b>United Kingdom</b> , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N/A																								
2.10.5.13	In <b>Finland, Norway and Sweden</b> , 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	<p>In <b>Switzerland</b>, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <table> <tr> <td>SEV 6532-2.1991</td><td>Plug Type 15</td><td>3P+N+PE</td><td>250/400 V, 10 A</td></tr> <tr> <td>SEV 6533-2.1991</td><td>Plug Type 11</td><td>L+N</td><td>250 V, 10 A</td></tr> <tr> <td>SEV 6534-2.1991</td><td>Plug Type 12</td><td>L+N+PE</td><td>250 V, 10 A</td></tr> </table> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <table> <tr> <td>SEV 5932-2.1998</td><td>Plug Type 25</td><td>3L+N+PE</td><td>230/400 V, 16 A</td></tr> <tr> <td>SEV 5933-2.1998</td><td>Plug Type 21</td><td>L+N</td><td>250 V, 16 A</td></tr> <tr> <td>SEV 5934-2.1998</td><td>Plug Type 23</td><td>L+N+PE</td><td>250 V, 16 A</td></tr> </table>	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	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
SEV 6532-2.1991	Plug Type 15	3P+N+PE	250/400 V, 10 A																								
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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																								
3.2.1.1	<p>In <b>Denmark</b>, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N/A																								
3.2.1.1	<p>In <b>Spain</b>, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A																								

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In the <b>United Kingdom</b> , 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
3.2.1.1	In <b>Ireland</b> , 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 <b>Switzerland</b> , for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the <b>United Kingdom</b> , a power supply cord with conductor of 1,25 mm <sup>2</sup> 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 <b>United Kingdom</b> , 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 <sup>2</sup> to 1,5 mm <sup>2</sup> nominal cross-sectional area.		N/A
4.3.6	In the <b>United Kingdom</b> , 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 <b>Ireland</b> , 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
5.1.7.1	In <b>Finland, Norway and Sweden</b> TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that <ul style="list-style-type: none"> <li>○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and</li> <li>○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and</li> <li>○ is provided with instructions for the installation of that conductor by a SERVICE PERSON;</li> </ul> • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement 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</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, 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;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 132400;</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.</li> </ul>		N/A
6.1.2.2	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, 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.</p>		N/A
7.2	<p>In <b>Finland, Norway</b> and <b>Sweden</b>, for requirements see 6.1.2.1 and 6.1.2.2 of this annex.</p> <p>The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.</p>		N/A
7.3	<p>In <b>Norway</b> and <b>Sweden</b>, there are many buildings where the screen of the coaxial cable is normally not connected to the earth in the building installation.</p>		N/A
7.3	<p>In <b>Norway</b>, for installation conditions see EN 60728-11:2005.</p>		N/A
ZC	A-DEVIATIONS (informative)		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.1	<b>Sweden</b> (Ordinance 1990:944) Add the following: NOTE In Sweden, switches containing mercury are not permitted.		N/A
1.5.1	<b>Switzerland</b> (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.		N/A
1.7.2.1	<b>Denmark</b> (Heavy Current Regulations) Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text: <p style="text-align: center;">Vigtigt!  Lederen med grøn/gul isolation  må kun tilsluttes en klemme mærket</p>  eller  If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."		N/A
1.7.2.1	<b>Germany</b> (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2). If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market. Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.		N/A
1.7.5	<b>Denmark</b> (Heavy Current Regulations) With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.		N/A
1.7.13	<b>Switzerland</b> (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.		N/A
5.1.7.1	<b>Denmark</b> (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.		N/A

IEC/EN 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 <sup>1)</sup>	
Power cord set	Changzhou Hong Chang	DTIII-2P-05 H05VV-F DTII-3P-04	16 A, 250 V~ 3 x 0.75 mm <sup>2</sup> 10 A, 250 V~	IEC 60884-1 - EN 60320-1	FIMKO	
Alt.	Weihai Honglin	HL-014 H05VV-F HL-026	16 A, 250 V~ 3 x 0.75 mm <sup>2</sup> 10 A, 250 V~	EN 60779	FIMKO	
Alt.	I-Sheng	SP-022 H05VV-F IS-14	16 A, 250 V~ 3 x 0.75 mm <sup>2</sup> 10 A, 250 V~	IEC 60884-1 - EN 60320-1	FIMKO	
Alt.	Longwell	LP-34A H05VV-F LS-60	16 A, 250 V~ 3 x 0.75 mm <sup>2</sup> 10 A, 250 V~	EN 60779	FIMKO	
Alt.	Volex	M2511 H05VV-F V1625	16 A, 250 V~ 3 x 0.75 mm <sup>2</sup> 10 A, 250 V~	IEC 60884-1 - EN 60320-1	FIMKO	
Power cord set (CA, USA type)	Kuk Je Tong Shin Co., Ltd.	KJP-120 SVT KJC-303	10 A, 125 V~ 3 x 18 AWG 10 A, 125 V~	UL 817/UL 62 CSA C22.2 No.21/CSA C22.2 No.49	cETLus	
Alt.	Various	Various	Type SVT or SJT, 18 AWG, 0.75 mm <sup>2</sup> , 125 V, 10 A, Max. 4.5 m long  One end with NEMA 5-15P  Other end with appliance coupler.	UL 817/UL 62 CSA C22.2 No.21/CSA C22.2 No.49	UL cUL	
AC Inlet	Rong Feng Industrial Co., Ltd.	SS-7B	250 V, 10 A	EN 60320-1 ANSI/UL 498 CSA-C22.2 No. 42-M1984	SEMKO UL CSA	

IEC/EN 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>
Alt.	Supercom Electronics Co., Ltd.	SC-9-1	250 V, 10 A	EN 60320-1 ANSI/UL 498 CSA-C22.2 No. 42-M1984	SEMKO UL cUL
AC Lead wire	Various	1015	105°C, 600 V, 18 AWG	UL 758 CSA-C22.2 No. 127	UL cUL
AC Input connector(CN1)	Yeon Ho Electronics Co., Ltd.	YH396-03V, YW396-03V	250 V, 7.5 A	UL 1977 CSA-C22.2 No. 182.3	UL CSA
Fuse (F1, F2)	Orisel Co., Ltd.	OS5	250 V, T5 A	EN 60127-3 ANSI/UL 248-1 CSA-C22.2 No. 248-1-00	VDE UL cUL
Alt.	Cooper Bussmann Inc. (Save Fusetech Inc.)	SS-5	250 V, T5 A	EN 60127-3 ANSI/UL 248-1 CSA-C22.2 No. 248-1-00	SEMKO UL cUL
X-Capacitor (C1, C2)	Pilkor Electronics Co., Ltd.	PCX2 337	275 V, 0.47 $\mu$ F, X2	IEC 60384-14 UL 1414 CSA-C22.2 No.1-94	SEMKO, FIMKO UL cUL
Alt.	Sun il Electronics Industry Co., Ltd.	436D	275 V, 0.47 $\mu$ F, X2	IEC 60384-14 UL 1414 CSA-C22.2 No.1-94	VDE UL cUL
X-Capacitor (C3)	Pilkor Electronics Co., Ltd.	PCX2 337	275 V, 0.1 $\mu$ F, X2	IEC 60384-14 UL 1414 CSA-C22.2 No.1-94	SEMKO, FIMKO UL cUL
Alt.	Sun il Electronics Industry Co., Ltd.	436D	275 V, 0.1 $\mu$ F, X2	IEC 60384-14 UL 1414 CSA-C22.2 No.1-94	VDE UL cUL
Y-Capacitor (CY2, CY3)	Dongil Electronics Co., Ltd.	DA	250 V, 100 pF, Y1	IEC 60384-14 UL 1414 CSA-C22.2 No.1-1994	FIMKO UL cUL



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

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>
Alt.	Wendeng Netrontech Electric Co., Ltd.	AD	250 V, 100 pF, Y1	IEC 60384-14 UL 1414	VDE UL
Alt.	Guangdong South Hongming Electronic Science & Technology Co., Ltd.	F	250 V, 100 pF, Y1	IEC 60384-14 UL 1414 CSA-C22.2 No.1-1994	FIMKO UL cUL
Bridge Capacitor (CY1)	Dongil Electronics Co., Ltd.	DA	250 V, 1000 pF, Y1	IEC 60384-14 UL 1414 CSA-C22.2 No.1-1994	FIMKO UL cUL
Alt.	Wendeng Netrontech Electric Co., Ltd.	AD	250 V, 1000 pF, Y1	IEC 60384-14 UL 1414	VDE UL
Alt.	Guangdong South Hongming Electronic Science & Technology Co., Ltd.	F	250 V, 1000 pF, Y1	IEC 60384-14 UL 1414 CSA-C22.2 No.1-1994	FIMKO UL cUL
Varistor (VR1)	Amotech Co., Ltd.	INR14D561K	Climatic category: 40/085/56  Maximum continuous voltage: 350 V a.c.  Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2  IEC 60950-1 Annex Q ANSI/UL 1449 CSA Standard C22.2 No 1	VDE   VDE UL CSA
Alt.	Thinking Electronic Industrial Co., Ltd.	TVR14D561K	Climatic category: 40/085/56  Maximum continuous voltage: 350 V a.c.  Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2  IEC 60950-1 Annex Q ANSI/UL 1449 CSA Standard C22.2 No 1	VDE   VDE UL cUL

IEC/EN 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>
Varistor (VR2, VR3)	Amotech Co., Ltd.	INR14D621K	Climatic category: 40/085/56  Maximum continuous voltage: 385 V a.c.  Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2  IEC 60950-1 Annex Q ANSI/UL 1449 CSA Standard C22.2 No 1	VDE  VDE UL CSA
Alt.	Thinking Electronic Industrial Co., Ltd.	TVR14D621K	Climatic category: 40/085/56  Maximum continuous voltage: 385 V a.c.  Current pulse rating: 6kV/3kA	IEC 61051-1 IEC 61051-2 IEC 61051-2-2  IEC 60950-1 Annex Q ANSI/UL 1449 CSA Standard C22.2 No 1	VDE  VDE UL cUL
Surge absorber (AR1)	Mitsubishi Materials Corp.	DB60-452M	250 V a.c., Basic insulation	EN 60950-1 ANSI/UL 60384-14 CAN/CSA- E60384-14	TUV-RH UL cUL
Thermister (TH1)	DSC Electronics Co., Ltd.	DSC-5D-11	240 V, 3 A, 5 ohm at 25°C	UL 1434 CSA-C22.2 No. 72	UL cUL
Opto coupler (PC1)	Cosmo Electronics Corp.	K1010	5000 V Creepage internal: 5.3 mm/external: 8.0 mm  Distance through insulation: 0.5 mm	EN 60950-1 UL 1577 CSA Standard C22.2 No. 0	FIMKO UL cUL
Alt.	Lite-on Technology Corp.	LVT817	5000 V Creepage internal: 5.2 mm/external: 7.8 mm  Distance through insulation: 0.8 mm	IEC/EN 60950- 1 UL 1577 CSA Standard C22.2 No. 0	FIMKO  UL cUL

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

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>
Alt.	Renesas Electronics Corporation	PS2561L-1	5000 V  Creepage internal: Min. 4.0 mm/ external: Min. 7.0 mm  Distance through insulation: 0.4 mm	EN 60950-1  UL 1577  CSA Standard C22.2 No. 0	FIMKO  UL  CSA
Battery protection IC (U45, U46, U47, U48)	Maxim Integrated Products	DS3232SN	VBAT: 3.0 V	UL 60950-1  CSA Standard C22.2 No. 60950-1	UL  cUL
Lithium battery (BT1)	Hitachi Maxell Energy Ltd.	CR2032	3 V, Max Abnormal Charging Current: 10 mA	UL 1642	UL
Alt.	Toshiba Home Appliances Corp.	CR2032	3 V, Max Abnormal Charging Current: 10 mA	UL 1642	UL
Alt.	Panasonic Corporation	CR2032	3 V, Max Abnormal Charging Current: 10 mA	UL 1642	UL
Alt.	Mitsubishi Electric Corp.	CR2032	3 V, Max Abnormal Charging Current: 10 mA	UL 1642	UL
Line Filter (LF1)	TNC Co., Ltd.	620180S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	WOOSUNG L&C	620180S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Line Filter (LF2)	TNC Co., Ltd.	613400S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	WOOSUNG L&C	613400S	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
PFC Trans (LP1)	SUN TECH CO.,LTD / ST	MQGAH013050	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONG IN SYSTEM CO.,LTD. / DI	MQGAH013050	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment

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

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity <sup>1)</sup>
Alt.	DONGHEUNG ELECTRONIC S CO., LTD / DH	MQGAH013050	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Transformer (T1)	SUN TECH CO.,LTD / ST	MQGAH034020	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONG IN SYSTEM CO.,LTD. / DI	MQGAH034020	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Alt.	DONGHEUNG ELECTRONIC S CO., LTD / DH	MQGAH034020	Class A Bobbin: V-0	IEC/EN 60950-1	Tested in equipment
Bridge Diode (BD1)	Various	Various	600 V, 4 A	IEC/EN 60950-1	Tested in equipment
Switching IC (ICB1)	Various	Various	650 V, 67 kHz	IEC/EN 60950-1	Tested in equipment
FET (Q1)	Various	Various	600 V, 11 A	IEC/EN 60950-1	Tested in equipment
Electrical Capacitor (CP9)	Various	Various	450 V, 150 uF, 105 °C	IEC/EN 60950-1	Tested in equipment
Insulation sheet for SMPS(LP1) to Chassis	Various	Various	V-0, Min. 0.51 mm thickness	UL 94	UL
PCB	Various	Various	V-0, Min. 105 °C, 1.6 mm thickness	UL 796	UL
Enclosure	Various	Various	Metal, 1.2 mm thickness	IEC/EN 60950-1	Tested in equipment

<sup>1)</sup> An asterisk indicates a mark which assures the agreed level of surveillance

Supplementary information:

IEC/EN 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	0.49	-	43.30	F1	0.49	Max. Normal load(50 Hz)	
100	0.43	0.5	43.40	F1	0.43	Max. Normal load(50 Hz)	
240	0.21	0.5	42.91	F1	0.21	Max. Normal load(50 Hz)	
254.4	0.21	-	42.96	F1	0.21	Max. Normal load(50 Hz)	
90	0.49	-	43.70	F1	0.49	Max. Normal load(60 Hz)	
100	0.44	0.5	43.30	F1	0.44	Max. Normal load(60 Hz)	
240	0.23	0.5	42.90	F1	0.23	Max. Normal load(60 Hz)	
254.4	0.22	-	43.00	F1	0.22	Max. Normal load(60 Hz)	
Supplementary information:							

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements						P
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:							
PCB (Line – Neutral; before fuse)	340	240	2.0	4.0	2.5	4.0	
Basic/supplementary:							
PCB (Primary-Protective earth)	340	240	2.0	4.0	2.5	4.0	
Reinforced:							
Transformer T1 (Primary-Secondary) Reinforced insulation	548	180	4.4	6.0	5.0	6.0	
PCB under PC1 (Primary-Secondary) Reinforced insulation	77	44	4.0	7.3	5.0	7.3	
PCB under CY1 (Primary-Secondary) Reinforced insulation	117	63	4.0	7.7	5.0	7.7	
Supplementary information:							

2.10.5	TABLE: Distance through insulation measurements					P
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)	
Transformer Bobbin Reinforced insulation	548	180	3000 V a.c.	0.4	1.0	

IEC/EN 60950-1						
Clause	Requirement + Test			Result - Remark	Verdict	
2.10.5	TABLE: Distance through insulation measurements				P	
Distance through insulation (DTI) at/of:		U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Optocoupler (PC1) Reinforced insulation		77	44	3000 V a.c.	0.4	>0.4
Insulation tape for transformer Reinforce insulation		548	180	2 layers: 3000 V a.c	3 layers	3 layers
Supplementary information: Certified optical isolator (see appended table 1.5.1)						

4.3.8	TABLE: Batteries								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available					Appropriate battery data is available. (see appended table 1.5.1)				P
Is it possible to install the battery in a reverse polarity position?					No				N/A
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	-	-	-	-	-	-	-	-	-
Max. current during fault condition	-	-	-	-	-	-	-	-	-
Max. current during fault condition	-	-	-	-	-	-	-	-	-
Test results:									Verdict
- Chemical leaks									N/A
- Explosion of the battery									N/A
- Emission of flame or expulsion of molten metal									N/A
- Electric strength tests of equipment after completion of tests									N/A

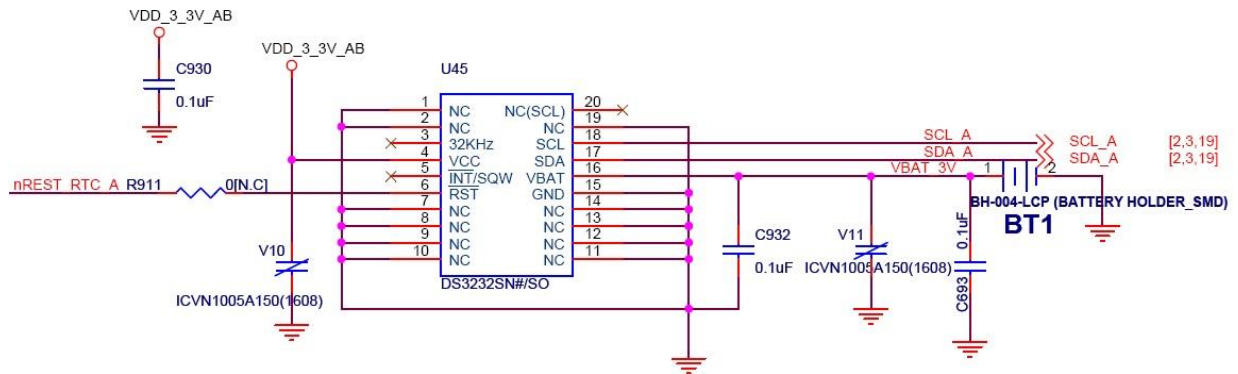
## IEC/EN 60950-1

Clause	Requirement + Test	Result - Remark	Verdict
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Supplementary information:

Certified protect IC used.  
(see appended table 1.5.1)

Circuit protection diagram:



4.5	TABLE: Thermal requirements			P
	Supply voltage (V) .....	90 V a.c., 60 Hz	254.4 V a.c., 50 Hz	—
	Ambient $T_{min}$ (°C) .....	See below	See below	—
	Ambient $T_{max}$ (°C) .....	See below	See below	—
Maximum measured temperature T of part/at:		T (°C) at Tma		Allowed $T_{max}$ (°C)
1. Input connector		48.5	44.7	-
2. LF2 coil		59.3	51.0	90
3. TH1 body		75.3	55.7	-
4. BD1 body		62.9	52.8	-
5. LF1 coil		51.1	49.3	90
6. C3 near PCB		50.2	49.2	105
7. LP1 coil		51.6	49.7	90
8. LP1 core		49.4	47.2	90
9. DB3 near PCB		50.9	50.3	105
10. Q1 for heat sink (HS1)		53.4	57.2	-
11. T1 coil		71.8	71.8	90
12. T1 core		60.4	60.1	90
13. HS2		65.1	64.8	-
14. U31 body		81.2	80.6	105

IEC/EN 60950-1							
Clause	Requirement + Test				Result - Remark		Verdict
15. U16 body	72.6				72.2		105
16. DC Fan body	48.4				47.6		-
17. U9 near PCB	64.7				64.1		105
18. Top enclosure	40.8				40.5		70
19. Ambient	40(25.3 °C)				40(26.0 °C)		-
Supplementary information:							
Maximum temperature T at Tma(40 °C) is calculated. (T at Tma = T- t <sub>2</sub> +Tma)							
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C) at Tma	Allowed T <sub>max</sub> (°C)	Insulation class
Supplementary information:							

4.5.5	TABLE: Ball pressure test of thermoplastic parts			P
	Allowed impression diameter (mm) ..... : ≤ 2 mm			—
Part		Test temperature (°C)	Impression diameter (mm)	
AC Input connector (CN1)		125	0.5	
Transformer (T1) bobbin		125	0.1	
PFC Trans (LP1) bobbin		125	0.1	
Line filter (LF1, LF2) bobbin		125	1.0	
Supplementary information:				

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

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:				
-		-	-	-



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

Basic/supplementary:			
Unit: Primary - Protective earth	AC	1834	No
Transformer (T1): Primary – Core	AC	1834	No
Transformer (T1): Secondary – Core	AC	1834	No
Reinforced:			
Unit: Primary – Secondary	AC	3000	No
Transformer (T1): Primary – Secondary	AC	3000	No
Supplementary information:			

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

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
BD1 ~ to +	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
BD1 ~ to -	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
C3	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
DP4	Short	254.4	10 min	F1	0.37	Normal operation. No hazard.
ICB1(2, 3)	Short	254.4	10 min	F1	0.094	Protection circuit operated, No hazard
Q1 (G, D)	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
Q1 (D, S)	Short	254.4	<1 s	F1	-	Immediately Fuse (F1) open. No hazard.
PC1 (1, 2)	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
PC1 (3, 4)	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
BD6 (1, 2)	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.
CB14	Short	254.4	10 min	F1	0.094	Protection circuit operated. No hazard.

IEC/EN 60950-1						
Clause	Requirement + Test				Result - Remark	
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Output +12 V d.c	Overload	254.4	52 min	F1	0.37	Max. Temperature of T1 coil: 80.0 °C, ambient: 27.2 °C at output loaded 6.8 A. Unit internal protection at output loaded 7.0 A No hazard.
DC Fan	Locked	254.4	1 h 7 min	F1	0.22	Max. Temperature of T1 coil: 62.6 °C, ambient: 25.3 °C. No hazard.
Openings	Blocked	254.4	2 h 18 min	F1	0.22	Max. Temperature of T1 coil: 71.4 °C, ambient: 24.0 °C. No hazard.
Supplementary information: The following electric strength test were conducted after above tests. - Primary-Secondary: 3000 V a.c. - Primary-Protective earth: 1834 V a.c.						

**List of test equipment used:**

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

Clause	Measurement / testing	Testing / measuring equipment / material used	Range used	Calibration date
Supplementary information: No listing of test equipment used necessary for chosen CBTL test procedure.				

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

<b>ATTACHMENT TO TEST REPORT IEC 60950-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> Information technology equipment – Safety – Part 1: General requirements	
<b>Differences according to.....:</b>	EN 60950-1:2006 + A11:2009
<b>Attachment Form No.....:</b>	EU_GD_IEC60950_1A
<b>Attachment Originator .....</b>	SGS Fimko Ltd
<b>Master Attachment .....</b>	Date (2009-09)
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**EN 60950-1:2006/A11:2009 – CENELEC COMMON MODIFICATIONS**

	<b>IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications (EN))</b>	
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Clause	Requirement + Test	Result - Remark	Verdict
Contents	Add the following annexes: Annex ZA (normative)      Normative references to international publications with their corresponding European publications Annex ZB (normative)      Special national conditions Annex ZC (informative)      A-deviations		P
General	Delete all the "country" notes in the reference document according to the following list: 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

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	<p>Add the following subclause:</p> <p>1.3.Z1 Exposure to excessive sound pressure</p> <p>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.</p> <p>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.</p>		N/A
1.5.1	<p>Add the following NOTE:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC</p>		P
1.7.2.1	<p>Add the following NOTE:</p> <p>NOTE Z1 In addition, the instructions shall include, as far as applicable, a warning that excessive sound pressure from earphones and headphones can cause hearing loss</p>		N/A
2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p>		P

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict						
	<p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N/A						
2.7.2	This subclause has been declared 'void'.		N/A						
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		P						
3.2.5.1	<p>Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6  </td><td>0,75 <sup>a)</sup>  </td></tr><tr><td>Over 6 up to and including 10  (0,75) <sup>b)</sup></td><td>1,0  </td></tr><tr><td>Over 10 up to and including 16  (1,0) <sup>c)</sup></td><td>1,5  </td></tr></table> <p>In the conditions applicable to Table 3B delete the words "in some countries" in condition <sup>a)</sup>.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 <sup>a)</sup>	Over 6 up to and including 10  (0,75) <sup>b)</sup>	1,0	Over 10 up to and including 16  (1,0) <sup>c)</sup>	1,5		P
Up to and including 6	0,75 <sup>a)</sup>								
Over 6 up to and including 10  (0,75) <sup>b)</sup>	1,0								
Over 10 up to and including 16  (1,0) <sup>c)</sup>	1,5								
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table><tr><td>Over 10 up to and including 16  </td><td>1,5 to 2,5  </td><td>1,5 to 4  </td></tr></table> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>	Over 10 up to and including 16	1,5 to 2,5	1,5 to 4		N/A			
Over 10 up to and including 16	1,5 to 2,5	1,5 to 4							
4.3.13.6	<p>Add the following NOTE:</p> <p>NOTE Z1 Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.</p>		N/A						
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N/A						

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
Bibliography	Additional EN standards.		—

ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS		—
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<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		N/A
1.2.4.1	In <b>Denmark</b> , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.		N/A
1.2.13.14	In <b>Norway</b> and <b>Sweden</b> , for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1	In <b>Finland, Norway</b> and <b>Sweden</b> , 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 <b>Norway</b> , 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 <b>Finland, Norway</b> and <b>Sweden</b> , 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 <b>Finland, Norway</b> and <b>Sweden</b> , 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"		N/A

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
	<p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p> <p>In <b>Norway</b> and <b>Sweden</b>, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>"Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)."</p> <p>NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>"Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet."</p> <p>Translation to Swedish:</p> <p>"Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet."</p>		



**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
1.7.5	In <b>Denmark</b> , socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.  For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
2.2.4	In <b>Norway</b> , 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 <b>Finland, Norway and Sweden</b> 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 <b>Norway</b> , 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 <b>United Kingdom</b> , the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A
2.7.1	In the <b>United Kingdom</b> , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N/A
2.10.5.13	In <b>Finland, Norway and Sweden</b> , 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 <b>Switzerland</b> , 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		N/A

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
	<p>SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A</p> <p>SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A</p> <p>SEV 5933-2.1998: Plug Type 21, L+N, 250 V, 16A</p> <p>SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16A</p>		N/A
3.2.1.1	<p>In <b>Denmark</b>, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N/A
3.2.1.1	<p>In <b>Spain</b>, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In the <b>United Kingdom</b> , 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
3.2.1.1	In <b>Ireland</b> , 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 <b>Switzerland</b> , for requirements see 3.2.1.1 of this annex.		N/A
3.2.5.1	In the <b>United Kingdom</b> , a power supply cord with conductor of 1,25 mm <sup>2</sup> 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 <b>United Kingdom</b> , 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 <sup>2</sup> to 1,5 mm <sup>2</sup> nominal cross-sectional area.		N/A
4.3.6	In the <b>United Kingdom</b> , 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 <b>Ireland</b> , 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  
(EN 60950-1:2006+A11:2009)**



Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	<p>In <b>Finland, Norway and Sweden</b> TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment:</p> <ul style="list-style-type: none"> <li>• STATIONARY PLUGGABLE EQUIPMENT TYPE A that <ul style="list-style-type: none"> <li>○ is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and</li> <li>○ has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and</li> <li>○ is provided with instructions for the installation of that conductor by a SERVICE PERSON;</li> </ul> </li> <li>• STATIONARY PLUGGABLE EQUIPMENT TYPE B;</li> <li>• STATIONARY PERMANENTLY CONNECTED EQUIPMENT.</li> </ul>		N/A
6.1.2.1	<p>In <b>Finland, Norway and Sweden</b>, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul> <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement 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</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul>		N/A

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
	<p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, 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;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 132400;</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.</li> </ul>		
6.1.2.2	In <b>Finland, Norway and Sweden</b> , 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 <b>Finland, Norway and Sweden</b> , for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3	In <b>Norway and Sweden</b> , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A
7.3	In <b>Norway</b> , for installation conditions see EN 60728-11:2005.		N/A

<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN). A-DEVIATIONS (informative)</b>		N/A
1.5.1	<p><b>Sweden</b> (Ordinance 1990:944)</p> <p>Add the following:</p> <p>NOTE In Sweden, switches containing mercury are not permitted.</p>		N/A

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
1.5.1	<p><b>Switzerland</b> (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.)</p> <p>Add the following:</p> <p>NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.</p>		N/A
1.7.2.1	<p><b>Denmark</b> (Heavy Current Regulations)</p> <p>Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text:</p> <p align="center">Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket</p> <p align="center"> eller </p> <p>If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text:</p> <p>“For tilslutning af de øvrige ledere, se medfølgende installationsvejledning.”</p>		N/A
1.7.2.1	<p><b>Germany</b> (Gesetz über technische Arbeitsmittel und Verbraucherprodukte (Geräte- und Produktsicherheitsgesetz – GPSG) [Law on technical labour equipment and consumer products], of 6th January 2004, Section 2, Article 4, Clause (4), Item 2).</p> <p>If for the assurance of safety and health certain rules during use, amending or maintenance of a technical labour equipment or readymade consumer product are to be followed, a manual in German language has to be delivered when placing the product on the market.</p> <p>Of this requirement, rules for use even only by SERVICE PERSONS are not exempted.</p>		N/A
1.7.5	<p><b>Denmark</b> (Heavy Current Regulations)</p> <p>With the exception of CLASS II EQUIPMENT provided with a socket outlet in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-4a, CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.</p>		N/A
1.7.13	<p><b>Switzerland</b> (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries)</p> <p>Annex 2.15 of SR 814.81 applies for batteries.</p>		N/A

**Attachment 1 - European group differences and national differences  
(EN 60950-1:2006+A11:2009)**

Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	<b>Denmark</b> (Heavy Current Regulations, Chapter 707, clause 707.4) TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B.		N/A

**Attachment 2 - National Difference for Canada (CA)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>National Differences for Canada</b>			
Canada and the United States of America have adopted a single, bi-national standard, CAN/CSA C22.2 No. 60950-1/UL60950-1, Second Edition, which is based on IEC 60950-1, Second Edition. This bi-national standard should be consulted for further details on the national conditions and differences summarized below.			
<b>SPECIAL NATIONAL CONDITIONS</b>			
The following is a summary of the key national differences based on national regulatory requirements, such as the Canadian Electrical Code (CEC) Part and the Canadian Building Code, which are referenced in legislation and which form the basis for the rules and practices followed in electrical and building installations.			
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75.		P
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.....:	Equipment acceptable for connection to 20 A	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.		N/A
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.		N/A
	A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235, and if it is part of a range that extends into the Table 2 "Normal Operating Conditions." 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."		N/A
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.		N/A



**Attachment 2 - National Difference for Canada (CA)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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.		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.		P
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.		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.		N/A
3.2.5	Power supply cords are required to be no longer than 4.5 m in length.  ..... Flexible power supply cords are required to be compatible with Tables 11 and 12 of the CEC and Article 400 of the NEC.		P
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 <sup>2</sup> ).		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for Canadian/US wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).		N/A

**Attachment 2 - National Difference for Canada (CA)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
	Battery system: ..... When power-off is activated: .....		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
	Flammable liquid material: ..... Flash point: ..... Boiling point: ..... Container material: ..... Storage container size:.....		N/A
4.3.13.5	Equipment with lasers is required to meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.		N/A
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m <sup>3</sup> (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 <sup>2</sup> (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.		N/A
Annex H	Equipment that produces ionizing radiation is required to comply with the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations, 21 CFR 1020, as applicable.		N/A
OTHER DIFFERENCES			
The following key national differences are based on requirements other than national regulatory requirements.			

**Attachment 2 - National Difference for Canada (CA)**


IEC/EN 60950-1			
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.		—
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V <sub>peak</sub> or 60 V <sub>d.c.</sub> , 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.		N/A
2.3.2.1	In the event of a single fault between TNV and SELV circuits, SELV Circuits and accessible conductive parts comply with the North American limits of 2.2.3.		N/A
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) subjected to the additional limited short circuit test conditions specified, if required.		P
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are provided with suitable enclosure to reduce the risk of injury due to the implosion of the CRT.		N/A
	Projected area of opening ..... : Minor dimension of projected area ..... :		—

**Attachment 2 - National Difference for Canada (CA)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.2.11	For equipment intended for mounting on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation, service and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails.		N/A
4.3.2	Equipment with handles is required to comply with special loading tests.		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
	Ringing ports provided: ..... Simulation provided to: ..... Measured total touch current : .....		—
5.3.7	<p>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.</p> <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.</p>	(see appended table 5.3)	P
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.		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
Annex NAF	Document (paper) shredders likely to be used in a home or home office (Pluggable Equipment Type A plug configuration) are required to comply with additional requirements, including markings/instructions, protection against inadvertent reactivation of a safety interlock, disconnection from the mains supply (via provision of an isolating switch), and protection against operator access (accessibility determined via new accessibility probe & probe/wedge).		N/A

**Attachment 2 - National Difference for Canada (CA)**

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

<b>Annex NAF</b> <b>Household/home office Document shredders</b>			N/A
NAF1.7	Markings and Instructions		N/A
NAF 1.7.15	Symbols alerting the user to the following considerations are provided adjacent to the document feed opening. These symbols are explained in the instructions:		N/A
	Product is not intended for use by children (product is not a toy) .....		N/A
	Avoid touching the document feed opening with hands .....		N/A
	Avoid clothing touching the document feed opening .....		N/A
	Keep aerosol products away (applicable for product with brush motor only) .....		N/A
	The  (ISO 7000-0434) symbol to alert user to important operating, maintenance and/or servicing instructions and the explanation of above symbols		N/A
	Marking is permanent, comprehensible and easily discernible on the equipment.		N/A
NAF 2.8.3	Safety interlock can not be activated by articulated accessibility probe (NAF.1)		N/A
			N/A
NAF 3.4	Isolation switch complying with 3.4.2 is provided to disconnect power to hazardous moving parts		N/A
	On/off marking is provided for two position switch ...:		N/A
	Off marking for multi-position switch .....		N/A
			N/A
NAF 4.4	Protection against hazardous moving parts		N/A
	Accessibility probe (Fig NAF.1) is inserted without force into each opening and did not contact hazardous moving parts		N/A
	Operator accessible guards are removed and Accessibility wedge is inserted into each opening according without contacting mechanical hazards:		—
	Strip-cut (45N): .....		N/A
	Cross-cut (90N) .....		N/A

**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>USA - Differences to IEC 60950-1:2005, Second Edition</b>			<b>P</b>
1.1	Equipment able to be installed in accordance with the National Electrical Code ANSI/NFPA 70		P
1.1.1	Equipment able to be installed in accordance with ANSI/NFPA 75 and NEC Art. 645 unless intended for use outside of computer room and provided with such instructions.		P
1.1.2	Equipment in wire-line communication facilities serving high-voltage electric power stations operating at greater than 1kV are excluded.		N/A
1.1.2	Equipment intended for outdoor use		N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20 A.		P
1.5.1	All IEC standards for components identified in Annex P.1 replaced by the relevant requirements of UL component standards in Annex P.1.		P
1.5.1	All IEC standards for components identified in Annex P.2 alternatively satisfied by the relevant requirements of UL component standards		P
1.5.5	Interconnecting cables acceptable for the application regarding voltage, current, temperature, flammability, mechanical serviceability and the like.		N/A
1.5.5	For other than limited power and TNV circuits, the type of output circuit identified for output connector.		N/A
1.5.5	External cable assemblies that exceed 3.05 m in length to be types specified in the NEC		N/A
1.5.5	Detachable external interconnecting cables 3.05 m or less in length and provided with equipment marked to identify the responsible organization and the designation for the cable		N/A
1.5.5	Building wiring and cable for use in ducts, plenums and other air handling space subject to special requirements and excluded from scope.		N/A
1.5.5	Telephone line and extension cords and the like comply with UL 1863		N/A
1.6.1.2	Equipment intended for connection to a d.c. power (mains) distribution system subjected to special circuit classification requirements (e.g., TNV-2)		N/A
1.6.1.2	Earthing of d.c. powered equipment provided		N/A
1.7	Lamp replacement information indicated on lampholder in operator access area		N/A
1.7.1	Special marking format for equipment intended for use on a supply system with an earthed neutral and more than one phase conductor		N/A
1.7.1	Equipment voltage rating not higher than rating of the plug except under special conditions		N/A
1.7.6	Fuse replacement marking for operator accessible		N/A

**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	fuses		
1.7.7	Identification of terminal connection of the equipment earthing conductor		P
1.7.7	Connectors and field wiring terminals for external Class 2 or Class 3 circuits provided with marking indicating minimum Class of wiring to be used.		N/A
1.7.7	Marking located adjacent to terminals and visible during wiring		N/A
2.1.1.1	Bare TNV conductive parts protected by a cover are exempt if instructions include directions for disconnection of TNV prior to removal of the cover		N/A
2.3.1.b	Other telecommunication signaling systems than described in 2.3.1(b) are subject to M.4.		N/A
2.3.1.b	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vp or 60 V d.c., the max. current limit through a resistor $\geq 2000$ Ohm with loads disconnected is 7.1 mA peak or 30 mA d.c. under normal conditions		N/A
2.3.1.b	Limits for measurements across 5000 Ohm resistor in the event of a single fault are replaced after 200 ms with the limits of M.3.1.4.		N/A
2.3.2.1	For a single fault, the limits of 2.2.3 apply to SELV circuits and accessible conductive parts.		N/A
2.3.2.4	Enamel coating on signal transformer winding wire allowed as an alternative to Basic insulation in specific telecommunication applications if subject to special construction requirements and testing		N/A
2.5	Overcurrent protection device required for Class 2 and Class 3 limiting according to the NEC, or for a Limited Power Source, not interchangeable with devices of higher ratings if operator replaceable		N/A
2.6	Equipment having receptacles for output a.c. power connectors generated from an internal separately derived source have the earthed (grounded) circuit conductor suitably bonded to earth.		P
2.6.3.3	For Pluggable Equipment Type A, if a) b) or c) are not applicable, the current rating of the circuit is taken as 20 A		P
2.6.3.4	Capacity of connection between earthing terminal and parts required to be earthed subject to special conditions based on the current rating of the circuit.		P
2.6.4.1	Field wiring terminals for earthing conductors suitable for wire sizes (gauge) used in US		P
2.7.1	Data for selection of special external branch circuit overcurrent devices marked on the equipment		N/A
2.7.1	Standard supply outlets protected by overcurrent device in accordance with the NEC		N/A
2.7.1	Overcurrent protection for individual transformers		N/A

**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	that distribute power to other units over branch circuit wiring		
2.7.1	Additional requirements for overcurrent protection apply to equipment provided with panelboards		N/A
2.7.1	Non-motor-operated equipment requiring special overcurrent protective device marked with device rating.		N/A
2.10.5.12	Multi-layer winding wire subject to UL component wire requirements in addition to 2.10.5.12 and Annex U.		P
3.1.1	Permissible combinations of internal wiring/external cable sizes for overcurrent & short circuit protection		P
3.1.1	All interconnecting cables protected against overcurrent and short circuit.		P
3.2	Wiring methods permit connection of equipment to primary power supply in accordance with the NEC		P
3.2.1	Permitted use for flexible cords and plugs.		P
3.2.1	Flexible cords provided with attachment plug rated 125% of equipment current rating.		P
3.2.1	Any Class II equipment provided with 15 or 20 A standard supply outlets, Edison-base lampholders or single pole disconnect device provided with a polarized type attachment plug.		N/A
3.2.1.2	Equipment intended for connection to DC mains supply power systems complies with special wiring requirements		N/A
3.2.1.2	Equipment with one pole of the DC mains supply connected to both the equipment mains input terminal and the main protective earthing terminal provided with special instructions and construction provisions for earthing		N/A
3.2.1.2	Equipment with means for connecting supply to earthing electrode conductor has no switches or protective devices between supply connection and earthing electrode connection.		N/A
3.2.1.2	Markings and instructions for equipment with provisions to connect earthed conductor of a DC supply circuit to the equipment earthing conductor		N/A
3.2.1.2	Special markings and instructions for equipment with earthed conductor of a DC supply circuit connected to the equipment earthing conductor		N/A
3.2.1.2	Terminals and leads provided for permanent connection of DC powered equipment to supply marked to indicate polarity if reverse polarity may result in a hazard.		N/A
3.2.3	Permanently connected equipment has provision for connecting and securing a field wiring system (i.e. conduit, or leads etc.) per the NEC		N/A



**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.3	Permanently connected equipment may have terminals or leads not smaller than No. 18 AWG (0.82 mm <sup>2</sup> ) and not less than 150 mm in length for connection of field installed wiring.		N/A
3.2.3	If supply wires exceed 60 °C, marking indicates use of 75 °C or 90 °C wiring for supply connection as appropriate.		N/A
3.2.3	Equipment compatible with suitable trade sizes of conduits and cables.		N/A
3.2.5	Length of power supply cord limited to between 1.5 and 4.5 m unless shorter length used when intended for a special installation.		P
3.2.5	Conductors in power supply cords sized per NEC		P
3.2.5	Power supply cords and cord sets incorporate flexible cords suitable for the particular application.		P
3.2.6	Strain relief provided for non-detachable interconnecting cables not supplied by a limited power source.		N/A
3.2.9	Adequate wire bending space and volume of field wiring compartment required to properly make the field connections.		N/A
3.2.9	Equipment solely for installation in Restricted Access Locations using low voltage d.c. systems may not need provision for connecting and securing a field wiring system when wiring is protected from abuse.		N/A
3.3	Field wiring terminals provided for interconnection of units for other than LPS or Class 2 circuits also comply with 3.3.		N/A
3.3	Interconnection of units by LPS or Class 2 conductors may have field wiring connectors other than specified in 3.3 if wiring is reliably separated		N/A
3.3.1	Terminals for the connection of neutral conductor identified by a distinctive white marking or other equally effective means		N/A
3.3.3	Wire binding screw terminal permitted for connection of No. 10 AWG (5.3 mm <sup>2</sup> ) or smaller conductor if provided with upturned lugs, cupped washer or equivalent retention.		N/A
3.3.4	Terminals accept US wire sizes (gauge)		N/A
3.3.4	Terminals accept current-carrying conductors rated 125% of the equipment current rating.		N/A
3.3.6	Field wiring terminals marked to indicate the material(s) of the conductor for the terminals used		N/A
3.3.6	Aluminum conductors not permitted for connection to terminal for equipment earthing conductor		N/A
3.3.6	Field wiring connections made through the use of suitable pressure connectors (including set screw		N/A

**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	type), solder lugs or splices to flexible leads.		
3.4.2	Separate motor control device(s) required for cord-connected equipment rated more than 12 A, or with motor rated more than 1/3 hp or more than 120 V.		N/A
3.4.8	Vertically mounted disconnect devices oriented so up position of handle is "on".		N/A
3.4.11	For computer-room applications, equipment with battery systems capable of supplying 750 VA for 5 minutes provided with battery disconnect means		N/A
4.2.8.1	Special opening restrictions for enclosures around CRTs with face dimension of 160 mm or more.		N/A
4.2.9	Compartment housing high-pressure lamp marked to indicate risk of explosion.		N/A
4.2.11	For equipment mounted on racks and provided with slide/rails allowing the equipment to slide away from the rack for installation and maintenance, additional construction, performance and marking requirements are applicable to determine the adequacy of the slide/rails		N/A
4.3.2	Loading test for equipment with handle(s) used to support more than 9 kg		N/A
4.3.6	In addition to the IEC requirements, Direct Plug-in Equipment complies with UL 1310		N/A
4.3.12	The max. quantity of flammable liquid stored in equipment per ANSI/NFPA 30 (Table NAE.6)		N/A
4.3.12	Equipment using replenishable liquids marked to indicate type of liquid to be used.		N/A
4.3.13.2	Equipment that produces x-radiation and does not comply with 4.3.12 under all conditions of servicing marked to indicate the presence of radiation		N/A
4.3.13.5	Requirements contained in the applicable national codes apply to lasers (21 CFR 1040).		N/A
4.7	Automated information storage equipment intended to contain more than 0.76 m <sup>3</sup> of combustible media requires provision for automatic sprinklers or a gaseous agent extinguishing system.		N/A
4.7.3.1	Equipment for use in environmental air space other than ducts or plenums provided with metal enclosure or with non-metallic enclosure having adequate fire-resistance and low smoke producing characteristics (according to UL 2043). Equipment for installation in space used for environmental air, described in Sec. 300-22(c) of the NEC, provided with instructions indicating suitability for installation		N/A
4.7.3.1	Flame spread rating for external surface of combustible material with exposed area greater than 0.93 m <sup>2</sup> or a single dimension greater than 1.8 m; 50 or less for computer room applications or 200 or less for other applications.		N/A

**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.4	Wire marked "VW-1" or "FT-1" considered equivalent.		N/A
5.1.8.2	Special earthing provisions and instructions for equipment with high touch current due to telecommunication network connections.		N/A
5.1.8.3	Touch current due to ringing voltage for equipment containing telecommunication network leads.		N/A
5.3.7	Overloading of SELV connectors and printed wiring board receptacles accessible to the operator.		P
5.3.7	Tests interrupted by opening of a component repeated two additional times.		P
5.3.9.1	Test interrupted by opening of wire or trace subject to certain conditions.		P
6	Specialized instructions for telephones that may be connected to a telecommunications network		N/A
6	Marking identifying function of telecommunication type connectors not used for connection to a telecommunication network.		N/A
6.3	Equipment remotely powered over telecommunication wiring systems provided with specialized markings adjacent to the connection.		N/A
6.3	Overcurrent protection incorporated into equipment to provide power over telecommunication wiring system not interchangeable with devices of higher ratings if operator replaceable.		N/A
6.4	Additional requirements for equipment connected to a telecommunication network using cable subject to overvoltage from power line failures		N/A
6.4	Where 26 AWG line cord required by Fig. 6C, either the cord is provided with the equipment or described in the safety instructions.		N/A
7	Equipment associated with the cable distribution system may need to be subjected to applicable parts of Chapter 8 of the NEC.		N/A
H	Ionizing radiation measurements made under single fault conditions according to 21 CFR 1020		N/A
M.2	Continuous ringing signals evaluated to Method A subjected to special accessibility considerations.		N/A
M.4	Special requirements for message waiting and similar telecommunications signals.		N/A
NAC	Equipment for use with a generic secondary protector marked with suitable instructions.		N/A
NAC	Equipment marked with suitable instructions if for use with a specific primary or secondary protector		N/A
NAD	Acoustic pressure from an ear piece for short and long duration disturbances		N/A
NAD	Equipment connected to a telecommunication and		N/A

**Attachment 3 - National Difference for USA (US)**

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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		
NAF	Household/Home Office Document Shredders		N/A
NAF.1.7	Markings and instructions alert the user to key safety considerations related to use of shredders, including not intended to be used by children, avoid touching document feed opening, avoid clothes and hair entanglement, and avoid aerosol products.		N/A
NAF.2.8.3	Safety interlock cannot be inadvertently activated by the articulated accessibility probe		N/A
NAF.3.4	Provided with an isolating switch complying with 3.4.2, including 3 mm contact gap, with appropriate markings associated with the switch.		N/A
NAF.4.4	Hazardous moving parts are not accessible, as determined using the articulated accessibility probe and the accessibility probe/wedge		N/A

**Attachment 4 - Photograph**

**Front View**



**Attachment 4 - Photograph**

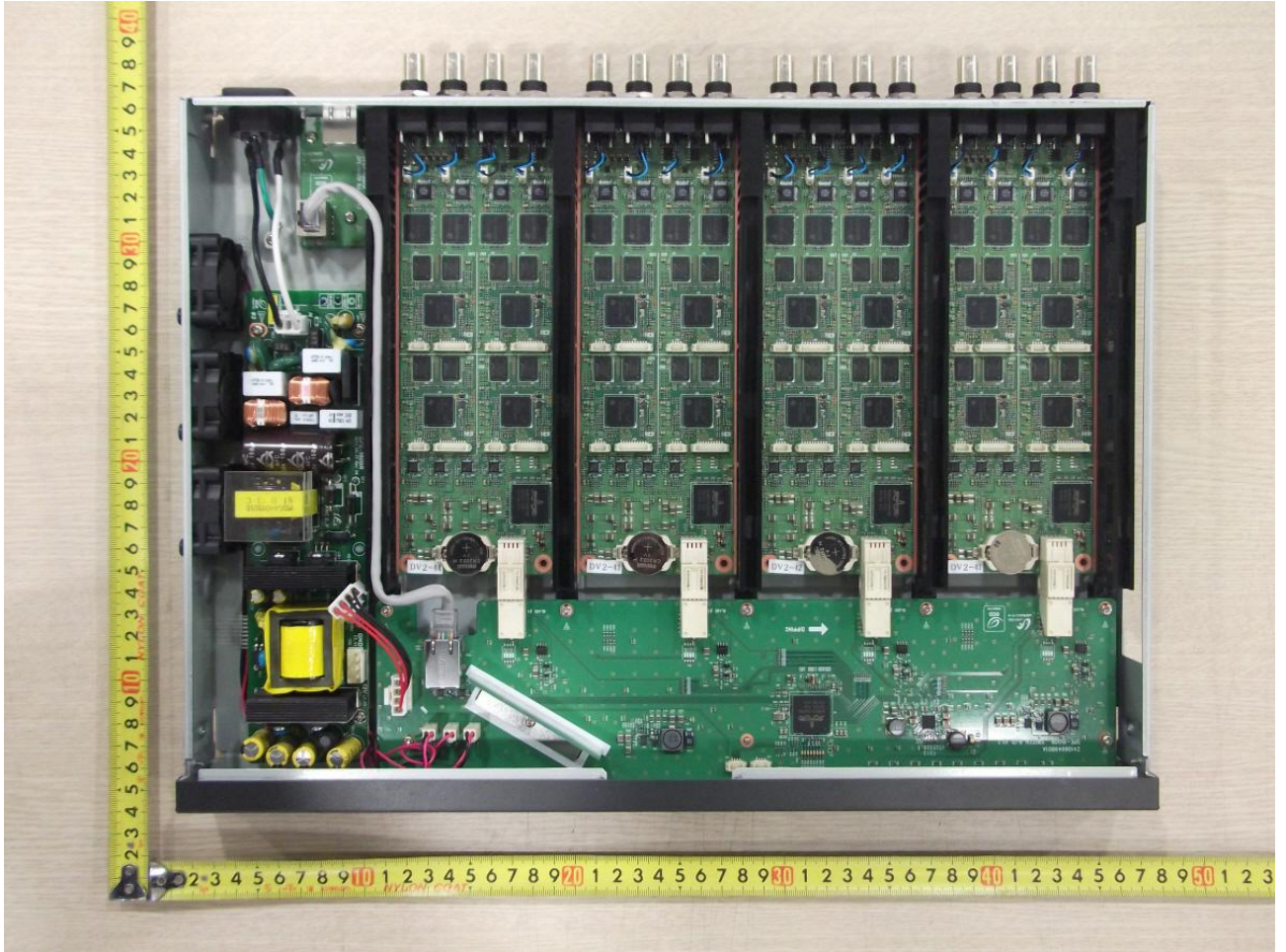
**Rear View**

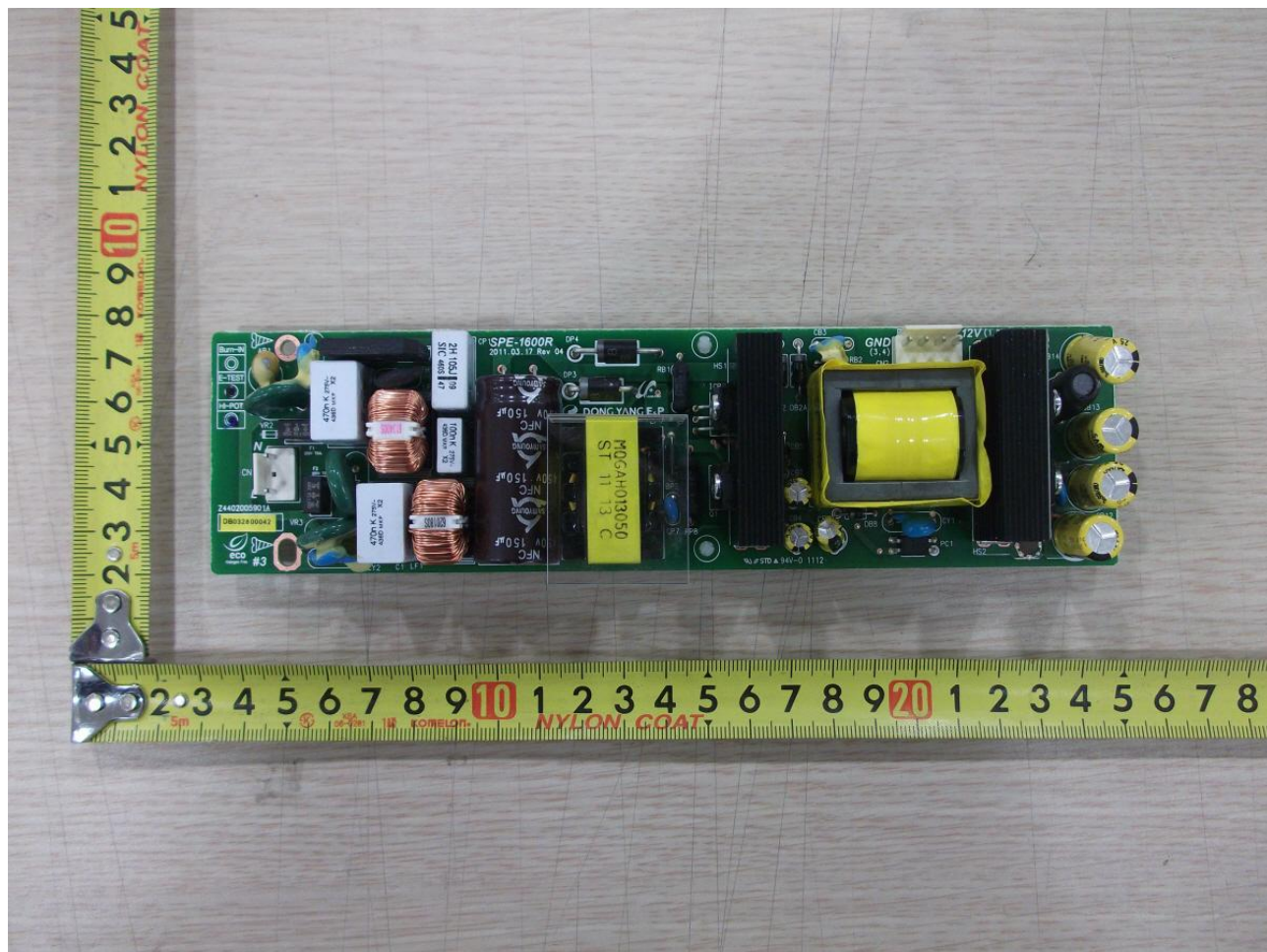




**Attachment 4 - Photograph**

**Internal View**



**Attachment 4 - Photograph****Power Supply Top View**



**Attachment 4 - Photograph**

**Power Supply Bottom View**

