Ref. Certif. No.
IL/2044ITL/19112017

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Network Switch
Name and address of the applicant	Radware Ltd. 22 Raoul Wallenberg Street, Tel-Aviv 69710 Israel
Name and address of the manufacturer	Radware Ltd. 22 Raoul Wallenberg Street, Tel-Aviv 69710 Israel
Name and address of the factory Note: *When more than one factory, please report on page 2*	☐ Additional information on page 2 NEXCOM International Co., Ltd. 5F,7F,8F,9F,10F&12F,No.63, Sec.1, Sanmin Rd., Banqiao Dist, New Taipei City Taiwan
Ratings and principal characteristics	ODS3 v. 2 HW Models: 100-240VAC, 47-63Hz, 8-4A (for AC powered models); -36 – -72VDC, 13A (for DC powered models) ODS-VL HW Models: 100-240VAC, 47-63Hz, 4A (with AC single PS), 100-240VAC, 47-63Hz, 6-3A (with AC dual PS); -36 – -72VDC, 5A (with DC single PS), -36 – -72VDC,15A (with DC dual PS)
Trademark (if any)	Radware
Customer's Testing Facility (CTF) Stage used	
Model / Type Ref.	ODS3 v. 2, ODS-VL
Additional information (if necessary may also be reported on page 2)	☐ Additional information on page 2
A sample of the product was tested and found to be in conformity with	IEC 60950-1:2005/AMD1:2009, IEC 60950-1:2005/AMD2:2013 National differences: EU Group Differences, EU Special National Conditions, AT, AU, BE, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, FR, GB, HU, IL, IN, IT, JP, KR, MY, NL, NO, PL, SE, SG, SI, SK, UA, US
As shown in the Test Report Ref. No. which forms part of this Certificate	CB181030.01

This CB Test Certificate is issued by the National Certification Body

ITL Product Testing Ltd.
1 Batsheva St., Lod 7116002, Israel

Date: 2017-11-19

Signature: Steli Loznen

Test Report issued under the responsibility of:

TEST REPORT

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

Report Number. ..... :	CB181030.01
Date of issue ..... :	November 6, 2017
Total number of pages ..... :	186
Applicant's name ..... :	Radware Ltd.
Address ..... :	22 Raoul Wallenberg Street, Tel-Aviv 69710, Israel
Test specification:	
Standard ..... :	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60950_1F
Test Report Form(s) Originator .... :	SGS Fimko Ltd
Master TRF ..... :	Dated 2014-02

Copyright © 2014 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	Network Switch
Trade Mark ..... :	Radware
Manufacturer ..... :	Radware Ltd.
Model/Type reference ..... :	**ODS3 v. 2, ODS-VL**
Ratings ..... :	**ODS3 v. 2 HW Models:** 100-240VAC, 47-63Hz, 8-4A (for AC powered models); -36 – -72VDC, 13A (for DC powered models) **ODS-VL HW Models:** 100-240VAC, 47-63Hz, 4A (with AC single PS), 100-240VAC, 47-63Hz, 6-3A (with AC dual PS); -36 – -72VDC, 5A (with DC single PS), -36 – -72VDC,15A (with DC dual PS)

Testing procedure and testing location:			
☒	**CB Testing Laboratory:**	I.T.L. (Product Testing) Ltd.	
Testing location/ address.....:		1 Bat Sheva St., P.O.B. 6117, Lod 7116002, Israel	
☐			
Testing location/ address.....:			
Tested by (name + signature).....:		Yigal Cohen	
Approved by (name + signature).....:		Ilan Cohen	
☐	**Testing procedure: TMP/CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name + signature).....:			
Approved by (name + signature).....:			
☐	**Testing procedure: WMT/CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature).....:			
Witnessed by (name + signature).....:			
Approved by (name + signature).....:			
☐	**Testing procedure: SMT/CTF Stage 3 or 4:**		
Testing location/ address.....:			
Tested by (name + signature).....:			
Witnessed by (name + signature).....:			
Approved by (name + signature).....:			
Supervised by (name + signature).....:			

List of Attachments:

The Following attachments applicable for both EUT HW Models.

- **Appendix 1 – Photographs**
- **Appendix 2 – National Differences**
- **Appendix 3 – Licences**

Summary of testing:

Tests performed (name of test and test clause):

For ODS3 v. 2 HW Model –

All the tests were taken and performed from CB reports CB106460.02 certificate no. US/4216/ITS **and CB106460.02_M1 certificate no. US/4231/ITS-M1**

For ODS-VL HW Model –

All the tests were taken and performed from CB reports CB124201.01 certificate no. US/4391/ITS **and CB124201.01_M1 certificate no. US/4391/ITS-M1**

1.6.2 – Input Test
1.7.13- Durability test
2.1.1.1- Access to energized parts
2.1.1.7- Capacitance Discharge Test
2.5 - Limited Power Source Test
2.6.3.3- Earthing Test
2.9.2 humidity conditioning (For China deviations)
4.2 - Mechanical Strength Test
4.5.1 –heating test
5.1- Touch Current Test
5.2.2 Electric strength
5.3.1- Abnormal Operation Tests

Tests were performed with maximum load on the models ODS3 v. 2 and ODS3 v. 2-DC represent AC and DC version of units.

Tests were performed with maximum load on the models ODS-VL and ODS-VL-DC represent AC and DC version of units.

Units tested for Ambient of up to 50°C.

Testing location:

I.T.L. (Product Testing) Ltd.

1 Bat Sheva St., P.O.B. 6117, Lod 7116002, Israel

Summary of compliance with National Differences

Summary of compliance with National Differences to IEC 60950-1:2005 (2nd Edition) + Am1:2009 + Am2:2013

List of countries addressed:
EU Group Differences, EU Special National Conditions, AT, CA, DK, SE, US

Summary of compliance with National Differences to IEC 60950-1:2005 (2nd Edition) + Am1:2009.

List of countries addressed:
EU Group Differences, EU Special National Conditions, AT, BE, BY, CH, CZ, DE, DK, ES, FI, FR, HU, IN, IL, IT, JP, KR, MY, NL, NO, SG, SE, SI, PL, SK, UA, UK

Summary of compliance with National Differences to IEC 60950-1:2005 (2nd Edition).

List of countries addressed: AU, BR, CN

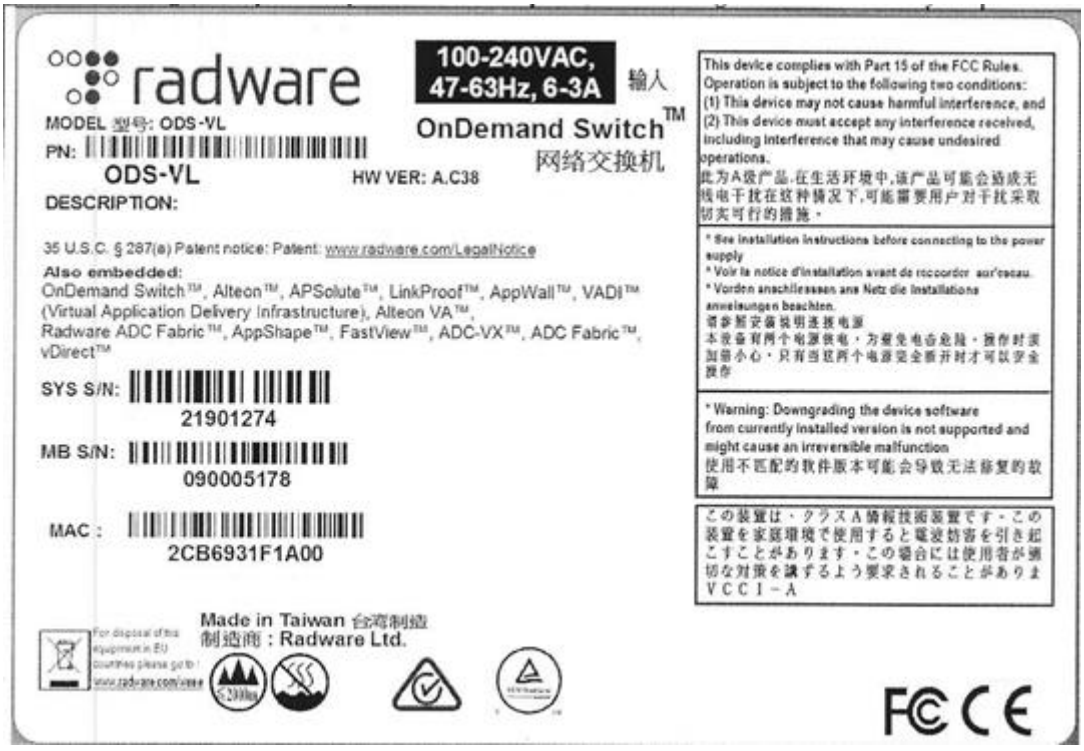
Explanation of used codes: AU=Australia, AT=Austria, BE=Belgium, BY=Belarus, BR=Brazil, CA=Canada, CH=Switzerland, CZ=Czech Republic, CN=China, DE=Germany, DK=Denmark, ES=Spain, FI=Finland, FR=France, HU=Hungary, IN=India, IL=Israel, IT=Italy, JP=Japan, KR=Korea, MY=Malaysia, NL=The Netherlands, NO=Norway, SG=Singapore, SE=Sweden, SI=Slovenia, PL=Poland, SK=Slovakia, UA=Ukraine, UK= United Kingdom, US=United States of America

☒ The product fulfils the requirements of IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 and EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

Copy of marking plate:

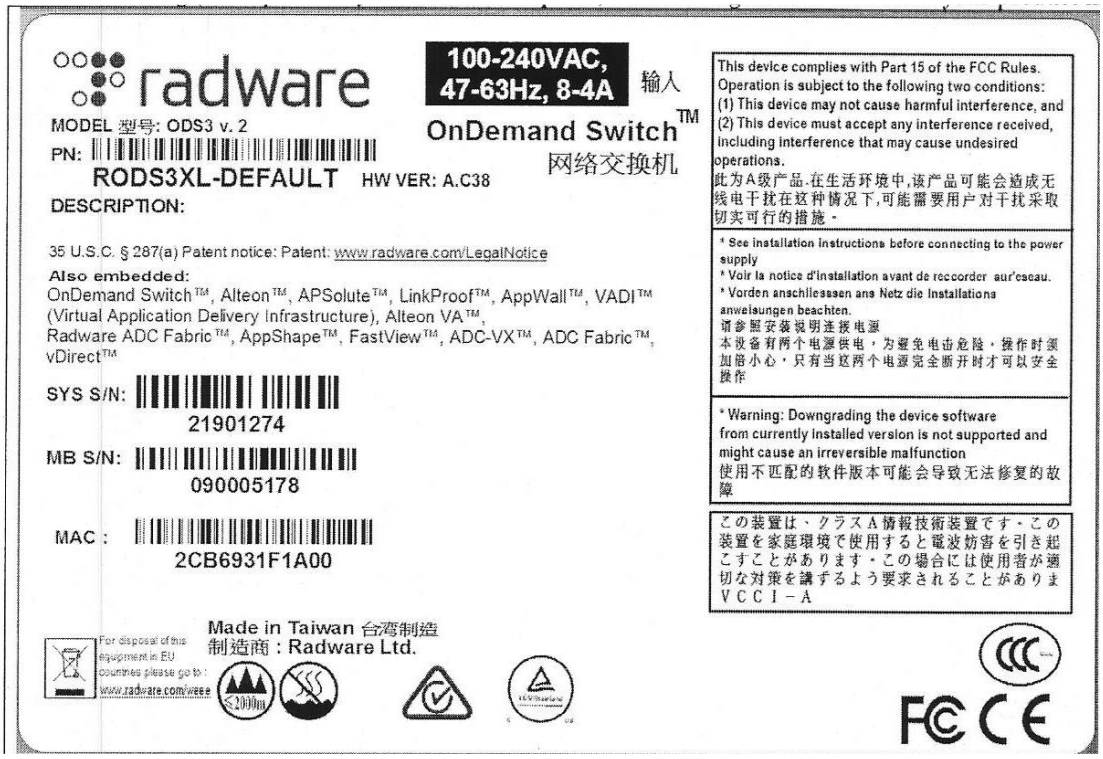
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

For ODS-VL HW Model:



CAUTION	ATTENTION
This unit has more than one power supply. Disconnect all power supplies before maintenance to avoid electric shock.	Cette unité a plus d'une source d'alimentation électrique. Débranchez toutes les sources d'alimentations électriques avant toute maintenance pour éviter les chocs électriques.

For ODS3 v. 2 HW Model:



CAUTION	ATTENTION
This unit has more than one power supply. Disconnect all power supplies before maintenance to avoid electric shock.	Cette unité a plus d'une source d'alimentation électrique. Débranchez toutes les sources d'alimentations électriques avant toute maintenance pour éviter les chocs électriques.

Test item particulars.....:	
Equipment mobility.....:	[X] movable [] hand-held [] transportable [X] stationary [] for building-in [] direct plug-in
Connection to the mains.....:	[X] pluggable equipment [X] type A [] type B [X] permanent connection (**only for ODS-VL**) [X] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition.....:	[X] continuous [] rated operating / resting time:
Access location .....:	[X] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[X] OVC I [x] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	+10%/-10%; for AC powered unit; -36V to -72Vdc according to manufacturer requirements
Tested for IT power systems .....:	[X] Yes (For Norway only) [] No
IT testing, phase-phase voltage (V) .....:	230V Ph-Ph
Class of equipment .....:	[X] Class I [] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installation (A) .....:	Up to 20A
Pollution degree (PD) .....:	[] PD 1 [X] PD 2 [] PD 3
IP protection class .....:	IPX0
Altitude during operation (m) .....:	Up to 2000
Altitude of test laboratory (m) .....:	55m
Mass of equipment (kg) .....:	8Kg (**for ODS-VL**), 16kg (**for ODS3 v. 2**)

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 .....:	October 2, 2017
Date (s) of performance of tests.....:	**<u>For ODS-VL HW Model -</u>** CB124201.01 - November 15, 2012 CB124201.01_M1 –July 28, 2014 **<u>For ODS3 v. 2 HW Model –</u>** CB106460.02 - November 20, 2012 CB106460.02_M1-October 10, 2014

General remarks:
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

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

Name and address of factory (ies) ..... :	NEXCOM International Co., Ltd. 5F,7F,8F,9F,10F&12F,No.63, Sec.1, Sanmin Rd., Banqiao Dist, New Taipei City, Taiwan

General product information:

ODS3 v. 2_HW Models:

The units are movable or rack-mountable, Class I, may be AC or DC powered.
Redundant AC or DC power supplies used for unit. The units can use alternate type for AC and for DC power supplies.
AC and DC power supplies are certified.
AC and DC powered units are pluggable type A, use detachable power cord.
The appliance couplers (part of approved power supply) are considered as disconnect devices.
All interfaces are SELV circuitry.
DC voltages 72V considered as TNV-2.
Power cords are not part of this evaluation.
Units contain certified optical transceivers, Class 1 complying with EN60825-1 and 21CFR (J).
Model differences - all Models have the same hardware and mechanical construction. Models are different in software versions and use AC or DC power supplies. Models Alteon (R -ALTEON, ODS3 v. 2XL-ALTEON, Alteon 5412, Alteon 5412 DC) have difference colour (grey) of enclosure and front panel.

Model differences:

All Models have the same hardware and mechanical construction. Models are different in software versions and use AC or DC power supplies. Models Alteon (ODS3 v. 2-ALTEON, ODS3 v. 2XL-ALTEON, Alteon 5412, Alteon 5412 DC) have difference colour (grey) of enclosure and front panel.

ODS-VL HW Models:

The units are movable or rack-mountable, Class I, may be AC or DC powered. All power supplies are certified.

AC powered unit is pluggable type A, uses detachable power cord. The appliance inlet is part of approved power supply, considered as disconnect device.

DC powered unit is permanently connected; uses terminal block that is a part of approved power supply, suitable for field wiring.

DC voltages 72V considered as TNV-2.

Power cords are not part of this evaluation.
Units contain certified optical transceivers, Class 1 complying with EN60825-1 and 21CFR (J).

Model differences

All Models have the same hardware and mechanical construction.
Models are different in software versions only.

Report history :

CB181030.01- Original Report

Abbreviations used in the report:

- normal conditions	**N.C**.	- single fault conditions	**S.F.C**
- functional insulation	**OP**	- basic insulation	**BI**
- double insulation	**DI**	- supplementary insulation	**SI**
- between parts of opposite polarity	**BOP**	- reinforced insulation	**RI**

Indicate used abbreviations (if any)

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		P
1.5	**Components**		P
1.5.1	General	All components either comply with the relevant standard or were subjected to the necessary test.	P
	Comply with IEC 60950-1 or relevant component standard	See appended table 1.5.1	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this Standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950-1 and the relevant component Standard. Components, for which no relevant IEC-Standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.	P
1.5.3	Thermal controls	No such components	N/A
1.5.4	Transformers	Evaluated as part of approved power supply.	N/A
1.5.5	Interconnecting cables	Interconnecting cables are not part of this evaluation.	N/A
1.5.6	Capacitors bridging insulation	Evaluated as part of approved power supply	N/A
1.5.7	Resistors bridging insulation	Evaluated as part of approved power supply	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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.8	Components in equipment for IT power systems	Components are suitably rated to withstand 230Vac line-to-line voltages of Norway IT power system	P
1.5.9	Surge suppressors	Considered and certified as part of the power supplies	P
1.5.9.1	General		P
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A
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	Unit was evaluated for use with TN power systems. However it may be connected to IT power system of Norway only	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	The unit is not hand-held	N/A
1.6.4	Neutral conductor	Part of approved power supply	N/A
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings	Provided	P
1.7.1.1	Power rating marking	Provided	P
	Multiple mains supply connections.....:	See installation instructions	P
	Rated voltage(s) or voltage range(s) (V) .....:	Provided on the labels	P
	Symbol for nature of supply, for d.c. only.....:	Marked	P
	Rated frequency or rated frequency range (Hz) ....:	Provided	P
	Rated current (mA or A) .....:	Provided	P
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....:	Provided	P
	Model identification or type reference .....:	Marked	P
	Symbol for Class II equipment only .....:	Unit Class I	N/A
	Other markings and symbols .....:	No other symbols	N/A
1.7.1.3	Use of graphical symbols	Not affecting safety	N/A
1.7.2	Safety instructions and marking	Operating instructions is available to the user.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	General	Operating instructions made available to the user.	P
1.7.2.2	Disconnect devices	Clear statement is provided in the installation instruction	P
1.7.2.3	Overcurrent protective device	No such equipment	N/A
1.7.2.4	IT power distribution systems	Safety instructions include a note that specifies connection for IT for Norway only	P
1.7.2.5	Operator access with a tool	Only SELV circuits and safety earth are accessible to an operator	P
1.7.2.6	Ozone	No such equipment	N/A
1.7.3	Short duty cycles	Continuous operation equipment	N/A
1.7.4	Supply voltage adjustment .....:	Equipment is automatically selectable	N/A
	Methods and means of adjustment; reference to installation instructions .....:	Equipment is automatically selectable	N/A
1.7.5	Power outlets on the equipment .....:	No such outlets	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....:	Part of certified power supply. No other fuses employed	N/A
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals ....:	Earthing screw is marked with symbol 5019 IEC 60417	P
1.7.7.2	Terminals for a.c. mains supply conductors	AC units employ appliance inlets for mains connection.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	For ODS3 v. 2 HW Models: DC unit employs 2 appliance inlets (connectors) for mains connection. For ODS-VL HW Models: DC terminal block is marked "+" "-" for DC mains connection.	P
1.7.8	Controls and indicators	Only functional indicators use colour.	P
1.7.8.1	Identification, location and marking ....:	Only functional indicators use colour.	P
1.7.8.2	Colours .....:	Only functional indicators are used.	P
1.7.8.3	Symbols according to IEC 60417.....:	No Switches	N/A
1.7.8.4	Markings using figures .....:	Figures are not used.	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.9	Isolation of multiple power sources .....:	Marking near power connection to power supply are provided. Markings are visible.	P
1.7.10	Thermostats and other regulating devices .....:	No such devices	N/A
1.7.11	Durability	The marking(s) withstood the required test	P
1.7.12	Removable parts	No removable parts	N/A
1.7.13	Replaceable batteries .....:	Statement provided in user manual	P
	Language(s) .....:	English, French	—
1.7.14	Equipment for restricted access locations.....:	DC unit is intended for RESTRICTED ACCESS LOCATION. Suitable text contains installation instruction.	P
2	**PROTECTION FROM HAZARDS**		P
2.1	**Protection from electric shock and energy hazards**		P
2.1.1	Protection in operator access areas	Only SELV circuits and safety earth are accessible to an operator. Protection is achieved by overall equipment basic insulation and earthing of accessible conductive parts. DC powered units are for installation in RAL (Restricted access location)	P
2.1.1.1	Access to energized parts	The operator has access to bare parts of SELV circuits only	P
	Test by inspection .....:	No hazards	P
	Test with test finger (Figure 2A) .....:	The test finger was unable to touch hazardous parts	P
	Test with test pin (Figure 2B) .....:	The test pin was unable to contact bare parts at hazardous voltage	P
	Test with test probe (Figure 2C) .....:	No TNV circuits	N/A
2.1.1.2	Battery compartments	No TNV in battery compartments	N/A
2.1.1.3	Access to ELV wiring	No ELV	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)	(see appended tables 2.10.2 and 2.10.5)	—
2.1.1.4	Access to hazardous voltage circuit wiring	Operator has no access to hazardous voltage circuit wiring	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.1.1.5	Energy hazards .....:	No energy hazards in operator access area	P
2.1.1.6	Manual controls	No manual controls	N/A
2.1.1.7	Discharge of capacitors in equipment	The voltage across-line capacitors decayed to less than 37% of its original value in 1sec. for AC unit	P
	Measured voltage (V); time-constant (s).....:	For ODS3 v. 2 HW Models: 30V within 1s for AC unit For ODS-VL HW Models: 0V after 1 sec.	—
2.1.1.8	Energy hazards – d.c. mains supply		P
	a) Capacitor connected to the d.c. mains supply ..:	Capacitors connected to DC mains discharged to 0V within 2s	P
	b) Internal battery connected to the d.c. mains supply :	No such parts	N/A
2.1.1.9	Audio amplifiers .....:	No such parts	N/A
2.1.2	Protection in service access areas	Bare parts operating at HAZARDOUS VOLTAGES are located such that unintentional contact with such parts is unlikely during servicing operations involving other parts of the equipment	P
2.1.3	Protection in restricted access locations	For ODS-VL HW Models: Equipment complies with requirements for protection in restricted access location.	P

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

2.2	**SELV circuits**		P
2.2.1	General requirements	Compliance checked by inspection and relevant tests. (see appended table 2.2)	P
2.2.2	Voltages under normal conditions (V) ..... :	Maximum 12VDC	P
2.2.3	Voltages under fault conditions (V) ..... :	Part of certified power supply	N/A
2.2.4	Connection of SELV circuits to other circuits ..... :	SELV to SELV	P

2.3	**TNV circuits**		N/A
2.3.1	Limits	DC units are connected to a maximum 72V DC mains, regarded as TNV-2 for the purpose of application of insulation requirements	N/A
	Type of TNV circuits..... :	No internal circuits outside DC/DC power supply are classified as 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..... :	Part os certified DC/DC power supply	—
2.3.5	Test for operating voltages generated externally		N/A

2.4	**Limited current circuits**		N/A
2.4.1	General requirements	Unit was not evaluated for 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 µF) ..... :		—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.4.3	Connection of limited current circuits to other circuits		N/A

2.5	**Limited power sources**		P
	a) Inherently limited output	Schematics evaluation - ports (Ethernet and signal/data ports) are inherently limited signal/data outputs not associated with power transfer	P
	b) Impedance limited output	For ODS3 v. 2 HW Models: USB ports are protected by PTC F2, F3 Output voltage 5V, output current 4.85Amax, apparent power 24.25VA I_{hold} =2.6A, Itrip=5.2A For ODS-VL HW Models: USB ports are protected by PTC . Output voltage 5.08 V, output current 1.58A max, apparent power 8.0 VA	P
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition	No such outputs	N/A
	Use of integrated circuit (IC) current limiters		N/A
	d) Overcurrent protective device limited output	No such outputs	N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)..... :		—
	Current rating of overcurrent protective device (A) .:		—

2.6	**Provisions for earthing and bonding**		P
2.6.1	Protective earthing	Accessible conductive parts are connected to protective earth in accordance with 2.6.1a)	P
2.6.2	Functional earthing	Circuits, which provide functional earthing, are connected to protective earthing and are separated from primary circuits by reinforced /double insulation in certified power supply	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Use of symbol for functional earthing .....:	Protective earthing or bonding symbol not used for fuctionla earthing	P
2.6.3	Protective earthing and protective bonding conductors	Requirements of 2.6.3.1, 2.6.3.2, 2.6.3.3 applicable	P
2.6.3.1	General	Protective bonding conductors comply with 2.6.1 a)	P
2.6.3.2	Size of protective earthing conductors	Power cord is not part of investigation	N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
2.6.3.3	Size of protective bonding conductors	Part of certified closed frame power supplies	N/A
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
	Protective current rating (A), cross-sectional area (mm^2), AWG..... :		
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)..... :	For ODS3 v. 2 HW Models: Test current 40A for a period of 2 minutes 0.033 Ω, voltage drop 1.32V for AC model 0.01 Ω, voltage drop 0.4V for DC model For ODS-VL HW Models: Test current 40A for a period of 2 minutes 0.018 Ω, voltage drop 0.7V for AC model 0.01 Ω, voltage drop 0.4V for DC model	P
2.6.3.5	Colour of insulation ..... :	Protective earthing conductor is part of power supply cord. Power supply cord not part of this evaluation.	N/A
2.6.4	Terminals	Requirements of 2.6.4.1, 2.6.4.2 apply	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.4.1	General	ODS3 v. 2 - Earthing is integral part of the approved power supply. ODS-VL - AC unit: Appliance inlet(s) used as protective earthing terminal(s). DC unit: GND screws (2 provided) used as protective earthing terminal	P
2.6.4.2	Protective earthing and bonding terminals	Construction of protective earthing terminal is suitable for application. AC unit: Appliance inlet(s) used as protective earthing terminal(s). DC unit: GND screws (2 provided) used as protective earthing terminal. Bonding is provided with mounting screws. For RAL units – external PE provided.	P
	Rated current (A), type, nominal thread diameter (mm)..... :	PE terminal located on the rear panel. For ODS3 v. 2 HW Models: Rated current 13 A. Earthing screw terminals have 4mm thread diameter For ODS-VL HW Models: Rated current 5 A. Earthing screw terminals have 3.5mm thread diameter	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors	No such conductors.	P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment	Equipment does not provide earthing to other equipment	N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No protective devices in the earthling conductors	P
2.6.5.3	Disconnection of protective earth	Disconnection of protective earthing at one point in the unit does not break the protective earthing to the other parts of the unit.	P
2.6.5.4	Parts that can be removed by an operator	No such parts	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.5.5	Parts removed during servicing	Earth does not have to be removed during service	P
2.6.5.6	Corrosion resistance	No risk of corrosion. Complies with Annex J.	P
2.6.5.7	Screws for protective bonding	Self-trapping or space thread screws are not used.	P
2.6.5.8	Reliance on telecommunication network or cable distribution system	Protective earthing does not rely on a telecommunication network or a cable distribution system.	N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		P
2.7.1	Basic requirements	AC units: Pluggable equipment Type A. Protection against overcurrent, short-circuit and earth faults in Primary provided as part of EUT. Additional protection provided as part of building installation. DC units are permanently connected. Protection provided as part of building installation and specified in installation manual instruction	P
	Instructions when protection relies on building installation	AC units are Pluggable Type A. DC powered units protection relies on building installation	P
2.7.2	Faults not simulated in 5.3.7	Protection against faults not covered in 5.3.7 not provided as part of EUT	N/A
2.7.3	Short-circuit backup protection	Building installation provides short-circuit back-up protection for both the ac and dc rated units.	P
2.7.4	Number and location of protective devices ..... :	Protective device provided as part of approved power supply. For Norway additional protection assumed on fuses in two conductors of circuit-breaker.	P
2.7.5	Protection by several devices	No such protection	N/A
2.7.6	Warning to service personnel ..... :	No protective device provided in the neutral conductor.	N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles	No interloks provided	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) .....:		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test	(see appended table 5.2)	N/A
2.8.8	Mechanical actuators		N/A

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

2.9	**Electrical insulation**		P
2.9.1	Properties of insulating materials	No natural rubber, asbestos or hygroscopic materials used as insulation	P
2.9.2	Humidity conditioning	For AC versions - Humidity test was conducted 48H hours for China deviation See National Differences China (CH).	P
	Relative humidity (%), temperature (°C) .....:	93% , 22^0C	—
2.9.3	Grade of insulation	Functional insulation employed in secondary SELV evaluated to 5.3.4 c) Basic insulation between Primary and earth.(Certified PS) Minimum Basic insulation between TNV-2 and SELV. (Certified PS) Reinforced insulation between primary circuits to SELV circuits	P
2.9.4	Separation from hazardous voltages	Part of certified power supply having outputs defined as SELV .(Certified PS)	P
	Method(s) used .....:	Part of certified power supply	—

2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General	Compliance was checked by inspection and by measurements.	P
2.10.1.1	Frequency .....:	47-63Hz	P
2.10.1.2	Pollution degrees .....:	2	P
2.10.1.3	Reduced values for functional insulation	Certified primary circuits. For SELV circuits: Considerations were considered and schematic evaluated according with 5.3.4 c) requirements	P
2.10.1.4	Intervening unconnected conductive parts	No such part	N/A
2.10.1.5	Insulation with varying dimensions	Part of certified power supplies	N/A
2.10.1.6	Special separation requirements	No such case	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.1.7	Insulation in circuits generating starting pulses	No such circuits	N/A
2.10.2	Determination of working voltage	Evaluated as part of closed frame certified power supplies. For the DC version, the DC mains input voltage, its positive pole shall be connected electrically to ground from the building installation side, so the max transient peak working voltage is assumed to be 71Vpeak	P
2.10.2.1	General	Evaluated as part of closed frame certified power supplies.	P
2.10.2.2	RMS working voltage		P
2.10.2.3	Peak working voltage		P
2.10.3	Clearances	Evaluated as part of closed frame certified power supplies.	P
2.10.3.1	General	Evaluated as part of closed frame certified power supplies.	P
2.10.3.2	Mains transient voltages		P
	a) AC mains supply .....:	2500Vp Evaluated as part of closed frame certified power supplies.	P
	b) Earthed d.c. mains supplies .....:	Assumed 71Vpeak	P
	c) Unearthed d.c. mains supplies .....:		N/A
	d) Battery operation .....:		N/A
2.10.3.3	Clearances in primary circuits	Evaluated as part of closed frame certified power supplies.	N/A
2.10.3.4	Clearances in secondary circuits	Considered through 5.3.4c	N/A
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply .....:	Evaluated as part of certified power supply	P
2.10.3.7	Transients from d.c. mains supply .....:	Evaluated as part of closed frame certified power supplies.	P
2.10.3.8	Transients from telecommunication networks and cable distribution systems .....:		N/A
2.10.3.9	Measurement of transient voltage levels	Evaluated as part of closed frame certified power supplies.	P
	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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.4	Creepage distances		N/A
2.10.4.1	General		N/A
2.10.4.2	Material group and comparative tracking index		N/A
	CTI tests ..... :	Material group IIIb is assumed to be used	—
2.10.4.3	Minimum creepage distances	Evaluated as part of closed frame certified power supplies.	N/A
2.10.5	Solid insulation	Evaluated as part of closed frame certified power supplies.	P
2.10.5.1	General		N/A
2.10.5.2	Distances through insulation	Evaluated as part of certified power supply	N/A
2.10.5.3	Insulating compound as solid insulation		N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.5.6	Thin sheet material – General		N/A
2.10.5.7	Separable thin sheet material	Evaluated as part of certified power supply	N/A
	Number of layers (pcs) ..... :		—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.10	Thin sheet material – alternative test procedure		N/A
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.11	Insulation in wound components		N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage ..... :		N/A
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplementary, reinforced insulation ..... :		N/A
	c) Compliance with Annex U ..... :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test	(see appended table 2.10.5)	—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Working voltage .....:		N/A
	- Basic insulation not under stress .....:		N/A
	- Supplementary, reinforced insulation .....:		N/A
2.10.6	Construction of printed boards	Evaluated as part of closed frame certified power supplies.	P
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.2	Coated printed boards	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation	(see appended table 2.10.5)	N/A
	Number of insulation layers (pcs) .....:		N/A
2.10.7	Component external terminations	Part of certified power supplies	N/A
2.10.8	Tests on coated printed boards and coated components	Evaluated as part of closed frame certified power supplies.	P
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	(see appended table 5.2)	N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A

3	**WIRING, CONNECTIONS AND SUPPLY**		P
3.1	**General**		P
3.1.1	Current rating and overcurrent protection	All internal wiring is rated for the application and has adequate cross-sectional areas depending on the circuits.	P
3.1.2	Protection against mechanical damage	The wires are well routed away from sharp edges, etc. and are adequately fixed to prevent excessive strain on wire and terminals	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.3	Securing of internal wiring	All wiring are reliably routed or separated and are adequately fixed to prevent excessive strain on wire and terminals	P
3.1.4	Insulation of conductors	Insulation on internal conductors are considered to be of adequate quality and suitable for the application and the working voltages involved	P
3.1.5	Beads and ceramic insulators	No such components	N/A
3.1.6	Screws for electrical contact pressure	PCBs are connected to earth via screws to chassis. Screws are engaged with at least two turns into metal.	P
3.1.7	Insulating materials in electrical connections	No such materials.	N/A
3.1.8	Self-tapping and spaced thread screws	No such screws	N/A
3.1.9	Termination of conductors	All internal wiring is properly terminated and fixed	P
	10 N pull test	Not considered necessary	N/A
3.1.10	Sleeving on wiring	Sleeving is not used as supplementary insulation	N/A

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

3.2	**Connection to a mains supply**		P
3.2.1	Means of connection	Units employ an appliance inlet.	P
3.2.1.1	Connection to an a.c. mains supply	Power inlet provided as part of approved power supplies.	P
3.2.1.2	Connection to a d.c. mains supply	DC unit provide with approved inlet for connection of detachable power supply cord	P
3.2.2	Multiple supply connections	For ODS3 v. 2 HW Models: Two appliance inlets for connection to AC mains or two connectors for connection to DC are provided. Bare parts at hazardous voltage are not accessible when one of this connections is disconnected For ODS-VL HW Models: Separate means are provided For each power connection	P
3.2.3	Permanently connected equipment	The equipment is not permanently connected to AC mains. For DC units a terminal block is provided.	P
	Number of conductors, diameter of cable and conduits (mm) ..... :	No part of this investigation	—
3.2.4	Appliance inlets	Part of certified power supplies	P
3.2.5	Power supply cords	Units not provided with power supply cord. When detachable power supply cord is supplied with unit, it shall comply with the requirements of the destination country.	N/A
3.2.5.1	AC power supply cords	Detachable power supply cord set not supplied with the equipment and not evaluated as part of this investigation.	N/A
	Type ..... :		—
	Rated current (A), cross-sectional area (mm^2), AWG ..... :		—
3.2.5.2	DC power supply cords	Not provided as part of the unit	N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) ..... :		—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Longitudinal displacement (mm) ..... :		—
3.2.7	Protection against mechanical damage	For ODS3 v. 2 HW Models: No non-detachable cords used For ODS-VL HW Models**:** No sharp edges on equipment which could damage the power supply cord	P
3.2.8	Cord guards	No non-detachable cords	N/A
	Diameter or minor dimension D (mm); test mass (g) ..... :		—
	Radius of curvature of cord (mm)..... :		—
3.2.9	Supply wiring space	AC units : No non-detachable cords. No permanently connected equipment DC units Terminal block for permanent connection to the supply are certified with power supply. There is no wiring compartment or cover as the unit is intended for installation in a Restricted Access Location.	P
3.3	**Wiring terminals for connection of external conductors**		P
3.3.1	Wiring terminals	For ODS3 v. 2 HW Models: No non-detachable cords. No permanently connected equipment For ODS-VL HW Models: AC powered units provided with an appliance inlet for connection of a power supply cord. DC powered units connect to mains by terminal block.	P
3.3.2	Connection of non-detachable power supply cords	Not used special non-detachable power supply cord	N/A
3.3.3	Screw terminals	Suitable for application	P
3.3.4	Conductor sizes to be connected	For ODS3 v. 2 HW Models: No such terminals For ODS-VL HW Models**:** Terminal sizes comply with wires suitable with table 3D requirements.	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Rated current (A), cord/cable type, cross-sectional area (mm^2)..... :	For ODS-VL HW Models: Max rated current 5A, cord/cable flexible type, cross-sectional area 0.75 to 1mm^2	—
3.3.5	Wiring terminal sizes	Earthing screws complies with Table 3E	P
	Rated current (A), type, nominal thread diameter (mm) ..... :	For ODS3 v. 2 HW Models: Rated current 13A, thread diameter min. 4 for each screw (2 Provided) For ODS-VL HW Models: Max rated current 5A, cord/cable flexible type, cross-sectional area 0.75 to 1mm^2	—
3.3.6	Wiring terminal design	Earthing screw is designed to reliably fix earthing conductor and provided with washer	P
3.3.7	Grouping of wiring terminals	For ODS3 v. 2 HW Models: No non-detachable cords, no permanently connected equipment For ODS-VL HW Models: Located proximity to each other	P
3.3.8	Stranded wire	For ODS3 v. 2 HW Models: No such components For ODS-VL HW Models: Complies with the requirements.	P

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

3.4	**Disconnection from the mains supply**		P
3.4.1	General requirement	Disconnect from mains supply provided for servicing comply with the requirements as disconnect device.	P
3.4.2	Disconnect devices	AC powered units employ an appliance coupler. For DC powered unit disconnect device incorporated in building installation instruction.	P
3.4.3	Permanently connected equipment	For ODS-VL HW Models: Appropriate disconnect device provided as part of the building installation.	P
3.4.4	Parts which remain energized	No accessible parts on the supply side of the disconnect device. For ODS-VL HW Models: DC units are located in RAL location.	P
3.4.5	Switches in flexible cords	No such parts	N/A
3.4.6	Number of poles - single-phase and d.c. equipment	Appliance coupler acts a disconnect AC powered device. For ODS-VL HW Models: In the DC units the disconnect device is provided as part of building installation	P
3.4.7	Number of poles - three-phase equipment	The units are a single-phase equipment or DC equipment	N/A
3.4.8	Switches as disconnect devices	No such parts	N/A
3.4.9	Plugs as disconnect devices	No such parts	N/A
3.4.10	Interconnected equipment	No interconnection of Hazardous Voltages or Hazardous Energy	N/A
3.4.11	Multiple power sources	Marking provided on the unit and in installation manual.	P

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

3.5	**Interconnection of equipment**		P
3.5.1	General requirements	SELV connected to SELV	P
3.5.2	Types of interconnection circuits ..... :	SELV circuits	P
3.5.3	ELV circuits as interconnection circuits	No ELV circuits	N/A
3.5.4	Data ports for additional equipment	Ports complied with limited power sources requirements.	P

4	**PHYSICAL REQUIREMENTS**		P
4.1	**Stability**		P
	Angle of 10°	Unit designed and constructed so as not to overbalance when tilted to an angle of 10° from its normal upright position	P
	Test force (N) .....:	Equipment is not intended for floor standing.	N/A

4.2	**Mechanical strength**		P
4.2.1	General	Rigid metallic enclosure is provided	P
	Rack-mounted equipment.	No slides	N/A
4.2.2	Steady force test, 10 N	Evaluated as part of closed frame certified power supply	N/A
4.2.3	Steady force test, 30 N	The equipment does not have covers or doors in operator access area	N/A
4.2.4	Steady force test, 250 N	No adverse effect	P
4.2.5	Impact test	The power supplies are closed frame, located inside a metal mechanical enclosure, so no adverse effect. After the impact test equipment passed Dielectric Strength.	P
	Fall test		P
	Swing test	Not required	N/A
4.2.6	Drop test; height (mm) .....:	Not required	N/A
4.2.7	Stress relief test	Metal enclosure	N/A
4.2.8	Cathode ray tubes	No such components	N/A
	Picture tube separately certified .....:	No such components	N/A
4.2.9	High pressure lamps	No such components	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.2.10	Wall or ceiling mounted equipment; force (N) .....:	Not wall or ceiling mounted device	N/A
4.3	**Design and construction**		P
4.3.1	Edges and corners	All edges and corners are well rounded and smoothed so as not to constitute a hazard	P
4.3.2	Handles and manual controls; force (N).....:	No such parts	N/A
4.3.3	Adjustable controls	No operator adjustable controls	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur. Screwed connections are reliably secured	P
4.3.5	Connection by plugs and sockets	No possibility of misconnection that may cause a hazard	P
4.3.6	Direct plug-in equipment	Unit is not direct plug-in type	N/A
	Torque .....:		—
	Compliance with the relevant mains plug standard .....:		N/A
4.3.7	Heating elements in earthed equipment	No heating elements in this unit	N/A
4.3.8	Batteries	Lithium battery is protected against charging current by resistor and diode. See Critical Components List. Marking in installation guide includes the suitable text	P
	- Overcharging of a rechargeable battery	No rechargeable batteries	N/A
	- Unintentional charging of a non-rechargeable battery	Lithium battery is protected against charging current by resistor and diode. See Critical Components List.	P
	- Reverse charging of a rechargeable battery	No rechargeable battery	N/A
	- Excessive discharging rate for any battery	Part of battery certification per UL1642	P
4.3.9	Oil and grease	No oil and grease	N/A
4.3.10	Dust, powders, liquids and gases	No such components	N/A
4.3.11	Containers for liquids or gases	No such components	N/A
4.3.12	Flammable liquids .....:	No such components	N/A
	Quantity of liquid (l) .....:	No such components	N/A
	Flash point (°C) .....:	No such parts	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.13	Radiation	Equipment using lasers Class I according to EN/IEC 60825 and 21CFR(J). Indicator LEDs are used.	P
4.3.13.1	General	Lasers Class I according to EN/IEC 60825-1 and 21CFR(J) and indicator LEDS are used.	P
4.3.13.2	Ionizing radiation	No such components	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	No such components	N/A
	Part, property, retention after test, flammability classification .....:	No such components	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....:	No such components	N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		P
4.3.13.5.1	Lasers (including laser diodes)	Equipment using lasers Class I according to EN/IEC 60825-1 and 21CFR(J) Low power indicator LEDs.	P
	Laser class .....:	Class I	—
4.3.13.5.2	Light emitting diodes (LEDs)	Low power indicator LEDs regarded inherently within Class I AEL	
4.3.13.6	Other types .....:	No such components	N/A

4.4	**Protection against hazardous moving parts**		P
4.4.1	General	DC fans provided	P
4.4.2	Protection in operator access areas ..... :	Fans are properly guarded	P
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations ..... :	Provided	P
4.4.4	Protection in service access areas	Unintentional contact with hazardous moving parts is unlikely.	P
4.4.5	Protection against moving fan blades	Unintentional contact with hazardous moving parts is unlikely.	N/A
4.4.5.1	General		P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Not considered to cause pain or injury. a)……:		P
	Is considered to cause pain, not injury. b) ……...:		N/A
	Considered to cause injury. c) ……:		N/A
4.4.5.2	Protection for users	The fans are suitably guarded from user access	P
	Use of symbol or warning ……..:		N/A
4.4.5.3	Protection for service persons	Unintentional contact is unlikely	P
	Use of symbol or warning ……..:		N/A
4.5	**Thermal requirements**		P
4.5.1	General	Temperatures do not exceed safe values under normal load operation. Refer to Table 4.5.	P
4.5.2	Temperature tests	Equipment was tested under the most adverse actual and simulated condition permitted in the installation instruction. Power supply evaluated in separate certification and tested in this evaluation.	P
	Normal load condition per Annex L ..... :	Unit operated per it's maximum normal load configuration. Data ports and laser transceivers were looped to simulate normal load, application was running	—
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 ..... :		N/A

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

4.6	**Openings in enclosures**		P
4.6.1	Top and side openings	Top side without openings. Side's openings are compliant.	P
	Dimensions (mm) ..... :	For ODS3 v. 2 HW Models: Left side contained tree oval 40 by 5mm openings on area 40 by 53 mm for fans; right side contained 5x5mm square openings on five areas 35 by 35 mm for fans. For ODS-VL HW Models: Rear side contained 4.5mm diameter hexahon openings on area 118 by 4.5 mm; left side contained 4.5mm diameter hexahon openings on area 88 by 55 mm; right side contained 4.5mm diameter hexahon openings on two areas 65 by 55 mm There are no parts at hazardous voltage or energy within volume specified in Fig 4D	—
4.6.2	Bottoms of fire enclosures	No bottom opening.	P
	Construction of the bottomm, dimensions (mm) .. :		—
4.6.3	Doors or covers in fire enclosures	No such parts	N/A
4.6.4	Openings in transportable equipment	No such equipment	N/A
4.6.4.1	Constructional design measures	No such equipment	N/A
	Dimensions (mm) ..... :		—
4.6.4.2	Evaluation measures for larger openings	No such equipment	N/A
4.6.4.3	Use of metallized parts	No such equipment	N/A
4.6.5	Adhesives for constructional purposes	Not used	N/A
	Conditioning temperature (°C), time (weeks) ..... :		—

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

4.7	**Resistance to fire**		P
4.7.1	Reducing the risk of ignition and spread of flame	The maximum working temperature of electrical components used in single fault conditions is less than that necessary to cause ignition of materials with which they are likely to come into contact.	P
	Method 1, selection and application of components wiring and materials	Method 1: Selection and application of components and materials, which minimize the possibility of ignition and spread of flame.	P
	Method 2, application of all of simulated fault condition tests	Method 1 used	N/A
4.7.2	Conditions for a fire enclosure	Fire enclosure is required and provided	P
4.7.2.1	Parts requiring a fire enclosure	All components are covered by fire enclosure except decorative HB plastic outside fire enclosure	P
4.7.2.2	Parts not requiring a fire enclosure	Decorative HB plastic outside fire enclosure	P
4.7.3	Materials		P
4.7.3.1	General	Enclosure and other components so constructed and such materials used, that the propagation of fire is limited.	P
4.7.3.2	Materials for fire enclosures	The fire enclosure is metal.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	The fire enclosure is only metal. Decorative parts are flame rated HB min.	P
4.7.3.4	Materials for components and other parts inside fire enclosures	All internal materials are rated V-2 or better or are mounted on a PWB rated V-1 or better. Integrated circuits, capacitors, etc. mounted on V-1 PWBs. Wiring is PVC, TFE, PTFE, FEP or neoprene. Connectors are flame rated min. V-2.	P
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**	**P**

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

5.1	**Touch current and protective conductor current**		P
5.1.1	General	(see appended Table 5.1)	P
5.1.2	Configuration of equipment under test (EUT)	Single phase Class 1 equipment.	P
5.1.2.1	Single connection to an a.c. mains supply	Multiple connections to an a.c. mains supply	N/A
5.1.2.2	Redundant multiple connections to an a.c. mains supply	Testing was performed for multiple connections to an a.c. mains supply	P
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply	Tested at both normal and reverse polarity of the supply. Switch “e” was open. 2 power supplies were operated to simulate the worst case. Current from 2 power supplies was measured	P
5.1.3	Test circuit	According to Figure 5A	P
5.1.4	Application of measuring instrument	Test instrument of Annex D.1 was used. Application of measuring device according to Fig. 5A, terminal A connected to unit PE terminal	P
5.1.5	Test procedure	Touch current from power supply was measured in normal and reverse polarity of the supply, switch “e” was open	P
5.1.6	Test measurements	rms value of U2 was measured and divided by 500 Ohm	P
	Supply voltage (V) .....:	264V	—
	Measured touch current (mA) .....:	See appended table 5.1	—
	Max. allowed touch current (mA) .....:	3.5	—
	Measured protective conductor current (mA) .....:		—
	Max. allowed protective conductor current (mA)...:	Touch current is less than 3.5mA.	—
5.1.7	Equipment with touch current exceeding 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	No connection to telecommunication network or cable distribution system	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system	No connection to telecommunication network or cable distribution system	N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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	No insulation breakdown detected during the test	P
5.3	**Abnormal operating and fault conditions**		P
5.3.1	Protection against overload and abnormal operation		N/A
5.3.2	Motors	No motors except for certified fans	N/A
5.3.3	Transformers	Evaluated as part of approved power supply.	N/A
5.3.4	Functional insulation.....:	Primary circuits are part of certified power supply SELV circuits- Functional insulation considered through 5.3.4 c). All components in SELV are mounted on PCB having flammability rating min. V-1	P
5.3.5	Electromechanical components	No electromechanical components except for certified fans.	N/A
5.3.6	Audio amplifiers in ITE .....:	No such parts	N/A
5.3.7	Simulation of faults	Refer to Table 5.3	P
5.3.8	Unattended equipment	No thermostats, temperature limiters and thermal cut-outs which operated during the test of 4.5.1	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	Evaluated as part of certified power supply	P
5.3.9.1	During the tests	Temperatures did not exceed allowed value	P

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.3.9.2	After the tests	No dielectric breakdown	P
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		N/A
6.1	**Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment**		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements	No connection to telecommunication networks	N/A
	Supply voltage (V) .....:		—
	Current in the test circuit (mA) .....:		—
6.1.2.2	Exclusions .....:		N/A
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		N/A
6.2.1	Separation requirements	No connection to telecommunication networks	N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test	(see appended table 5.2)	N/A
6.2.2.2	Steady-state test	(see appended table 5.2)	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 connection to 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	No connection to cable distribution system	N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system	No connection to cable distribution system	N/A
7.4	Insulation between primary circuits and cable distribution systems	No connection to cable distribution system	N/A
7.4.1	General		N/A
7.4.2	Voltage surge test		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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)**	Fire enclosure is metal	N/A
A.1.1	Samples.....:		—
	Wall thickness (mm) .....:		—
A.1.2	Conditioning of samples; temperature (°C) .....:		N/A
A.1.3	Mounting of samples .....:		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D .....:		—
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s) .....:		—
	Sample 2 burning time (s) .....:		—
	Sample 3 burning time (s) .....:		—
A.2	**Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)**		N/A
A.2.1	Samples, material.....:		—
	Wall thickness (mm) .....:		—
A.2.2	Conditioning of samples; temperature (°C) .....:		N/A
A.2.3	Mounting of samples .....:		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C .....:		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s) .....:		—
	Sample 2 burning time (s) .....:		—
	Sample 3 burning time (s) .....:		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s) .....:		—
	Sample 2 burning time (s) .....:		—
	Sample 3 burning time (s) .....:		—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
A.3	**Hot flaming oil test (see 4.6.2)**		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A
B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		P
B.1	**General requirements**	Certified DC fans are used	N/A
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
B.2	**Test conditions**	Certified DC fans are used	N/A
B.3	**Maximum temperatures**	Certified DC fans are used	N/A
B.4	**Running overload test**	Certified DC fans are used	N/A
B.5	**Locked-rotor overload test**	Certified DC fans are used	N/A
	Test duration (days) .....:		—
	Electric strength test: test voltage (V) .....:		—
B.6	**Running overload test for d.c. motors in secondary circuits**	Certified DC fans are used	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**	Certified DC fans are used	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**	Certified DC fans are used	N/A
B.9	**Test for three-phase motors**	Certified DC fans are used	N/A
B.10	**Test for series motors**	Certified DC fans are used	N/A
	Operating voltage (V) .....:		—
C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Position .....:	Trasfomers part of approved power supply	—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
	Method of protection..... :		—
C.1	**Overload test**	(see appended table 5.3)	N/A
C.2	**Insulation**	(see appended tables 5.2 and C2)	N/A
	Protection from displacement of windings..... :		N/A
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		P
D.1	**Measuring instrument**		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**	Standard methods used	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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.4	Transients from cable distribution systems		N/A
G.5	**Measurement of transient voltages (V)**		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
G.6	**Determination of minimum clearances ..... :**		N/A
H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A
J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		P
	Metal(s) used .....:	Aluminium and stainless steel	—
K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)**		N/A
K.1	Making and breaking capacity	No such controls	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	(see appended table 5.3)	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	Maximum normal load was used	P
M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A
M.1	Introduction	No telephone ringing signals	N/A
M.2	Method A		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.3	Method B		N/A
M.3.1	Ringing signal		N/A
M.3.1.1	Frequency (Hz) .....:		—
M.3.1.2	Voltage (V) .....:		—
M.3.1.3	Cadence; time (s), voltage (V) .....:		—
M.3.1.4	Single fault current (mA) .....:		—
M.3.2	Tripping device and monitoring voltage .....:		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) .....:		N/A
N	**ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)**		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	**ANNEX P, NORMATIVE REFERENCES**		—
Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		N/A
	- Preferred climatic categories .....:	Part of certified power supply	N/A
	- Maximum continuous voltage .....:	Part of certified power supply	N/A
	- Combination pulse current .....:	Part of certified power supply	N/A
	Body of the VDR Test according to IEC60695-11-5.....:		N/A
	Body of the VDR. Flammability class of material (min V-1).....:		N/A
R	**ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES**		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	**ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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
		See separate test report	—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		P
		See separate test report	—
V	**ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)**		P
V.1	Introduction	Intended for TN power distribution system, single phase, 3 wire and for IT power system of Norway only	P
V.2	TN power distribution systems	Separate neutral and protective conductors used	P
W	**ANNEX W, SUMMATION OF TOUCH CURRENTS**		P
W.1	Touch current from electronic circuits	Only SELV accessibility circuits	P
W.1.1	Floating circuits	No such case	N/A
W.1.2	Earthed circuits	Only SELV accessibility circuits	P
W.2	Interconnection of several equipments	No such case.	N/A
W.2.1	Isolation	No such case.	N/A
W.2.2	Common return, isolated from earth	No such case.	N/A
W.2.3	Common return, connected to protective earth	No such case.	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 ..... :	No UV	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

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
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**		—
CC	**ANNEX CC, Evaluation of integrated circuit (IC) current limiters**		N/A
CC.1	General	Part of approved power supply	N/A
CC.2	Test program 1……:		N/A
CC.3	Test program 2……:		N/A
CC.4	Test program 3.....:		N/A
CC.5	Compliance.....:		N/A
DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		N/A
DD.1	General	No slides	N/A
DD.2	Mechanical strength test, variable N……..:		N/A
DD.3	Mechanical strength test, 250N, including end stops……:		N/A
DD.4	Compliance……..:		N/A
EE	**ANNEX EE, Household and home/office document/media shredders**		N/A
EE.1	General	No such equipment	N/A
EE.2	Markings and instructions		N/A
	Use of markings or symbols……..:		N/A
	Information of user instructions, maintenance and/or servicing instructions……..:		N/A
EE.3	Inadvertent reactivation test……:		N/A
EE.4	Disconnection of power to hazardous moving parts:		N/A
	Use of markings or symbols……..:		N/A
EE.5	Protection against hazardous moving parts		N/A
	Test with test finger (Figure 2A) ……..:		N/A
	Test with wedge probe (Figure EE1 and EE2) ……:		N/A

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

1.5.1	TABLE: List of critical components –				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
ODS3 v. 2 HW Models					
PCB	Interchangeable	Interchangeable	Flame rated min V-1, temperature rated min. 105°C	UL796, CAN/CSA-C22.2 No. 0.17	UR
Decorative plastic on front panel of enclosure	Interchangeable	Interchangeable	Flame rated min. HB	UL94	UR
Hard Disk Drive (Optional)	Interchangeable	Interchangeable	Rated: 5V, 0.72A max.; 12V, 0.52A max.	UL60950-1	UR
PTC fuse F1	Polytronics / interchangeable	SMD1206 series	Rated I_{hold} =1.5A	UL1434 IEC/EN 60730-1	UR, TUV
PTC fuse F2, F3	Polytronics / interchangeable	SMD1812 series	Rated I_{hold} =2.6A	UL1434 IEC/EN 60730-1	UR, TUV
DC-DC converter (U66,U68,U87, U88,U89)	Texas Instruments / interchangeable	PTV05010WAH	Input:5Vdc, Output:0.8V-3.6Vdc, 8A, 25W	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR, TUV
DC-DC converter on motherboard U90,U91	Texas Instruments / interchangeable	PTH08T210WAD	Input: 5.5 - 14 Vdc, 25 A max Output: 0.7 - 3.6 Vdc, 30 A	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR, VDE
Daughter board Type I(Optional)	--	--	--	--	--
DC-DC converter on daughterboard U9, U53, U55 (Optional)	Texas Instruments or interchangeable	PTR08060WVD	Input: 4.5 -14 Vdc Output: 0.6-5.5 Vdc, 6 A, 33 W Max.	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR, VDE
DC-DC converter on daughterboard (MOD1) (Optional)	Texas Instruments or interchangeable	PTH08T210WAD	Input: 5.5-14Vdc, 25A max Output:0.7-3.6Vdc, 30A	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR, VDE
DC/DC converter on daughterboard (MOD2) (Optional)	Texas Instruments or interchangeable	PTH12020LAH	Rated: input: 12V; output 1.8V, 18A	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR, VDE

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

Daughter board Type II(Optional)	--	--	--	--	--
DC-DC converter on daughterboard (MOD4, MOD3) (Optional)	Texas Instruments or equivalent	PTH12020LAH	Input: 12Vdc, Output: 12-5.5 Vdc or 0.8V-1.8V	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR
DC-DC converter on daughterboard (MOD1) (Optional)	Texas Instruments or equivalent	PTV05010WAH	Input:5Vdc, Output:0.8V-3.6Vdc, 8A, 25W	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR
DC/DC converter on daughterboard (MOD2) (Optional)	Texas Instruments or equivalent	PTH08T210WAD	Input: 5.5 - 14 Vdc, 25 A max Output: 0.7 - 3.6 Vdc, 30 A	IEC/EN60950-1 UL60950-1 evaluated to 2 ed. In this report	UR
Lithium battery BAT1	SPECTRUM BRANDS INC or equivalent	BR2032	Rated: 3.0V, protected by resistor R52 1k and diode D4	UL1642	UR
Lithium battery BAT1 (Alternate)	VIC-DAWN ENTERPRISE CO LTD or equivalent	CR2032	Rated: 3.0V, protected by resistor R52 1k and diode D4	UL1642	UR
Lithium battery BAT1 (Alternate)	PANASONIC CORPORATION, PANASONIC CORPORATION OF NORTH AMERICA or equivalent	CR2032	Rated: 3.0V, protected by resistor R52 1k and diode D4	UL1642	UR
Laser transceiver Gigabit Ethernet ports 4 provided (Optional)	Optech	OP6C-MX5-85-C4	SFP transceiver – Multimode – 3.3V – 850nm – 1.25Gbps Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Interchangeable	Interchangeable	SFP transceiver – Multimode, 3.3V, 850nm, 1.25Gbps Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Sanoc	SI1312-10ATO	SFP transceiver, Singlemode, 3.3V, 1310nm, 1.25Gpbs Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV

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

Laser transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Interchangeable	Interchangeable	SFP transceiver, Singlemode, 3.3V, 1310nm, 1.25Gpbs Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Sanoc	SI1512-80ATO	SFP transceiver, Singlemode, 3.3V, 1550nm Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Interchangeable	Interchangeable	SFP transceiver, Singlemode, 3.3V, 1550nm Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Copper transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Sanoc	SI0012-X1ATO[N]	SFP Copper, 1000Base-TX 3.3V	-	-
Copper transceiver Gigabit Ethernet ports 4 provided Alternate (Optional)	Interchangeable	Interchangeable	SFP Copper, 10/100/1000 Mbps - 3.3V	-	-
Laser transceiver Gigabit Ethernet fiber ports 4 provided (Optional)	Optech	OP7K-MX3-85-C	XFP transceiver, Multimode, 10GbE - 850nm Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver Gigabit Ethernet fiber ports 4 provided (Optional)	Interchangeable	Interchangeable	XFP transceiver, Multimode, 10GbE - 850nm Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver 10 Gigabit Ethernet fiber ports 4 provided (Optional)	Finisar	FTLX1411D3	XFP transceiver, Singlemode, 10GbE - 1310nm Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV
Laser transceiver 10 Gigabit Ethernet fiber ports 4 provided (Optional)	Interchangeable	Interchangeable	XFP transceiver, Singlemode, 10GbE - 1310nm Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UR or CSA, TUV

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

Optional - Fan 1 provided (right side of unit)	SUNON or Interchangeable	KDE1204PFVX	40x40x10mm; Rated:12Vdc, max. 0.15A, 9.9 CFM min	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Fan (3 provided (one is optional) on left side of unit and 1 on the right (Optional) side of unit)	SUNON or Interchangeable	KDE1204PKVX	40x40x20mm; Rated:12Vdc, max. 0.12A, 10.8CFM min.	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Alternate Fan (3 provided(one is optional) on left side of unit and 1 on the right (Optional) side of unit)	Sunonwealth Electric Machine Industry Co., Ltd. or Interchangeable	EF40201BX-0000-G99	40x40x20mm; Rated:12Vdc, 0.74W max., 10.8 CFM	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Optional - Fan (1 provided on right side of unit)	SUNON wealth electronic machine industry co or interchangeable	PMD1204WQB2-A	40x40x28mm; Rated:12Vdc, max.0.58A, 22CFM min	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Optional - Fan (2 provided on right side of unit and 1 near compression cards)	SUNON wealth electronic machine industry co or interchangeable	GM1204PQB1-8A	40x40x28mm; Rated:12Vdc, max.0.22A, 15.3CFM min	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Fan 2 provided max. (internal on CPU)	Everflow or interchangeable	F126025DU	60x60x25mm; Rated:12Vdc, max.0.26A, 24.49CFM min	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Fan on motherboard	SUNON or Interchangeable	GB1205PHVX-8AY	50x50x15mm; Rated:12Vdc, max.0.17A, 4.7CFM min	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
Alternate Fan on motherboard	Sunonwealth Electric Machine Industry Co., Ltd.or Interchangeable	MF50151VX-B0000-G99	51.7x51.6x15mm; Rated:12Vdc, 0.17A max., 5.4 CFM	UL507, CSA-C22.2 No. 113-M1984	UR, TUV
SELV external connectors	Interchangeable	Interchangeable	Flame rated min. V-1	UL94	UR
SELV internal connectors	Interchangeable	Interchangeable	Flame rated min. V-2	UL94	UR
Internal Wiring, (secondary)	Interchangeable	Interchangeable	Rated min. 300V, 60°C, VW-1 or FT-1 or better.	UL758	UR

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

Power supply for AC powered unit	Zippy Technology co.	MRW-5500V4V	Redundant power supply with two power module MRW-3500V-R Rated: Input: 100-240Vac, 47-63Hz, 8-4A; Output: 500W max.: +5V, 25A; +12V, 41A; +3.3V, 0-25A; -12V, 0-0.8A; +5VSB, 0-3.5A. +5V and +3.3V Total max.170W.	IEC 60950-1:2005+A1+ A2	TUV
Power supply for AC powered unit. (600W) Alternate	Zippy Technology co.	MRW-5600V4V	Redundant power supply with two power module MRW-3600V-R Rated: Input: 100-240 Vac, 47-63Hz, 9-4 A; Output: 600W max.: +5Vdc, 25A; +12Vdc, 49A; +3.3Vdc, 0-25A; -12Vdc, 0-0.8A;+5VSB, 0-3.5A. +5Vdc and +3.3Vdc; Total max. 170W.	IEC 60950-1:2005+A1+ A2	TUV

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

Power supply (for DC powered unit)	Zippy Technology co.	DMRW-5500V4V	Redundant power supply with two power module DMRW-3500V-R Rated: Input: -36 to -72Vdc, 18-9A; Output: 500W max.: +5V, 0-25A; +12V, 41A; +3.3V, 0-25A; -12V, 0-0.8A; +5VSB, 0-3.5A. +5V and +3.3V Total max.170W.	IEC 60950-1:2005+A1+ A2	TUV
Power supply for DC powered unit. (600W) Alternate	Zippy Technology co.	DMRW-5600V4V	Redundant power supply with two power module DMRW-3600V-R Rated: Input: -36Vdc to -72Vdc, 21~11A; Output: 600W max.: +5Vdc, 0-25A; +12Vdc, 49A; +3.3Vdc, 0-25A; -12Vdc, 0-0.8A; +5VSB, 0-3.5A. +5Vdc and +3.3Vdc Total max.170W	IEC 60950-1:2005+A1+ A2	TUV
Supplementary information:					

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

1.5.1	TABLE: List of critical components-				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
ODS-VL HW Models					
PCB	Interchangeable	Interchangeable	Flame rated min UL94V-1, temperature rated min. 105°C	UL796	UL
Power supply (for AC powered units with single power supply)	Zippy Technology co.	H1U-6250P	Input: 100-240Vac, 47-63Hz, 4-2A; output:+5V, 23A; +12V, 16A; +3.3V, 0-14A; -5V, 0-0.2A; -12V, 0-0.5A; +5Vsb, 0-2A; +5V and +3.3V 150W max; Total 250W max.	IEC 60950-1:2005+A1+ A2	TUV
Power supply (for DC powered units with single power supply)	Zippy Technology co.	DP1H-6350F	Rated: Input: -36 to-72Vdc ,17A Fuse 20A/250V. DC Output 350W max.: +5V, 35A; +12V, 22A; +3.3V, 0-20A; -5V, 0-0.5A; -12V, 0-0.5A; +5VSB, 0-2A. +5V and +3.3V Total max.40A.	IEC 60950-1:2005+A1+ A2	TUV
Power supply (for AC powered units with dual power supplies)	Zippy Technology co.	M1S2-5400V4H (redundant power supply with two M1S-3400V power modules)	Input: 100-240Vac, 47-63Hz, 6-3A; output:+5V, 0-25A; +12V, 33A; +3.3V, 0-25A; -12V, 0-0.8A; 5VSB, 0-3.5A; +5V and +3.3V max 170W; total	IEC 60950-1:2005+A1+ A2	TUV

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

			400W max.		
Power supply (for DC powered units with dual power supplies)	Zippy Technology co.	DM1S2-5400V4H (redundant power supply with two DM1S-3400V power modules)	Input: -36Vdc to -72Vdc,15A; output: +5V, 0-25A; +12V, 33A; +3.3V, 0-25A; -12V, 0-0.8A; 5VSB, 0-3.5A; +5V and +3.3V max 170W; total 400W max.	IEC 60950-1:2005+A1+A2	TUV
Poly Switch (F2, F4 for USB port)	LITTELFUSE INC / interchangeable	miniSMDC110F-2	Rated: 8Vdc, Ih=1.1A, CA=3	UL1434 IEC60730	UL, TUV
Alternate Poly Switch (F2, F4 for USB port)	Polytronics technology co.	SMD1812P110TF	Rated: 8Vdc, Ih=1.1A, CA=3	UL1434 IEC60730	UL, TUV
Lithium battery RTC	Spectrum Brands	BR2032	3.0Vdc, max. abnormal charging current 5mA, protected by resistor R748 1k and diode D26	UL1642	UL
Lithium battery RTC Alternate	Panasonic co.	CR2032	3.0Vdc, max. abnormal charging current 10mA, protected by resistor R748 1k and diode D26	UL1642	UL
Decorative plastic on front panel of enclosure	Interchangeable	Interchangeable	Flame rated min. UL94-HB	UL94	UL
Hard Disk Drive For unit with single power supply (Optional)	Western Digital	WD2503ABYX	3.5",250G/7200RPM/640MB Rated: 5V, 0.72A max.; 12V, 0.52A max.	UL60950-1 or UL60950-21, FDA 21 CFR	UL
Hard Disk Drive	HITACHI	HDS721050CLA662	3.5",500G/7200RPM/16MB	UL60950-1 or UL60950-21,	UL

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

Alternate (Optional)			Rated: 4W	FDA 21 CFR	
Hard Disk Drive For unit with dual power supply (Optional)	HITACHI / Interchangeable	HTE543225A7A384	2.5",250G/5400RPM Rated: 400mA,0.8W	UL60950-1 or UL60950-21, FDA 21 CFR	UL
Hard Disk Drive Alternate (Optional)	HITACHI / Interchangeable	HTE723232A7A364	2.5",320G/7200RPM Rated: 400mA,0.8W	UL60950-1 or UL60950-21, FDA 21 CFR	UL
Fan (five provided) – 2 fans are optional in the middle	Sunonwealth Electric Machine Industry Co., Ltd.or Interchangeable	GM1204PQV1-8A	Rated: 12Vdc, 0.23A, 15.3 CFM	UL507	UL TUV
Alternate Fan (five provided) – 2 fans are optional in the middle	NMB or Interchangeable	04028DA-12Q-AUF	Rated: 12Vdc, 0.35A max., 0.47 m^3/min max.	UL 507	UL VDE
Alternate Fan (five provided) – 2 fans are optional in the middle	NMB or Interchangeable	04028DA-12P-AUF	Rated: 12Vdc, 0.22A max., 0.37 m^3/min max.	UL 507	UL VDE
Alternate Fan (five provided) – 2 fans are optional in the middle	Sunonwealth Electric Machine Industry Co., Ltd.or Interchangeable	PF40281B3Z	Rated: 12Vdc, 0.198A max., 15.4 CFM max.	UL507	UL TUV
Alternate Fan (five provided) – 2 fans are optional in the middle	Sunonwealth Electric Machine Industry Co., Ltd.or Interchangeable	PSD1204PQBX-A (2).B4586.F.GN	Rated: 12Vdc, 0.8A, 21.9 CFM	UL507	UL TUV
Fan (one provided for chipset U22) (Optional)	Sunonwealth Electric Machine Industry Co., Ltd.or Interchangeable	124010VM-8	Rated: 12Vdc, 0.07A, 6 CFM	UL507	UL TUV
Optional Laser transceiver Gigabit	Optech	OP6C-MX5-85-C4	SFP transceiver – Multimode – 3.3V – 850nm	UL/CSA60950-1, EN60825-1, EN60825-2	UL or CSA, TUV

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

Ethernet ports 2 provided			– 1.25Gbps Class 1 laser		
Optional- 1 Gbps pluggable copper 1000 base –T	Optech	OP6C-TX1-00-C2	SFP Copper – 1000Base-TX 3.3V	--	--
Optional - 1Gbps pluggable Optic Multimode SX	Sanoc	SI8512-X5ATO-3C	SFP transceiver – Multimode – 3.3V – 850nm – 1.25Gbps Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UL or CSA, TUV
Optional - 1Gbps pluggable Optic Single mode LX	Sanoc	SI1312-10ATO	SFP transceiver - Singlemode - 3.3V - 1310nm - 1.25Gpbs Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UL or CSA, TUV
Optional - 1Gbps pluggable Optic Single mode ZX	Sanoc	SI1512-80ATO	SFP transceiver - Singlemode - 3.3V - 1310nm - 1.25Gpbs Class 1 laser	UL/CSA60950-1, EN60825-1, EN60825-2	UL or CSA, TUV
1 Gbps Pluggable copper 1000 Base –T	Methode	DM7041-R-L	SFP Copper – 1000Base-TX 3.3V	--	--
Optional- Copper transceiver Gigabit Ethernet ports 2 provided	Sanoc	SI0012-X1ATO[N]	SFP Copper – 1000Base-TX 3.3V	-	-
Optional - 1 Gbps Pluggable copper 1000 Base –T	Methode	DM7041-R-L	SFP Copper – 1000Base-TX 3.3V	--	--
SELV external connectors	Interchangeable	Interchangeable	Flame rated min. UL94V-0	UL94	UL
SELV internal connectors	Interchangeable	Interchangeable	Flame rated min. UL94V-2	UL94	UL
Internal Wiring, (secondary)	Interchangeable	Interchangeable	Rated min. 300V, 60°C, VW-1 or FT-1 or better.	UL758	UL
Supplementary information:					

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

1.5.1	TABLE: Opto Electronic Devices	N/A

Manufacturer ..... :

Type..... :

Separately tested ..... :

Bridging insulation ..... :

External creepage distance..... :

Internal creepage distance ..... :

Distance through insulation ..... :

Tested under the following conditions..... :

Input..... :

Output..... :

supplementary information

1.6.2	TABLE: Electrical data (in normal conditions) – **For ODS3 v. 2 HW Models**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90/60	3.92	-	352	-	-	Maximum normal load with 2 AC PS
100/60	3.43	8	349	-	-	
240/50	1.40	4	320	-	-	
264/50	1.3	-	315	-	-	
90/60	3.71	-	329	-	-	Maximum normal load with 1 AC PS
100/60	3.25	8	324	-	-	
240/50	1.30	4	296	-	-	
264/50	1.17	-	300	-	-	
Supplementary information: With power supply MRW-5500V4V						

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

1.6.2	TABLE: Electrical data (in normal conditions) - **For ODS3 v. 2 HW Models**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90/60	3.14	-	285	-	-	Maximum normal load with 2 AC PS
100/60	2.78	8	283	-	-	
240/50	1.20	4	275	-	-	
264/50	1.10	-	273	-	-	
90/60	3.07	-	280	-	-	Maximum normal load with 1 AC PS
100/60	2.70	8	275	-	-	
240/50	1.10	4	261	-	-	
264/50	1.00	-	260	-	-	
Supplementary information: With power supply MRW-5600V4V						

1.6.2	TABLE: Electrical data (in normal conditions) - **For ODS3 v. 2 HW Models**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
36	8.48	13	-	-	-	Maximum normal load with 2 DC PS
48	6.22	13	-	-	-	
60	5.02	13	-	-	-	
72	4.23	13	-	-	-	
36	8.1	13	-	-	-	Maximum normal load with 1 DC PS
48	6.05	13	-	-	-	
60	4.86	13	-	-	-	
72	4.03	13	-	-	-	
Supplementary information: with PS DMRW-5500V4V						

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

1.6.2	TABLE: Electrical data (in normal conditions) - **For ODS3 v. 2 HW Models**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
36	7.60	13	-	-	-	Maximum normal load with 2 DC PS
48	5.67	13	-	-	-	
60	4.52	13	-	-	-	
72	3.85	13	-	-	-	
36	7.30	13	-	-	-	Maximum normal load with 1 DC PS
48	5.43	13	-	-	-	
60	4.33	13	-	-	-	
72	3.70	13	-	-	-	
Supplementary information: with PS DMRW-5600V4V						

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

1.6.2	TABLE: Electrical data (in normal conditions) - **For ODS-VL HW Models**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90/60	1.58	-	140.6	-	-	Maximum normal load, two PS
100/60	1.44	6	141.3	-	-	Maximum normal load, two PS
240/50	0.68	3	140.1	-	-	Maximum normal load, two PS
264/50	0.65	-	140.1	-	-	Maximum normal load, two PS
90/60	1.36	-	121.8	-	-	Maximum normal load, one PS
100/60	1.22	6	121.8	-	-	Maximum normal load, one PS
240/50	0.53	3	117.6	-	-	Maximum normal load, one PS
264/50	0.49	-	117.5	-	-	Maximum normal load, one PS
36	3.80	15	-	-	-	Maximum normal load, two PS
72	1.85	15	-	-	-	Maximum normal load, two PS
36	3.30	15	-	-	-	Maximum normal load, one PS
72	1.61	15	-	-	-	Maximum normal load, one PS
Supplementary information:tests above refer to Dual AC and DC						

1.6.2	TABLE: Electrical data (in normal conditions) - **For ODS-VL HW Models**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
90/60	1.580	-	140	-	-	Maximum normal load (unit ODS-VR)
100/60	1.410	4	140	-	-	""
240/50	0.590	4	135	-	-	""
264/50	0.550	-	137	-	-	""
36	3.600	5	-	-	-	Maximum normal load (unit ODS-VR DC)
72	1.900	5	-	-	-	""
Supplementary information: tests above refer to single AC and DC						

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

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

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

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

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

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

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

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

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

2.5	**TABLE: Limited power sources**	N/A

Circuit output tested:

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

Components	Sample No.	Uoc (V)	I_{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit

supplementary information:

Sc=Short circuit, Oc=Open circuit

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

Location	RMS voltage (V)	Peak voltage (V)	Comments

supplementary information:

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

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

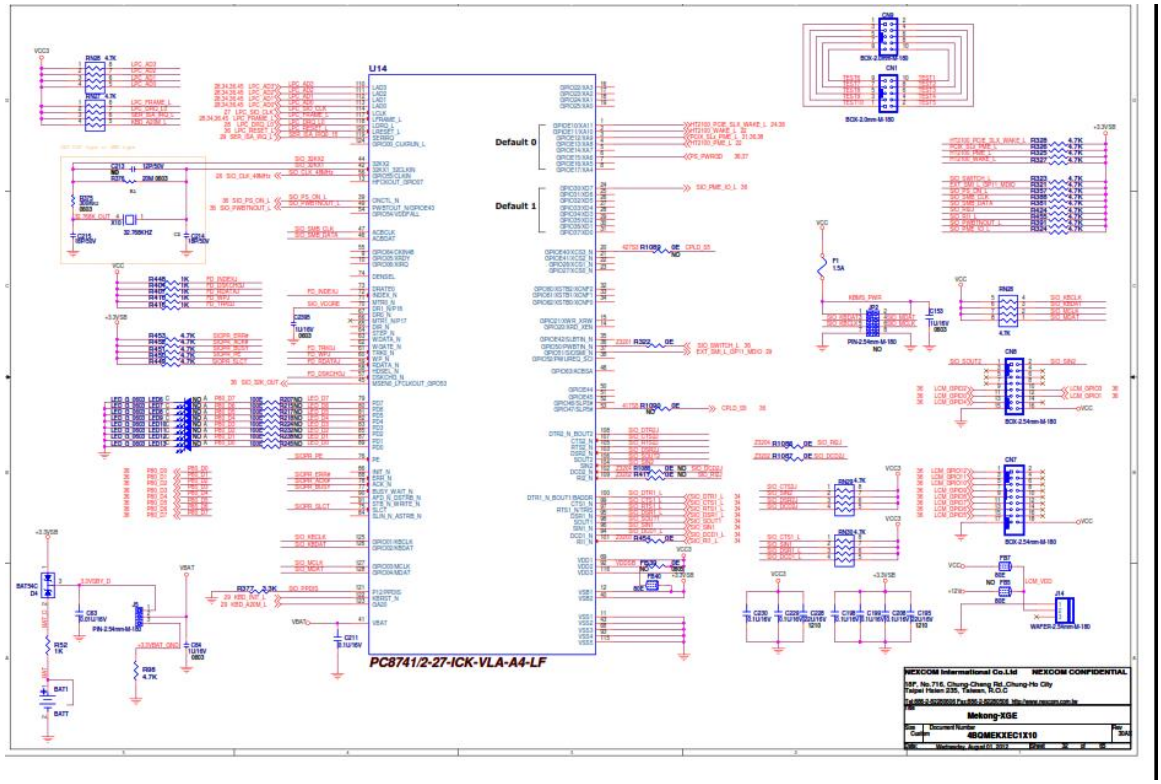
2.10.5	TABLE: Distance through insulation measurements				N/A
Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Supplementary information:					

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

4.3.8	TABLE: Batteries – For ODS3 v. 2 HW Models								P
The tests of 4.3.8 are applicable only when appropriate battery data is not available						Certified batteries see apended table 1.5.1			N/A
Is it possible to install the battery in a reverse polarity position?						The battery shape prevents reverse polarity			P
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition									
Max. current during fault condition									
Test results:									Verdict
- Chemical leaks						No			P
- Explosion of the battery						No			P
- Emission of flame or expulsion of molten metal						No			P
- Electric strength tests of equipment after completion of tests									N/A
Supplementary information:									

4.3.8	TABLE: Batteries – For ODS3 v. 2 HW Models	P
Battery category ..... :	(Lithium, ~~NiMh, NiCad, Lithium Ion~~ …)	
Manufacturer ..... :	See appended table 1.5.1	
Type / model..... :	See appended table 1.5.1	
Voltage ..... :	See appended table 1.5.1	
Capacity..... :	See appended table 1.5.1	
Tested and Certified by (incl. Ref. No.) ..... :	See appended table 1.5.1	
Circuit protection diagram:		

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



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

MARKINGS AND INSTRUCTIONS (1.7.13) – For ODS3 v. 2 HW Models	
Location of replaceable battery	Service access area
Language(s) ……..:	English and French
Close to the battery ……..:	--
In the servicing instructions ……:	Provided
In the operating instructions ……..:	Provided

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

4.3.8	TABLE: Batteries – For ODS-VL HW Models	P
Battery category ..... :	(Lithium, ~~NiMh, NiCad, Lithium Ion~~ …)	
Manufacturer ..... :	See appended table 1.5.1	
Type / model..... :	See appended table 1.5.1	

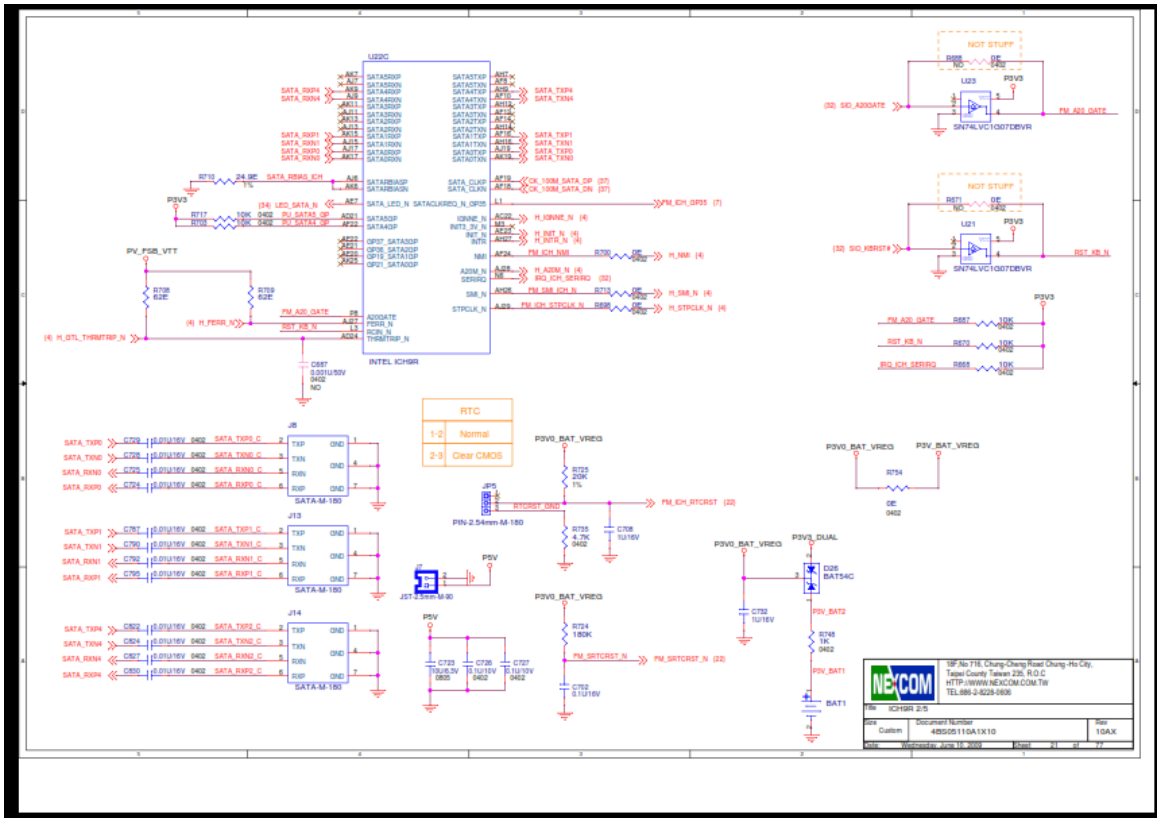
IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

Voltage ..... : See appended table 1.5.1

Capacity..... : See appended table 1.5.1

Tested and Certified by (incl. Ref. No.) ..... : See appended table 1.5.1

Circuit protection diagram:



MARKINGS AND INSTRUCTIONS (1.7.13) – For ODS-VL HW Models	
Location of replaceable battery	Service access area
Language(s) ……:	English and French
Close to the battery ……:	--
In the servicing instructions ……:	Provided
In the operating instructions ……:	Provided

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

4.5	TABLE: Thermal requirements For ODS3 v. 2 HW Models						P
	Supply voltage (V) .....:	90/60	264/50				—
	Ambient T_{min} (°C) .....:	22	22				—
	Ambient T_{max} (°C) .....:	22	22				—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Motherboard near CPU A		38.6	38.3				77(105+22-50)
Motherboard, on U21		40.5	40.2				77(105+22-50)
Optic Fiber Motherboard, near U1		38.5	37.4				77(105+22-50)
Red PCB card near Capacitor C161		64.6	64.8				77(105+22-50)
Motherboard near DIMM1		35.9	35.7				77(105+22-50)
EUT Enclosure		24.9	25				42(70+22-50)
Supplementary information:							

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

Supplementary information: CB106460.02_M1 Thermal requirements

4.5	TABLE: Thermal requirements For ODS3 v. 2 HW Models						P
	Supply voltage (V) .....:	90/60	264/50				—
	Ambient T_{min} (°C) .....:	23.5	23.0				—
	Ambient T_{max} (°C) .....:	23.5	23.0				—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Mother board, PCB near U5		35.3	35.3				78.5 (105-50+23.5)
Mother board, DC converter MOD2, choke		31.3	30.7				63.5 (100-10-50+23.5)
Mother board, DC converter MOD1, choke		36.8	35.4				63.5 (100-10-50+23.5)

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

Mother board, on choke of U9	35.2	34.3				63.5 (100-10-50+23.5)
Mother board, PCB of U9	35.6	34.7				78.5 (105-50+23.5)
Main board, ct123 (capacitor)	45.8	45.0				78.5 (105-50+23.5)
Main board, PCB near U19	43.9	43.0				78.5 (105-50+23.5)
Main board, lithium battery	45.1	43.0				58.5 (85-50+23.5)
Main board, on choke U66	45.9	45.0				63.5 (100-10-50+23.5)
Main board, on choke U89	37.3	36.5				63.5 (100-10-50+23.5)
Main board, PCB near CPU B	35.9	35.3				78.5 (105-50+23.5)
PS choke, common mode	45.1	39.0				63.5 (100-10-50+23.5)
PS main transformer (T2) winding	45.7	45.2				63.5 (100-10-50+23.5)
PS capacitor near main transformer	42.9	41.5				78.5 (105-50+23.5)
PS X-cap C1 (85C)	33.6	32.2				58.5 (85-50+23.5)
PCB near T2	42.6	36.8				78.5 (105-50+23.5)
PS transformer T1 winding	36.4	35.4				63.5 (100-10-50+23.5)
Driver HDD	38.6	37.2				58.5 (85-50+23.5)
CN_1620 board, PCB near U5	68.4	68.5				78.5 (105-50+23.5)
CN_1620 board, PCB near L10	64.0	65.9				78.5 (105-50+23.5)
AHA_363 comtech, on choke DC converter	56.1	47.8				63.5 (100-10-50+23.5)
AHA_363 comtech, PCB near U3	55.8	53.2				78.5 (105-50+23.5)
Enclosure	28.2	28.9				43.5 (70-50+23.5)

Supplementary information: tested with one AC power supply MRW-5500V4V

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

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

Supplementary information:							

4.5	**TABLE: Thermal requirements For ODS3 v. 2 HW Models**						P
	Supply voltage (V) ..... :	90/60	264/50				—
	Ambient T_{min} (°C) ..... :	28.4	26.2				—
	Ambient T_{max} (°C) ..... :	28.4	26.2				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
Mother Board U8 dc/dc converter on PCB DtoD		35.5	33.5				83.4 (105-50+28.4)
M.B. U66 dc/dc converter on PCB		33.6	32.0				83.4 (105-50+28.4)
M.B. Lithium battery		37.8	37.0				63.4 (85-50+28.4)
M.B. CT26 (E.C 105C)		40.2	38.7				83.4 (105-50+28.4)
M.B. PCB near U16		38.8	37.2				83.4 (105-50+28.4)
M.B. U91 dc/dc converter choke		38.2	36.5				68.4 (100-10-50+28.4)
M.B. U91 dc/dc converter PCB		36.8	35.0				83.4 (105-50+28.4)
M.B. PCB near U88		34.5	32.7				83.4 (105-50+28.4)
Daughter Board Optical transceiver port 11		33.4	31.9				63.4 (85-50+28.4)
D.B. PCB near U46		30.2	28.4				83.4 (105-50+28.4)
D.B. PCB near U23		30.4	28.7				83.4 (105-50+28.4)
D.B. dc/dc converter MOD3 T winding		31.0	29.3				68.4 (100-10-50+28.4)
D.B. dc/dc converter MOD3 PCB		31.0	29.3				83.4 (105-50+28.4)
D.B. dc/dc converter MOD1 PCB		31.2	29.5				83.4 (105-50+28.4)
D.B. dc/dc converter MOD2 T winding		31.7	29.9				68.4 (100-10-50+28.4)
D.B. dc/dc converter MOD2 PCB		31.2	29.4				83.4 (105-50+28.4)
Hard Disc ST3160318AS		34.3	32.8				63.4 (85-50+28.4)
AHA363PCIE0301GA4 board PCB near U3		38.2	36.5				83.4 (105-50+28.4)

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

AHA363PCIE0301GA4 board dc/dc U10 PCB	42.0	40.3				83.4 (105-50+28.4)
ETPCI600G04NPX4 board PCB near U2	36.4	34.6				83.4 (105-50+28.4)
Inlet PS	29.7	27.3				63.4 (85-50+28.4)
Upper power supply T2 core	46.8	46.1				78.4 (100-50+28.4)
Upper power supply T2 winding	46.1	45.1				68.4 (100-10-50+28.4)
Upper power supply C 105C 120uF near T2	40.3	38.8				83.4 (105-50+28.4)
Upper power supply T1 winding	37.7	36.7				68.4 (100-10-50+28.4)
Upper power supply L6 winding	35.0	33.7				68.4 (100-10-50+28.4)
Upper power supply PCB near T2	42.3	40.7				83.4 (105-50+28.4)
Upper power supply PCB near L6	35.0	33.5				83.4 (105-50+28.4)

Supplementary information: tested with one AC power supply MRW-5600V4V

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

Supplementary information:

4.5	**TABLE: Thermal requirements For ODS3 v. 2 HW Models**						P
	Supply voltage (V) ..... :	36	72				—
	Ambient T_{min} (°C) ..... :	23.2	23.2				—
	Ambient T_{max} (°C) ..... :	23.2	23.2				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
Mother board PCB by U5		37.4	37.6				78.2 (105-50+23.2)
Mother board dc/dc converter MOD2 choke		31.4	31.6				63.2 (100-10-50+23.2)
Mother board dc/dc converter MOD1 choke		41.5	41.7				63.2 (100-10-50+23.2)
Mother board U9 choke		30.6	30.8				63.2 (100-10-50+23.2)
Mother board U9 PCB		32.3	32.6				78.2 (105-50+23.2)
Main board CT123 (E.C 105C)		39.9	40				78.2 (105-50+23.2)
Main board PCB by U19		45.5	45.6				78.2 (105-50+23.2)

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

Main board lithium battery	45.4	45.5				58.2 (85-50+23.2)
Main board U66 choke	47.3	47.4				63.2 (100-10-50+23.2)
Main board U89 choke	38.1	38.3				63.2 (100-10-50+23.2)
Main board PCB by CPU B	42	42.2				78.2 (105-50+23.2)
CN_1620 card PCB by U5	33.8	34.3				78.2 (105-50+23.2)
CN_1620 card L10	36.1	36.5				63.2 (100-10-50+23.2)
EUT enclosure	27.1	27.5				43.2 (70-50+23.2)
AHA_363 dc/dc converter choke	36.1	35.9				63.2 (100-10-50+23.2)
AHA_363 PCB by U3	42.5	42.8				78.2 (105-50+23.2)
Driver HDD	31.6	31.7				58.2 (85-50+23.2)
Backplane PCB	32.6	32.6				78.2 (105-50+23.2)
Backplane L1 (3.3V)	34.6	34.8				63.2 (100-10-50+23.2)
Backplane L1 (5V)	33.4	33.6				63.2 (100-10-50+23.2)
Upper power supply L1	34.4	31.0				63.2 (100-10-50+23.2)
Upper power supply LF1	36.5	31.8				63.2 (100-10-50+23.2)
Upper power supply C39A (E.C. 105C)	38.7	35.7				78.2 (105-50+23.2)
Upper power supply PCB by Q1	38.5	35.2				78.2 (105-50+23.2)
Upper power supply T2 winding	47.0	46.6				63.2 (100-10-50+23.2)
Upper power supply T1 winding	40.4	40.3				63.2 (100-10-50+23.2)
Upper power supply input connector	27.6	26.4				58.2 (85-50+23.2)

Supplementary information: with one PS DMRW-5500V4V

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

Supplementary information:

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

4.5	**TABLE: Thermal requirements For ODS3 v. 2 HW Models**						P
	Supply voltage (V) ..... :	36	72				—
	Ambient T_{min} (°C) ..... :	26.2	26.1				—
	Ambient T_{max} (°C) ..... :	26.2	26.1				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
Mother Board U8 dc/dc converter on PCB DtoD		37.2	37.4				81.2 (105+26.2-50)
M.B. U66 dc/dc converter on PCB		41.0	41.4				81.2 (105+26.2-50)
M.B. Lithium battery		44.2	44.5				61.2 (85+26.2-50)
M.B. CT26 (E.C 105C)		43.0	43.4				81.2 (105+26.2-50)
M.B. PCB near U16		42.1	42.4				81.2 (105+26.2-50)
M.B. U91 dc/dc converter choke		39.7	40.0				66.2 (100-10+26.2-50)
M.B. U91 dc/dc converter PCB		38.3	38.6				81.2 (105+26.2-50)
M.B. PCB near U88		35.2	35.5				81.2 (105+26.2-50)
Daughter Board Optic transceiver port 11		34.6	34.8				61.2 (85+26.2-50)
D.B. PCB near U46		40.9	41.0				81.2 (105+26.2-50)
D.B. PCB near U23		36.1	36.3				81.2 (105+26.2-50)
D.B. dc/dc converter MOD3 T winding		43.6	43.6				66.2 (100-10+26.2-50)
D.B. dc/dc converter MOD3 PCB		42.7	42.8				81.2 (105+26.2-50)
D.B. dc/dc converter MOD1 PCB		36.6	36.7				81.2 (105+26.2-50)
D.B. dc/dc converter MOD2 T winding		38.0	38.2				66.2 (100-10+26.2-50)
D.B. dc/dc converter MOD2 PCB		36.4	36.6				81.2 (105+26.2-50)
Hard Disc ST3160318AS		33.4	33.6				61.2 (85+26.2-50)
AHA363PCIE0301GA4 board PCB near U3		37.8	38.0				81.2 (105+26.2-50)
AHA363PCIE0301GA4 board dc/dc U10 PCB		40.9	41.2				81.2 (105+26.2-50)
ETPCI600G04NPX4 board PCB near U2		36.1	36.3				81.2 (105+26.2-50)
Inlet PS		28.8	27.7				61.2 (85+26.2-50)

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

Upper power supply T2 core	43.2	43.0				76.2 (100-+26.2-50)
Upper power supply T2 winding	37.8	37.5				66.2 (100-10+26.2-50)
Upper power supply C 105C 120uF near T2	36.9	36.4				81.2 (105+26.2-50)
Upper power supply T1 winding	37.3	37.3				66.2 (100-10+26.2-50)
Upper power supply L6 winding	36.5	36.5				66.2 (100-10+26.2-50)
Upper power supply PCB near T2	38.3	38.2				81.2 (105+26.2-50)
Upper power supply PCB near L6	37.7	37.6				81.2 (105+26.2-50)

Supplementary information: tested with one DC power supply DMRW-5600V4V

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

Supplementary information:

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

4.5	TABLE: Thermal requirements For ODS-VL HW Models – AC supplied units						P
	Supply voltage (V) .....:	90/60	264/50				—
	Ambient T_{min} (°C) .....:	22	22				—
	Ambient T_{max} (°C) .....:	22	22				—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Main board PCB by big copper heat-sink		28.6	28.7				77(105+22-50)
Main board PCB by U105		23.2	23.4				77(105+22-50)
Main board lithium battery		27.9	28				57(85+22-50)
Main board L11 body		26.2	26.2				77(105+22-50)
Metal enclosure		26.3	26.4				42(70+22-50)
Supplementary information: Single AC power supplies , CB124201.01_M1 Thermal requirements							

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

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

4.5	TABLE: Thermal requirements For ODS-VL HW Models – AC supplied units						P
	Supply voltage (V) .....:	90/60	264/50				—
	Ambient T_{min} (°C) .....:	24.9	24.9				—
	Ambient T_{max} (°C) .....:	24.9	26.6				—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
PS input choke by fan		38.6	37.2				64.9(100-10+24.9-50)
PS X-capacitor (85C)		43.1	40.0				59.9(85+24.9-50)
PS input choke by main storage capacitor		39.7	37.5				64.9(100-10+24.9-50)
PS middle main storage capacitor (105C)		36.8	36.4				79.9(105+24.9-50)
PS transformer winding		38.5	38.5				64.9(100-10+24.9-50)
PS PCB by R16A		30.3	30.2				79.9(105+24.9-50)
Hard disk		26.1	26.0				79.9(105+24.9-50)
Main board PCB by big copper heatsink		30.5	30.5				79.9(105+24.9-50)
Main board PCB by U16 heatsink		26.8	26.7				79.9(105+24.9-50)
Main board L1 body		34.2	34.1				64.9(100-10+24.9-50)
Main board lithium battery		28.3	28.2				59.9(85+24.9-50)
Main board L11 wiring		29.7	29.6				64.9(100-10+24.9-50)
Main board CE15 (E.C. 105C)		30.3	30.2				79.9(105+24.9-50)
Main board input connector from PS		29.9	29.9				59.9 (85+24.9-50)
Enclosure		27.4	27.6				44.9 (70+24.9-50)
Supplementary information: Dual AC power supplies							

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

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

Supplementary information:							

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

4.5	**TABLE: Thermal requirements For ODS-VL HW Models – AC supplied units**						P
	Supply voltage (V) ..... :	90/60	264/50				—
	Ambient T_{min} (°C) ..... :	23.3	23.6				—
	Ambient T_{max} (°C) ..... :	23.6	24.0				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
PS Inlet		36.1	34.6				-
PS X-cap C1 (85C)		45.1	43.0				(85-50+23.6) 58.6
PS main storage capacitor (105C)		48.6	46.3				(105-50+23.6) 78.6
PS big transformer winding		46.2	44.9				(100-10-50+23.6) 63.6
PS small transformer winding		35.0	34.2				(100-10-50+23.6) 63.6
PS PCB by heatsink of bridge		41.4	38.1				(105-50+23.6) 78.6
PS input choke (by X-cap)		45.3	42.4				(100-10-50+23.6) 63.6
Main board PCB by big copper heatsink		29.1	29.0				(105-50+23.6) 78.6
Main board PCB by U16 heatsink		26.6	26.6				(105-50+23.6) 78.6
Main board L1 body		31.9	31.5				(100-10-50+23.6) 63.6
Main board lithium battery		27.3	27.4				38(65-50+23)
Main board L11 wiring		29.1	29.1				(100-10-50+23.6) 63.6
Main board CE15 (E.C. 105C)		27.0	27.0				(105-50+23.6) 78.6
Main board input connector from PS		26.3	26.3				58(85-50+23)
Enclosure		27.2	26.8				(70-50+23.6) 43.6
Supplementary information: Single AC Power supply							

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

Supplementary information:

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

4.5	**TABLE: Thermal requirements For ODS-VL HW Models – DC supplied units**						P
	Supply voltage (V) .....:	36	72				—
	Ambient T_{min} (°C) .....:	23	23				—
	Ambient T_{max} (°C) .....:	23	23				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
Main board L1 body		33.1	32.9				63(100-10+23-50)
Main board lithium battery		29.2	28.6				58(85+ 23-50)
Main board L11 wiring		32.1	32				63(100-10+23-50)
Main board CE15 (E.C. 105C)		29.8	29.2				78(105+ 23-50)
Main board input connector from PS		29.8	29.8				58(85+ 23-50)
Enclosure		26.8	26.5				45 (70+23-50)

Supplementary information: Single DC power supply

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

Supplementary information: CB124201.01_M1 Thermal requirements.

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

4.5	**TABLE: Thermal requirements For ODS-VL HW Models – DC supplied units**						P
	Supply voltage (V) ..... :	72	36				—
	Ambient T_{min} (°C) ..... :	26.0	24.9				—
	Ambient T_{max} (°C) ..... :	26.0	24.9				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
Input terminal block		35.7	36.3				64.9(100-10+24.9-50)
PS choke by fan		35.0	35.7				64.9(100-10+24.9-50)
PS choke by main storage capacitor		35.1	36.4				64.9(100-10+24.9-50)
PS middle main storage capacitor (105C)		34.1	34.2				79.9(105+24.9-50)
PS transformer winding		38.4	38.3				64.9(100-10+24.9-50)
PS PCB by R16A		33.9	33.8				79.9(105+24.9-50)
Hard disk		28.2	27.9				79.9(105+24.9-50)
Main board PCB by big copper heatsink		33.2	33.0				79.9(105+24.9-50)
Main board PCB by U16 heatsink		32.2	32.1				79.9(105+24.9-50)
Main board L1 body		35.7	35.5				64.9(100-10+24.9-50)
Main board lithium battery		31.2	31.1				59.9(85+24.9-50)
Main board L11 wiring		32.9	32.7				64.9(100-10+24.9-50)
Main board CE15 (E.C. 105C)		30.5	30.7				79.9(105+24.9-50)
Main board input connector from PS		30.3	30.3				59.9(85+24.9-50)
Enclosure		28.7	28.4				44.9 (70+24.9-50)
Supplementary information: Dual DC power supplies							

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

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

4.5	**TABLE: Thermal requirements For ODS-VL HW Models – DC supplied units**						P
	Supply voltage (V) ..... :	36	72				—
	Ambient T_{min} (°C) ..... :	23.1	23.4				—
	Ambient T_{max} (°C) ..... :	23.4	23.5				—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
PS PCB by Q3 and R15		31.3	33.0				(105-50+23.5) 78.5
PS C33 (105C)		25.7	25.9				(105-50+23.5) 78.5
PS main storage capacitor (E.C. 105C)		30.9	39.5				(105-50+23.5) 78.5
PS big transformer winding		31.1	31.5				(100-10-50+23.5) 63.5
PS small transformer winding		30.7	31.8				(100-10-50+23.5) 63.5
PS output big choke winding		27.0	27.3				(100-10-50+23.5) 63.5
Main board PCB by big copper heatsink		28.4	28.6				(105-50+23.5) 78.5
Main board PCB by U16 heatsink		26.5	26.7				(105-50+23.5) 78.5
Main board L1 body		31.5	31.4				(100-10-50+23.5) 63.5
Main board lithium battery		26.4	26.4				38.5(65-50+23.5)
Main board L11 wiring		28.7	28.8				(100-10-50+23.5) 63.5
Main board CE15 (E.C. 105C)		27.1	27.2				(105-50+23.5) 78.5
Enclosure		26.1	26.3				(70-50+23.5) 43.5
Supplementary information: Single DC power supply							

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

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

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

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

4.7	**TABLE: Resistance to fire**				N/A
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
Supplementary information:					

5.1	**TABLE: touch current measurement**		P
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions
For ODS3 v. 2 HW Models			
Between primary and ground	2.32	3.5	
For ODS-VL HW Models			
Between primary and ground	1.2	3.5	Single AC power supply
Between primary and ground	Max 2.08	3.5	Dual AC power supplies
supplementary information:			

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

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Functional:				
Basic/supplementary:				
For ODS3 v. 2 HW Models:				
AC: L+N to GND with PS MRW-5500V4V		DC	2837V	No
AC: L+N to GND with PS MRW-5600V4V		DC	2635V	No
DC: "+" & "-" to GND with PS DMRW-5500V4V		DC	1414V	No
DC: "+" & "-" to GND with PS DMRW-5600V4V		DC	1414V	No
For ODS-VL HW Models				
AC: L+N to GND (ZIPPY M1S2-5400V4H)		DC	2531V	No
AC: L+N to GND (ZIPPY H1U-6250P)		DC	2836V	No
DC: "+" and "-" to GND (both models)		DC	1001V	No
Reinforced:				

Supplementary information For ODS3 v. 2 HW Models:

Test voltage 2836Vdc and 1979Vdc were applied according to table 5b for measured working voltage 680Vpk (PS MRW-5500V4V) and 576Vp (PS MRW-5500V4V) according to CoA of UL report

The test on the AC chassis was reconducted after humidity conditioing test per National Differences **China (CH) clause 2.9.2**

Supplementary information For ODS-VL HW Models:

The test on the AC chassis was reconducted after humidity conditioing test per National Differences **China (CH) clause 2.9.2**

5.3	TABLE: Fault condition tests – For ODS3 v. 2 HW Models		P
	Ambient temperature (°C) .....:	23.6-25.7	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	See Table 1.5.1	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Complete AC unit with PS MRW-5500V4V	Vents blocked	100/60	1h30m	-	-	Maximum obtained temperature of CN_1620 board PCB by U5 is 76.9°C at ambient 23.0°C. No fire, no hazard

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

Complete AC unit with PS MRW-5600V4V	Vents blocked	100/60	1h	-	-	Maximum available temperature of PCB near L6 is 103°C, L6 winding 106.5°C, T2 core 107.7°C at ambient 28.8°C. After 60 min the device stopped working. AC PS stopped worked permanently. The main Fuse cut off. No fire, no hazard
Complete AC unit with PS MRW-5500V4V	Main board fan disconnected	100/60	1h30m	-	-	Maximum obtained temperature of CN_1620 board PCB by U5 is 67.9°C at ambient 26.9°C. No fire, no hazard
Complete AC unit with PS MRW-5500V4V	Right side fan disconnected	100/60	1h30m	-	-	Maximum obtained temperature of CN_1620 board PCB by U5 is 68.0°C at ambient 26.9°C. No fire, no hazard
Complete AC unit with PS MRW-5500V4V	Left side fan disconnected	100/60	1h30m	-	-	Maximum obtained temperature of CN_1620 board PCB by U5 is 87.9°C at ambient 26.8°C. No fire, no hazard
Complete AC unit with PS MRW-5600V4V	Left side fan disconnected	100/60	1h20m	-	-	Maximum obtained temperature of MOD3 DC/DC converter T winding is 52.4°C at ambient 28°C. No fire, no hazard
Complete DC unit with PS DMRW-5500V4V	Vents blocked	36Vdc	2h	-	-	Maximum obtained temperature of AHA_363 card PCB by U3 is 81.2°C at ambient 23.9°C. No fire, no hazard
Complete DC unit with PS DMRW-5600V4V	Left side fan disconnected	48Vdc	1h30m	-	-	Maximum obtained temperature of MOD3 T winding is 50.6°C at ambient 26.4°C. No fire, no hazard
Complete DC unit with PS DMRW-5500V4V	Right side fan disconnected	36Vdc	1h 45m	-	-	Maximum obtained temperature of AHA_363 card PCB by U3 is 66.1°C at ambient 23.3°C. No fire, no hazard
Complete DC unit with PS DMRW-5500V4V	Left side fan disconnected	36Vdc	1h 30m	-	-	Maximum obtained temperature of main board U66 choke is 48.5°C at ambient 23.1°C. No fire, no hazard
Complete DC unit with PS DMRW-5500V4V	Main board fan disconnected	36Vdc	1h 30m	-	-	Maximum obtained temperature of main board U66 choke is 48.4°C at ambient 23.7°C. No fire, no hazard

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

Supplementary information:			
5.3	**TABLE: Fault condition tests – For ODS-VL HW Models**		P
	Ambient temperature (°C) .....:	23.6-25.7	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	See Table 1.5.1	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Dual power supplies						
Complete AC unit	Vents blocked	100Vac	1h	-	-	Maximum available temperature of PS X-capacitor (85C) is 45.7C at ambient 24.4C. No hazard, no fire. NB, NC, NT
Complete AC unit	Middle fan stalled	100Vac	1h	-	-	Maximum available temperature of PS X-capacitor (85C) is 43.0C at ambient 25.7C. No hazard, no fire. NB, NC, NT
Complete DC unit	Vents blocked	36Vdc	1h	-	-	Maximum available temperature of PS transformer winding is 43.3C at ambient 24.9C. No hazard, no fire. NB, NC, NT
Complete DC unit	Middle fan stalled	36Vdc	1h	-	-	Maximum available temperature of PS transformer winding is 38.9C at ambient 25.1C. No hazard, no fire. NB, NC, NT
Single power supply						
Complete AC unit	Vents blocked	100Vac	1.5h	-	-	Maximum available temperature of PS big transformer winding is 58.7C at ambient 25.7C. No hazard, no fire.
Complete AC unit	Middle fan stalled	100Vac	2h	-	-	No hazard. Maximum available temperature of PS big transformer winding is 46.8C at ambient 25.7C. No hazard, no fire.
Complete DC unit	Vents blocked	72Vdc	1.5h	-	-	No hazard. Maximum available temperature of PS small transformer winding is 41.2C at ambient 23.8C. No hazard, no fire.
Complete DC unit	Middle fan stalled	72Vdc	2h	-	-	Maximum available temperature of PS big transformer winding is 32.5C at ambient 23.6C. No hazard, no fire.
Console	Short pins 1-4,5,6,7,8; 2-4,5,6,7,8; 3-4,5,6,7,8	72Vdc	1h	-	-	Open Circuit Voltage 9.64V, Maximum Available Current 10.7mA

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

USB connector	Short pins 1-4	72Vdc	-	-	-	Open Circuit Voltage 5.08V, Maximum Available Current 1.58mA. 8.026VA. PTC used, USB output is assumed as LPS.
Supplementary information:						

C.2	TABLE: transformers	N/A

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

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

supplementary information:

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

C.2	TABLE: transformers	N/A
Transformer		

Appendix 1 – Photographs

ODS3 v. 2 HW Model

Sides and front view of unit

Internal View

ODS-VL HW Model

Sides and front view of unit

ODS-VL Family Internal View

Appendix 2 - National Differences CB Bulletin

IEC 60950-1:2006, Amendment 1: 2009 + Amendment 2: 2013

EU Group Differences
AT=Austria
CA=Canada
DK=Denmark
SE=Sweden
US=United States of America

IEC 60950-1:2006, Amendment 1: 2009

EU Group Differences
AT=Austria (issuing/recognizing)
BE=Belgium (issuing/recognizing)
BY=Belarus (issuing/recognizing)
CH=Switzerland (issuing/recognizing)
CZ=Czech Republic (issuing/recognizing)
DE=Germany
DK=Denmark
ES=Spain (issuing/recognizing)
FI=Finland
FR=France (issuing/recognizing)
HU=Hungary (issuing/recognizing)
IN=India (issuing/recognizing)
IL=Israel
IT=Italy (issuing/recognizing)
JP=Japan (issuing/recognizing)
KR=Korea
MY=Malaysia (issuing/recognizing)
NL=The Netherlands (issuing/recognizing)
NO=Norway(issuing/recognizing)
SG=Singapore (issuing/recognizing)
SE=Sweden
SI=Slovenia
PL=Poland (recognizing only)
SK=Slovakia (issuing/recognizing)
UA=Ukraine (issuing/recognizing)
UK= United Kingdom

IEC 60950-1:2005

,
AU=Australia
BR=Brazil
CN=China

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

Information technology equipment – Safety –

Part 1: General requirements

Differences according to.....:	EN 60950-1:2006/A11:2009/A1:2010
Attachment Form No.....:	EU_GD_IEC60950_1C
Attachment Originator .....:	SGS Fimko Ltd
Master Attachment.....:	Date (2010-04)

Copyright © 2010 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
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		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note		P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	Added	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	Added	P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;	Replaced	P
	c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		P
2.7.2	This subclause has been declared ‘void’.	Void	N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	Deleted	N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: Up to and including 6 | 0,75 a) | Over 6 up to and including 10| (0,75) b) 1,0 | Over 10 up to and including 16| (1,0) c) 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition a). In NOTE 1, applicable to Table 3B, delete the second sentence.	Replaced	N/A
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A	Deleted	N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artifical optical radiation).	Replaced	P
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		P
Annex H	Replace the last paragraph of this annex by: At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see NOTE). Account is taken of the background level. Replace the notes as follows: NOTE These values appear in Directive 96/29/Euratom. Delete NOTE 2.	Replaced	P
Bibliography	Additional EN standards.		—

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
ZA	**NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		—

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Not provided with the unit	N/A
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1	In **Finland, Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.	Part of certified power supply	N/A
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Capacitors are suitably rated for 230V phase-phase voltage of IT system of Norway	P
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	Part of certified power supply	N/A

ZB ANNEX (normative)

SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag” In **Norway** and **Sweden**, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”	The unit has own connection to protective earthing Marking will be provided when distributed in Finland, Norway and Sweden	P

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
	NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): "Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet." Translation to Swedish: "Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet."		P
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.	Considered	P

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	No direct plug-in	N/A
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A	Not shipped with the product	N/A
	SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998:Plug Type 21, L+N, 250 V, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A		

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	Not shipped with the product	N/A
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.	Not shipped with the product	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	Power cord is not supplied with the unit	N/A
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	Power cord is not supplied with the unit	N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.		P
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	Not shipped with the product	N/A
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	Power cord is not supplied with the unit	N/A

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Not exceed 3.5mA	N/A

ZB ANNEX (normative)

SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.	Added	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		N/A
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.		N/A
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	No connection to cable distribution systems	N/A
7.3	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	No connection to cable distribution systems	N/A
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.	No connection to cable distribution systems	N/A

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

Information technology equipment – Safety –

Part 1: General requirements

Differences according to.....:	EN 60950-1:2006/A11:2009/A1:2010/A12:2011
Attachment Form No.....:	EU_GD_IEC60950_1C_II
Attachment Originator .....:	SGS Fimko Ltd
Master Attachment .....:	Date 2011-08

Copyright © 2011 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
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		P
General	Delete all the “country” notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note		P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	Added	N/A
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010	Deleted.	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	Added	P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A
1.7.2.1 (A12.2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.	Deleted.	N/A
	Zx Protection against excessive sound pressure from personal music players		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players. A personal music player is a portable equipment for personal use, that: – is designed to allow the user to listen to recorded or broadcast sound or video; and – primarily uses headphones or earphones that can be worn in or on or around the ears; and – allows the user to walk around while in use. NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment. A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause. The requirements in this sub-clause are valid for music or video mode only. The requirements do not apply: – while the personal music player is connected to an external amplifier; or – while the headphones or earphones are not used. NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player. The requirements do not apply to: – hearing aid equipment and professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.		N/A
	– analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015. NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: – equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and – a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx. All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off. d) have a warning as specified in Zx.3; and e) not exceed the following: 1) equipment provided as a package (player with Its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed “programme simulation noise” described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed “programme simulation noise” described in EN 50332-1. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song. NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: – the symbol of Figure 1 with a minimum height of 5 mm; and – the following wording, or similar: "To prevent possible hearing damage, do not listen at high volume levels for long periods."  **Figure 1 – Warning label (IEC 60417-6044)** Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.		N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.	No headphones and earphones	N/A
	Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed "programme simulation noise" described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.4.3 Wireless listening devices In wireless mode: – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.	No such parts	N/A
	Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s. NOTE Test method for wireless equipment provided without listening device should be defined.	No such parts	N/A
2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;	Replaced	P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	Pluggable equipment type A	N/A
2.7.2	This subclause has been declared 'void'.	Void	N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.	Deleted	N/A
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: Up to and including 6 | 0,75 a) | Over 6 up to and including 10| (0,75) b) 1,0 | Over 10 up to and including 16| (1,0) c) 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition a). In NOTE 1, applicable to Table 3B, delete the second sentence.	Replaced	N/A
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A	Deleted	N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artifical optical radiation).	Replaced	P
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		P

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

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

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Power cord Is not supplied with the unit	N/A
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1	In **Finland, Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.	Part of certified power supplies	N/A
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Capacitors suitably rated for 230V phase-phase voltage of IT system of Norway	P
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag” In **Norway** and **Sweden**, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”	The unit has own connection to protective earthing Marking will be provided when distributed in Finland, Norway and Sweden	P

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.” Translation to Swedish: ”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”		P
1.7.5	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		P
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	Not direct plug-in equipment	N/A

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998:Plug Type 21, L+N, 250 V, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A	Not shipped with the product	N/A
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	Not shipped with the product	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.	Not supplied with the unit	N/A
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	Not supplied with the unit	N/A
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	Not supplied with the unit	N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	Not supplied with the unit	N/A
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	Not shipped with the product	N/A
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	No such terminals	N/A

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.		N/A
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Not exceed 3.5mA	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.	Added	P
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.	Part of certified power supplies	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	Pluggable type A	N/A
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	No connection to cable distribution systems	N/A
7.3	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	No connection to cable distribution systems	N/A
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.	No connection to cable distribution systems	N/A

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

Information technology equipment – Safety –

Part 1: General requirements

Differences according to.....:	EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013
Attachment Form No.....:	EU_GD_IEC60950_1E
Attachment Originator .....:	SGS Fimko Ltd
Master Attachment .....:	Date 2014-02

Copyright © 2014 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

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

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it´s amendmets are prefixed “Z”		P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
General	Delete all the "country" notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2 1.5.1 Note 2 & 3 1.5.7.1 Note 1.5.8 Note 2 1.5.9.4 Note 1.7.2.1 Note 4, 5 & 6 2.2.3 Note 2.2.4 Note 2.3.2 Note 2.3.2.1 Note 2 2.3.4 Note 2 2.6.3.3 Note 2 & 3 2.7.1 Note 2.10.3.2 Note 2 2.10.5.13 Note 3 3.2.1.1 Note 3.2.4 Note 3. 2.5.1 Note 2 4.3.6 Note 1 & 2 4.7 Note 4 4.7.2.2 Note 4.7.3.1Note 2 5.1.7.1 Note 3 & 4 5.3.7 Note 1 6 Note 2 & 5 6.1.2.1 Note 2 6.1.2.2 Note 6.2.2 Note 6.2.2.1 Note 2 6.2.2.2 Note 7.1 Note 3 7.2 Note 7.3 Note 1 & 2 G.2.1 Note 2 Annex H Note 2		P
General (A1:2010)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note		P
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.		P
1.1.1 (A1:2010)	**Replace** the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.		P

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for "one package equipment", and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.	No headphones or earphones	N/A
(A12:2011)	In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010	Deleted. No sound pressure	N/A
1.5.1 (Added info*)	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *		P
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A
1.7.2.1 (A12.2011)	In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.	Deleted	N/A
	Zx Protection against excessive sound pressure from personal music players		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.1 General This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players. A personal music player is a portable equipment for personal use, that: – is designed to allow the user to listen to recorded or broadcast sound or video; and – primarily uses headphones or earphones that can be worn in or on or around the ears; and – allows the user to walk around while in use. NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment. A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause. The requirements in this sub-clause are valid for music or video mode only. The requirements do not apply: – while the personal music player is connected to an external amplifier; or – while the headphones or earphones are not used. NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player. The requirements do not apply to: – hearing aid equipment and professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.		N/A
	– analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015. NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.2 Equipment requirements No safety provision is required for equipment that complies with the following: – equipment provided as a package (personal music player with its listening device), where the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; and – a personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx. All other equipment shall: a) protect the user from unintentional acoustic outputs exceeding those mentioned above; and b) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and NOTE 2 Examples of means include visual or audible signals. Action from the user is always required. NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off. d) have a warning as specified in Zx.3; and e) not exceed the following: 1) equipment provided as a package (player with Its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and 2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song. NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.3 Warning The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following: – the symbol of Figure 1 with a minimum height of 5 mm; and – the following wording, or similar: "To prevent possible hearing damage, do not listen at high volume levels for long periods."  **Figure 1 – Warning label (IEC 60417-6044)** Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.		N/A
	Zx.4 Requirements for listening devices (headphones and earphones)		N/A
	Zx.4.1 Wired listening devices with analogue input With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed "programme simulation noise" described in EN 50332-2 shall be ≥ 75 mV. This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control). NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.		N/A
	Zx.4.2 Wired listening devices with digital input With any playing device playing the fixed "programme simulation noise" described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.). NOTE An example of a wired listening device with digital input is a USB headphone.		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	Zx.4.3 Wireless listening devices In wireless mode: – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA. NOTE An example of a wireless listening device is a Bluetooth headphone.	No such parts	N/A
	Zx.5 Measurement methods Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s. NOTE Test method for wireless equipment provided without listening device should be defined.	No such parts	N/A
2.7.1	Replace the subclause as follows: Basic requirements To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.	Pluggable equipment Type A	N/A
2.7.2	This subclause has been declared 'void'.		N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A
3.2.5.1	Replace "60245 IEC 53" by "H05 RR-F"; "60227 IEC 52" by "H03 VV-F or H03 VVH2-F"; "60227 IEC 53" by "H05 VV-F or H05 VVH2-F2". In Table 3B, replace the first four lines by the following: Up to and including 6 | 0,75 a) | Over 6 up to and including 10| (0,75) b) 1,0 | Over 10 up to and including 16| (1,0) c) 1,5 | In the conditions applicable to Table 3B delete the words "in some countries" in condition a). In NOTE 1, applicable to Table 3B, delete the second sentence.	Detachable power supply cord set not supplied with the equipment	N/A
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD	Power cord not shipped with the product	N/A
3.3.4	In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following: Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 | Delete the fifth line: conductor sizes for 13 to 16 A		N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 Attention is drawn to: 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artifical optical radiation).		P
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		P

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

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

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
1.2.4.1	In **Denmark**, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Power cord not shipped with the product	N/A
1.2.13.14 (A11:2009)	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.	No connection to the cable distribution system	N/A
1.5.7.1 (A11:2009)	In **Finland, Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.	Part of certified power supply	N/A
1.5.8	In **Norway**, due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Part of certified power supply	N/A
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No connection to telecommunication networks	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	In **Finland**, **Norway** and **Sweden**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In **Finland**: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In **Norway**: “Apparatet må tilkoples jordet stikkontakt” In **Sweden**: “Apparaten skall anslutas till jordat uttag”	No connection to the cable distribution system	N/A
1.7.2.1 (A11:2009)	In **Norway** and **Sweden**, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”		

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.” Translation to Swedish: ”Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet.”		N/A
1.7.2.1 (A2:2013)	In **Denmark**, CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in **Denmark** shall be as follows: In **Denmark**: “Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.”	Will be provided on label when shipped to Denamrk	P
1.7.5 1.7.5 (A11:2009)	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.	No socket-outlets	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
1.7.5 (A2:2013)	In **Denmark**, socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with by DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c	No socket-outlets	N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	No connection to telecommunication networks	N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	No connection to telecommunication networks	N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.	No connection to telecommunication networks	N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		P
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.	Not direct plug-in equipment	N/A
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	No connection to telecommunication networks	N/A
3.2.1.1	In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A	Not shipped with the product	N/A

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
	SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998: Plug Type 25 , 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998:Plug Type 21, L+N, 250 V, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE 250 V, 16 A		N/A
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	Not shipped with the product	N/A

ZB ANNEX (normative)
SPECIAL NATIONAL CONDITIONS (EN)

Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1 (A2:2013)	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Justification the Heavy Current Regulations, 6c	Not shipped with the product	N/A
3.2.1.1	In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994. Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994. If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.	Not shipped with the product	N/A
3.2.1.1	In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations. NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	No such parts	N/A

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.	No such parts	N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.	No such parts	N/A
3.2.5.1	In the **United Kingdom**, a power supply cord with conductor of 1,25 mm2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	Not shipped with the product	N/A
3.3.4	In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is: • 1,25 mm^2 to 1,5 mm^2 nominal cross-sectional area.	No such terminals	N/A
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	No direct plug-in	N/A
4.3.6	In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	No direct plug-in	N/A

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	Not exceed 3.5mA	N/A
6.1.2.1 (A1:2010)	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. Alternatively for components, there is no distance through insulation requirements for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.	No connection to telecommunication networks	N/A

ZB ANNEX (normative) *SPECIAL NATIONAL CONDITIONS (EN)*			
Clause	Requirement + Test	Result - Remark	Verdict
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14: - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.	No connection to telecommunication networks	N/A
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a SERVICE PERSON.	No connection to telecommunication networks	N/A
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	No connection to telecommunication networks	N/A
7.3 (A11:2009)	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.	No connection to cable distribution systems	N/A

Annex ZD
(informative)

IEC and CENELEC code designations for flexible cords

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

ATTACHMENT TO TEST REPORT IEC 60950-1
FINLAND NATIONAL DIFFERENCES

Information technology equipment – Safety –

Part 1: General requirements

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

Attachment Form No.....: FI_ND_IEC60950_1C
Attachment Originator .....: SGS Fimko Ltd
Master Attachment.....: Date (2010-04)

Copyright © 2010 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

	National Differences		
General	See also Group Differences (EN 60950-1:2006/A11/A1)		
1.5.7.1	In **Finland** 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.	Part of certified of certified power supply	N/A
1.5.9.4	In **Finland,** the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.	No connection to the telecommunication network	N/A

1.7.2.1	In **Finland**,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 in Finland shall be as follows: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"	The unit has own connection to protective earthing Marking will be provided when distributed in Finland	P
2.3.2	In **Finland,** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.	No connection to the telecommunication network	N/A
2.10.5.13	In **Finland,** there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.	No connection to the telecommunication network	N/A
5.1.7.1	In **Finland,** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that - is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and - has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and - is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.	No exceeding 3.5mA	N/A

6.1.2.1 (A1:2010)	In **Finland,** add the following text between the first and second paragraph of the compliance clause: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - two layers of thin sheet material, each of which shall pass the electric strength test below, or - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. Alternatively for components, there is no distance through insulation 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 - passes the tests and inspection criteria of 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 shall be performed using 1,5 kV), and - is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.	Added	N/A

	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14:2005 which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14:2005; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14:2005, in the sequence of tests as described in EN 60384-14:2005.		N/A
6.1.2.2	In **Finland,** 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.	Pluggable equipment type A	N/A
7.2	In **Finland,** for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	No connection to cable distribution system	N/A

ATTACHMENT TO TEST REPORT IEC 60950-1
DENMARK NATIONAL DIFFERENCES

Information technology equipment – Safety –

Part 1: General requirements

Differences according to.....: DS/EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013

	Special national conditions		
1.2.4.1	In Denmark, certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Not provided with the unit	N/A
1.7.5	In Denmark, socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a. For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.	No socket-outlets	N/A
3.2.1.1	In Denmark, supply cords of single-phase equipment having a rated current not exceeding13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.	Not shipped with the product	N/A

ATTACHMENT TO TEST REPORT IEC 60950-1
SWEDEN NATIONAL DIFFERENCES

Information technology equipment – Safety –

Part 1: General requirements

Differences according to.....: DS/EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013

Various	Please see the EN version of the standard where the Swedish National and Special National Deviations are stated.		P

ATTACHMENT TO TEST REPORT IEC 60950-1 with A1: 2009 and A2:2013 U.S.A. NATIONAL DIFFERENCES Information technology equipment – Safety – Part 1: General requirements	
Differences according to ..... :	UL 60950-1-07(Second Edition) + A1: 2011 + A2: 2014
Attachment Form No. ..... :	US_ND_IEC60950_1F
Attachment Originator ..... :	UL
Master Attachment ..... :	Date 2014-07
Copyright © 2014 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.	

	Special national conditions		
1.1.1	All equipment is designed as to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and if applicable, the National Electrical Safety Code, IEEE C2	In accordance with the National Electrical Code (NEC), ANSI/NFPA 70, and unless marked or otherwise identified, the Standard for Electronic Computer/Data-Processing Equipment	P
	Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75		**P**
1.1.2	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors	No such parts	N/A
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A	Considered 20A	P
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the /NEC	No interconnected cables	N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC are required to have special construction features and identification markings		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	1 phase only	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		N/A
	- if it is part of a range that extends into the Table 2 "Normal Operating Conditions"		N/A
	Likewise, a voltage rating is not to be lower than the specified "Normal Operating Conditions," unless it is part of a range that extends into the "Normal Operating Conditions"		N/A
1.7.7	Wiring terminals intended to supply Class 2 outputs in accordance with NEC or CEC Part 1 or NEC are marked with the voltage rating and “Class 2” or equivalent	No such terminals	N/A

	- Marking is located adjacent to the terminals		N/A
	- Marking is visible during wiring		N/A
2.5	Fuse providing Class 2, Limited Power Source, or TNV current limiting is not operator-accessible unless it is not interchangeable		N/A
2.6	Equipment with isolated ground (earthing) receptacles is in compliance with NEC 250.146(D) and CEC 10-112 and 10-906(8)	No such parts	N/A
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is provided for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	No power outlets	N/A
	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, provided with special transformer overcurrent protection		N/A
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains is in accordance with the NEC/CEC		N/A
3.2.1	Attachment plugs of power supply cords are rated not less than 125 percent of the rated current of the equipment	Not shipped with the product	N/A
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment comply with special earthing, wiring, marking and installation instruction requirements	Poles of the DC mains input terminal are not connected to the main protective earthing terminal in the equipment	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	Nor permanently connected	N/A
3.2.5	Power supply cords are no longer than 4.5 m in length	Power supply cords are not part of this investigation	N/A
	Minimum cord length is 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement		N/A
	Flexible power supply cords are compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC		N/A
3.2.9	Permanently connected equipment has a suitable wiring compartment and wire bending space	Detachable power supply cord is used	N/A
3.3	Wiring terminals and associated spacings for field wiring connections comply with CSA C22.2 No. 0	Earthing screws comply with CSA C22.2 No. 0	P
3.3.3	Wire binding screws are not attached with conductors larger than 10 AWG (5.3 mm2)	No such screws	N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are suitable for Canadian/US wire gauge sizes, are	Not such mains connection	N/A
	- rated 125 per cent of the equipment rating, and		N/A
	- are specially marked when specified (1.7.7)		N/A

3.3.5	Revise first column of Table 3E to “Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration”	Revised	P
3.4.2	Motor control devices are provided for cord-connected equipment with a motor if the equipment is rated more than 12 A,	No such device	N/A
	- or if the motor has a nominal voltage rating greater than 120 V		N/A
	- or is rated more than 1/3 hp (locked rotor current over 43 A)		N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position	No switches	N/A
3.4.11	For computer room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the computer room remote power-off circuit	No such equipment	N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment complies with NFPA 30	No liquids	N/A
4.3.13.5.1	Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Lasers to meet the Canadian Radiation Emitting Devices Act, REDR C1370 and/or Code of Federal Regulations 21 CFR 1040, as applicable.	P
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge	No such application	N/A
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less	No such device	N/A
	For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less		N/A
4.7.3.1	Non-metallic enclosures of equipment for use in spaces used for environmental air (plenums) are required to comply with UL 2043	No such uses	N/A
Annex H	Equipment that produces ionizing radiation complies with U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370)		N/A
	Other National Differences		N/A

1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (Canadian and/or U.S.) component or material standard requirements. These components include: attachment plugs, battery backup systems, battery packs, cathode ray tubes, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), cord sets and power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communications circuits, receptacles, solid state controls, supplementary protectors, switches (including interlock switches), thermal cut-offs, thermostats, (multi-layer) transformer winding wire, surge protective devices, tubing, vehicle battery adapters, wire connectors, and wire and cables	Considered. See component list.	P
1.6.1.2	A circuit for connection to the DC Mains Supply is classified as a SELV Circuit, TNV-2 Circuit or Hazardous Voltage Circuit depending on the maximum operating voltage of the supply	Maximum operated voltages of dc mains supply up to 72Vdc, classified as TNV-2.	P
	This maximum operating voltage includes consideration of the battery charging “float voltage” associated with the intended supply system, regardless of the marked power rating of the equipment		P
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 V_{peak} or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions	Not relevant to DC mains	N/A
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts	No such circuits	N/A
2.6.2	Equipment with functional earthing marked with the functional earthing symbol (IEC 60417-6092)		N/A
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified		N/A
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more reduce the risk of injury due to the implosion of the CRT	No CRT	N/A
4.3.2	Equipment with handles complies with special loading tests	No handles	N/A
4.3.8	Battery packs for both portable and stationary applications comply with special component requirements		P

5.1.8.3	Equipment intended to receive telecommunication ringing signals comply with a special touch current measurement tests	No intended to received telecommunication ringing signals	N/A
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are overloaded	No such parts	N/A
	During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test is repeated twice (three tests total) using new components as necessary	No such condition occured	N/A
6.4	Equipment intended for connection to telecommunication network outside plant cable is protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC	No connection to the telecommunication network	N/A
Annex EE	Articulated accessibility probe (Fig EE.3) is used for assessing accessibility to document/media shredders instead of the Figure 2A test finger	No shredders	N/A
Annex M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions	No connection to the telecommunication network	N/A
Annex NAD	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear comply with special acoustic pressure requirements	No connection to the telecommunication network	N/A

ATTACHMENT TO TEST REPORT IEC 60950-1 with A1:2009 and A2:2013
CANADA NATIONAL DIFFERENCES

Information technology equipment – Safety – Part 1: General requirements

Differences according to ..... : CAN/CSA-C22.2 No. 60950-1-07, Amd 1:2011, Amd 2:2014

Attachment Form No. ..... : CA_ND_IEC60950_1F
Attachment Originator..... : CSA
Master Attachment..... : Date (2015-05)

Copyright © 2015 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

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.	In accordance with the National Electrical Code (NEC) and the Canadian Electrical Code (CEC) part 1 CAN/CSA C22.1, ANSI/NFPA 70, and unless marked or otherwise identified, the Standard for Electronic Computer/Data-Processing Equipment, ANSI/NFPA 75	P
1.1.2	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.	No such parts	N/A
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. 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.	No interconnected cables	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. 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."	1 phase only	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.	No such terminals	N/A
2.5	Where a fuse is used to provide Class 2, Limited Power Source, or TNV current limiting, it shall not be operator-accessible unless it is not interchangeable.		N/A
2.6	Equipment with isolated ground (earthing) receptacles are required to comply with NEC 250.146(D) and CEC 10-112 and 10-906(8).	No such parts	N/A
2.7.1	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable. Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
3.2	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Provided	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.	Not shipped with the product	N/A
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.	The pole of the DC mains input terminal unit is not connected to the main protective earthing terminal in the equipment	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.	Nor permanently connected	N/A
3.2.5	Power supply cords are required to be no longer than 4.5 m in length. Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.	Not shipped with the product	N/A
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.	Detachable power supply cord for ODS3 v. 2 HW Models. Complies for ODS-VL HW Models.	P
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0	Earthing screws comply with CSA C22.2 No. 0	P

3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm2).	No such screws	N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for US/Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified (1.7.7).	Certified terminal block is used for ODS-VL HW Models. Not applicable for ODS3 v. 2 HW Models.	P
3.3.5	First column of Table 3E revised to require "Smaller of the RATED CURRENT of the equipment or the PROTECTIVE CURRENT RATING of the circuit under consideration."	Revised	P
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12 A, or if the motor has a nominal voltage rating greater than 120 V, or is rated more than 1/3 hp (locked rotor current over 43 A).	No such device	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.	No switches	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.	No such equipment	N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No liquids	N/A
4.3.13.5.1	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Lasers meet the Code of Federal Regulations 21 CFR 1040.	P
4.7	For computer room applications, automated information storage systems with combustible media greater than 0.76 m3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.	No such application	N/A
4.7.3.1	For computer room applications, enclosures with combustible material measuring greater than 0.9 m2 (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.	No such device	N/A
	Non-metallic enclosures of equipment for use in spaces used for environmental air (plenums) are required to comply with UL 2043.	No such uses	N/A
Annex H	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A

OTHER DIFFERENCES The following key national differences are based on requirements other than national regulatory requirements.			
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 safety component list	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.	Maximum operated voltages of dc mains supply up to 72Vdc, classified as TNV-2.	P
2.3.1	For TNV-2 and TNV-3 circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No such circuits	N/A
2.3.2.1	In the event of a single fault between TNV and SELV circuits, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.	No such circuits	N/A
2.6.2	Equipment with functional earthing is required to be marked with the functional earthing symbol (IEC 60417-6092).		N/A
2.6.3.4	Protective bonding conductors of non-standard protective bonding constructions (e.g., printed circuit traces) may be subjected to the additional limited short circuit test conditions specified.		N/A
4.2.8.1	Enclosures around CRTs with a face diameter of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT	N/A

4.3.2	Equipment with handles is required to comply with special loading tests.	No handles	N/A
4.3.8	Battery packs for both portable and stationary applications are required to comply with special component requirements.		P
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No intended to received telecommunication ringing signals	N/A
5.3.7	Internal (e.g., card cage) SELV circuit connectors and printed wiring board connectors that are accessible to the operator and that deliver power are to be overloaded. During abnormal operating testing, if a circuit is interrupted by the opening of a component, the test shall be repeated twice (three tests total) using new components as necessary.	No such parts	N/A
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.	No connection to the telecommunication network	N/A
Annex EE	UL articulated accessibility probe (Fig EE.3) required for assessing accessibility to document/media shredders instead of the Figure 2A test finger.	No shredders	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.	No connection to the telecommunication network	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.	No connection to the telecommunication network	N/A

National Differences/EU Special National Conditions/EU A-Deviations for **Switzerland (CH)** (EN 60950-1:2006/AC:2011)			P
1.5.1	Switzerland (Ordinance on environmentally hazardous substances SR 814.081, Annex 1.7, Mercury - Annex 1.7 of SR 814.81 applies for mercury.) Add the following: NOTE In Switzerland, switches containing mercury such as thermostats, relays and level controllers are not allowed.	Switches containing mercury such as thermostats, relays and level controllers are not used.	P
1.7.13	Switzerland (Ordinance on chemical hazardous risk reduction SR 814.81, Annex 2.15 Batteries) Annex 2.15 of SR 814.81 applies for batteries.	No hazardous materials	N/A
3.2.1.1	In Switzerland, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets: SEV 6532-2.1991 Plug Type 15 3P+N+PE 250/400 V, 10 A SEV 6533-2.1991 Plug Type 11 L+N 250 V, 10 A SEV 6534-2.1991 Plug Type 12 L+N+PE 250 V, 10 A In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998: SEV 5932-2.1998 Plug Type 25 3L+N+PE 230/400 V, 16 A SEV 5933-2.1998 Plug Type 21 L+N 250 V, 16 A SEV 5934-2.1998 Plug Type 23 L+N+PE 250 V, 16 A	Not shipped with the product	N/A
3.2.4	In Switzerland, for requirements see 3.2.1.1 of this annex.		P

National Differences/EU A-Deviations for **Germany (DE)**			P
1.7.2.1	According to GPSG, section 2, clause 4: If certain rules on the use, supplementation or maintenance of an item of technical work equipment or ready-to-use commodity must be observed in order to guarantee safety and health, instructions for use in German must be supplied when it is brought into circulation.	Instructions in German will be provided when distributed to Germany	P

National Differences for **Korea (KR)**	P

1.5.101	Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305)	Power supply cord not shipped with the product	N/A
8	EMC, The apparatus shall comply with the relevant CISPR standards	Compliance with relevant CISPR requirements will be provided when shipped to Korea	P

National Differences: **Israel (IL) :February 2012**			P
1.6	Power interfaces		P
1.6.1	AC Power distribution Systems		P
	At the end of clause , the following note shall be added : In Israel , the clause is subject to the electrically law, 1954 its regulations and updates		P
1.7	Marking and instruction: Subclause 1.7.201 shall be added		P
1.7.201	Marking in Hebrew language:	Will be provided when shipped to Israel	P
1.7.2	Safety instruction and marking		P
1.7.2.1	The following shall be added to the clause: - All the instructions and warning related to safety shall also be written in the Hebrew language -Name of the apparatus and its commercial designation -manufacture's name and address, - If the equipment is imported, the importer's name and address - Manufacturer's registered trademark, if any; - Name of the model and serial number, if any; - Country of manufacture.	Will be provided when shipped to Israel	P
1.201	**power consumption in standby mode** Equipment shall comply with the requirements of Energy Sources Regulations 2011 with permitted deviation of up to 10% (Maximum electrical power in standby mode for domestic and office electrical appliance)		P
2	Protection from hazards The clause is applicable with the following additions		P

2.9.4	Seven means of protection against electrocution are permitted as follows : 1) TN-S, TN-C-S 2) TT 3) IT 4) Isolated transformer 5) Safety extra low voltage 6) Residual current breaker (30mA=IΔ) 7) Reinforced insulation; Double insulation	TN-S Double/ Reinforce insulation provided as part of certified power supplies	P
2.201	Prevention of electromagnetic interference. The apparatus shall meet the requirements in the appropriate parts of the Standard series SI 961	Compliance with SI 961 standard will be demonstrated when distributed to Israel	P
3	Wiring connection and supply		P
3.2	Connection to a mains supply		P
3.2.1	Means of connection		P
3.2.1.1	Connection to an a.c. mains supply In Israel, the supply plug shall comply, with the requirements of Israeli Standard SI 32 Part 1.1	Plug shall be provided by the end-user	N/A
3.2.1.2	Connection to a d.c. mains At the time of issue this Standard, there is no Israel Standard for connection accessories to d.c.		N/A

<table>
<tr><td colspan="3">National Differences for Australia (AU) and New Zealand – IEC 60950-1: ED. 2.0 (2005)</td><td>P</td></tr>
<tr><td>1.2</td><td>Between the definitions for ‘Person, service’ and ‘Range, rated frequency’ insert the following: I ignition source 1.2.12.201</td><td>Inserted</td><td>P</td></tr>
<tr><td>1.2.12.201</td><td>After the definition of 1.2.12.15, add the following: 1.2.12.201 potential ignition source: Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c. or d.c. and the product of the peak value of this voltage and the measured r.m.s current under normal operating conditions exceeds 15 VA. Such a faulty contact or interruption in an electrical connection includes those which may occur in conductive patterns on printed boards. NOTE 201 An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE. NOTE 202 This definition is from AS/NZS 60065:2003.</td><td>Added</td><td>P</td></tr>
<tr><td>1.5.1</td><td>Add the following to the end of first paragraph: ‘or the relevant Australian/New Zealand Standard’.</td><td>Added</td><td>P</td></tr>
<tr><td>1.5.2</td><td>Add the following to the end of first and third dash items: ‘or the relevant Australian/New Zealand Standard’.</td><td>Added</td><td>P</td></tr>
<tr><td>3.2.5.1</td><td>Modify Table 3B as follows: Delete the first four rows and replace with</td><td>No cords</td><td>P</td></tr>
<tr><td colspan="4">
<table>
<tr><td rowspan="2">Rated Current of the Equipment
A</td><td colspan="2">Minimum Conductor Sizes</td></tr>
<tr><td>Nominal cross-sectional area mm^2</td><td>AWG or kcmil [cross-sectional area in mm2] see note 2</td></tr>
<tr><td>Over 0.2 up to and including 3
Over 3 up to and including 7.5
Over 7.5 up to and including 10
Over 10 up to and including 16</td><td>0,5 [1)]
0,75
(0,75)[2)] 1,00
(1,0)[3)] 1,5</td><td>18 [0,8]
16 [1,3]
16 [1,3]
14 [2]</td></tr>
</table>
</td></tr>
<tr><td colspan="4">Replace footnote 1) with the following: 1) This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm2 three-core supply flexible cords are not permitted; see AS/NZS 3191).
Delete Note 1</td></tr>
<tr><td>4.1.201</td><td>Insert a new Clause 4.1.201 after Clause 4.10 as followings: 4.1.201 Display devices which may be used for television purposes, with a mass of 7 kg or more, shall comply with the requirements for stability and mechanical hazards, including the additional stability requirements for television receivers, specified in AS/NZS 60065.</td><td>Inserted</td><td>N/A</td></tr>
</table>

4.3.6	Delete the third paragraph and replace with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flatpin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.	Deleted	N/A
4.3.13.5	Add the following to the end of the first paragraph: ‘, or AS/NZS 2211.1’.“.	Added	P
4.7	Add the following paragraph: For alternative tests refer to Clause 4.7.201.	Added	P

4.7.201	Add the following after Clause 4.7.3.6. 4.7.201 Resistance to fire – Alternative tests 4.7.201.1 General Parts of non-metallic material shall be resistant to ignition and spread of fire. This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from inside the apparatus, or the following: Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length. The following parts which would contribute negligible fuel to a fire: small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; small electrical components, such as capacitors with a volume not exceeding 1 750 mm3, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10. NOTE In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another. Compliance shall be checked by the tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5. For the base material of printed boards, compliance shall be checked by the test of 4.7.201.5. The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use. These tests are not carried out on internal wiring. 4.7.201.2 Testing of non-metallic materials Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C. Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the sample tested was not thicker than the relevant part. 4.7.201.3 Testing of insulating materials Parts of insulating material supporting POTENTIAL IGNITION SOURCES shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C.	Added No alternative tests applied	N/A

	The test shall be also carried out on other parts of insulating material which are within a distance of 3mm of the connection. NOTE Contacts in components such as switch contacts are considered to be connections. For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier which meets the needle-flame test shall not be tested. The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications:		No alternative tests applied	N/A
	Clause of AS/NZS 60695.11.5	Change		N/A
	9 Test procedure			N/A
	9.2 Application of needleflame	Replace the first paragraph with: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1. If possible the flame shall be applied at least 10 mm from a corner Replace the second paragraph with: The duration of application of the test flame shall be 30 s ±1 s.	Replaced	N/A
	9.3 Number of test specimens	Replace with: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.	Replaced	N/A
	11 Evaluation of test results	Replace with: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.	Replaced	N/A

	The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10, provided that the sample tested was not thicker than the relevant part. 4.7.201.4 Testing in the event of non-extinguishing material If parts, other than enclosures, do not withstand the glow wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 4.7.201.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested. NOTE 1 - If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 2 - If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 4.7.201 without the need for consequential testing. NOTE 3 - Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections. 4.7.201.5 Testing of printed boards The base material of printed boards shall be subjected to the needle-flame test of Clause 4.7.201.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE. The test is not carried out if the — Printed board does not carry any POTENTIAL IGNITION SOURCE; Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or Base material of printed boards, on which the available apparatus power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. Compliance shall be determined using the smallest thickness of the material. NOTE – Available apparent power is the maximum apparent power		N/A

6.2.2	For Australia only, delete the first paragraph and Note, and replace with the following: In Australia only, compliance with 6.2.2 shall be checked by the tests of both 6.2.2.1 and 6.2.2.2.	No connection to telecommunication networks	N/A
6.2.2.1	For Australia only, delete the first paragraph including the Notes, and replace with the following: In Australia only, the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator reference 1 of Table N.1. The interval between successive impulses is 60 s and the initial voltage, U , is: (i) for 6.2.1 a):7.0 kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and (ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 201 – The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 – The value of 2.5 kV for 6.2.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.	No connection to telecommunication networks	N/A
6.2.2.2	For Australia only, delete the second paragraph including the Note, and replace with the following: In Australia only, the a.c. test voltage is: (i) for 6.2.1 a): 3 kV; and (ii) for 6.2.1 b) and 6.2.1 c): 1.5 kV. NOTE 201 Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.	No connection to telecommunication networks	N/A
7.3	Add the following before the first paragraph: Equipment providing functions that fall only within the scope of AS/NZS 60065 and that incorporate a PSTN interface, are not required to comply with this Clause where the only ports provided on the equipment, in addition to a coaxial cable connection and a PSTN interface, are audio or video ports and analogue or data ports not intended to be used for telecommunications purposes.	No such equipment	N/A
Annex P	Add the following Normative References: AS/NZS 3191, Electric flexible cords AS/NZS 3112, Approval and test specification—Plugs and socket-outlets		N/A

Index	1. Insert the following between ‘asbestos, not to be used as insulation’ and ‘attitude see orientation’: AS/NZS 2211.1……..……4.3.13.5 AS/NZS3112…… …..4.3.6 AS/NZS3191…..... 3.2.5.1 (Table 3B) AS/NZS60064..... 4.1.201 AS/NZS60695.2.11..... 4.7.201.2, 4.7.201.3 AS/NZS60695.11.10…..... 4.7.201.1, 4.7.201.5 AS/NZS60695.11.5.....4. 7.201.3 2. Insert the following between ‘positive temperature coefficient (PTC) device’ and ‘powder’: potential ignition source 1.2.201, 4.7.201.3, 4.7.201.5		P

National Differences **China (CN)** GB4943.1-2011Information technology equipment – Safety – Part 1: General requirements Applicable for 60950-1:2005 oldest version			P
1.1.2	GB 4943.1-2011 applies to equipment for use at altitudes not exceeding 5000m above sea level, primarily in regions with moderate or tropical climates. Amend the third dashed paragraph of 1.1.2 as: ——equipment intended to be used in vehicles, on board ships or aircraft, at altitudes greater than 5000m;	Intended for altitudes up to 2000m	P
1.4.5	After the third paragraph, add a paragraph: If the equipment is intended for direct connection to an AC mains supply, the tolerances on RATED VOLTAGE shall be taken as +10%,-10% unless a wider tolerance is declared by the manufacturer. The first dash paragraph "-the RATED VOLTAGE is 230V single -phase or 400V three-phase, in which case the tolerance shall be taken as +10% and -10%" of IEC 60950-1:2005 is deleted in GB 4943.1-2011	+10%,-10% considered during the testing	P

1.4.12.1	Tma in clause 1.4.12.1 amended as: Tma: is the maximum ambient temperature permitted by the manufacturer's specification, or 35 °C, whichever is greater. Add note 1: For equipment not to be operated at tropical climatic conditions, Tma: is the maximum ambient temperature permitted by the manufacturer's specification, or 25 °C, whichever is greater. Add note 2: For equipment is to be operated at 2000m-5000m above sea leave, its temperature test conditions and temperature limits are under consideration.	Not for tropic climate conditions Added	N/A
1.5. 2	Add a note behind the first break off section in Clause 1.5.2: A component used shall comply with related requirements corresponding altitude of 5000m.	Added	N/A
1.7	Add one paragraph before the last paragraph: The required marking and instruction should be given in normative Chinese unless otherwise specified.	Will be provided when shipped to China	P
1.7.1	Based on the AC mains supply of China, the RATED VOLTAGE should be 220V (single phase) or 380V (three-phases) for single rated voltage, for RATED VOLTAGE RANGE, it should cover 220V or 380V (three-phases), for multiple RATED VOLTAGES, one of them should be 220V or 380V (three-phases) and set on 220V or 380V (three-phases) when manufactured. And the RATED FREQUENCY or RATED FREQUENCY RANGE should be 50Hz or include 50Hz.	Covered by EUT rating	P

1.7.2.1	Add requirements of warning for equipment intended to be used at altitudes not exceeding 2000m or at non-tropical climate regions: For equipment intended to be used at altitude not exceeding 2000m, a warning label containing the following or a similar appropriate wording, or a symbol as in annex DD shall fixed to the equipment at readily visible place. "Only used at altitude not exceeding 2000m."  For equipment intended to be used in not-tropical climate regions, a warning label containing the following or a similar appropriate wording, or a symbol as in annex DD shall fixed to the equipment at readily visible place. "Only used in not-tropical climate regions."  If only the symbol used, the explanation of the symbol shall be contained in the instruction manual. The above statements shall be given in a language acceptable to the regions where the apparatus is intended to be used.	Tested for Max operation up to 2000m, for non-tropical climate Markings will be provided when the product is shipped to China	P
2.7.1	Amended the first paragraph as: Protection in PRIMARY CIRCUITS against overcurrent short-circuits and earth faults shall be provided as an integral part of the equipment except special provisions. And the protective device shall meet the requirement of Clause 5.3. Delete note of Clause 2.7.1.	Part of certified power supplies	P

2.9.2	First section of Clause 2.9.2 amended as two sections: Where required by 2.9.1, 2.10.8.3, 2.10.10 or 2.10.11, humidity conditioning is conducted for 120 h in a cabinet or room containing air with ambient temperature 40±2℃ and a relative humidity of (93±3)%. During this conditioning the component or subassembly is not energized. For equipment not to be operated at tropical climatic conditions, Where required by 2.9.1, 2.10.8.3, 2.10.10 or 2.10.11, humidity conditioning is conducted for 48 h in a cabinet or room containing air with a relative humidity of (93±3) %. The temperature of the air, at all places where samples can be located, is maintained within 2 °C of any convenient value between 20 °C and 30 °C such that condensation does not occur. Due to pretreatment of equipment operated at high altitude area is humidity conditioning withstand hot shock, specific requirements are to be considered. Add note: For equipment to be operated at 2000 m - 5000m above sea level, assessment and requirement of humidity conditioning for Insulation material properties are considered.	Humidity conditioning was conducted for 48 Hours at temp. 22^0C with relative humidity 93% See also appended table 5.2 IEC60950-1	P
2.10.3.1	Amend the third paragraph of Clause 2.10.3.1 to be: These requirements apply for equipment to be operated up to 2000 m above sea level. For equipment to be operated at more than 2000 m above sea level and up to 5000m above sea level, the minimum CLEARANCE shall be multiplied by the factor 1.48 corresponding altitude of 5000m given in Table A.2 of IEC 60664-1. For equipment to be operated at more than 5000 m above sea level, the minimum CLEARANCE shall be multiplied by the factor given in Table A.2 of IEC 60664-1. Linear interpolation is permitted between the nearest two points in Table A.2. The calculated minimum CLEARANCE using this multiplication factor shall be rounded up to the next higher 0,1 mm increment.	Designed to operate up to 2000m altituded	P
2.10.3.3& 2.10.3.4	Add "(applicable for altitude up to 2000m)" in header of Table 2K、2L and 2M.	Added	P

2.10.3.4	Add a new section above Table 2K and in Clause 2.10.3.4: Minimum CLEARANCES determined by above rules apply for equipment to be operated up to 2000m above sea level. For equipment to be operated at 2000 m - 5000m above sea level, the minimum CLEARANCE shall be multiplied by the factor 1.48 corresponding altitude of 5000m given in Table A.2 of GB/T16935.1（ IEC 60664-1）. For equipment to be operated at more than 5000 m above sea level, the minimum CLEARANCE shall be multiplied by the factor given in Table A.2 of GB/T16935.1.	Designed to operate up to 2000m altituded	P
3.2.1.1	Add a paragraph before the last paragraph: Plugs connected to AC mains supply shall comply with GB 1002 or GB 1003 or GB/T 11918 as applicable.	Not shipped with the product	N/A
4.2.8	Clause 4.2.8 cathode ray tubes quoted Clause 18 of GB8898-2011. Delete note of Clause 4.2.8.	No CRT‘s	N/A
Annex E	Last section of Annex E amended as: For comparison of winding temperatures determined by the resistance method of this annex with the temperature limits of Table 4B, 35 °C shall be added to the calculated temperature rise. And add note: for equipment not to be operated at tropical climatic conditions, 25 °C shall be added to the calculated temperature rise to compare with the temperature of Table 4B.	Resistance method not applied	N/A
Annex G.6	Change the second section of Clause G.6 to be: For equipment to be operated at 2000 m - 5000m above sea level, the minimum CLEARANCE shall be multiplied by the factor 1.48 corresponding altitude of 5000m given in Table A.2 of GB/T16935.1. For equipment to be operated at more than 5000 m above sea level, the minimum CLEARANCE shall be multiplied by the factor given in Table A.2 of IEC 60664-1. Linear interpolation is permitted between the nearest two points in Table A.2. The calculated minimum CLEARANCE using this multiplication factor shall be rounded up to the next higher 0,1 mm increment.	Designed to operate up to 2000m altituded	N/A
Annex BB (informative)	Amended as : The differences between Chinese national standards GB 4943.1-2011 and GB 4943-2001.		P

Annex DD (normative)	Added annex DD: Instructions for the new safety warning labels. DD.1 Altitude warning label  Meaning of the label: Evaluation for apparatus only based on altitude not exceeding 2000m, therefor it's the only operating condition applied for the equipment .There may be some potential safety hazard if the equipment is used at altitude above 2000m . DD.2 Climate warning label  Meaning of the label: Evaluation for apparatus only based on temperate climate condition, therefor it's the only operating condition applied for the equipment .There may be some potential safety hazard if the equipment is used in tropical climate region.	Will be provided on EUT label when shipped to China	P
Annex EE (informative)	Added annex EE: Illustration relative to safety explanation in normative Chinese、Tibetan、Mongolian、Zhuang Language and Uighu.		P
Other amendments	In accordance with the relevant CTL decisions and the amendments of IEC 60950-1, the specific requirements or mistakes in IEC standard are corrected or editorially modified in this part, Including clause 1.7, 2.1.1.7, 2.9.2, Table 2H, Figure 2H, F.8, F.9, M.3 and Annex U.		P

Quoting standards and reference documents	The principles of quoting and referring to other standards in Annex P and reference documents of IEC 60950-1 are as follows: If the date of the reference document is given, only that edition applies, excluding any subsequent corrigenda and amendments. However, parties to agreements based on this part are encouraged to investigate the possibility of applying the most recent editions of the reference documents. For undated references, the latest edition of the referenced document applies, including any corrigenda and amendments. For the usage of international standards in Chinese national standards and industry standards is various, in the aim of achieving easy operation and based on the requirements of GB/T 1.1 and GB/T 20000.2, when quoting an entire international standard in the normative quoting files and reference documents of Annex P of this part, the principles of quotation are as follows: - If there is no national standard or industry standard corresponding to the international standard, then the international standard is quoted; - If there is national standard or industry standard corresponding to the international standard, then either the national or industry standard is quoted; - If the date of the national standard or industry standard is not given, the latest edition of the standard applies; - The national standard or industry standard number, corresponding international standard number and the consistency level code should be identified in parentheses behind the listed national standard or industry standard. When quoting several chapters or clauses of the international standard, the principles of quotation are as follows: - If there is no national standard or industry standard corresponding to the international standard, then the international standard is quoted; - If there is national standard or industry standard corresponding to the international standard, then either the national or industry standard is quoted. Meanwhile, in order to retain the relevant information on international standards, informative annex CC is increased, which gives the table about the comparison of the normative quoting files and reference documents in IEC 60950-1: 2005 and GB 4943.1-2011.		P

Appendix 3 – licences

IEC IECEE CB SCHEME

Ref. Certif. No.
JPTUV-057014

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Redundant Power Supply and Power Module
Name and address of the applicant Nom et adresse du demandeur	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the factory Nom et adresse de l'usine	Zippy Technology Corp. 2F, No. 123, Lane 235 Pao-Chiao Rd., Shin Tien District, New Taipei City, 231 Taiwan
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input: AC 100-240V; 47-63Hz; 1) 8-4A, 2) 7-3A, 3) 9-4A; Class I Output: refer to the test report
Trademark (if any) Marque de fabrique (si elle existe)	EMACS
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	1) MRW-5500V4V, MRW-3500V-R 2) MRW-5450V4V, MRW-3450V-R 3) MRW-5600V4V, MRW-3600V-R, MRW-5600G4V, MRW-3600G-R
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si necessaire, peuvent être indiqués sur la 2ème page)	For model differences, refer to the test report.
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+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11037166 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 16.06.2014

Signature: Dipl.-Ing. E. Stoelzel

IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-065240

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Switching Power Supply
Name and address of the applicant Nom et adresse du demandeur	Zippy Technology Corp. 10F., No. 50, Minquan Rd., Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Zippy Technology Corp. 10F., No. 50, Minquan Rd., Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the factory Nom et adresse de l'usine	ZIPPY TECHNOLOGY CORP 4F., No. 48, Wucyuan Rd. Wugu Dist., New Taipei City 24886 Taiwan
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input : DC -36V- -72V; 17A; Class I Output: refer to the test report
Trademark (if any) Marque de fabrique (si elle existe)	EMACS
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	DP1H-6350F, DP1H-6400F, DP2H-6350F, DP2H-6400F, SP410-1D
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	For model differences, refer to the test report.
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+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11042164 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 07.08.2015

Signature:

Dipl.-Ing. F. Scheizel

IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-058397

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Switching Power Supply
Name and address of the applicant Nom et adresse du demandeur	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the factory Nom et adresse de l'usine	Zippy Technology Corp. 2F, No. 123, Lane 235 Pao-Chiao Rd., Shin Tien District, New Taipei City, 231 Taiwan
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input: AC 100-240V; 47-63Hz; 4-2A; Class I Output: refer to the test report
Trademark (if any) Marque de fabrique (si elle existe)	EMACS
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	H1U-6xxxP (xxx = 251, 250, 200, 150) P1X-6yyyP (yyy = 300, 250, 200)
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	For model differences, refe to the test report.
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+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11037753 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 26.08.2014

Signature: i.V. Dipl.-Ing. H. Stoelzel

IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-057251

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Redundant Power Supply and Power Module
Name and address of the applicant Nom et adresse du demandeur	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the factory Nom et adresse de l'usine	Zippy Technology Corp. 2F, No. 123, Lane 235 Pao-Chiao Rd., Shin Tien District, New Taipei City, 231 Taiwan
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input : AC 100-240V, 1) 6-3A, 2) 8-4A; 47-63Hz; Class I Output: refer to the test report
Trademark (if any) Marque de fabrique (si elle existe)	EMACS
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	1) M1S-3400V, M1S-3401V, M1S2-5400V4H, M1S2-5401V4H 2) M1S-3500V, M1S-3501V, M1S2-5500V4H, M1S2-5501V4H
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiquées sur la 2ème page)	For model differences, refer to the test report.
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+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11037311 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 26.06.2014

Signature: Dipl.-Ing. P. Stöbzel

IEC IECEE CB SCHEME

Ref. Certif. No.
JPTUV-057503

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Redundant Power Supply and Power Module
Name and address of the applicant Nom et adresse du demandeur	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Zippy Technology Corp. 10F., No. 50, Min Chyuan Rd. Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the factory Nom et adresse de l'usine	Zippy Technology Corp. 2F, No. 123, Lane 235 Pao-Chiao Rd., Shin Tien District, New Taipei City, 231 Taiwan
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input : DC -36V - -72V; 1) 16-8A, 2) 18-9A, 3) 21-11A; Class I Output: refer to the test report
Trademark (if any) Marque de fabrique (si elle existe)	EMACS
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	1) DMRW-5450V4V, DMRW-3450V-R 2) DMRW-5500V4V, DMRW-3500V-R 3) DMRW-5600V4V, DMRW-3600V-R
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	For model differences, refer to the test report.
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+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11037109 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 09.07.2014

Signature: Dipl.-Ing. (FH) A. Klinker

IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-064518

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Redundant Power Supply and Power Module
Name and address of the applicant Nom et adresse du demandeur	Zippy Technology Corp. 10F., No. 50, Miriquan Rd., Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Zippy Technology Corp. 10F., No. 50, Miriquan Rd., Shin Tien District, New Taipei City, 231 Taiwan
Name and address of the factory Nom et adresse de l'usine	ZIPPY TECHNOLOGY CORP 4F., No. 48, Wucyuan Rd. Wugu Dist., New Taipei City 24886 Taiwan
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input : DC -36V to -72V; 1) 15A, 2) 19A; Class I Output: refer to the test report
Trademark (if any) Marque de fabrique (si elle existe)	EMACS
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	1) DM1S2-5400V4H, DM1S2-5401V4H, DM1S-3400V, DM1S-3401V 2) DM1S2-5500V4H, DM1S2-5501V4H, DM1S-3500V, DM1S-3501V
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	For model differences, refe to the test report.
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+A1+A2 National differences see test report
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	11041217 001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification

TÜVRheinland®

TÜV Rheinland Japan Ltd.
Global Technology Assessment Center
4-25-2 Kita-Yamata, Tsuzuki-ku
Yokohama 224-0021 Japan
Phone + 81 45 914-3888
Fax + 81 45 914-3354
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 09.07.2015

Signature: Dipl.-Ing. [illegible] Stoelzel

End of test report