Ref. Certif. No.

JPTUV-114786

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

CB TEST CERTIFICATE

Product	OnDemand Switch
Name and address of the applicant	Radware Ltd. 22 Raoul Wallenberg St. 6971917 Tel Aviv, Israel
Name and address of the manufacturer	Radware Ltd. 22 Raoul Wallenberg St. 6971917 Tel Aviv, Israel
Name and address of the factory	Portwell, Inc. No. 242, Bo-Ai St. Shu-Lin Dist., New Taipei City, 23845 Taiwan
Ratings and principal characteristics	AC 100-240V;5.0-2.5A;50-60Hz x 2(for dual AC power modules) or AC 100-240V; 5.0-2.5A;50-60Hz(for single AC power module) or DC -36 - -72V; 16-8A x2 (for dual DC power module) DC -36 - -72V; 16-8A (for single DC power module); Class I
Trademark (if any)	radware
Customer's Testing Facility (CTF) Stage used	N/A
Model / Type Ref.	ODS-MR
Additional information (if necessary may also be reported on page 2)	
A sample of the product was tested and found to be in conformity with	IEC 62368-1:2014 See Test Report for National Differences
As shown in the Test Report Ref. No. which forms part of this Certificate	60394292 001

This CB Test Certificate is issued by the National Certification Body

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
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Date: 2020-10-08

Signature:

Jason C. H. Chang

10/061 CB 06/20v9 rk

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number .....:	60394292 001
Date of issue .....:	2020-10-05
Total number of pages .....:	58
Applicant's name.....:	Radware Ltd.
Address .....:	22 Raoul Wallenberg St., 6971917 Tel Aviv, Israel
Test specification:	
Standard.....:	IEC 62368-1:2014 (Second Edition)
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No. .....:	IEC62368_1B
Test Report Form(s) Originator .....:	UL(US)
Master TRF .....:	2014-03

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 ..... :	OnDemand Switch
Trade Mark ..... :	radware®
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	ODS-MR
Ratings ..... :	100-240Vac, 5.0-2.5A, 50-60Hz x 2 (for dual AC power modules) or 100-240Vac, 5.0-2.5A, 50-60Hz (for single AC power module) or -36 – -72Vdc, 16–8A x2 (for dual DC power module) -36 – -72Vdc, 16–8A (for single DC power module)

Testing procedure and testing location:			
☒	CB Testing Laboratory:	TÜV Rheinland Taiwan Ltd.	
Testing location/ address ..... :		11F., No. 758, Sec. 4, Bade Road., Taipei 105, Taiwan Chinese Taipei	
☐	Associated CB Testing Laboratory:		
Testing location/ address ..... :			
Tested by (name + signature) ..... :			X Project Engineer Signed by: Patrick T. H. Lee
Approved by (name + signature)..... :			X Reviewer Signed by: Simon Yu
☐	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) ..... :			
Approved by (name + signature)..... :			
Supervised by (name + signature) ..... :			

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

- Photo Documentation
- National Differences
- Measurement Section
- Total number of pages in each attachment is indicated in each individual attachment.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
Name of test and test clause of tests performed are given in appended Compliance Checklist, Measurement section and Attachments if any. • Continuously operating with below describe d maximum normal load configuration: - USB port loaded 2.5W. - All connectors are connected and transmit data. - Cross reading/writing data between HDD/SSD. • CPU under test: Intel, E5-1650V3, 3.5GHz. • Optical transceiver under test: OLINK, type: OLSP851XL-CDS3. • Pre-production without serial number.	Unless otherwise indicated, all tests were performed at the location stated in “Testing procedure and testing location”.

Summary of compliance with National Differences:

List of countries addressed:

Summary of compliance with National Differences to IEC 62368-1:2014 (Second Edition) and EN 62368-1: 2014+ A11:2017 (for explanation of codes see below):

EU Group Differences, EU Special National Conditions

☒ **The product fulfils the requirements of EN 62368-1:2014+ A11:2017**.

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.


radware®
-36V - -72V 16-8A
MODEL 型号/型號: ODS-MR OnDemand Switch™ 网络交换机
PN: AMR0-03201DH-000
HW VER: B.A03
DESCRIPTION: Alteon 6024/MR/32GB/Single DC/HDD
35 U.S.C. § 287(a) Patent notice: Patent: www.radware.com/LegalNotice
Also embedded:
OnDemand Switch™, Alteon™, APSolute™, LinkProof™, AppWall™, VADI™ (Virtual Application Delivery Infrastructure), Alteon VA™, Radware ADC Fabric™, AppShape™, FastView™, ADC-VX™, ADC Fabric™, vDirect™
S/N: 41507199
MAC: 2CB69327CB00
UPC: 811239025364
For disposal of this equipment in EU countries please go to: www.radware.com/weee
ICES-003 Class A Notice - Avis NMB-003, Classe A This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
Made in Taiwan 台湾制造
This device complies with Part 15 of the FCC Rules. . Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operations.
此为A级产品。在生活环境中，该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对干扰采取切实可行的措施。
* See installation instructions before connecting to the power supply.
* Voir la notice d'installation avant de reccorder . aur'eseau.
* Vorden anschliesssen ans Netz die . Installations anweisungen beachten.
请参照安装说明连接电源。
* Warning: Downgrading the device software . from currently installed version is not supported . and might cause an irreversible malfunction
* Le déclassement du logiciel de l'appareil de la . version actuellement installée n'est pas pris en . charge et peut provoquer une défaillance . irréversible.
使用不匹配的软件版本可能会导致无法修复的故障。
CE
TÜVRheinland


radware®
-36V - -72V 16-8A
x2
MODEL 型号/型號: ODS-MR OnDemand Switch™ 网络交换机
PN: AMR0-03202DH-000
HW VER: B.A03
DESCRIPTION: Alteon 6024/MR/32GB/Dual DC/HDD
35 U.S.C. § 287(a) Patent notice: Patent: www.radware.com/LegalNotice
Also embedded:
OnDemand Switch™, Alteon™, APSolute™, LinkProof™, AppWall™, VADI™ (Virtual Application Delivery Infrastructure), Alteon VA™, Radware ADC Fabric™, AppShape™, FastView™, ADC-VX™, ADC Fabric™, vDirect™
S/N: 41507199
MAC: 2CB69327CB00
UPC: 811239025364
For disposal of this equipment in EU countries please go to: www.radware.com/weee
ICES-003 Class A Notice - Avis NMB-003, Classe A This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
Made in Taiwan 台湾制造
This device complies with Part 15 of the FCC Rules. . Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operations.
此为A级产品。在生活环境中，该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对干扰采取切实可行的措施。
* See installation instructions before connecting to the power supply.
* Voir la notice d'installation avant de reccorder . aur'eseau.
* Vorden anschliesssen ans Netz die . Installations anweisungen beachten.
请参照安装说明连接电源。
* Warning: Downgrading the device software . from currently installed version is not supported . and might cause an irreversible malfunction
* Le déclassement du logiciel de l'appareil de la . version actuellement installée n'est pas pris en . charge et peut provoquer une défaillance . irréversible.
使用不匹配的软件版本可能会导致无法修复的故障。
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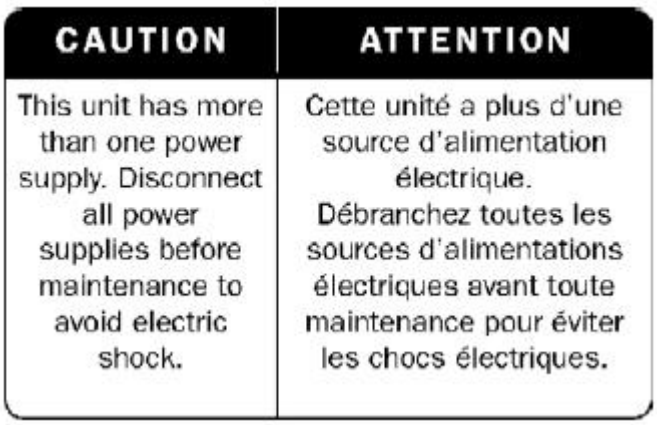

CAUTION
This unit has more than one power supply. Disconnect all power supplies before maintenance to avoid electric shock.
ATTENTION
Cette unité a plus d'une source d'alimentation électrique. Débranchez toutes les sources d'alimentations électriques avant toute maintenance pour éviter les chocs électriques.

TEST ITEM PARTICULARS:	
Classification of use by..... :	☐ Ordinary person ☒ Instructed person ☒ Skilled person ☐ Children likely to be present
Supply Connection ..... :	☒ AC Mains ☐ DC Mains ☒ External Circuit - not Mains connected - ☐ ES1 ☒ ES2 ☐ ES3
Supply % Tolerance ..... :	☒ +10%/-10% for AC mains ☐ +20%/-15% ☐ +25%/ -25% ☒ None (for DC supply)
Supply Connection – Type ..... :	☒ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☒ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☒ mating connector ☐ other:_____
Considered current rating of protective device as part of building or equipment installation..... :	16 A Installation location: ☒ building; ☐ equipment
Equipment mobility..... :	☐ movable ☐ hand-held ☐ transportable ☒ stationary ☐ for building-in ☐ direct plug-in ☒ rack-mounting ☐ wall-mounted
Over voltage category (OVC) ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment ..... :	☒ Class I ☐ Class II ☐ Class III
Access location ..... :	☒ restricted access location ☐ N/A
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maxium operating ambient :	50 °C
IP protection class ..... :	☒ IPX0 ☐ IP___
Power Systems ..... :	☒ TN ☐ TT ☐ IT - 230 V $_{L-L}$
Altitude during operation (m) ..... :	☒ 2000 m or less ☐ _____ m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ _____ m
Mass of equipment (kg) ..... :	☒ Approx. 20.32
POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object ..... :	
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)

TESTING:	
Date of receipt of test item .....:	2020-7-14
Date (s) of performance of tests .....:	2020-7-14 to 2020-08-17

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.

Where statement of conformity is provided in this test report, if not otherwise indicated, "accuracy method" described in IEC GUIDE 115 has been taken to address uncertainty of measurement.

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).....:	Portwell, Inc. No. 242, Bo-Ai St., Shu-Lin Dist., New Taipei City, 23845 Taiwan

GENERAL PRODUCT INFORMATION:

Product Description –

The equipment is an Ethernet switch.

Engineering Considerations

1. The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C.
2. The equipment disconnect device is considered to be: Appliance Inlet.
3. Following parts are protective earthing terminals (See subclause F.3.6.1.1): Earth pin of inlet
4. Following parts are protective bonding conductor (See subclause F.3.6.1.2): Metal enclosure.

Additional Information

1. The **power supply unit** used in the product is a certified product which was investigated according to the standard of same version. The suitability of use has been evaluated in this report.
2. Some components are **pre-certified and/or tested**, which have been evaluated according to the relevant component requirements of IEC 60950-1 or IEC 62368, are employed in this product. Their suitability of use has been checked according to subclauses 4.1.2
3. The optical transceiver are **pre-certified and/or tested**, which have been evaluated according to the relevant component requirements of IEC 60825-1, are employed in this product.

Marking and Instruction:

1. The following marking/statement is marked in operating instructions. (See subclause F.3.5.4)

LITHIUM BATTERY CAUTION

Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to

the instructions

2. The product also marked with:

-  (IEC 60417-5017) for the protective bonding condutor (See subclause F.3.6.1.1)
-  (IEC 60417-5019) for the protective earthing terminal (See subclause F.3.6.1.1)

Model Differences

N/A

Additional application considerations – (Considerations used to test a component or sub-assembly)

N/A

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	**Corresponding classification (ES)**
Input circuits within power supply (AC input)	ES3
Input circuits within power supply (DC input)	ES3
Output of power supply and system circuiting	ES1
All output ports	ES1
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2	
Source of power or PIS	**Corresponding classification (PS)**
Circuits within power supply	PS3
Output of power supply and system circuiting	PS3
1Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	**Corresponding chemical**
RTC battery	See Annex M
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	**Corresponding classification (MS)**
Sharp edges and corners	MS1
Mass	MS2
Moving parts (DC fan)	MS3 (fan guard used)
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1	
Source of thermal energy	**Corresponding classification (TS)**
Metal chassis (the accessible surfaces of side of appliance inlet)	TS1
Metal chassis (the accessible surfaces except for the side of appliance inlet)	TS1

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1	
Type of radiation	**Corresponding classification (RS)**
LED	RS1
Optical fiber transceiver	RS1, Class 1 laser product

ENERGY SOURCE DIAGRAM				
Indicate which energy sources are included in the energy source diagram. Insert diagram below				
ES3 is only in IEC 60950-1 approved SPS / output of the SPS is ES1 / PS3 is in the equipment / enclosure surface is TS1, MS3 is DC fan blade in the equipment				
OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	**Possible Hazard**			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES1: Output of power supply	N/A	N/A	N/A
Ordinary	ES1: Output connector	N/A	N/A	N/A
Ordinary	ES3: AC input circuit	N/A	N/A	Equipment safeguards
Ordinary	ES2: DC input circuit	N/A	N/A	Equipment safeguards
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Internal components / wiring material	PS3: > 100 Watt circuit (Primary and secondary circuits)	Equipment safeguards (See 6.3.1 (a))	Equipment safeguards (Control of fire spread)	N/A
Metal Chassis	PS3: > 100 Watt circuit (Primary and secondary circuits)	Equipment safeguards (See 6.3.1 (a))	Equipment safeguards (Control of fire spread)	N/A
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	Electrolytes inside (RTC battery)	Equipment safeguard	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3: High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)

Ordinary	MS1: Sharp edge and corners	N/A	N/A	N/A
Ordinary	MS3: Moving parts (DC fan)	N/A	N/A	Enclosure
Ordinary	MS2: Mass	N/A	N/A	See 8.6.2.2
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	TS1: Metal chassis (the accessible surfaces of side of appliance inlet) (< 60 °C)	N/A	N/A	N/A
Ordinary	TS1: Metal chassis (the accessible surfaces except for the side of appliance inlet) (< 60 °C)	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	RS1: LED	N/A	N/A	N/A
Ordinary	RS1: optical transceiver (Laser Class 1)	N/A	N/A	N/A
Supplementary information: (1) See attached energy source diagram for additional details. (2) “N” – Normal Condition; “A” – Abnormal Condition; “S” – Single Fault.				

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components		P
4.1.3	Equipment design and construction		P
4.1.15	Markings and instructions ..... :	(See Annex F)	P
4.4.4	Safeguard robustness		P
4.4.4.2	Steady force tests..... :	(See Annex T.5)	P
4.4.4.3	Drop tests ..... :		N/A
4.4.4.4	Impact tests ..... :	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests ..... :		N/A
4.4.4.6	Glass Impact tests..... :		N/A
4.4.4.7	Thermoplastic material tests ..... :		N/A
4.4.4.8	Air comprising a safeguard ..... :		P
4.4.4.9	Accessibility and safeguard effectiveness		P
4.5	Explosion		P
4.6	Fixing of conductors		P
4.6.1	Fix conductors not to defeat a safeguard		P
4.6.2	10 N force test applied to ..... :		N/A
4.7	Equipment for direct insertion into mains socket - outlets		N/A
4.7.2	Mains plug part complies with the relevant standard ..... :		N/A
4.7.3	Torque (Nm)..... :		N/A
4.8	Products containing coin/button cell batteries	The unit is installed in server room and children is unlikely to access	P
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery ..... :		—
4.8.4	Battery Compartment Mechanical Tests..... :		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object..... :	(See Annex P)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

5	**ELECTRICALLY-CAUSED INJURY**		P
5.2.1	Electrical energy source classifications ..... :	See Energy source identification and classification table.	P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current..... :	Evaluated in approved power source	P
5.2.2.3	Capacitance limits ..... :		N/A
5.2.2.4	Single pulse limits ..... :		N/A
5.2.2.5	Limits for repetitive pulses ..... :		N/A
5.2.2.6	Ringing signals ..... :		N/A
5.2.2.7	Audio signals ..... :		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.2.1	Accessibility to electrical energy sources and safeguards		P
5.3.2.2	Contact requirements		P
	a) Test with test probe from Annex V ..... :	It can't contact any bare internal conductive part (See Annex V for used finger)	P
	b) Electric strength test potential (V) ..... :		N/A
	c) Air gap (mm) ..... :		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Humidity conditioning ..... :	See 5.4.8	P
5.4.1.4	Maximum operating temperature for insulating materials ..... :	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degree ..... :	2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage	Evaluated in approved power supply.	N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat softening temperature..... :		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10.3	Ball pressure ..... :		N/A
5.4.2	Clearances	Evaluated as part of Power Supply unit.	N/A
5.4.2.2	Determining clearance using peak working voltage		N/A
5.4.2.3	Determining clearance using required withstand voltage ..... :		N/A
	a) a.c. mains transient voltage ..... :		—
	b) d.c. mains transient voltage ..... :		—
	c) external circuit transient voltage ..... :		—
	d) transient voltage determined by measurement ..... :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages ..... :		N/A
5.4.3	Creepage distances ..... :	Evaluated as part of Power Supply unit.	N/A
5.4.3.1	General		N/A
5.4.3.3	Material Group ..... :		—
5.4.4	Solid insulation		N/A
5.4.4.2	Minimum distance through insulation ..... :		N/A
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs)..... :		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material ..... :		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz ..... :		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ)..... :		—
5.4.6	Insulation of internal wire as part of supplementary safeguard ..... :		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%)....:	93%	—
	Temperature (°C) ....:	40°C	—
	Duration (h)....:	120h	—
5.4.9	Electric strength test ....:	Tested after 5.4.8. (See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test		P
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test ....:		N/A
5.4.10.2.3	Steady-state test....:		N/A
5.4.11	Insulation between external circuits and earthed circuitry ....:		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op}(V) ....:		—
	Nominal voltage U_{peak}(V) ....:		—
	Max increase due to variation U_{sp} ....:		—
	Max increase due to ageing ΔU_{sa}....:		—
	$U_{op}= U_{peak}+ \Delta U_{sp}+\Delta U_{sa}$....:		—
5.5	Components as safeguards		
5.5.1	General		N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector....:		N/A
5.5.3	Transformers		N/A
5.5.4	Optocouplers		N/A
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPD’s		N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable.....:		N/A
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation	Evaluated as part of Power Supply unit.	P
5.6.3	Requirement for protective earthing conductors		P
	Protective earthing conductor size (mm^2) .....:	1.5mm^2 for DC PSU, 0.75mm^2 for AC PSU	—
5.6.4	Requirement for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm^2).....:	Evaluated as part of Power Supply unit.	—
	Protective current rating (A)..... :	Evaluated as part of Power Supply unit.	—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors	Evaluated as part of Power Supply unit.	N/A
5.6.5.1	Requirement		N/A
	Conductor size (mm^2), nominal thread diameter (mm). .....:		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω).....:		N/A
5.6.7	Reliable earthing		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current .....:	Instrument indicating peak voltage used.	P
5.7.2.2	Measurement of prospective touch voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P
	System of interconnected equipment (separate connections/single connection) .....:	N/A	—
	Multiple connections to mains (one connection at a time/simultaneous connections) .....:	One connection at a time.	—
5.7.4	Earthed conductive accessible parts.....:	(See appended Table 5.7.4)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.5	Protective conductor current		N/A
	Supply Voltage (V).....:		—
	Measured current (mA).....:		—
	Instructional Safeguard.....:		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (mA).....:		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA).....:		N/A
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications	See Energy source identification and classification table.	P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault ... :		N/A
6.2.2.3	Power measurement for worst-case power source fault ..... :		N/A
6.2.2.4	PS1 ..... :	(See appended table 6.2.2)	P
6.2.2.5	PS2 ..... :		N/A
6.2.2.6	PS3 ..... :	See 6.2.2	P
6.2.3	Classification of potential ignition sources	All conductors and devices are considered as PIS.	P
6.2.3.1	Arcing PIS ..... :		P
6.2.3.2	Resistive PIS ..... :	See 6.2.3	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials ..... :	(See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure	No materials outside enclosure except for marking label.	P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Control of fire spread	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions..... :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		N/A
6.4.5.2	Supplementary safeguards .....:		N/A
6.4.6	Control of fire spread in PS3 circuit	Components other than PCB and wires are: - mounted on PCB rated V-1 or better, or - made of V-2/VTM-2 or better. - Min. VW-1 for internal wiring - Approved power supply source - Approved DC fan/SSD (with motor used) - Approved fire enclosure used	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General.....:		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	Fire enclosure provided.	P
6.4.8.1	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions(mm) .....:	See measurement section	P
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm).....:		N/A
	Flammability tests for the bottom of a fire enclosure .....:		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c) ..... :		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating ..... :	Enclosure is made of metal.	P
6.5	Internal and external wiring		P
6.5.1	Requirements	VW-1 wires used, which considered to equivalent to IEC/TS 60695-11-21	P
6.5.2	Cross-sectional area (mm^2) ..... :	Suitable area used.	—
6.5.3	Requirements for interconnection to building wiring ..... :		N/A
6.6	Safeguards against fire due to connection to additional equipment		P
	External port limited to PS2 or complies with Clause Q.1	See appended table annex Q.1.	P
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		P
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions ..... :		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010) ..... :		—
7.6	Batteries ..... :	See appended table annex M	P
8	**MECHANICALLY-CAUSED INJURY**		P
8.1	General		P
8.2	Mechanical energy source classifications	See Energy source identification and classification table.	P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners	MS1	N/A
8.4.1	Safeguards		N/A
8.5	Safeguards against moving parts		P
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment	The blades of the DC fan are not accessible with test finger Figure V.2 and V.1.	P
8.5.2	Instructional Safeguard ..... :	N/A	—
8.5.4	Special categories of equipment comprising moving parts		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks .....:		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard .....:		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N) .....:		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test.....:		N/A
8.6	Stability		P
8.6.1	Product classification	MS2	P
	Instructional Safeguard .....:	N/A	—
8.6.2	Static stability		P
8.6.2.2	Static stability test	The equipment remains stable at 10° tilt.	P
	Applied Force .....:	Not applied	—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt.....:		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force).....:		N/A
	Position of feet or movable parts.....:		—
8.7	Equipment mounted to wall or ceiling		N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) .....:		N/A
8.7.2	Direction and applied force .....:		N/A
8.8	Handles strength		N/A
8.8.1	Classification		N/A
8.8.2	Applied Force .....:		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.1	Classification		N/A
8.9.2	Applied force .....:		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructional Safeguard.....:		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force .....:		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N).....:		—
8.10.6	Thermoplastic temperature stability (°C).....:		N/A
8.11	Mounting means for mounted equipment		N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable *N*.....:		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas.....		N/A
	Button/Ball diameter (mm).....:		—
9	**THERMAL BURN INJURY**		P
9.2	Thermal energy source classifications		P
9.3	Safeguard against thermal energy sources		P
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard	Metal enclosure used.	P
9.4.2	Instructional safeguard .....:		N/A
10	**RADIATION**		P
10.2	Radiation energy source classification	See Energy source identification and classification table.	P
10.2.1	General classification		P
10.3	Protection against laser radiation	Approved Class 1 laser product. (See appended table 4.1.2)	P
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :		N/A
	Instructional safeguard ..... :		—
	Tool..... :		—
10.4	Protection against visible, infrared, and UV radiation		P
10.4.1	General	Indicating light LED used (RS1)	P
10.4.1.a)	RS3 for Ordinary and instructed persons .....:		N/A
10.4.1.b)	RS3 accessible to a skilled person.....:		N/A
	Personal safeguard (PPE) instructional		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	safeguard.....:		
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 . :		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions ..... :		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque.....:		N/A
10.4.1.f)	UV attenuation.....:		N/A
10.4.1.g)	Materials resistant to degradation UV .....:		N/A
10.4.1.h)	Enclosure containment of optical radiation.....:		N/A
10.4.1.i)	Exempt Group under normal operating conditions.....:		N/A
10.4.2	Instructional safeguard .....:		N/A
10.5	Protection against x-radiation		N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards.....:		N/A
	Instructional safeguard for skilled person..... :		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation .....:		—
	Abnormal and single-fault condition ..... :		N/A
	Maximum radiation (pA/kg)..... :		N/A
10.6	Protection against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A)..... :		N/A
	Output voltage, unweighted r.m.s..... :		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards ..... :		N/A
	Equipment safeguard prevent ordinary person to RS2..... :		—
	Means to actively inform user of increase sound pressure..... :		—
	Equipment safeguard prevent ordinary person to RS2..... :		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq}acoustic pressure output..... :		—
10.6.5.2	Corded listening devices with digital input		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Maximum dB(A) ..... :		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A) ..... :		—
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.2	Normal Operating Conditions		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers ..... :		N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements..... :	(See appended table B.3)	P
B.3.2	Covering of ventilation openings	(See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6)	P
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector ..... :	No voltage selector.	N/A
B.3.5	Maximum load at output terminals ..... :	(See appended table B.3)	P
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited ..... :	No temperature controlling device.	N/A
B.4.3	Motor tests		P
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature ..... :	(See appended table B.4)	P
B.4.4	Short circuit of functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation	Functional insulation complied with the requirements: a clearance for functional insulation shall be short-circuited.	P
B.4.4.2	Short circuit of creepage distances for functional insulation	Functional insulation complied with the requirements: a creepage distance for functional insulation shall be short-circuited	P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnect of passive components		N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		P
B.4.9	Battery charging under single fault conditions ... :		P
C	**UV RADIATION**		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	**TEST GENERATORS**		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N/A
E.1	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V) .....:		—
	Rated load impedance (Ω) .....:		—
E.2	Audio amplifier abnormal operating conditions		N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	General requirements		P
	Instructions – Language .....:	English and German	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		N/A
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Equipment and rating marking are on the exterior of EUT.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....:	See copy of marking plate	—
F.3.2.2	Model identification .....:	See copy of marking plate	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of supply voltage.....:	See copy of marking plate	—
F.3.3.4	Rated voltage .....:	See copy of marking plate	—
F.3.3.4	Rated frequency.....:	See copy of marking plate	—
F.3.3.6	Rated current or rated power .....:	See copy of marking plate	—
F.3.3.7	Equipment with multiple supply connections		P
F.3.4	Voltage setting device	No voltage setting device.	N/A
F.3.5	Terminals and operating devices		P
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :	No appliance outlet and socket-outlet.	N/A
F.3.5.2	Switch position identification marking ..... :	No disconnect switch.	N/A
F.3.5.3	Replacement fuse identification and rating markings..... :	Evaluated in approved SPS.	P
F.3.5.4	Replacement battery identification marking ..... :	See instruction manual.	P
F.3.5.5	Terminal marking location		P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I Equipment	See marking and instruction	P
F.3.6.1.1	Protective earthing conductor terminal		P
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking .....:	IPX0	—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings		P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present – marking	This unit is used in server room, and children is not intent to use.	P
	b) Instructions given for installation or initial use		P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		P
	g) Protective earthing conductor current exceeding ES2 limits		N/A
	h) Symbols used on equipment		N/A
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards		P
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		P
G	**COMPONENTS**		P
G.1	**Switches**		N/A
G.1.1	General requirements		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	**Relays**		N/A
G.2.1	General requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	**Protection Devices**		P
G.3.1	Thermal cut-offs		N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H) ..... :		—
	Single Fault Condition ..... :		—
	Test Voltage (V) and Insulation Resistance (Ω). :		—
G.3.3	PTC Thermistors		P
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions.....:		N/A
G.4	**Connectors**		P
G.4.1	Spacings		P
G.4.2	Mains connector configuration .....:	Evaluated in approved SPS.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		P
G.5	**Wound Components**		N/A
G.5.1	Wire insulation in wound components.....		N/A
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s) .....:		—
	Temperature (°C) .....:		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	**Transformers**		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1).....:		N/A
	Position.....:		—
	Method of protection .....:		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings.....:		—
G.5.3.3	Overload test ..... :		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	**Motors**		N/A
G.5.4.1	General requirements	Approved DC fan used.	N/A
	Position .....:		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) .....:		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V) ..... :		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) ..... :		N/A
	Electric strength test (V) ..... :		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
	Electric strength test (V) ..... :		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) ..... :		N/A
	Electric strength test (V) ..... :		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		N/A
G.6.1	General		N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	**Mains supply cords**		N/A
G.7.1	General requirements	No power supply cord provided.	N/A
	Type..... :		—
	Rated current (A)..... :		—
	Cross-sectional area (mm^2), (AWG)..... :		—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) ..... :		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).... :		—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry ..... :		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g) ..... :		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Diameter (m) .....:		—
	Temperature (°C) .....:		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	**Varistors**		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test .....:		N/A
G.8.3.3	Temporary overvoltage .....:		N/A
G.9	**Integrated Circuit (IC) Current Limiters**		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA .....:		—
G.9.1 d)	IC limiter output current (max. 5A) .....:		—
G.9.1 e)	Manufacturers' defined drift .....:		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	**Resistors**		N/A
G.10.1	General requirements		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	**Capacitor and RC units**		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
G.12	**Optocouplers**		N/A
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....:		N/A
	Type test voltage Vini .....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Routine test voltage, Vini,b.....:		—
G.13	**Printed boards**		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction).....:		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation .....:		N/A
	Number of insulation layers (pcs).....:		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements ..... :		N/A
G.15	**Liquid filled components**		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	**IC including capacitor discharge function (ICX)**		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with Uc = to transient voltage .....:		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage .....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance .....:		—
D3)	Resistance .....:		—
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz) .....:		—
H.3.1.2	Voltage (V) .....:		—
H.3.1.3	Cadence; time (s) and voltage (V) .....:		—
H.3.1.4	Single fault current (mA):.....:		—
H.3.2	Tripping device and monitoring voltage .....:		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) .....:		—
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N/A
	General requirements		N/A
K	**SAFETY INTERLOCKS**		N/A
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance .....:		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method .....:		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) .....:		N/A
K.7.2	Overload test, Current (A) .....:		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test .....:		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
L	**DISCONNECT DEVICES**		P
L.1	General requirements	Appliance coupler is considered as disconnected device.	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		P
L.4	Single phase equipment		P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		P
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		P
M.1	General requirements		P
M.2	Safety of batteries and their cells		P
M.2.1	Requirements		P
M.2.2	Compliance and test method (identify method) .. :	See appended table 4.1.2 for RTC battery.	P
M.3	Protection circuits		P
M.3.1	Requirements		P
M.3.2	Tests	RTC Battery is protected against charging current by multiple components.	P
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		P
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance .....:	(See appended Table annex M)	P
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature .....:		—
M.4.2.2 b)	Single faults in charging circuitry .....:		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method) ..... :		N/A
M.6.2	Leakage current (mA) ..... :		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume *V*z (m^3/s)..... :		—
M.8.2.3	Correction factors..... :		—
M.8.2.4	Calculation of distance *d* (mm) ..... :		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) ..... :	Complied by inspection and data review. Provided in user's manual.	P
N	**ELECTROCHEMICAL POTENTIALS**		P
	Metal(s) used ..... :	The combined electrochemical potential is below 0.6V.	—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		P
	Figures O.1 to O.20 of this Annex applied ..... :	Pollution degree considered	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
P	**SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS**		P
P.1	General requirements		P
P.2.2	Safeguards against entry of foreign object	Enclosure used.	P
	Location and Dimensions (mm) .....:	Side/bottom opening: No any opening. Front opening: within 4.0x4.0 mm per each hole and no any component when mapping to the area. Rear side opening: 4.33 x 4.33 mm in any dimension for DC fan guard.	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A
	Transportable equipment with metalized plastic parts .....:		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) .....:		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C).....:		—
	Tr (°C) .....:		—
	Ta (°C).....:		—
P.4.2 b)	Abrasion testing .....:		N/A
P.4.2 c)	Mechanical strength testing .....:		N/A
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		P
Q.1	Limited power sources		P
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		P
	- Regulating network limited output under normal operating and simulated single fault condition		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		P
Q.1.2	Compliance and test method	See table Q.1	P
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) .....:		—
	Current limiting method.....:		—
R	**LIMITED SHORT CIRCUIT TEST**		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)). .....:		N/A
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material .....:		—
	Wall thickness (mm).....:		—
	Conditioning (test condition), (°C).....:		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
T	**MECHANICAL STRENGTH TESTS**		P
T.1	General requirements		P
T.2	Steady force test, 10 N .....:	(See appended table 5.4.2.2)	P
T.3	Steady force test, 30 N .....:		N/A
T.4	Steady force test, 100 N .....:		N/A
T.5	Steady force test, 250 N .....:	(See appended table T.5)	P
T.6	Enclosure impact test	(See appended table T.6)	P
	Fall test		P
	Swing test		N/A
T.7	Drop test .....:		N/A
T.8	Stress relief test .....:		N/A
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J).....:		—
	Height (m) .....:		—
T.10	Glass fragmentation test .....:		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm).....:		—
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFECTS OF IMPLOSION**		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen.....:		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)**		P
V.1	Accessible parts of equipment	Figure V.2 and V.3 are considered.	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
V.2	Accessible part criterion		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
Metal enclosure	Interchangeable	Interchangeable	Metal, thickness min. 1.0 mm.	--	--
Redundant Power	Etasis Electronics Corporation	EFRP-S2400C	I/P: AC 100-240V~, 5.0-2.5A, 50-60Hz O/P: +3.3V/ 20A, +5V/ 20A, +12V/ 32A, -12V/ 0.5A, +5VSB/ 2.5A +5V & +3.3V Combine Max. 140W Total power: 400W Class I, 50°C, 5000m	IEC 60950-1 : 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 60950-1	CB (SG-OF-13806), TÜV (B 15 12 28569 372), UL (E176239)
- Power Module	Etasis Electronics Corporation	EFRP-S400C	I/P: AC 100-240V~, 5.0-2.5A, 50-60Hz O/P: +12V/ 32A, +5VSB/ 2.5A, Total power: 400W Class I, 50°C, 5000m	IEC 60950-1: 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 60950-1	CB (SG-OF-13806), TÜV (B 15 12 28569 372), UL (E176239)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Redundant Power Supply	Zippy Technology Corp.	DM1P2-5420V4V	I/P: -36 - -72Vdc, 16-8A O/P: +5V / 0-32A, +12V / 35A, +3.3V / 0-25A, -12V / 0-0.5A, +5VSB / 0-3.5A, (+5V & +3.3V Total Max. 170W), Max. power: 420W Class I, 50 degree C, 5000m	IEC 60950-1 : 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 60950-1 2nd edition, 201410-14 CAN/CSA C22.2 No. 60950-1-07 2nd edition, 2014-10	CB (JPTUV-073658), TÜV (R 50350676), UL (E143756) , cUL
- Power Module (One or two provided)	Zippy Technology Corp.	DM1P-2420V	I/P: -36 - -72Vdc, 16-8A O/P: +12V / 35A, +5VSB / 0-3.5A, Max. power: 420W Class I, 50 degree C, 5000m	IEC 60950-1 : 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 60950-1 2nd edition, 201410-14 CAN/CSA C22.2 No. 60950-1-07 2nd edition, 2014-10	CB (JPTUV-073658), TÜV (R 50350676), UL (E143756) , cUL
All PCBs material	Interchangeable	Interchangeable	V-1 or better , 105°C min.	UL 796	UL
Hard Disk Drive (HDD) (One provided) (Optional)	HGST Japan, Ltd.	TT7SAE500	Generic, 5Vdc, 0.8A max.	EN 60950-1: 2006 +A11+A1+ A12, UL 60950-1	TÜV (R 50024840), UL (E182115)
	Interchangeable	Interchangeable	Rated 5V, max. 0.8A.	EN/IEC 60950-1, UL 60950-1	TÜV or VDE or ENEC or NORDIC UL
Solid State Drive (SSD) (One provided) (optional)	Interchangeable	Interchangeable	Rated 5Vdc, 0.26A max.	--	--
DC Fan (Three provided) (for system)	Sanyo Denki Co., Ltd.	9GA0612P1J601	Outward, 12Vdc, 1.5A, 62CFM	EN 60950-1: 2006+A11+A1+ A12+A2, UL 507	TÜV (R 2051038), UL (E46810),

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Poly-switch (FS1) (USB port protector)	Polytronics Technology Corp.	SMD1812P110TF	PTC type, Vmax= 8Vdc, Isc= 100A, Ih= 1.1A, It= 2.2A	IEC/EN 60730-1: 2000 (Tested to clauses 15, 17, J15 and J17), UL 1434	TÜV (R 50099121), UL (E201431)
RTC battery (BAT1)	Hitachi Maxell Ltd.	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH12568)
	Sony Energy Devices Corp.	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH12566)
	Mitsubishi Electric Corp.	CR2032	3Vdc, 210mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH15370)
	Mitsubishi Electric Home Appliance Co Ltd.	CR2032, CR2032E	3Vdc, 210mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH21249)
	Panasonic Corporation,	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH12210)
	VIC-DAWN Enterprise Co., Ltd.	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH20550)
	Toshiba Home Appliances Corp.	CR2032	3Vdc, 210mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH12828)
	Shun Wo New Power Battery Technology Ltd. (Newsun)	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH25881)
	Double Best Co., Ltd.	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 10mA	UL 1642	UL (MH45388)
	Spectrum Brands Inc.	CR2032	3Vdc, 220mAh, Max Abnormal Charging Current 5mA	UL 1642	UL (MH12542)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

	FDK Corp.	CR2032, CR2032U	3Vdc, 220mAh, max Abnormal Charging Current 5mA	UL 1642	UL (MH13421)

Supplementary information:

1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.

4.8.4, 4.8.5	**TABLE: Lithium coin/button cell batteries mechanical tests**	N/A

(The following mechanical tests are conducted in the sequence noted.)

4.8.4.2	**TABLE: Stress Relief test**		—
Part	**Material**	**Oven Temperature (°C)**	**Comments**

4.8.4.3	**TABLE: Battery replacement test**	—
Battery part no. .....:		—
Battery Installation/withdrawal	Battery Installation/Removal Cycle	Comments
	1	
	2	
	3	
	4	
	5	
	6	
	8	
	9	
	10	

4.8.4.4	**TABLE: Drop test**		—
Impact Area	Drop Distance	Drop No.	Observations
		1	
		2	
		3	

4.8.4.5	**TABLE: Impact**		—
Impacts per surface	**Surface tested**	**Impact energy (Nm)**	**Comments**

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.8.4, 4.8.5	**TABLE: Lithium coin/button cell batteries mechanical tests**	N/A

(The following mechanical tests are conducted in the sequence noted.)

4.8.4.6	**TABLE: Crush test**	—

Test position	**Surface tested**	**Crushing Force (N)**	**Duration force applied (s)**

Supplementary information:

4.8.5	**TABLE: Lithium coin/button cell batteries mechanical test result**	N/A

Test position	**Surface tested**	**Force (N)**	**Duration force applied (s)**

Supplementary information:

5.2	**Table: Classification of electrical energy sources**	N/A

5.2.2.2 –Steady State Voltage and Current conditions

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
			Normal				
			Abnormal				
			Single fault – SC/OC				
			Normal				
			Abnormal				
			Single fault – SC/OC				

Supplementary Information:

5.2.2.3 - Capacitance Limits

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
			Normal			
			Abnormal			
			Single fault – SC/OC			

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.2.2.4 - Single Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				

5.2.2.5 - Repetitive Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				

Test Conditions:

Normal –

Abnormal – Covering of ventilation openings, maximum load at output terminals

Supplementary information: SC=Short Circuit, OC=Short Circuit

No single fault conditions considered necessary because the circuits of output connectors are supplied by the output circuits of approved power supply board that meet ES1.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 6.3.2, 9.0, B.2.6	**TABLE: Thermal requirements**				P
	Supply voltage (V) ..... :	See below			—
	Ambient T_{min} (°C) ..... :	--			—
	Ambient T_{max} (°C) ..... :	See below			—
Maximum measured temperature T of part/at.....:		T (°C)			Allowed T_{max} (°C)
With single power module operating					
Supply voltage		90Vac	264Vac	--	--
Power module location		Top	Top	--	--
SPS T1		59.5	59.6	--	110
SPS T2		46.5	46.7	--	110
Main Board HS1		55.3	55.1	--	110
Main Board HS2		50.6	50.4	--	110
Card PCB near heatsink		45	44.7	--	90
HDD		45.6	45.5	--	90
RTC		42.8	42.5	--	100
Tma		50	50	--	--
Tamb		24.1	24.0	--	--
Metal enclosure outside near SPS		42.9	42.5	--	70
Metal enclosure outside near HS1		42.5	42.4	--	70
Tma		25	25	--	--
Tamb		24.1	24.0	--	--
Supply voltage		DC36V	DC72V	--	--
Power module location		Top	Top	--	--
SPS T1		49.3	49.3	--	110
SPS T2		47.6	48.1	--	110
Main Board HS1		55.3	55.6	--	110
Main Board HS2		50.6	51	--	110
Card PCB near heatsink		44.4	45	--	90
HDD		45.7	46	--	90
RTC		42.2	42.8	--	100
Metal enclosure outside near SPS		42.7	42.4	--	70

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Metal enclosure outside near HS1	41.1	41.5	--	70
Tma	50	50	--	--
Tamb	23.4	25	23.7	--
Metal enclosure outside near SPS	43.3	42.4	--	70
Metal enclosure outside near HS1	41.7	41.5	--	70
Tma	25	25	--	--
Tamb	23.4	25	23.7	--

Supplementary information:

1) With a maximum ambient temperature of +50°C as declared by the manufacturer.
2) Thermocouple method used for measuring the temperatures.
3) Winding components (providing safety isolation):
   - Class 130 material (B) Tmax = 120°C - 10°C= 110°C
   - Class 105 material (A) Tmax = 100°C - 10°C= 90°C

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

5.4.1.10.2	**TABLE: Vicat softening temperature of thermoplastics**		N/A
Penetration (mm)..... :			—
Object/ Part No./Material	Manufacturer/trademark	T softening (°C)	
supplementary information:			

5.4.1.10.3	**TABLE: Ball pressure test of thermoplastics**			N/A
Allowed impression diameter (mm) ..... :	≤ 2 mm			—
Object/Part No./Material	Manufacturer/trademark	Test temperature (°C)	Impression diameter (mm)	
Supplementary information:				

5.4.2.2, 5.4.2.4 and 5.4.3	**TABLE: Minimum Clearances/Creepage distance**						N/A
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz)[1]	Required cl (mm)	cl (mm)[2]	Required[3] cr (mm)	cr (mm)

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information: Evaluated as part of power supply

5.4.2.3	**TABLE: Minimum Clearances distances using required withstand voltage**			N/A
	Overvoltage Category (OV):			II
	Pollution Degree:			2
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)
Supplementary information:				

5.4.2.4	**TABLE: Clearances based on electric strength test**			N/A
Test voltage applied between:		Required cl (mm)	Test voltage (kV) peak/ r.m.s. / d.c.	Breakdown Yes / No
Supplementary information:				

5.4.4.2, 5.4.4.5 c) 5.4.4.9	**TABLE: Distance through insulation measurements**					N/A
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)	
Supplementary information:						

5.4.9	**TABLE: Electric strength tests**			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Basic/supplementary:				
Unit: Primary to Earth(Enclosure) (AC power supply)		DC	2760	No
Unit: Primary to Earth(Enclosure) (DC power supply)		DC	4242	No
Reinforced:				
Unit: Primary to Secondary (AC power supply)		DC	4242	No
Unit: Primary to Secondary (DC power supply)		DC	2760	No
Supplementary information: 1. Test voltages not according to standard were requested by client. 2. Applied d.c. voltage in one polarity for 60s and then repeated it in reverse polarity.				

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

5.5.2.2	TABLE: Stored discharge on capacitors				N/A
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification

Supplementary information:

X-capacitors installed for testing are:

☐ bleeding resistor rating:)

☐ ICX:

Notes:

A. Test Location:

Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth

B. Operating condition abbreviations:

N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition

5.6.6.2	TABLE: Resistance of protective conductors and terminations			P
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
Inlet earth pin to metal chassis (AC power source)	40	2	0.2	0.005
Inlet earth pin to metal chassis (AC power source)	32	2	0.128	0.004
Inlet earth pin to metal chassis (DC power source)	50	2	0.4	0.005
Supplementary information:				

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part	P
Supply voltage .....:	264Vac	—
Location	Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (mA)
Line/Neutral to metal enclosure (Normal / Reverse)	1 (for dual AC power supplies)	1.36
	2*	N/A
	3	N/A
	4	N/A
	5	N/A
	6	N/A
	8	N/A
	8	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary Information: Test with three power modules together.

Notes:
[1] Supply voltage is the anticipated maximum Touch Voltage
[2] Earthed neutral conductor [Voltage differences less than 1% or more]
[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3
[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.
[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

6.2.2	**Table: Electrical power sources (PS) measurements for classification**				N/A
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s*)	PS Classification
		Power (W) :			
		V_A (V) :			
		I_A (A) :			

Supplementary Information:
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits

6.2.3.1	**Table: Determination of Potential Ignition Sources (Arcing PIS)**			N/A
Location	Open circuit voltage After 3 s (Vp)	Measured r.m.s current (Irms)	Calculated value (V_p x I_{rms})	Arcing PIS? Yes / No

Supplementary information:

An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.

6.2.3.2	**Table: Determination of Potential Ignition Sources (Resistive PIS)**				N/A
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary Information:

A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.

If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.

A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

8.5.5	**TABLE: High Pressure Lamp**		N/A
Description		Values	Energy Source Classification
Lamp type.....:			—
Manufacturer .....:			—
Cat no. .....:			—
Pressure (cold) (MPa).....:			MS_
Pressure (operating) (MPa) .....:			MS_
Operating time (minutes) .....:			—
Explosion method .....:			—
Max particle length escaping enclosure (mm) .:			MS_
Max particle length beyond 1 m (mm).....:			MS_
Overall result .....:			
Supplementary information:			

B.2.5	**TABLE: Electrical data (in normal conditions)**					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
With single power module						
90/50	3.46	--	308.9	In SPS	--	Maximum normal load.
90/60	3.45	--	307.8	In SPS	--	Maximum normal load.
100/50	3.11	5	307.0	In SPS	--	Maximum normal load.
100/60	3.11	5	305.8	In SPS	--	Maximum normal load.
240/50	1.32	2.5	293.6	In SPS	--	Maximum normal load.
240/60	1.31	2.5	293.4	In SPS	--	Maximum normal load.
254/50	1.25	--	293.6	In SPS	--	Maximum normal load.
254/60	1.25	--	294.7	In SPS	--	Maximum normal load.
264/50	1.20	--	293.7	In SPS	--	Maximum normal load.
264/60	1.19	--	292.8	In SPS	--	Maximum normal load.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

With dual power modules						
90/50	3.49	--	308.6	In SPS	--	Maximum normal load.
90/60	3.49	--	309.1	In SPS	--	Maximum normal load.
100/50	3.11	5	308.2	In SPS	--	Maximum normal load.
100/60	3.09	5	307.0	In SPS	--	Maximum normal load.
240/50	1.45	2.5	311.9	In SPS	--	Maximum normal load.
240/60	1.42	2.5	312.7	In SPS	--	Maximum normal load.
254/50	1.34	--	311.2	In SPS	--	Maximum normal load.
254/60	1.34	--	310.7	In SPS	--	Maximum normal load.
264/50	1.32	--	312.0	In SPS	--	Maximum normal load.
264/60	1.30	--	311.1	In SPS	--	Maximum normal load.
Single power module operating only						
-36Vdc	8.14	12	293.0	In SPS	--	Maximum normal load
-72Vdc	4.01	6	288.7	In SPS	--	Maximum normal load
Dual power modules operating						
-36Vdc	8.57	12	308.5	In SPS	--	Maximum normal load
-72Vdc	4.21	6	303.1	In SPS	--	Maximum normal load
Supplementary information:						

B.3	**TABLE: Abnormal operating condition tests**	P
Ambient temperature (°C) .....:		—
Power source for EUT: Manufacturer, model/type, output rating ..:		—

Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Ventilation	Block	240Vac	3hr33min	--	--	--	--	Unit normal operating. No hazard. No damage.
System fan 1	Lock	240Vac	3hr28min	--	--	--	--	Unit normal operating. No hazard. No damage.
System fan 2	Lock	240Vac	3hr42min	--	--	--	--	Unit normal operating. No hazard. No damage.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

System fan 3	Lock	240Vac	2hr29min	--	--	--	--	Unit normal operating. No hazard. No damage.
SPS fan	Lock	240Vac	10min	--	--	--	--	When SPS Fan locked. Unit shutdown. No hazard. No damage.
RJ45 port (J47), all pins to return	overload	240Vac	10min	--	--	--	--	Voc:0V. Can not overload.
Console port (J50) pin 1, 2 to return	overload	240Vac	10min	--	--	--	--	Voc:0V. Can not overload.
Console port (J50) other pins to return	overload	240Vac	10min	--	--	--	--	Voc:0V. Can not overload.
USB port (J48) pin 1 to return	overload	240Vac	10min	--	--	--	--	Voc:5.02V. DC loafd:3.2A / 12.6W.
USB port (J48) other pins to return	overload	240Vac	10min	--	--	--	--	Voc:0V. Can not overload.

B.4	**TABLE: Fault condition tests**							P
Ambient temperature (°C) ..... :			25 if no any other specific.					—
Power source for EUT: Manufacturer, model/type, output rating .... :			See below					—
Component No.	Fault Condition	Supply voltage, (V)	Test time	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
See table B.3	--	--	--	--	--	--	--	--
Supplementary information:								

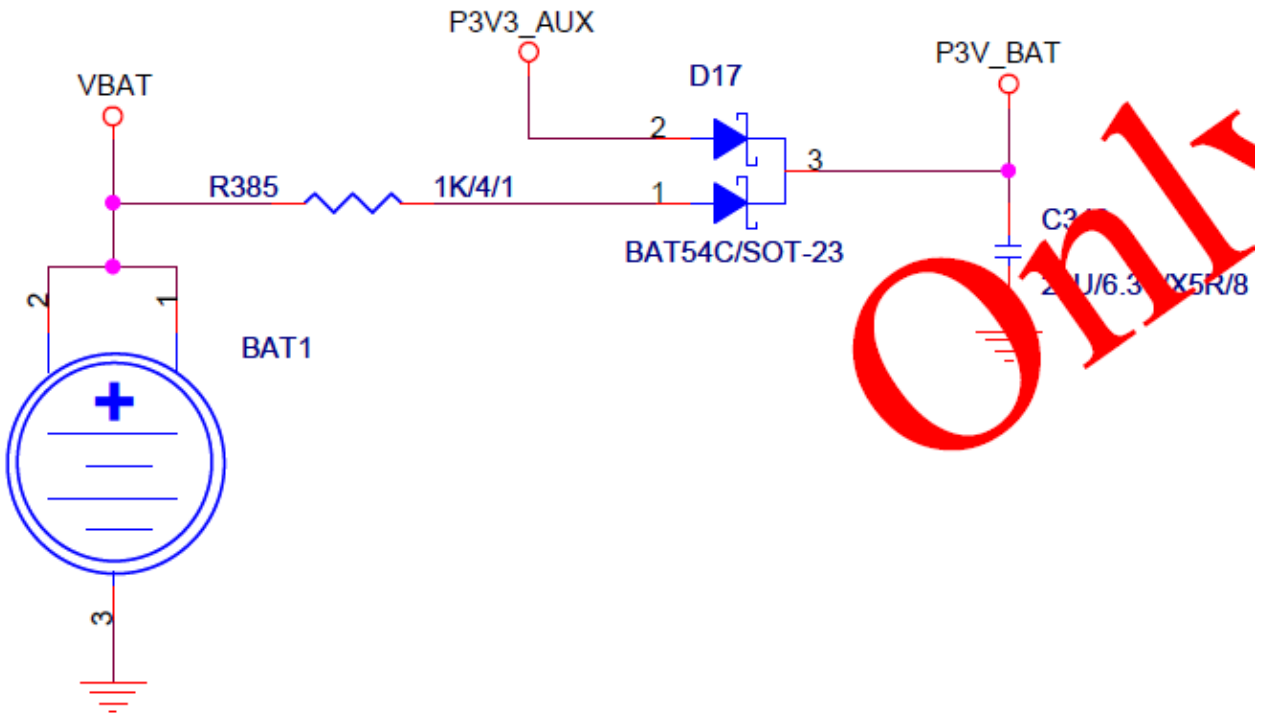
Annex M	**TABLE: Batteries**									P
The tests of Annex M are applicable only when appropriate battery data is not available										P
Is it possible to install the battery in a reverse polarity position? ..... :						--				P
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Max. current during normal condition	--	--	0	--	--	--	--	--	--
Max. current during fault condition	--	--	D17 (1 – 3) short= 2.0mA	--	--	--	--	--	--
Max. current during fault condition	--	--	Fault condition: R341 shorted 0 A	--	--	--	--	--	--
Max. current during fault condition	--	--	R385 short= 0mA	--	--	--	--	--	--

Test results:		Verdict
- Chemical leaks		P
- Explosion of the battery		P
- Emission of flame or expulsion of molten metal		P
- Electric strength tests of equipment after completion of tests		N/A

Supplementary information:



Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries	N/A

Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

--	Normal	--	--	--	--
--	Abnormal	--	--	--	--
--	Single fault –SC/OC	--	--	--	--
--	Normal	--	--	--	--
--	Abnormal	--	--	--	--
--	Single fault – SC/OC	--	--	--	--

Supplementary Information:

Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation
--	--	--	--	--
--	--	--	--	--

Supplementary Information:

Annex Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**	P

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

Output Circuit	Components	U_{oc} (V)	I_{sc} (A) 60s		S (VA) 60s	
			Meas.	Limit	Meas.	Limit
J47 (MNG1 port), All Pins to return	Normal Condition	0	--	8	--	100
J47 (MNG2 port), All Pins to return	Normal Condition	0	--	8	--	100
J50 (Console port), Pin 1, 2 to return	Normal Condition	9.92	--	8	--	100
J50 (Console port), other pins to return	Normal Condition	-6.17	--	8	--	100
J48 (USB port), Pin 1 to return. Protected by FS1	Normal Condition	0	--	8	--	100
J48 (USB port), other pins to return.	Normal Condition	0	--	8	--	100

Supplementary Information:

SC=Short circuit, OC=Open circuit

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

T.2, T.3, T.4, T.5	TABLE: Steady force test	P

Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation
Enclosure/ Top	Metal	1.65	250	5	No cracking, class 3 energy sources did not become accessible and all safeguards remain effective, No indication of dielectric breakdown
Enclosure/ Rear	Metal	0.95	250	5	No cracking, class 3 energy sources did not become accessible and all safeguards remain effective, No indication of dielectric breakdown
Enclosure/ Bottom	Metal	1.05	250	5	No cracking, class 3 energy sources did not become accessible and all safeguards remain effective, No indication of dielectric breakdown
Enclosure/ Side (near power supply)	Metal	1.95	250	5	No cracking, class 3 energy sources did not become accessible and all safeguards remain effective, No indication of dielectric breakdown

Supplementary information:

T.6, T.9	TABLE: Impact tests	P

Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation
Enclosure / Top near power supply	See appended table 4.1.2	See appended table 4.1.2	1300	No cracking, class 3 energy sources did not become accessible and all safeguards remain effective, No indication of dielectric breakdown
Enclosure / Side near power supply	See appended table 4.1.2	See appended table 4.1.2	1300	No cracking, class 3 energy sources did not become accessible and all safeguards remain effective, No indication of dielectric breakdown

Supplementary information:

Results Key: NB=No indication of dielectric breakdown

T.7	TABLE: Drop tests	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

Part/Location	Material	Thickness (mm)	Drop Height (mm)	Observation
Supplementary information:				

T.8	**TABLE: Stress relief test**				N/A
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Supplementary information:					

List of test equipment used:

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

Information:

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

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment - Part 1: Safety requirements)

Differences according to ..... : EN 62368-1:2014+A11:2017

Attachment Form No. ..... : EU_GD_IEC62368_1B_II

Attachment Originator..... : Nemko AS

Master Attachment..... : Date 2017-09-22

	CENELEC COMMON MODIFICATIONS (EN)	P
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed "Z".	P
CONTENTS	**Add** the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords	P
	Delete all the "country" notes in the reference document (IEC 62368-1:2014) according to the following list:	P

0.2.1	Note	1	Note 3	4.1.15	Note
4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c
5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note
5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3
5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4
10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3

	For special national conditions, see Annex ZB.		P
1	**Add** the following note: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.Z1	**Add** the following new subclause after 4.9: To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. **mains**, 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 B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for **pluggable equipment type B** or **permanently connected equipment**, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for **pluggable equipment type A** the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		N/A
5.4.2.3.2.4	**Add** the following to the end of this subclause: The requirement for interconnection with **external circuit** is in addition given in EN 50491-3:2009.		N/A
10.2.1	Add the following to [c] and [d] in table 39: For additional requirements, see 10.5.1.		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	**Add** the following after the first paragraph: *For RS 1 compliance is checked by measurement under the following conditions:* *In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.* NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. *The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus.* *Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.* *For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.* NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		N/A
10.6.1	**Add** the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		N/A
10.Z1	**Add** the following new subclause after 10.6.5. **10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz** The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body-mounted devices, attention is drawn to EN 50360 and EN 50566		N/A
G.7.1	**Add** the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Bibliography	**Add** the following standards: **Add** the following notes for the standards indicated: IEC 60130-9 NOTE Harmonized as EN 60130-9. IEC 60269-2 NOTE Harmonized as HD 60269-2. IEC 60309-1 NOTE Harmonized as EN 60309-1. IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series. IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4. IEC 60664-5 NOTE Harmonized as EN 60664-5. IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified). IEC 61508-1 NOTE Harmonized as EN 61508-1. IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1. IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4. IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6. IEC 61643-1 NOTE Harmonized as EN 61643-1. IEC 61643-21 NOTE Harmonized as EN 61643-21. IEC 61643-311 NOTE Harmonized as EN 61643-311. IEC 61643-321 NOTE Harmonized as EN 61643-321. IEC 61643-331 NOTE Harmonized as EN 61643-331.		N/A
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		N/A
4.1.15	**Denmark, Finland, Norway** and **Sweden** To the end of the subclause the following is added: **Class I pluggable equipment type A** intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and **accessible** parts, have a marking stating that the equipment shall be connected to an earthed **mains** socket-outlet. The marking text in the applicable countries shall be as follows: In **Denmark**: “Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord.” In **Finland**: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In **Norway**: “Apparatet må tilkoples jordet stikkontakt” In **Sweden**: “Apparaten skall anslutas till jordat uttag”		N/A
4.7.3	**United Kingdom** To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	**Denmark** After the 2nd paragraph add the following: A warning (marking **safeguard**) for high **touch current** is required if the **touch current** exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A
5.4.11.1 and Annex G	**Finland and Sweden** To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: 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. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV. 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 5.4.11; • 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

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	**Norway** After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
5.5.6	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: Resistors used as **basic safeguard** or bridging **basic insulation** in **class I pluggable equipment type A** shall comply with G.10.1 and the test of G.10.2.		N/A
5.6.1	**Denmark** **Add** to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. *Justification:* In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		N/A
5.6.4.2.1	**Ireland and United Kingdom** After the indent for **pluggable equipment type A**, the following is added: – the **protective current rating** is taken to be 13 A, this being the largest rating of fuse used in the **mains** plug.		N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm^2 to 1,5 mm^2 in cross-sectional area.		N/A
5.7.5	**Denmark** To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the **protective conductor current** exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.1	**Norway and Sweden** To the end of the subclause the following is added: The screen of the television 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 needs 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 a retailer, for example. 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: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for CATV-installations, 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): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: ”Apparater 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 apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.2	**Denmark** To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .		N/A
B.3.1 and B.4	**Ireland and United Kingdom** The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of **direct plug-in equipment**, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the **direct plug-in equipment**, until the requirements of Annexes B.3.1 and B.4 are met		N/A
G.4.2	**Denmark** To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. 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. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a *Justification:* Heavy Current Regulations, Section 6c		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	**United Kingdom** To the end of the subclause the following is added: 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
G.7.1	**United Kingdom** To the first paragraph the following is added: Equipment 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 shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		N/A
G.7.1	**Ireland** To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		N/A
G.7.2	**Ireland and United Kingdom** To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm^2 is allowed for equipment which is rated over 10 A and up to and including 13 A.		N/A

IEC 62368-1:2018 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	**Germany** The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. *Justification:* German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. **NOTE** Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de		N/A

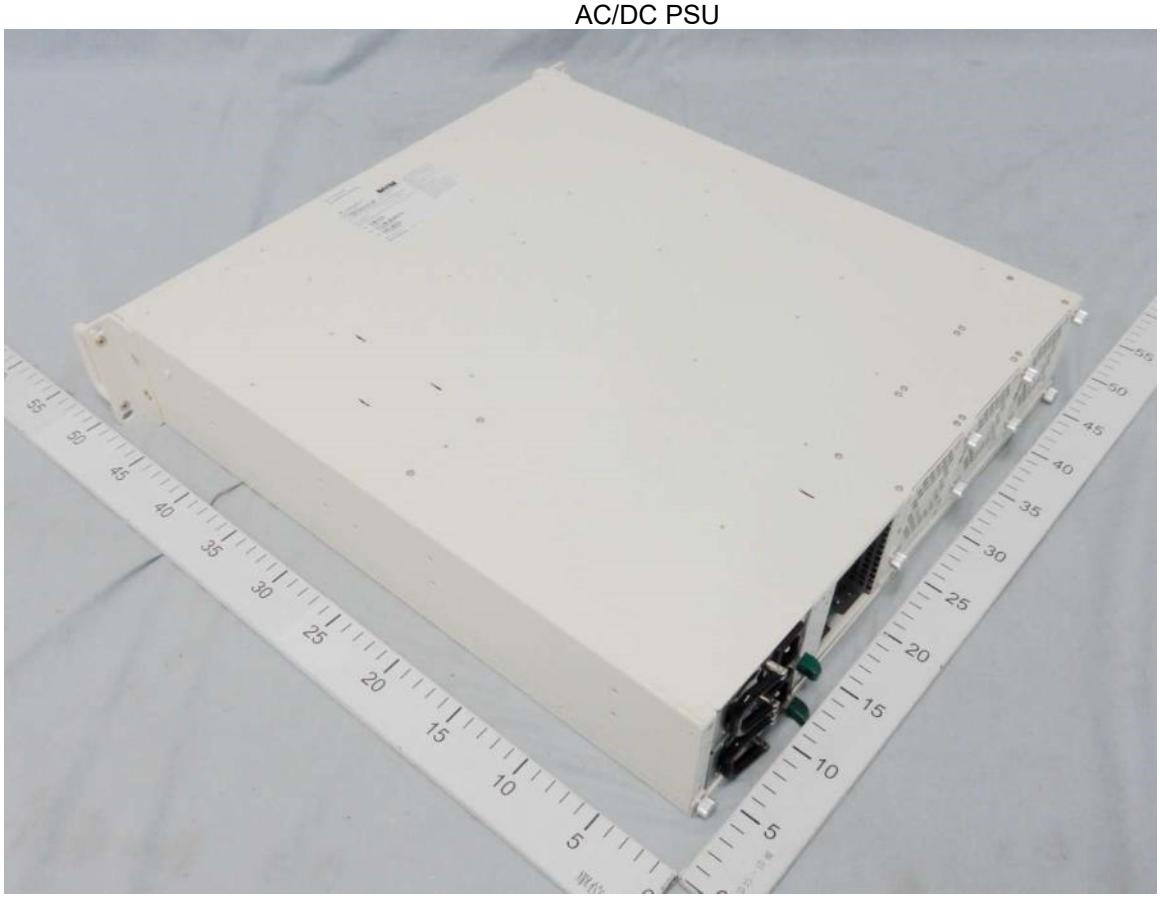
Clause	Requirement + Test	Result - Remark	Verdict

6.4.8.3.3	Table: Enclosure opening measurements		P
Location		Size (mm)	Comments
Front		Ø 4.4	- Numerous circle shape openings which covers an area 32 x 352mm.
Rear		Ø 5.3	- Numerous square shape openings which covers areas: 1. 45 x 72mm 2. 18 x 72mm 3. 18 x 72mm - No bare conductive parts are with hazardous voltage and energy hazards within 5° projective area.
		4 x 11.9	- Numerous "⬭" shape openings which covered an area 10 x 42mm. - Two areas. - No bare parts at ES3 or PS3 or which are energy hazards at the location of 5° projection from these openings.
(measured on power module)		Max. 22.4 x 5.5	- Several irregular shape openings which formed as fan guard. - Test finger cannot access to moving fan blades through the opening. - No bare conductive parts are with ES3 or PS3 and energy hazards within 5° projective area.
(measured fan module)		Ø 6.7	- Numerous hexagon shape openings which covered an area 51 x 55mm and formed as fan guard. - Test finger cannot access to moving fan blades through the opening. - No bare conductive parts are with ES3 or PS3 and energy hazards within 5° projective area.
Others		--	- No openings.
Supplementary information:			

Product: OnDemand Switch

Type Designation: ODS-MR

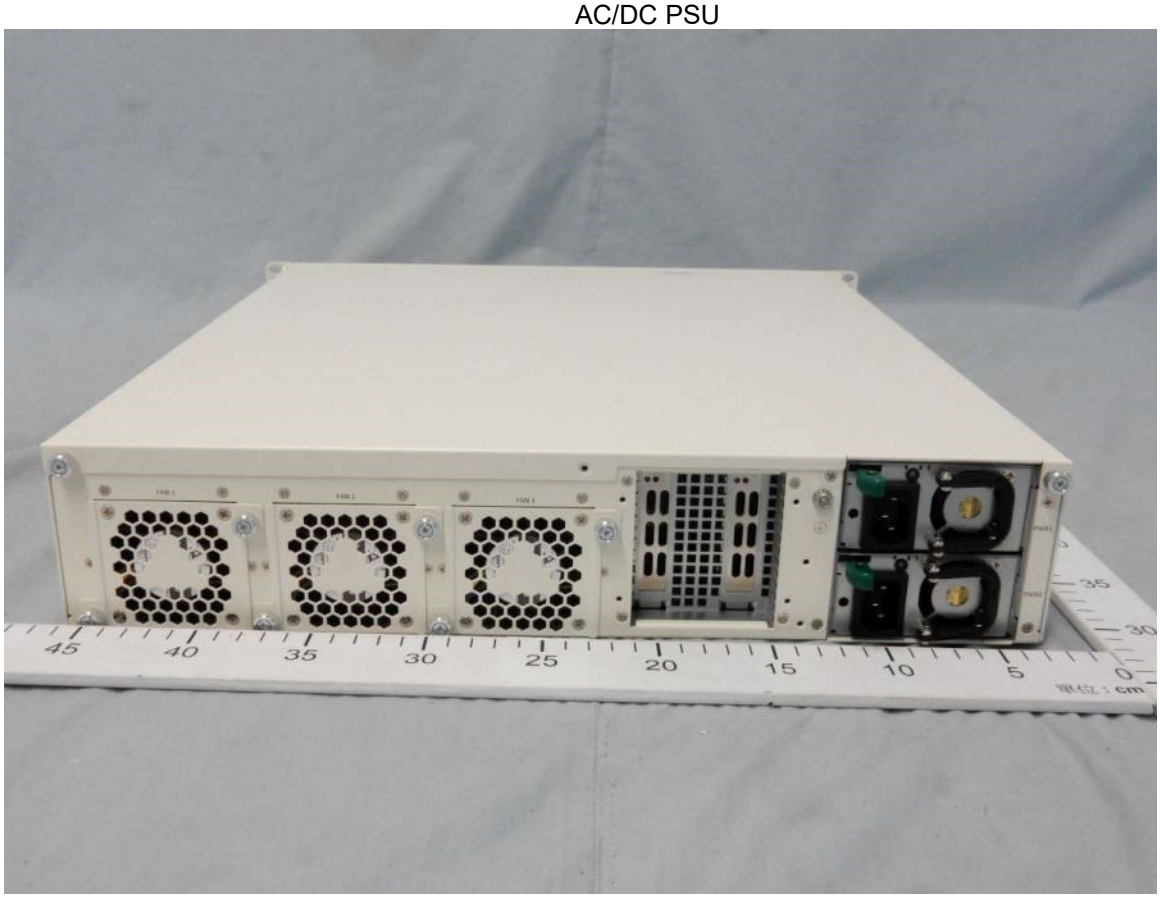
AC/DC PSU



Product: OnDemand Switch

Type Designation: ODS-MR

AC/DC PSU



Product: OnDemand Switch

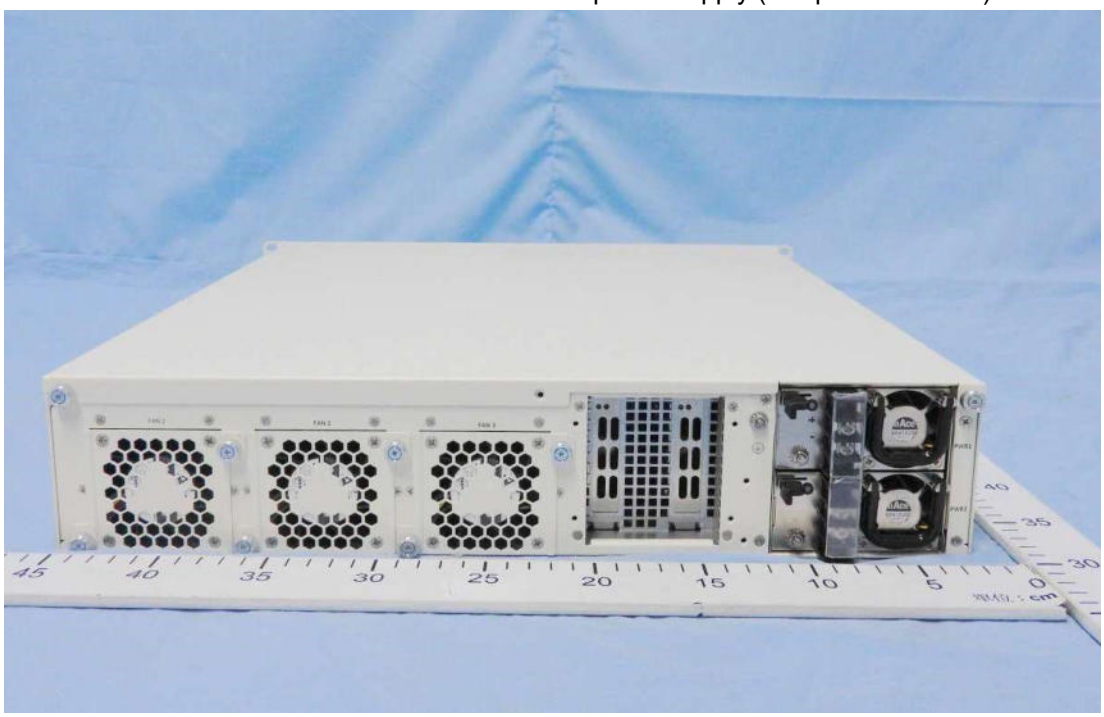
Type Designation: ODS-MR

AC/DC PSU

Product: OnDemand Switch

Type Designation: ODS-MR

EUT with redundant DC power supply (two power module)



EUT with redundant DC power supply (one power module)

Product: OnDemand Switch

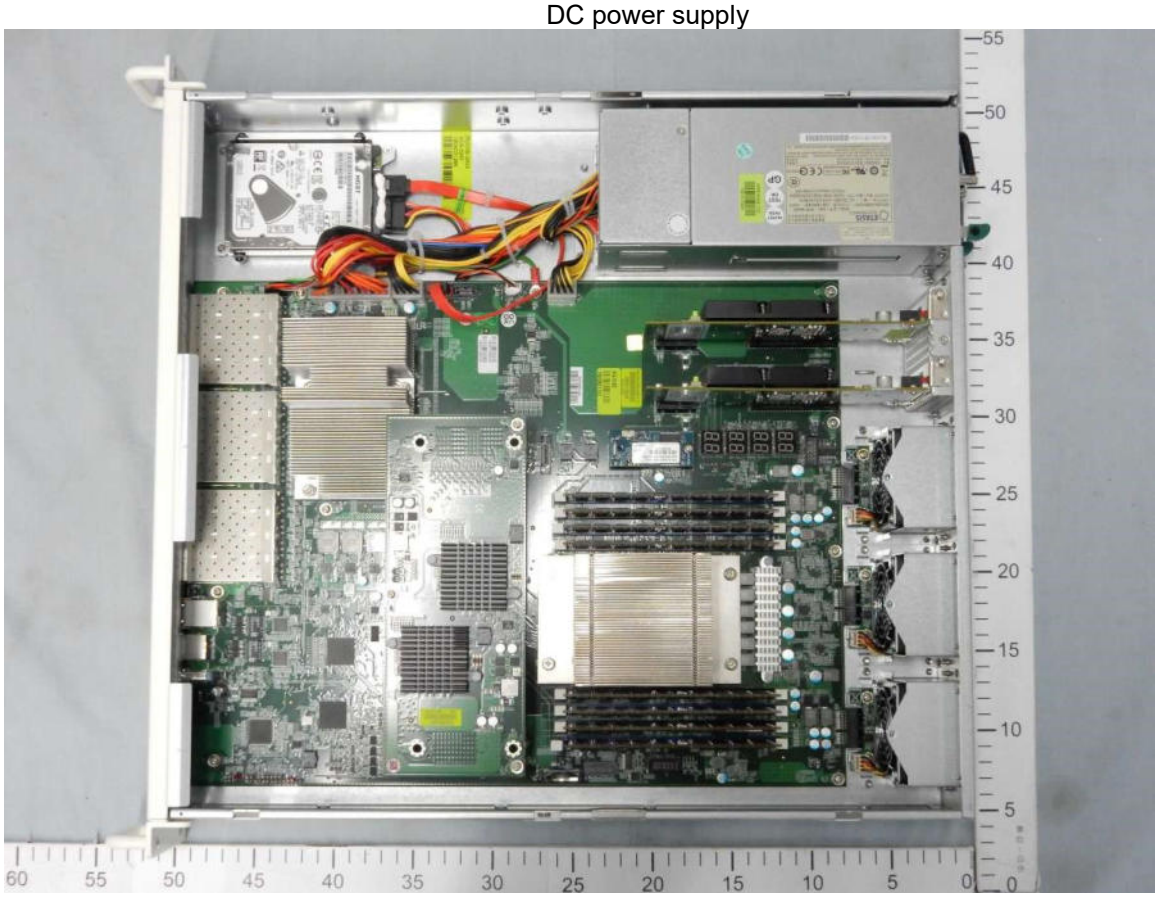
Type Designation: ODS-MR

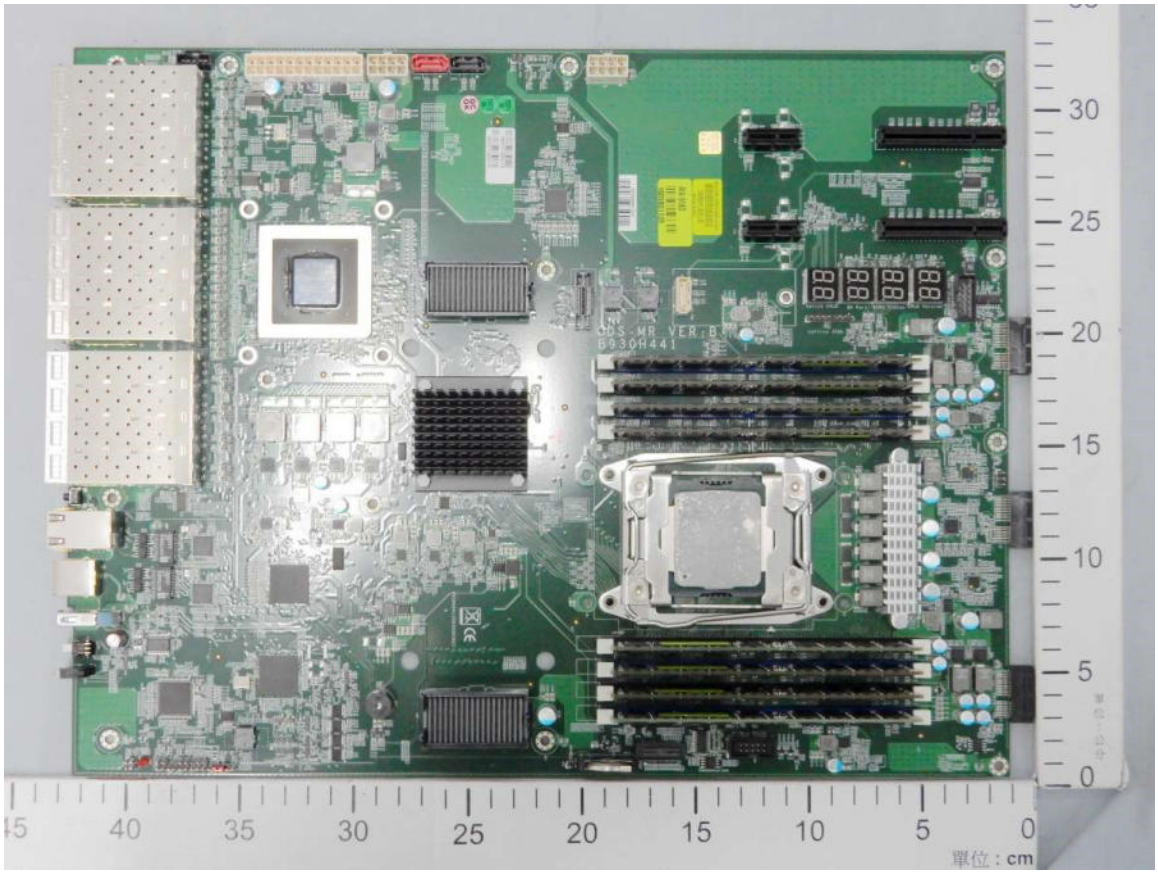
EUT with redundant DC power supply

Product: OnDemand Switch

Type Designation: ODS-MR

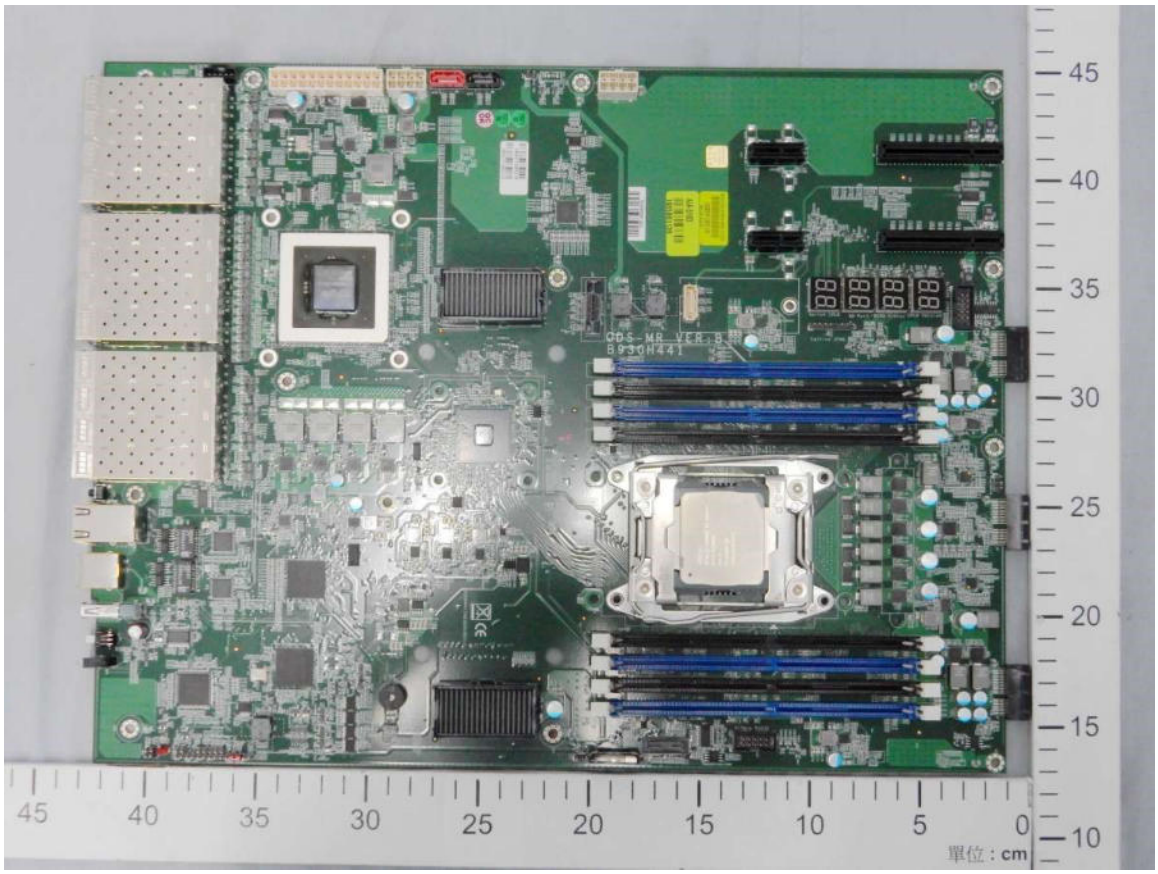
DC power supply

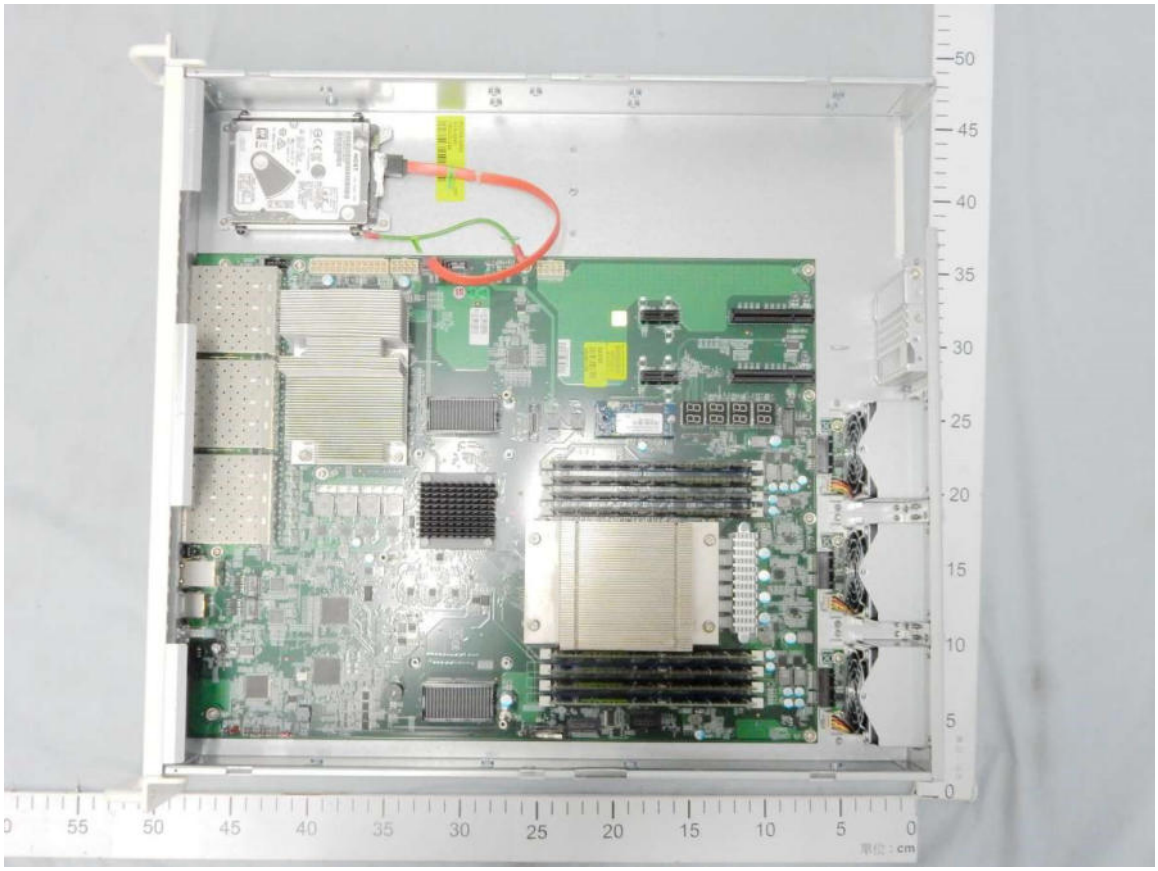




Product: OnDemand Switch

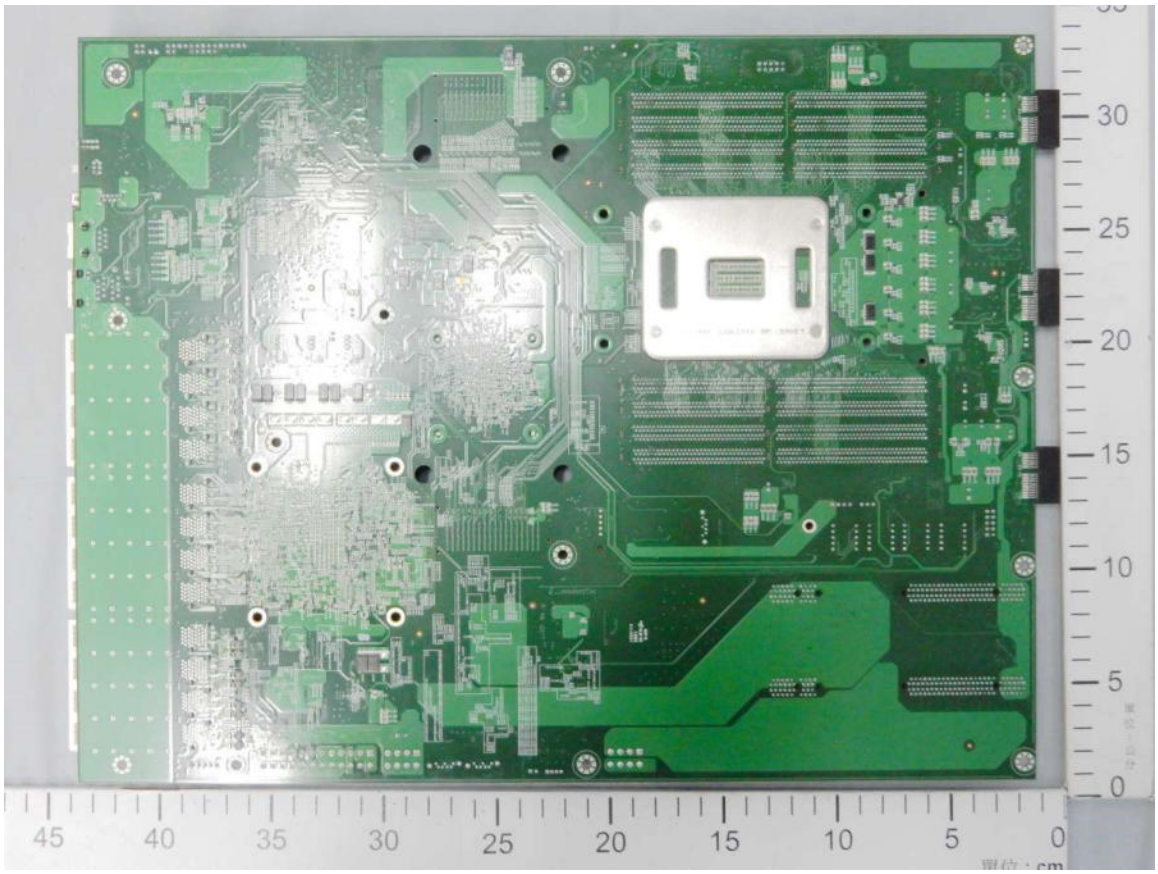
Type Designation: ODS-MR

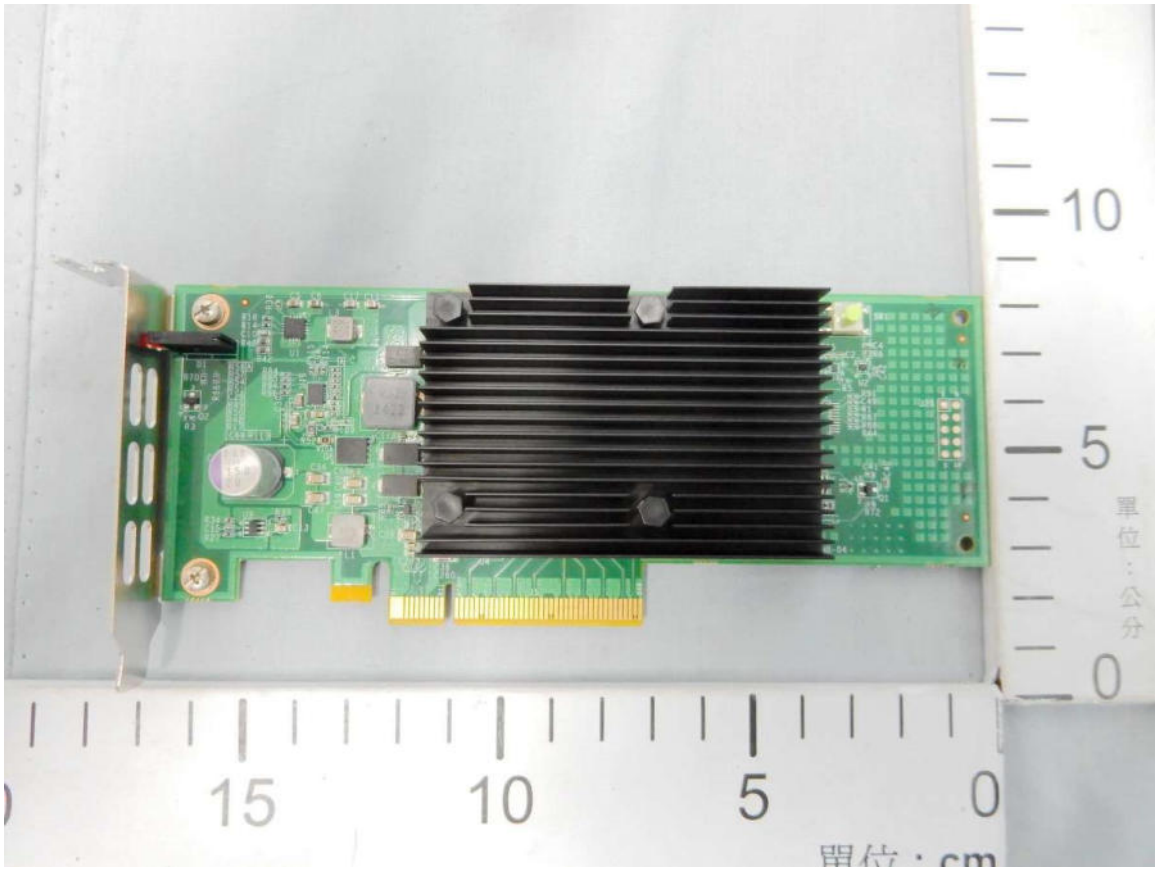




Product: OnDemand Switch

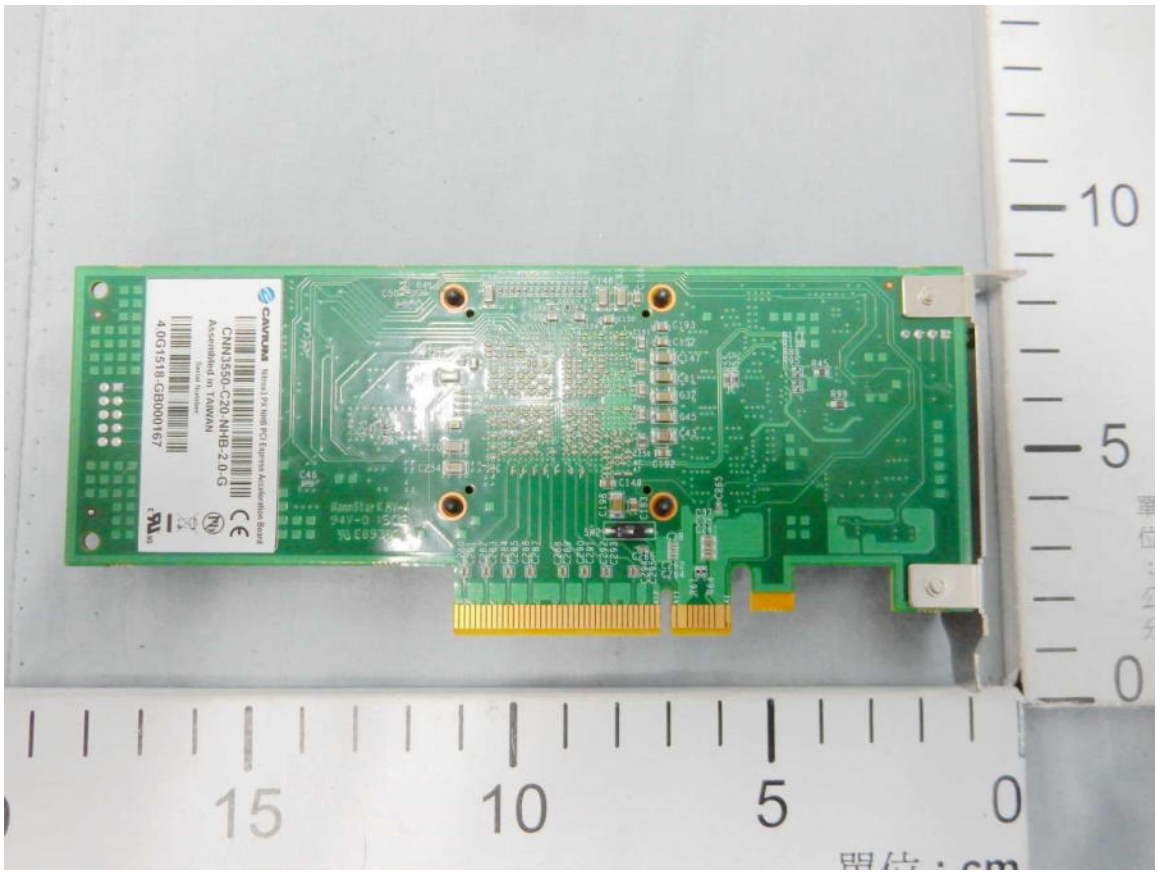
Type Designation: ODS-MR

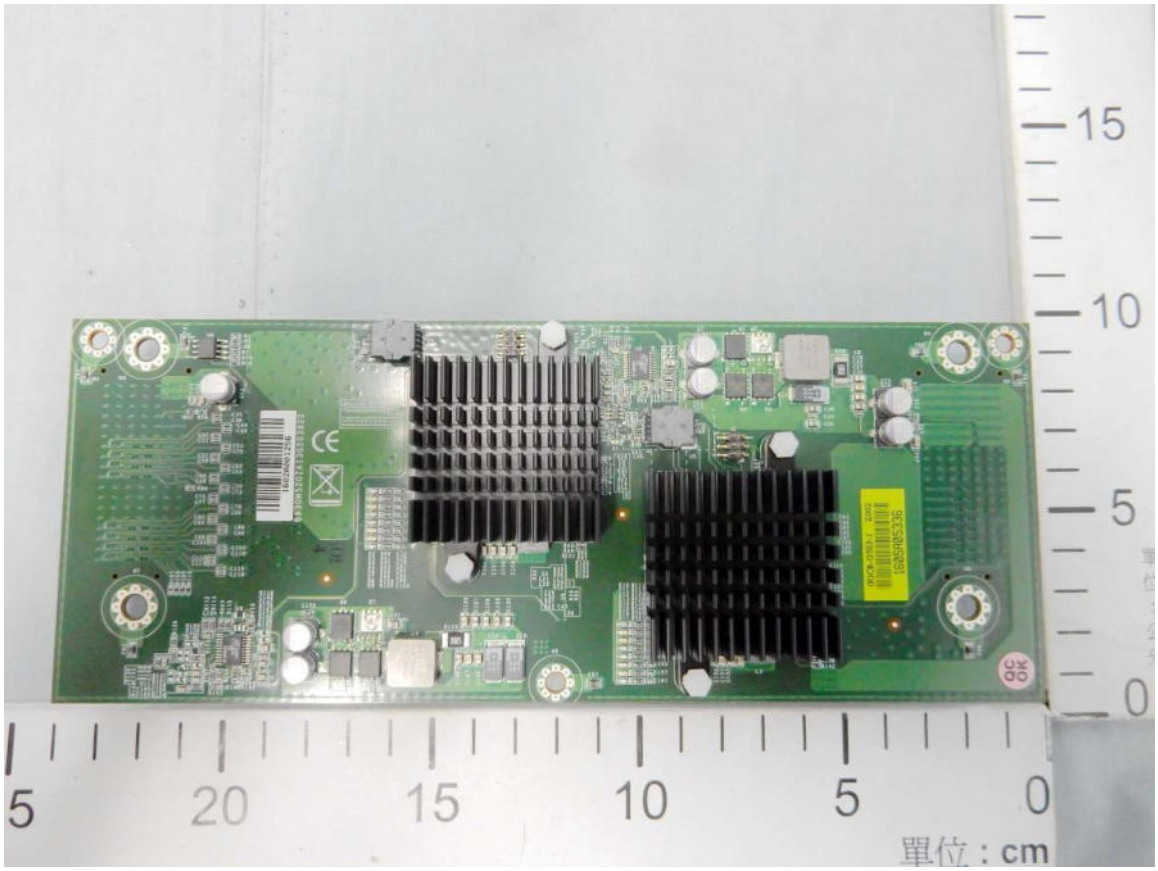




Product: OnDemand Switch

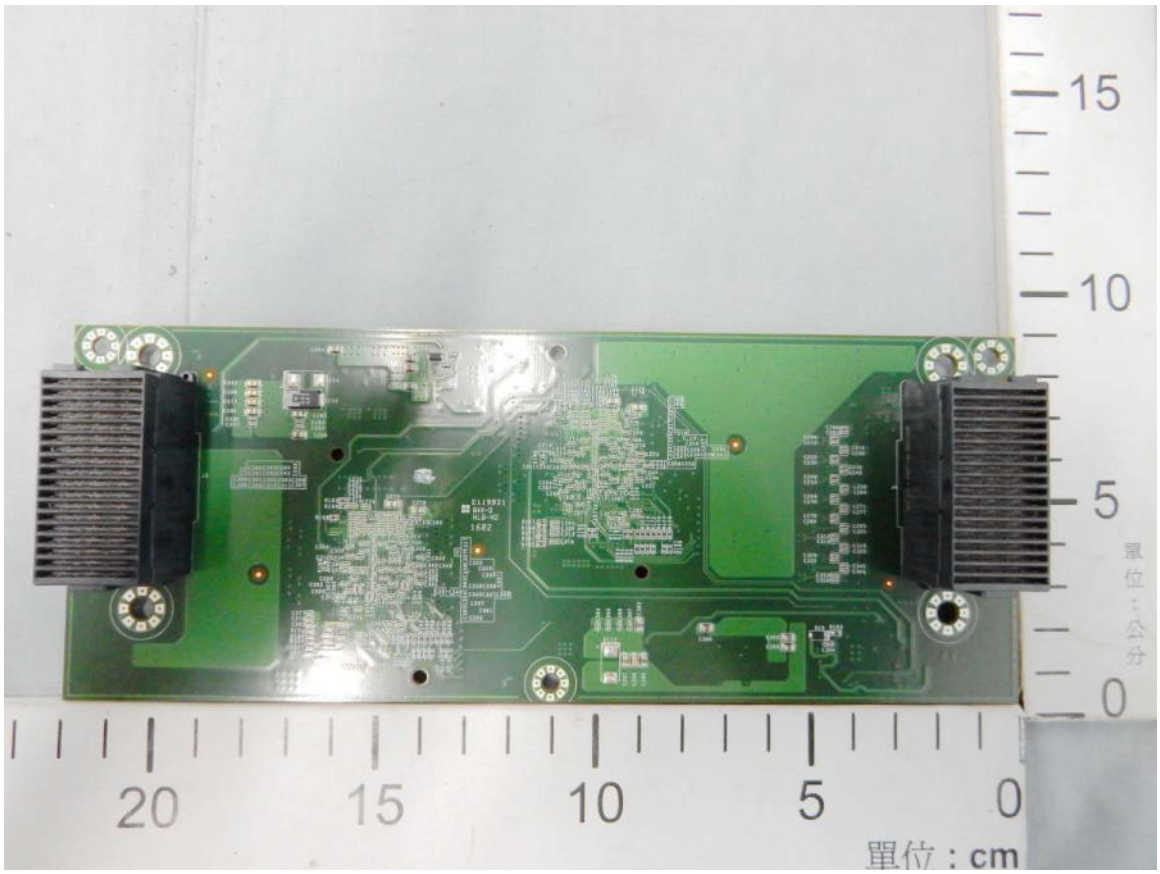
Type Designation: ODS-MR





Product: OnDemand Switch

Type Designation: ODS-MR



IEC IECEE CB SCHEME

Ref. Certif. No.

JPTUV-072404-M2

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	Network Switch
Name and address of the applicant Nom et adresse du demandeur	Radware Ltd. 22 Raoul Wallenberg St. 69710 Tel Aviv, Israel
Name and address of the manufacturer Nom et adresse du fabricant	Radware Ltd. 22 Raoul Wallenberg St. 69710 Tel Aviv, Israel
Name and address of the factory Nom et adresse de l'usine	Portwell, Inc. No. 242, Bo-Ai St. Shu-Lin Dist , New Taipei City, 23845 Taiwan
Ratings and principal characteristics Valeurs nominales et charactéristiques principales	AC 100-240V, 5.0-2.5A, 50-60Hz x 2 (for dual power modules) or AC 100-240V; 5.0-2.5A, 50-60Hz (for single power module) or DC -36 – -72V; 16–8A x2 (for dual DC power module) DC -36 – -72V, 16–8A (for single DC power module); Class I
Trademark (if any) Marque de fabrique (si elle existe)	radware
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	N/A
Model / Type Ref. Ref. de type	ODS-MR
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire, peuvent être indiqués sur la 2ème page)	Re-issue of JPTUV-072404-M1 dated 27.06.2016, due to second modification.
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 See Test Report for National Differences
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	11046153 003

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: 11.10.2016

Signature: Simon Yu

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 60950-1

Information technology equipment – Safety – Part 1: General requirements

Report Number. ..... :	11046153 003
Date of issue ..... :	Oct. 06, 2016
Total number of pages ..... :	17
Applicant's name ..... :	Radware Ltd.
Address ..... :	22 Raoul Wallenberg St., 69710 Tel Aviv, 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

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..... :	Same as applicant
Model/Type reference ..... :	ODS-MR
Ratings ..... :	I/P: See General product information for details

Testing procedure and testing location:			
☒	**CB Testing Laboratory:**	TÜV Rheinland Taiwan Ltd., Taichung Laboratory	
Testing location/ address.....:		No. 9, Ln. 36, Sec. 3, Minsheng Rd., Daya District, Taichung City 428, Taiwan CHINESE TAIPEI	
☐	**Associated CB Testing Laboratory:**		
Testing location/ address.....:			
Tested by (name + signature) .....:		Bruce Tsai	
Approved by (name + signature) .....:		Jason Chang	
☐	**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 (including a total number of pages in each attachment):

- Measurement Section
- Photo documentation

Total number of pages in each attachment is indicated in each individual attachment.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
Name of test and test clause of tests performed are given in appended Compliance Checklist, Measurement section and Attachments if any. • Pre-production sample without serial number. • The load conditions used during testing: Continuously operating with below describe maximum normal load configuration: - All connectors are connected and transmit data. - Cross reading/writing data between HDD/SSD. - USB port loaded 2.5W. • CPU under test: Intel, E5-1650V3, 3.5GHz. • Optical transceiver under test: OLINK, type: OLSP851XL-CDS3.	Unless otherwise indicated, all tests were performed at the location stated in "Testing procedure and testing location".

Summary of compliance with National Differences

List of countries addressed:

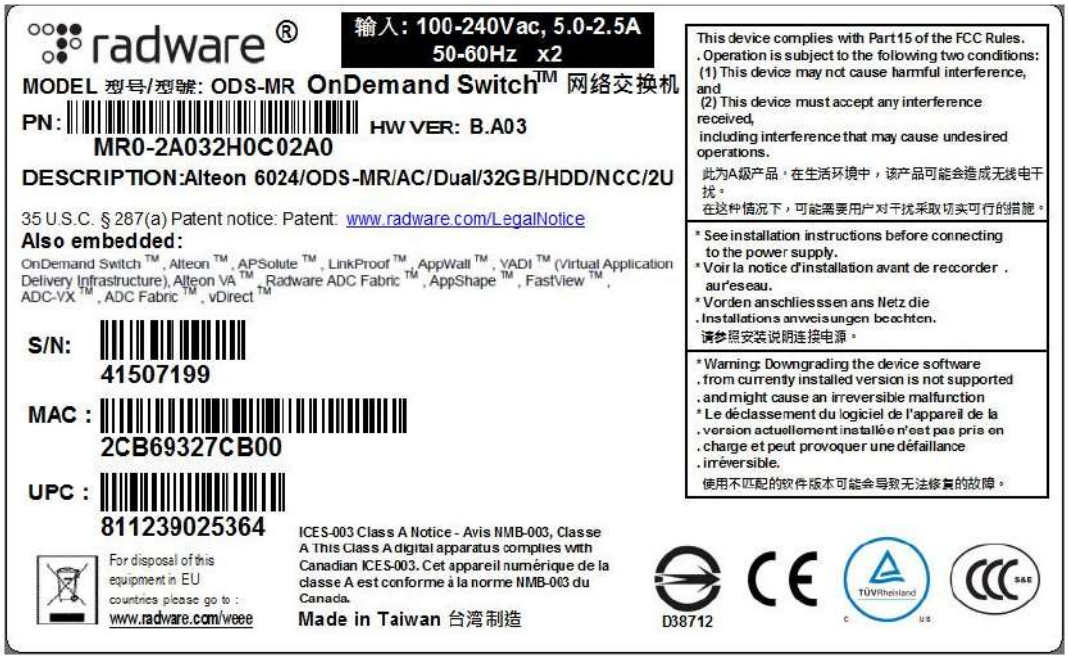
EU Group Differences, EU Special National Conditions, CA, US.

Explanation of used codes: CA = Canada, US = United States of America.

☒ **The product fulfils the requirements of 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.



Copy of marking plate

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

Test item particulars.....:	
Equipment mobility.....:	[X] movable [] hand-held [] transportable [] stationary [] for building-in [] direct plug-in
Connection to the mains.....:	[X] pluggable equipment [X] type A [] type B [X] permanent connection [X] detachable power supply cord [X] non-detachable power supply cord [] not directly connected to the mains
Operating condition.....:	[X] continuous [] rated operating / resting time:
Access location .....:	[X] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[] OVC I [X] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	For AC input: ± 10 For DC input (not DC mains): ± 0%
Tested for IT power systems .....:	[X] Yes [] No
IT testing, phase-phase voltage (V) .....:	230V for Norway
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) .....:	20
Pollution degree (PD) .....:	[] PD 1 [X] PD 2 [] PD 3
IP protection class .....:	IPX0
Altitude during operation (m) .....:	Up to 5000
Altitude of test laboratory (m) .....:	Not over 2000
Mass of equipment (kg) .....:	11.6 max.
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.....:	Aug. 23, 2016
Date(s) of performance of tests .....:	Aug. 23 to Sep. 02, 2016
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) ..... : Portwell, Inc.

No. 242, Bo-Ai St., Shu-Lin Dist., New Taipei City, 23845 Taiwan

General product information:

Input ratings:

Model	Ratings
ODS-MR	100-240Vac, 5.0-2.5A, 50-60Hz x 2 (for dual AC power modules) or 100-240Vac, 5.0-2.5A, 50-60Hz (for single AC power module) or -36 – -72Vdc, 16–8A x2 (for dual DC power module) -36 – -72Vdc, 16–8A (for single DC power module)

Engineering Considerations

- Following parts are **protective earthing terminals** (See subclause 2.6.4):
  - For EUT with AC PSU: The earthing terminal in the appliance inlet.
  - For EUT with DC PSU: The earthing terminal screw provided on the rear side enclosure near the PSU
- The manufacturer declared that the equipment is intended to be connected to an AC mains supply or a DC mains supply which having a voltage of – 36Vdc to –72Vdc and the tolerance shall be taken as ± 0%.

Markings and Instructions

- The installation instructions states "A readily accessible disconnect device shall be incorporated external to the equipment." (See sub-clause 1.7.2.2, 3.4.3)

The product also marked with:

- ⏚ (IEC 60417-5019) for the wiring terminal of protective eathing conductor (See subclause 1.7.7.1):
  - For EUT with AC PSU: Appliance inlet used.
  - For EUT with DC PSU: Marking is marked on rear side enclosure adjacent to the protective earthing terminal screw.
- The polarity for the terminals for d.c. mains supply conductors (See subclause 1.7.7.3): Marking provided on the DC input terminal block of the certified DC PSU.

Description of change(s):

1. Change the test item description to Network Switch
2. Add alternate input rating
3. Add one alternative source of redundant power with new input rating used.
4. Correct typo for the appended table 4.5 in the test report no.: 11046153 002
5. Update and replace the drawing of marking plate for edition of AC input rating

For the above described change(s) the following was considered to be necessary:

Change	Testing	Comments
1, 4.	• N/A	See bold type words in page 1 and appended table for the update and correction.
2 - 3.	• Electrical data • Resistance of earthing measurement • Humidity conditionin • Steady force test, 250 N • Impact test • Thermal requirement • Enclosure opening measurements • Electric strength tests • Fault condition tests	See copy of marking plate for the new rating. Certified source of redundant power with suitable rating used. See appended table 1.5.1 for component source, see appended sub-clauses and tables for test results. See also General product information for update information.
5.	• N/A	The new marking is similar to original one except for slight change in certification marks and information in installation instruction, see copy of marking plate for the details.

History of amendments and modifications:

Ref. No. 11046153 001, dated May 24, 2016 (original test report)

Ref. No. 11046153 002, dated June 23, 2016 (modification)

Ref. No. 11046153 003, dated Oct. 06, 2016 (modification)

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**
- power supply unit	**PSU**		

Indicate used abbreviations (if any)

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings	See below:	P
1.7.1.1	Power rating marking	The power rating marking is provided and is readily visible in operator access area.	P
	Multiple mains supply connections.....:	The power rating marking is provided on the rating label of the equipment for each individual mains supply connection and is readily visible in operator access area.	P
	Rated voltage(s) or voltage range(s) (V) .....:	See copy of marking plate.	P
	Symbol for nature of supply, for d.c. only .....:		N/A
	Rated frequency or rated frequency range (Hz) ....:	See copy of marking plate.	P
	Rated current (mA or A) .....:	See copy of marking plate.	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark .....:	See copy of marking plate.	P
	Model identification or type reference .....:	See copy of marking plate.	P
	Symbol for Class II equipment only .....:		N/A
	Other markings and symbols .....:	Other markings and symbols do not give rise to misunderstanding.	P
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	Instructions are available.	P
1.7.2.2	Disconnect devices	See General product information - Markings and Instructions for details.	P
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals .....:	See General product information - Markings and Instructions for details.	P
1.7.7.2	Terminals for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors	See General product information - Markings and Instructions for details.	P

2.9.2	Humidity conditioning	Tested for 120hrs.	P
	Relative humidity (%), temperature (°C) .....:	93% R.H., 40°C.	—

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.9	Termination of conductors	All conductors are reliable secured.	P
	10 N pull test	10N pull test performed for all relevant conductors. No hazards caused hereby.	P
3.2	**Connection to a mains supply**		P
3.2.1	Means of connection	See below.	P
3.2.1.1	Connection to an a.c. mains supply	An appliance inlet provided.	P
3.2.1.2	Connection to a d.c. mains supply	A terminal block provided.	P
3.2.2	Multiple supply connections	Consideration has been taken.	P
3.2.3	Permanently connected equipment	A certified set of terminal block provided.	P
	Number of conductors, diameter of cable and conduits (mm) ..... :		—
3.3	**Wiring terminals for connection of external conductors**		P
3.3.1	Wiring terminals	For EUT with DC PSU: Terminal block provided which connection is made by screw.	P
3.3.2	Connection of non-detachable power supply cords	For EUT with DC PSU: Terminal block is properly rated, 20A. The connection is reliably in electrical and mechanical, no exceeding temperature on the connection. See also 3.1.9.	P
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected	For EUT with DC PSU: See below	P
	Rated current (A), cord/cable type, cross-sectional area (mm^2) ..... :	16 A, copper wire, 4 mm^2 max	—
3.3.5	Wiring terminal sizes	See below.	P
	Rated current (A), type, nominal thread diameter (mm) ..... :	For DC PSU: Rated 16A, 4.0mm (pillar type)	—
3.3.6	Wiring terminal design	Adequate clamping pressure between metal surfaces.	P
3.3.7	Grouping of wiring terminals	Terminals are located in proximity to each other.	P
3.3.8	Stranded wire		N/A

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
3.4	**Disconnection from the mains supply**		P
3.4.1	General requirement	See below.	P
3.4.2	Disconnect devices	Appliance inlet as disconnect device.	P
3.4.3	Permanently connected equipment	For EUT with DC PSU: See General product information for details.	P
3.4.11	Multiple power sources	A prominent marking at each disconnect device giving adequate instructions.	P
4.2.4	Steady force test, 250 N	Test applied to top, side and bottom side of enclosure near DC PSU.	P
4.2.5	Impact test	Test applied to top, side and bottom side of enclosure near DC PSU.	P
	Fall test	See above.	P
	Swing test	See above.	P

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])
Redundant Power Supply	Zippy Technology Corp.	DM1P2-5420V4V	I/P: -36 - -72Vdc, 16-8A O/P: +5V / 0-32A, +12V / 35A, +3.3V / 0-25A, -12V / 0-0.5A, +5VSB / 0-3.5A, (+5V & +3.3V Total Max. 170W), Max. power: 420W Class I, 50 degree C, 5000m	IEC 60950-1 : 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 60950-1 2nd edition, 201410-14 CAN/CSA C22.2 No. 60950-1-07 2nd edition, 2014-10	CB (JPTUV-073658), TÜV (R 50350676), UL (E143756) , cUL
- Power Module (One or two provided)	Zippy Technology Corp.	DM1P-2420V	I/P: -36 - -72Vdc, 16-8A O/P: +12V / 35A, +5VSB / 0-3.5A, Max. power: 420W Class I, 50 degree C, 5000m	IEC 60950-1 : 2005+A1+A2, EN 60950-1: 2006+A11+A1+ A12+A2, UL 60950-1 2nd edition, 201410-14 CAN/CSA C22.2 No. 60950-1-07 2nd edition, 2014-10	CB (JPTUV-073658), TÜV (R 50350676), UL (E143756) , cUL
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
Test with redundant DC power supply (one power module) (Zippy Technology Corp. / DM1P2-5420V4V)						
-36Vdc	8.56	16	308.2	In SPS	8.56	Maximum Normal Load.
-72Vdc	3.90	8	280.8	In SPS	3.90	Maximum Normal Load.
Test with redundant DC power supply (two power module) (Zippy Technology Corp./ DM1P2-5420V4V)						
-36Vdc	4.43+4.08	16	159.5 +146.9	In SPS	4.43+4.08	Maximum Normal Load.
-72Vdc	2.05+1.96	8	147.6 +141.1	In SPS	2.05+1.96	Maximum Normal Load.
Supplementary information:						

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

4.5	**TABLE: Thermal requirements**				P
	Supply voltage (V) ..... :	See below			—
	Ambient T_{min} (°C) ..... :	--			—
	Ambient T_{max} (°C) ..... :	See below			—
Maximum measured temperature T of part/at.....:		T (°C)			Allowed T_{max} (°C)
Test with redundant AC power supply (one power module) (Zippy Technology Corp. / M1P2-5420V4V)					
Supply voltage		90	90	264	--
Power module location		Bottom	Top	Top	--
Tma		**50.0**	**50.0**	**50.0**	--
Tamb		**24.6**	**24.1**	**26.6**	--
SPS：LF2		**64.9**	**67.5**	**61.2**	105
SPS：T3 Coil		**66.9**	**68.4**	**64.2**	105
SPS：T3 Core		**66.8**	**67.7**	**63.7**	105
SPS：T1 Coil		**74.6**	**72.3**	**69.3**	110
SPS：T1 Core		**65.3**	**67.8**	**65.0**	110
SPS：T2 Coil		**60.0**	**64.3**	**61.6**	110
SPS：T2 Core		**60.7**	**62.8**	**60.1**	110
SPS：U6		**56.4**	**63.7**	**60.8**	100
SPS：U2		**54.8**	**56.8**	**53.9**	100
Main board：PCB near U12		**55.4**	**56.1**	**53.3**	105
Main board：PCB near U47		**61.0**	**62.4**	**58.2**	105
Main board：BAT1		**52.8**	**53.3**	**50.4**	100
Main board：EC45		**54.7**	**55.1**	**52.2**	85
NC card：PCB near U6		**53.8**	**54.2**	**51.5**	105
Acceleration board：PCB near U10		**54.9**	**56.9**	**53.5**	105
HDD		**55.6**	**56.5**	**53.4**	--
SSD		**52.6**	**56.5**	**52.7**	--
Metal enclosure outside near SPS		**50.7**	**54.0**	**50.5**	70
Metal enclosure outside near U12		**51.5**	**52.1**	**49.9**	70
Test with redundant DC power supply (one power module) (Zippy Technology Corp. / M1P2-5420V4V)					
Supply voltage		-36Vdc	-36Vdc	-72Vdc	--

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

Power module location	Top	Down	Top	--
Tma	50.0	50.0	50.0	--
Tamb	24.7	24.6	25.1	--
SPS：T1 Coil	77.3	64.4	66.7	110
SPS：T1 Core	69.7	57.5	59.1	110
SPS：T2 Coil	60.2	47.7	50.0	110
SPS：T2 Core	58.8	46.1	48.6	110
SPS：U5	58.3	46.5	47.5	100
SPS：U6	58.7	45.1	47.3	100
SPS：U8	60.1	46.0	48.8	100
Main board：PCB near U12	55.7	44.9	45.3	105
Main board：PCB near U47	63.4	52.6	53.2	105
Main board：BAT1	52.5	41.9	42.0	100
Main board：EC45	54.7	44.1	44.1	85
NC card：PCB near U6	53.1	42.4	42.7	105
Acceleration board：PCB near U10	55.1	44.2	45.0	105
HDD	56.6	46.1	46.2	--
SSD	55.3	42.5	45.9	--
Metal enclosure outside near SPS	53.0	40.2	42.4	70
Metal enclosure outside near U12	50.9	40.1	40.7	70

Supplementary information:

1) The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.2 at voltages as described in above.
2) With a maximum ambient temperature of +50℃ as declared by the manufacturer.
3) Thermocouple method used for measuring the temperatures.
4) Winding components (providing safety isolation):

- Class 130 material (B) Tmax = 120℃ - 10℃= 110℃

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

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
Basic/supplementary:				
Primary to earthed metal enclosure		DC	1849	No
Reinforced:				
Primary to secondary		DC	2959	No
Supplementary information:				

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) .....:	See below	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	See appended table 1.5.1.	—

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Vnetilation	Block	DC -72	1 hrs 42 mins	In SPS	3.90	Normal operation, no hazards. Ambient=25.5°C, Top SPS : T1 Coil=52.9°C, Top SPS : T1 Core=45.4°C, Top SPS : T2 Coil=38.9°C, Top SPS : T2 Core=38.0°C, Top SPS : U5=39.6°C, Top SPS : U6=39.9°C, Top SPS : U8=40.5°C
System fan1	Lock	DC -72	2 hrs 31 mins	In SPS	3.90	Normal operation, no hazards. Ambient=25.0°C, Top SPS : T1 Coil=50.6°C, Top SPS : T1 Core=43.8°C, Top SPS : T2 Coil=33.4°C, Top SPS : T2 Core=32.5°C, Top SPS : U5=32.3°C, Top SPS : U6=31.7°C, Top SPS : U8=32.7°C

IEC 60950-1						
Clause	Requirement + Test				Result - Remark	Verdict
System fan2	Lock	DC -72	1 hrs 59 mins	In SPS	3.90	Normal operation, no hazards. Ambient=25.4°C, Top SPS : T1 Coil=50.5°C, Top SPS : T1 Core=43.6°C, Top SPS : T2 Coil=33.6°C, Top SPS : T2 Core=32.8°C, Top SPS : U5=32.4°C, Top SPS : U6=31.9°C, Top SPS : U8=32.9°C
System fan3	Lock	DC -72	1 hrs 28mins	In SPS	3.90	Normal operation, no hazards. Ambient=25.6°C, Top SPS : T1 Coil=50.7°C, Top SPS : T1 Core=43.8°C, Top SPS : T2 Coil=33.7°C, Top SPS : T2 Core=32.9°C, Top SPS : U5=32.3°C, Top SPS : U6=31.7°C, Top SPS : U8=32.9°C
SPS fan	Lock	DC -72	2 hrs 15 mins	In SPS	3.90	Normal operation, no hazards. Ambient=24.0°C, Top SPS : T1 Coil=54.7°C, Top SPS : T1 Core=51.1°C, Top SPS : T2 Coil=41.1°C, Top SPS : T2 Core=40.7°C, Top SPS : U5=29.1°C, Top SPS : U6=29.0°C, Top SPS : U8=28.4°C
Supplementary information:						

List of test equipment used:

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

Information:

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

Clause	Requirement + Test	Result - Remark	Verdict

2.1.1.7	TABLE: Discharge test				N/A
Condition	τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments	
Supplementary information:					

2.4.2	TABLE: Limited current circuit measurement					N/A
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
Supplementary information:						

2.6.3.4	TABLE: Resistance of earthing measurement	P
Location	Resistance measured (mΩ)	Comments
Inlet earth pin to metal enclosure	--	40A for 2 min. (Voltage drop= 0.92V)
Inlet earth pin to metal enclosure	20	32A for 2 min.
Supplementary information:		

4.6.1, 4.6.2	Table: Enclosure opening measurements		P
Location		Size (mm)	Comments
For EUT with redundant DC power supply			
Rear		Ø 5.3	- Numerous square shape openings which covers areas: 1. 45 x 72mm 2. 18 x 72mm 3. 18 x 72mm - No bare conductive parts are with hazardous voltage and energy hazards within 5° projective area.
		4 x 11.9	- Numerous "⬭" shape openings which covered an area 10 x 42mm. - Two areas. - No bare parts at HAZARDOUS VOLTAGE or which are energy hazards at the location of 5° projection from these openings.

Clause	Requirement + Test	Result - Remark	Verdict
(measured on power module)	**Max. 23.8 x 8** **Max. dia. 12**	- **Four curve shape openings and one circular opening which formed as fan guard.** - **Test finger cannot access to moving fan blades through the opening.** - **No bare conductive parts are with hazardous voltage and energy hazards within 5° projective area.**	
(measured fan module)	Ø 6.7	- Numerous hexagon shape openings which covered an area 51 x 55mm and formed as fan guard. - Test finger cannot access to moving fan blades through the opening. - No bare conductive parts are with hazardous voltage and energy hazards within 5° projective area.	
Supplementary information:			