	Test Report issued under the responsibility of: **NCB TÜV SÜD PSB Pte Ltd.** **1 Science Park Drive, 118221 Singapore** **Singapore**	

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

Report Number .....:	211-21180290-000
Date of issue.....:	2018-07-09
Total number of pages .....:	88
Applicant's name.....:	Astec International Ltd.
Address .....:	16th Floor, Lu Plaza, 2 Wing Yip Street, Kwun Tong, Kowloon, HONG KONG
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.
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Test Item description ..... :	Switching Power Supply
Trade Mark ..... :	N/A
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	LPS102-M, LPS103-M, LPS104-M, LPS105-M, LPS108-M, LPS109-M
Ratings ..... :	Input: 100-250VAC, 2.5A, 50/60Hz or 120-300VDC, 2A Output: For Model LPS102-M: +5VDC, 24A MAX; + 12VFAN, 1 A MAX For Model LPS103-M: +12VDC, 12.5A MAX; + 12VFAN, 1 A MAX For Model LPS104-M: +15VDC, 10A MAX; + 12VFAN, 1 A MAX For Model LPS105-M: +24VDC, 6.25A MAX; + 12VFAN, 1 A MAX For Model LPS108-M: +48VDC, 3.1A MAX; + 12VFAN, 1 A MAX For Model LPS109-M: +54VDC, 2.77A MAX; + 12VFAN, 1 A MAX Maximum Output Power: For model LPS102-M: 80 Watts for convection cooling; 120 Watts for forced-air cooling For Models LPS103-M, LPS104-M, LPS105-M, LPS108-M and LPS109-M: 100W for convection cooling 150W for forced air cooling

Testing procedure and testing location:			
☒	Testing Laboratory:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch	
Testing location/ address ..... :		Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, CHINA	
☐	Associated Testing Laboratory:		
Testing location/ address..... :			
Tested by (name + signature).....:		Bruce Zhang	
Approved by (name + signature) .....:		Hmily Wei	
☐	Testing procedure: Elsewhere:		
Testing location/ address..... :			
Tested by (name + signature).....:			
Approved by (name + signature) .....:			

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

Attachment No. 1: 9 pages of EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES for EN 62368-1:2014 + A11:2017.

Attachment No. 2: 27 pages of National and Group Differences for IEC 62368-1:2014 (Second Edition) as per CB Bulletin.

Attachment No. 3: 7 pages of photos.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
The submitted samples were tested and found to comply with the requirements of: - IEC 62368-1:2014 - EN 62368-1:2014/A11:2017	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, CHINA

Summary of compliance with National Differences:

List of countries addressed: See the attachment No. 1 and No. 2 of National and Group Differences for details.

☒ **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 Certification Bodies that own these marks.


开关电源
MODEL (型号):
LPS108-M
MADE IN THE PHILIPPINES
制造商：Astec International Ltd – Philippine Branch
INPUT: (输入): 100-250V～2.5A 50/60Hz
120V(MIN)-300V(MAX) ⎓2A
OUTPUT: (输出): +48V ⎓ 3.1A MAX
+12VFAN ⎓ 1A MAX
MAXIMUM OUTPUT POWER :
100VA CONVECTION COOLING
150VA FORCED AIR COOLING
仅适用于在海拔2000米以下安全使用
仅适用于非热带气候条件下安全使用
51485
REV. XX


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100VA CONVECTION COOLING
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仅适用于在海拔2000米以下安全使用
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51485
REV. XX

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% ☐ +20%/-15% ☐ +__%/ -__% ☐ None
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: to be considered in end system
Considered current rating of protective device as part of building or equipment installation .....:	20 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 ☐ IP20
Power Systems .....:	☒ TN ☐ TT ☐ IT
Altitude during operation (m) .....:	☐ 2000 m or less ☒ 3963 m
Altitude of test laboratory (m) .....:	☐ 2000 m or less ☒ 500 m
Mass of equipment (kg) .....:	☒ Less than 1kg
POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object.....:	N/A

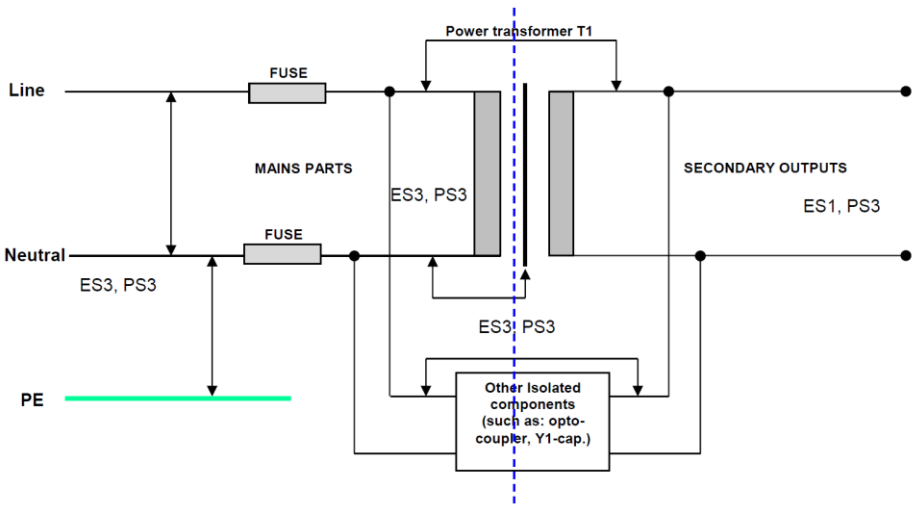
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
TESTING:	
Date of receipt of test item..... :	2018-06-08
Date (s) of performance of tests..... :	2018-06-08 to 2018-07-09
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	1) Zhongshan General Carton Box Factory Co., Ltd. No. 62, Qi Guan Road West, Shiqi District, 528400 Zhongshan City, Guangdong, PEOPLE'S REPUBLIC OF CHINA 2) Astec Power Philippines Inc 104 Laguna Boulevard, Laguna Technopark, 4026 Sta Rosa Laguna, Philippines 3) Astec Power Philippines Inc. Main Avenue Corner Rd “J”, Cavite Export Processing Zone, Rosario, Cavite, Philippines 4) Astec Electronics (Luoding) Co. Limited No. 68 Baocheng Road East, Fucheng Luoding, 527200 Guangdong, PEOPLE'S REPUBLIC OF CHINA

GENERAL PRODUCT INFORMATION:
These power supplies are open-frame type, switching mode power supplies are manufactured by Astec International Ltd., intend to be built into information technology equipment.
Model Differences – All these models are similar with each other, except for model designation, output rating, output choke (L5), power transformer (T1) and secondary heat sink.
Additional application considerations – (Considerations used to test a component or sub-assembly) – 1. When installing the equipment, all requirements of the mentioned standard must be fulfilled. 2. Refer to installation and operation instructions for details of operating temperature and loading condition. 3. Clearance distance was evaluated for operating altitude up to 3963m above sea level. 4. Built-in type equipment, suitable enclosure should be provided in end system. 5. For the DC input of these power supplies shall be derived from the end system mains of maximum 250Vac mains supply.

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: AC 264V input ES1	
Source of electrical energy	**Corresponding classification (ES)**
LPS102-M	
Primary circuits supplied by AC mains supply	ES3
+5V main output	ES1
+12V fan output	ES1
LPS103-M	
Primary circuits supplied by AC mains supply	ES3
+12V main output	ES1
+12V fan output	ES1
LPS104-M	
Primary circuits supplied by AC mains supply	ES3
+15V main output	ES1
+12V fan output	ES1
LPS105-M	
Primary circuits supplied by AC mains supply	ES3
+24V main output	ES1
+12V fan output	ES1
LPS108-M	
Primary circuits supplied by AC mains supply	ES3
+48V main output	ES1
+12V fan output	ES1
LPS109-M	
Primary circuits supplied by AC mains supply	ES3
+54V main output	ES1
+12V fan output	ES1
Internal Circuits (Both primary circuits and secondary circuits)	ES3
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)**

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
All circuits (both primary circuits and secondary circuits, input terminal, Output Terminal)	PS3
Injury 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**
N/A	N/A
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)**
Equipment Mass	MS1
Sharp edges and corners	To be Evaluated in the End System
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)**
N/A	To be Evaluated in the End System
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)**
N/A	No LED Indicator

ENERGY SOURCE DIAGRAM
Indicate which energy sources are included in the energy source diagram. Insert diagram below



☒ ES ☒ PS ☒ MS ☒ TS ☐ RS

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)
Instructed; Skilled	ES3: all primary circuit	(N): bleeding rely on circuit design	(S): Do not exceed ES2 limits of Table 5 under anyone component open-circuit condition	N/A
Instructed	ES3: Internal circuits (primary circuits)	N/A	N/A	N/A
Instructed	ES3: Internal circuits (Secondary circuits)	(N): Mosfet provided	(S): Do not exceed ES1 limits of Table 4 under mosfet short-circuit condition	N/A
Instructed; Skilled	ES1: Output Terminal	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
All combustible materials within equipment	PS3: All circuits (include: input terminal, output terminal, internal circuits)	1, No ignition occurred. 2, No parts exceeding 90% of its spontaneous ignition temperature	1, PCB is complied with V-0 material. 2, All other components: at least V-2 except for mounted on min. V-1 material or small parts of combustible material. 3, fire enclosure should be provide in end system	N/A
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	--	--	--	--

8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3: High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
N/A	N/A	N/A	N/A	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	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				

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Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	(See appended table 4.1.2)	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.2, T.3, T.4, T.5)	P
4.4.4.3	Drop tests .....:		N/A
4.4.4.4	Impact tests .....:		N/A
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.....:	(See Annex T.8)	N/A
4.4.4.8	Air comprising a safeguard.....:		N/A
4.4.4.9	Accessibility and safeguard effectiveness	Built-in equipment should be considered in end system	N/A
4.5	Explosion		N/A
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 .....:	Steady force of 10N was applied on components of the unit.	P
4.7	Equipment for direct insertion into mains socket - outlets	No such apparatus	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	No battery used	N/A
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.....:	Built-in component, considered in end system	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5	**ELECTRICALLY-CAUSED INJURY**		
5.2.1	Electrical energy source classifications ..... :	(See appended table 5.2)	P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current..... :	(See appended table 5.2)	P
5.2.2.3	Capacitance limits ..... :	(See sub-clause table 5.5.2.2)	P
5.2.2.4	Single pulse limits ..... :	No single pulse introduced	N/A
5.2.2.5	Limits for repetitive pulses ..... :	No repetitive pulses introduced	N/A
5.2.2.6	Ringing signals ..... :	No means for connection to telephone network and no ringing signal generated	N/A
5.2.2.7	Audio signals ..... :	No audio signal terminals	N/A
5.3	Protection against electrical energy sources	Should be considered in end system	N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
5.3.2.2	Contact requirements		N/A
	a) Test with test probe from Annex V ..... :		N/A
	b) Electric strength test potential (V) ..... :		N/A
	c) Air gap (mm) ..... :		N/A
5.3.2.4	Terminals for connecting stripped wire	No such terminal, considered in end system	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Humidity conditioning ..... :	Refer to Cl. 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 ..... :	Pollution degree 2 considered	—
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	(See appended table 5.4.1.8)	P
5.4.1.9	Insulating surfaces		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	Ball pressure test considered	P
5.4.1.10.2	Vicat softening temperature ..... :		N/A
5.4.1.10.3	Ball pressure ..... :	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances		P
5.4.2.2	Determining clearance using peak working voltage	(See appended table 5.4.2.2)	P
5.4.2.3	Determining clearance using required withstand voltage ..... :	(See appended table 5.4.2.3)	P
	a) a.c. mains transient voltage ..... :	2500V peak	—
	b) d.c. mains transient voltage ..... :		—
	c) external circuit transient voltage ..... :	No such transient voltage	—
	d) transient voltage determined by measurement ... :	No need to conduct this test	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	(See appended table 5.4.2.4)	N/A
5.4.2.5	Multiplication factors for clearances and test voltages ..... :	Clearance distance was evaluated for altitude up to 4000m above sea level, correction factor for clearance is 1.29	P
5.4.3	Creepage distances ..... :	(See appended table 5.4.3)	P
5.4.3.1	General		P
5.4.3.3	Material Group ..... :	Material group IIIb is assumed to be used	—
5.4.4	Solid insulation		P
5.4.4.2	Minimum distance through insulation ..... :	(See appended table 5.4.4.2)	P
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		P
5.4.4.6.1	General requirements		P
5.4.4.6.2	Separable thin sheet material		P
	Number of layers (pcs) ..... :	2 or 3 layers	P
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	(See Annex G.5 and G.6)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.9	Solid insulation at frequencies >30 kHz .....:	(See appended table 5.4.9)	P
5.4.5	Antenna terminal insulation	No such terminal	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.....:	No such wires	N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%).....:	93%	—
	Temperature (°C) .....:	30°C	—
	Duration (h) .....:	48h	—
5.4.9	Electric strength test.....:	(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	No transient voltage from 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 .....:	No such external circuit	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		P
5.5.1	General		P
5.5.2	Capacitors and RC units	(See appended table 4.1.2)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	General requirement		P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector.....:	(See appended table 5.5.2.2)	P
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	(See sub-clause 5.4 or Annex G.12)	P
5.5.5	Relays	No such relay used for safeguards	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
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		N/A
5.6.2	Requirement for protective conductors	To be considered in end system	N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm^2) .....:		—
5.6.4	Requirement for protective bonding conductors	To be considered in end system	N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm^2).....:		—
5.6.4.2	Protective current rating (A) ..... :		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors		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).....:	(See appended table 5.6.6.2)	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

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.1	Measurement of touch current .....:	(See appended table 5.7.4)	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) .....:	Single equipment	—
	Multiple connections to mains (one connection at a time/simultaneous connections) .....:		—
5.7.4	Earthed conductive accessible parts.....:	Class I apparatus	P
5.7.5	Protective conductor current		P
	Supply Voltage (V).....:	264V, 60Hz	—
	Measured current (mA).....:	0.4	—
	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	No such 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**		
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications		P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault ... :	(See appended table 6.2.2)	P
6.2.2.3	Power measurement for worst-case power source fault..... :	(See appended table 6.2.2)	P
6.2.2.4	PS1 ..... :	Assume no PS1 inside the equipment	N/A
6.2.2.5	PS2 ..... :	(See appended table 6.2.2)	N/A
6.2.2.6	PS3 ..... :	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS ..... :	(See appended table 6.2.3.1)	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.2.3.2	Resistive PIS ..... :	(See appended table 6.2.3.2)	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 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure	Built-in component, considered in end system	N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Method of control of fire spread is opted.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		P
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		P
6.4.7	Separation of combustible materials from a PIS	To be considered in end system	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	To be considered in end system	N/A
6.4.8.1	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier	No such barrier used	N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm) .....:		N/A
	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
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 .....:		N/A
6.5	Internal and external wiring		N/A
6.5.1	Requirements		N/A
6.5.2	Cross-sectional area (mm^2) .....:		—
6.5.3	Requirements for interconnection to building wiring .....:		N/A
6.6	Safeguards against fire due to connection to additional equipment		N/A
	External port limited to PS2 or complies with Clause Q.1		N/A
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		
7.2	Reduction of exposure to hazardous substances	No such hazardous substances	N/A
7.3	Ozone exposure	No ozone production	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.....:	No batteries used	N/A
8	**MECHANICALLY-CAUSED INJURY**		
8.1	General	To be considered in end system	N/A
8.2	Mechanical energy source classifications		N/A
8.3	Safeguards against mechanical energy sources		N/A
8.4	Safeguards against parts with sharp edges and corners		N/A
8.4.1	Safeguards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard ..... :		—
8.5.4	Special categories of equipment comprising moving parts		N/A
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		N/A
8.6.1	Product classification		N/A
	Instructional Safeguard .....:		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force .....:		—
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

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Clause	Requirement + Test	Result - Remark	Verdict
8.8.2	Applied Force .....:		N/A
8.9	Wheels or casters attachment requirements	No wheels or casters attachment	N/A
8.9.1	Classification		N/A
8.9.2	Applied force .....:		—
8.10	Carts, stands and similar carriers	No carts, stands or similar carriers	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	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 rack 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**		
9.2	Thermal energy source classifications	To be considered in end system	N/A
9.3	Safeguard against thermal energy sources	No safeguards are required between TS1 and ordinary person	N/A
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard		N/A
9.4.2	Instructional safeguard .....:		N/A

10	**RADIATION**		
10.2	Radiation energy source classification		N/A
10.2.1	General classification		N/A
10.3	Protection against laser radiation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :		N/A
	Instructional safeguard ..... :		—
	Tool..... :		—
10.4	Protection against visible, infrared, and UV radiation		N/A
10.4.1	General		N/A
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 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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	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**		
B.2	Normal Operating Conditions		P
B.2.1	General requirements..... :	(See summary of testing & appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers ..... :	No audio amplifier circuits	N/A
B.2.3	Supply voltage and tolerances	100-240Vac, +10%/-10%	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		N/A
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector ..... :	No such voltage selector	N/A
B.3.5	Maximum load at output terminals ..... :	(see appended table B.3)	P
B.3.6	Reverse battery polarity	No batteries used	N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.8	Safeguards functional during and after abnormal operating conditions	During an abnormal operating condition that does not lead to a single fault condition, all safeguards are remained effective. After restoration of normal operating conditions, all safeguards are compliant with applicable requirements. For those abnormal operating conditions lead to single fault conditions, see Clause B.4.	P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited ..... :	No such controlling device	N/A
B.4.3	Motor tests	Considered	N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature ..... :		N/A
B.4.4	Short circuit of functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	(See appended table B.4)	P
B.4.6	Short circuit or disconnect of passive components	(See appended table B.4)	P
B.4.7	Continuous operation of components	Not intermittent or short-time operation equipment	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 ... :	No batteries used	N/A

C	**UV RADIATION**		
C.1	Protection of materials in equipment from UV radiation	No UV radiation within the EUT.	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

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Clause	Requirement + Test	Result - Remark	Verdict
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	**TEST GENERATORS**		
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**		
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**		
F.1	General requirements		P
	Instructions – Language .....:	English	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Located on the enclosure's inner and outer surfaces	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....:	ASTEC International Limited	—
F.3.2.2	Model identification .....:	The model is marked on label, and affixed on enclosure	—
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.....:	~ used for AC	—
F.3.3.4	Rated voltage .....:	Refer to model label	—
F.3.3.4	Rated frequency.....:	50/60Hz	—
F.3.3.6	Rated current or rated power .....:	Refer to model label	—

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device	No such device	N/A
F.3.5	Terminals and operating devices		P
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :	No mains appliance outlet	N/A
F.3.5.2	Switch position identification marking ..... :	No switch	N/A
F.3.5.3	Replacement fuse identification and rating markings..... :	T2.5 250V marked on PCB near F1 and F2	P
F.3.5.4	Replacement battery identification marking ..... :		N/A
F.3.5.5	Terminal marking location	To be considered in end system	N/A
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I Equipment	Class I equipment	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		P
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 .....:		—
F.3.8	External power supply output marking	Built-in component	N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	After the test, the marking remains legible, and moreover, the label shows no curling and is not removable by hand.	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking	Built-in component, consider in end system	N/A
	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	Not used in restricted access area	N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	f) Protective earthing employed as safeguard		P
	g) Protective earthing conductor current exceeding ES2 limits		N/A
	h) Symbols used on equipment		P
	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		N/A
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
G	**COMPONENTS**		
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	No thermal cut-off used	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	No thermal link used	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). :		—

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.3	PTC Thermistors	No PTC used	N/A
G.3.4	Overcurrent protection devices	Approved fuse provided	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions.....:	(See appended Table B.4)	N/A
G.4	**Connectors**		N/A
G.4.1	Spacings		N/A
G.4.2	Mains connector configuration .....:		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound Components**		P
G.5.1	Wire insulation in wound components.....	Approved TIW used in transformers	—
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°	Separated by the insulation tape	P
G.5.1.2 b)	Construction subject to routine testing		P
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**		P
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1).....:	The isolation transformer meets the requirements given in G.5.3.2 and G.5.3.3	P
	Position.....:	Isolation transformer	—
	Method of protection .....:	See appended table B.3 and B.4	—
G.5.3.2	Insulation		P
	Protection from displacement of windings.....:	By bobbin and insulation tape	—
G.5.3.3	Overload test..... :	(See appended table B.3)	P
G.5.3.3.1	Test conditions		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3.2	Winding Temperatures testing in the unit	Maximum temperatures of windings did not exceed the limits given in Table G.3. During the test, the transformer did not emit flames or molten metal.	P
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	**Motors**		N/A
G.5.4.1	General requirements		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
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		P
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**		P
G.6.1	General	Approved TIW used	P
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	**Mains supply cords**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	General requirements	No such cords provided, built-in component, consider in end system	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) ..... :		—
	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**		P
G.8.1	General requirements		P
G.8.2	Safeguard against shock	Approved varistor used	P
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.	No such IC used	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) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
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	No resistors used as safeguard or insulation.	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**		P
G.11.1	General requirements	(See appended table 4.1.2)	P
G.11.2	Conditioning of capacitors and RC units		P
G.11.3	Rules for selecting capacitors		P
G.12	**Optocouplers**		P
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....:	Approved optocoupler used	P
	Type test voltage Vini .....:		—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
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 ..... :	(See G.13)	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 .....:		—
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**		
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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**		
	General requirements		N/A
K	**SAFETY INTERLOCKS**		
K.1	General requirements	No safety interlocks inside the EUT	N/A
K.2	Components of safety interlock safeguard mechanism	(See Annex G)	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 .....:	(See appended table B.4)	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 .....:	(See appended table 5.4.11)	N/A
L	**DISCONNECT DEVICES**		
L.1	General requirements		N/A
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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		N/A

M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		
M.1	General requirements	No batteries used	N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Requirements		N/A
M.2.2	Compliance and test method (identify method) .. :		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance .....:	(See appended Tables and Annex M and M.4)	N/A
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 .....:	(See Table M.4)	—
M.4.2.2 b)	Single faults in charging circuitry .....:	(See Annex B.4)	—
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
	Charge		N/A
	Discharge		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 *Vz* (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) ..... :		N/A
N	**ELECTROCHEMICAL POTENTIALS**		
	Metal(s) used ..... :	Steel and copper	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		**P**
	Figures O.1 to O.20 of this Annex applied ..... :	Considered	—
P	**SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS**		
P.1	General requirements	To be evaluated according to the end application	N/A
P.2.2	Safeguards against entry of foreign object		N/A
	Location and Dimensions (mm) ..... :		—
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**		
Q.1	Limited power sources		N/A
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A

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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		N/A
Q.1.2	Compliance and test method		N/A
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**		
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 .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm).....:		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
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**		
T.1	General requirements	Built-in component	P
T.2	Steady force test, 10 N .....:	(See appended table T.2)	P
T.3	Steady force test, 30 N .....:	(See appended table T.3)	N/A
T.4	Steady force test, 100 N .....:		N/A
T.5	Steady force test, 250 N .....:	(See appended table T.5)	N/A
T.6	Enclosure impact test	(See appended table T.6)	N/A
	Fall test		N/A
	Swing test		N/A
T.7	Drop test .....:		N/A
T.8	Stress relief test .....:		N/A
T.9	Impact Test (glass)	No glass used	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) .....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFECTS OF IMPLOSION**		
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)**		
V.1	Accessible parts of equipment		P
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	Mark(s) of conformity[1])
Input Connector (J5 or Assy2)	Molex	41671	V-0 105°C	UL1977,	UL
(Alternate)	LANDWIN	3061P	V-0 105°C	UL1977	UL
Fuse (F1, F2)	BEL FUSE	RST	T2.5A, 250VAC	IEC 60127-1 IEC 60127-3 UL 248	VDE, UL
(Alternate)	HOLLYLAND	5ET	T2.5A, 250VAC	IEC 60127-1 IEC 60127-3 UL 248	VDE, UL
(Alternate)	CONQUER	MST	T2.5A, 250VAC	IEC 60127-1 IEC 60127-3 UL 248	VDE, UL
Varistor (VDR400)	THINKING	TVR14511	Min. 320VAC, 40/85/56	IEC 61051-1 IEC 61051-2	VDE, UL
X-capacitor (C400)	HUA JUNG	MKP	MAX. 0.56uF, MIN. 275VAC	IEC 60384-14	SEMKO
(Alternate)	EVOX RIFA/ KEMET	PHE840M	MAX. 0.56uF, MIN. 275VAC	IEC 60384-14	SEMKO
X-capacitor (C5)	EVOX RIFA/ KEMET	PHE840M	MAX. 0.1uF, MIN. 275VAC	IEC60384-14	ENEC
(Alternate)	HUA JUNG	MKP	MAX. 0.1uF, MIN. 275VAC	IEC60384-14	ENEC
(Alternate)	ISKRA	KNB1560	MAX. 0.1uF, MIN. 275VAC	IEC60384-14	ENEC
Y1-capacitor (C6, C7, C28)	TDK	CD	MAX. 1500pF, MIN. 250VAC	IEC 60384-14	VDE
(Alternate)	WALSIN	AH	MAX. 1500pF, MIN. 250VAC	IEC 60384-14	VDE
(Alternate)	VISHAY	WKP	MAX. 1500pF, MIN. 250VAC	IEC 60384-14	VDE
(Alternate)	MURATA	KX	MAX. 1500pF, MIN. 250VAC	IEC 60384-14	VDE
Bridging Y1-capacitor (C43, C44)	TDK	CD	MAX. 2200pF, MIN. 250VAC	IEC60384-14	VDE
(Alternate)	MURATA	KX	MAX. 2200pF, MIN. 250VAC	IEC60384-14	VDE

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

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity[1])
(Alternate)	WALSIN	AH	MAX. 2200pF, MIN. 250VAC	IEC60384-14	VDE
(Alternate)	VISHAY	WKP	MAX. 2200pF, MIN. 250VAC	IEC60384-14	VDE
Optocoupler (IC211, IC217)	VISHAY	SFH615A	Dti >0.4mm, 100°C	IEC 60747-5-5 UL 1577	VDE UL
(Alternate)	VISHAY	TCLT1002	Dti >0.4mm, 100°C	IEC 60747-5-5 UL 1577	VDE UL
(Alternate)	LITE-ON	LTV-123	Dti >0.4mm 110°C	IEC 60747-5-5 UL 1577	VDE UL
Electrolyte capacitor (C4)	INTERCHANGEABLE	INTERCHANGEA BLE	MIN. 82uF, MIN. 400VAC	IEC 62368-1	Tested with appliance
Bridge rectifier (DB1)	INTERCHANGEABLE	INTERCHANGEA BLE	MIN. 3A, MIN. 600VAC	IEC 62368-1	Tested with appliance
Power MOSFET (Q5, Q7)	INTERCHANGEABLE	INTERCHANGEA BLE	MIN. 6.0A, MIN. 500VAC	IEC 62368-1	Tested with appliance
Insulator between PE tab and C5	E I DUPONT	FR530	V-0	UL 94	UL
Insulator between L4 and C25	E I DUPONT	FR530	V-0	UL 94	UL
PCB	INTERCHANGEABLE	INTERCHANGEA BLE	MIN. V-0, 130°C	UL 796	UL
Common Mode Choke (L402)	ASTEC/ ARTESYN	852-66017770	130°C	IEC 62368-1	Tested with appliance
Differential Choke (L2)	ASTEC/ ARTESYN	852-66017810	130°C	IEC 62368-1	Tested with appliance
PFC Choke (L1)	ASTEC/ ARTESYN	852-66017540	130°C	IEC 62368-1	Tested with appliance
Differential Choke (L4)	ASTEC/ ARTESYN	852-66017780	130°C	IEC 62368-1	Tested with appliance
Output Choke (L6)	ASTEC/ ARTESYN	852-20101280	130°C	IEC 62368-1	Tested with appliance

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

Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity[1])
Output Choke (L5)	ASTEC/ ARTESYN	1) For LPS102-M: 852-66017660 2) For LPS103-M: 852-66017580 3) For LPS104-M: 852-66018870 4) For LPS105-M: 852-66018890 5) For LPS108-M and LPS109-M: 852-66018910	130°C	IEC 62368-1	Tested with appliance
Gate Drive Transformer (T2)	ASTEC/ ARTESYN	1) For LPS102-M, LPS103-M, LPS104-M, LPS105-M: 852- 66017560 2) For LPS108-M, LPS109-M: 852- 66020070	130°C	IEC 62368-1	Tested with appliance
Power Transformer (T1)	ASTEC/ ARTESYN	1) For LPS102-M: 852-66018850 2) For LPS103-M: 852-66017520 3) For LPS104-M: 852-66018860 4) For LPS105-M: 852-66018880 5) For LPS108-M: 852-66018900 6) For LPS109-M: 852-66025920	Class F	IEC 62368-1	Tested with appliance
Supplementary information: 1) an asterisk indicates a mark which assures the agreed level of surveillance.					

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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.)			
4.8.4.2	**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**
4.8.4.6	**TABLE: Crush test**		—
Test position	**Surface tested**	**Crushing Force (N)**	**Duration force applied (s)**
Supplementary information:			

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Clause	Requirement + Test	Result - Remark	Verdict

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	P

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 (mApk or mArms)	Hz	
LPS102-M	-	-	-	-	-	-	-
1	AC275 V	+5V Main output	Normal	5.69	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
2	AC275 V	+12VFan output	Normal	12.83	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
3	AC275 V	PE of MUT	Normal	208	1.88	-	ES2
			Abnormal	208.19	1.90	-	
			Single fault – SC/OC	44.2	0.4	-	
4	AC275 V	+5V Main output	Normal	248	1.56	-	ES2
			Abnormal	248.99	1.59	-	
			Single fault – SC/OC	11	0.4	-	
5	AC275 V	+5V Main output Common	Normal	250	1.6	-	ES2
			Abnormal	251.00	1.63	-	
			Single fault – SC/OC	10.6	0.4	-	
6	AC275 V	+12VFan	Normal	202	1.36	-	ES2

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Clause	Requirement + Test			Result - Remark			Verdict
		output	Abnormal	202.32	1.38	-	
			Single fault – SC/OC	35.6	0.4	-	
7	AC275 V	+12VFan output Common	Normal	202	1.32	-	ES2
			Abnormal	202.78	1.34	-	
			Single fault – SC/OC	35.6	0.4	-	
LPS103-M	-	-	-	-	-	-	-
1	AC275 V	+12V Main output	Normal	13.21	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
2	AC275 V	+12VFan output	Normal	14.89	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
3	AC275 V	PE of MUT	Normal	205	1.96	-	ES2
			Abnormal	205.84	2.00	-	
			Single fault – SC/OC	44	0.44	-	
4	AC275 V	+12V Main output	Normal	251.6	1.56	-	ES2
			Abnormal	252.29	1.58	-	
			Single fault – SC/OC	14.3	0.44	-	
5	AC275 V	+12V Main output Common	Normal	251.4	1.56	-	ES2
			Abnormal	251.60	1.58	-	
			Single fault – SC/OC	14.3	0.44	-	
6	AC275 V	+12VFan output	Normal	221.8	1.32	-	ES2
			Abnormal	222.34	1.34	-	
			Single fault – SC/OC	34.6	0.44	-	
7	AC275 V	+12VFan output Common	Normal	221	1.36	-	ES2
			Abnormal	221.22	1.40	-	
			Single fault – SC/OC	34.3	0.44	-	

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
LPS104-M	-	-	-	-	-	-	-
	AC275 V	+15V Main output	Normal	16.18	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	+12VFan output	Normal	12.97	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	PE of MUT	Normal	203.8	1.8	-	ES2
			Abnormal	204.30	1.83	-	
			Single fault – SC/OC	42.8	0.4	-	
	AC275 V	+15V Main output	Normal	238	1.4	-	ES2
			Abnormal	238.20	1.42	-	
			Single fault – SC/OC	14	0.4	-	
	AC275 V	+15V Main output Common	Normal	239	1.4	-	ES2
			Abnormal	239.47	1.43	-	
			Single fault – SC/OC	14	0.4	-	
	AC275 V	+12VFan output	Normal	198.4	1.24	-	ES2
			Abnormal	199.12	1.28	-	
			Single fault – SC/OC	36.2	0.4	-	
	AC275 V	+12VFan output Common	Normal	195.8	1.32	-	ES2
			Abnormal	196.67	1.33	-	
			Single fault – SC/OC	36.2	0.4	-	
LPS105-M	-	-	-	-	-	-	-
	AC275 V	+24V Main output	Normal	25.34	-	-	ES1
			Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	+12VFan	Normal	13.49	-	-	ES1

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
		output	Abnormal	-	-	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	PE of MUT	Normal	201.8	1.96	-	ES2
			Abnormal	202.02	1.96	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	+24V Main output	Normal	235.4	1.48	-	ES2
			Abnormal	236.03	1.50	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	+24V Main output Common	Normal	235.2	1.56	-	ES2
			Abnormal	235.32	1.58	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	+12VFan output	Normal	192.2	1.32	-	ES2
			Abnormal	192.35	1.36	-	
			Single fault – SC/OC	-	-	-	
	AC275 V	+12VFan output Common	Normal	192.4	1.4	-	ES2
			Abnormal	193.30	1.42	-	
			Single fault – SC/OC			-	
LPS108-M	-	-	-	-	-	-	-
	AC275 V	+48V Main output	Normal	49.2	-	-	ES1
			Abnormal	-	-	-	
			Single fault - SC/OC	-	-	-	
	AC275 V	+12VFan output	Normal	49.2	-	-	ES1
			Abnormal	-	-	-	
			Single fault - SC/OC	-	-	-	
	AC275 V	PE of MUT	Normal	202.6	1.72	-	ES2
			Abnormal	202.78	1.75	-	
			Single fault - SC/OC	-	-	-	

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
	AC275 V	+48V Main output	Normal	232.6	1.44	-	ES2
			Abnormal	233.30	1.48	-	
			Single fault - SC/OC	-	-	-	
	AC275 V	+48V Main output Common	Normal	232	1.4	-	ES2
			Abnormal	232.05	1.40	-	
			Single fault - SC/OC			-	
	AC275 V	+12VFan output	Normal	190.2	1.28	-	ES2
			Abnormal	190.79	1.31	-	
			Single fault - SC/OC			-	
	AC275 V	+12VFan output Common	Normal	190.8	1.32	-	ES2
			Abnormal	191.74	1.35	-	
			Single fault - SC/OC	-	-	-	
LPS109-M	-	-	-	-	-	-	-
	AC275 V	+54V Main output	Normal	57.1	-	-	ES1
			Abnormal	-	-	-	
			Single fault - SC/OC	-	-	-	
	AC275 V	+12VFan output	Normal	14.1	-	-	ES1
			Abnormal	-	-	-	
			Single fault - SC/OC	-	-	-	
	AC275 V	PE of MUT	Normal	-	0.44	-	ES1
			Abnormal	-	0.44	-	
			Single fault - SC/OC	-	0.40	-	
	AC275 V	+54V Main output	Normal	-	0.48	-	ES1
			Abnormal	-	0.40	-	
			Single fault - SC/OC	-	0.72/ 0.68	-	
	AC275 V	+54V Main output	Normal	-	0.5	-	ES1
			Abnormal	-	0.40	-	

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

		Common	Single fault - SC/OC	-	0.68	-	
	AC275 V	+12VFan output	Normal	-	0.56	-	ES1
			Abnormal	-	0.40	-	
			Single fault - SC/OC	-	0.68	-	
	AC275 V	+12VFan output Common	Normal	-	0.56	-	ES1
			Abnormal	-	0.40	-	
			Single fault - SC/OC	-	0.68	-	

5.2.2.3 - Capacitance Limits

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
1	250Va.c. 60Hz	C400, C5	Normal	0.1uF, 0.56uF	354	ES3
			Abnormal	--	--	
			Single fault- SC/OC (R14 OC)	--	--	

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:

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

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS103-M)					P
	Supply voltage (V) .....:	90V/ 60Hz	275V/ 50Hz	DC120	DC300	—
	Ambient T_{min} (°C) .....:	50.0	50.0	50.0	50.0	—
	Ambient T_{max} (°C) .....:	50.0	50.0	50.0	50.0	—
	Tma (°C) .....:	50.0	50.0	50.0	50.0	—
Maximum measured temperature T of part/at:		T (°C)				Allowed T_{max} (°C)
Ambient		50.0	50.0	50.0	50.0	-
DB1		107.9	77.3	92.7	75.6	130
L2		93.6	69.5	76.9	65.9	130
SK1		63.8	54.2	55.4	53.5	105
C7		89.4	68.6	74.9	65.0	125
C6		108.7	78.4	87.8	73.9	125
C28		103.2	79.1	88.7	76.1	125
F2 (CONSIDERED AS VDR400)		68.9	68.4	72.5	64.7	85
F1 (CONSIDERED AS VDR400)		65.9	70.4	73.7	68.4	85
T2 COIL		129.6	103.2	112.8	104.2	130
T2 CORE		126.2	98.0	105.6	98.3	130
C4		90.0	81.7	85.7	80.6	105
T1 COIL (CLASS F)		123.9	108.5	111.9	109.2	130
T1 CORE (CLASS F)		104.3	94.7	97.6	95.3	130
L1		123.6	86.7	103.7	88.1	130
L4		124.7	103.1	110.9	104.4	130
C43		116.1	89.9	95.0	91.2	125
C44		100.4	85.9	89.5	86.9	125
L6		85.8	85.8	87.6	86.1	130
C3		89.7	80.0	82.2	80.6	105
IC217		78.2	75.0	77.6	75.5	100
IC211		77.8	75.8	78.7	76.5	100
C400		95.0	69.2	73.4	63.6	100
L402		66.6	74.8	81.5	66.7	130
C5		69.2	58.5	61.5	56.9	100

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

Supplementary information:

Load conditions:

Loaded with +12V/7.83A, +12V_Fan/0.5A. a

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

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5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS103-M)						P
	Supply voltage (V) .....:	*90V/ 60Hz	**90V/ 60Hz	***90V/60 Hz	#90V/ 60Hz	##90V/ 60Hz	—
	Ambient T_{min} (°C) .....:	50.0	50.0	50.0	60.0	70.0	—
	Ambient T_{max} (°C) .....:	50.0	50.0	50.0	60.0	70.0	—
	Tma (°C) .....:	50.0	50.0	50.0	60.0	70.0	—
Maximum measured temperature T of part/at:		T (°C)					Allowed T_{max} (°C)
Ambient		50.0	50.0	50.0	60.0	70.0	-
DB1		85.0	85.9	102.8	96.8	94.8	130
L2		63.7	65.4	86.7	84.6	86.3	130
SK1		50.3	52.6	62.5	64.9	73.5	105
C7		61.2	63.7	83.3	81.8	84.8	125
C6		68.3	70.7	100.5	93.8	92.4	125
C28		70.2	72.5	96.8	93.8	93.2	125
F2 (CONSIDERED AS VDR400)		65.8	68.5	83.4	79.4	83.4	85
F1 (CONSIDERED AS VDR400)		68.7	72.5	81.6	79.3	84.7	85
T2 COIL		84.8	89.6	121.7	105.9	106.3	130
T2 CORE		84.1	87.9	118.4	102.8	102.4	130
C4		71.2	75.2	95.5	86.5	90.5	105
T1 COIL (CLASS F)		104.5	110.6	119.6	103.6	100.9	130
T1 CORE (CLASS F)		81.4	92.5	99.9	94.1	95.0	130
L1		91.9	95.3	117.2	104.7	100.9	130
L4		88.4	92.6	116.8	102.8	103.3	130
C43		87.6	92.2	88.9	86.7	94.4	125
C44		78.3	83.5	92.8	83.5	91.6	125
L6		74.9	79.7	83.5	86.5	89.3	130

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

C3	73.4	78.5	82.4	82.6	86.3	105
IC217	67.1	71.5	72.5	80.9	86.5	100
IC211	69.6	72.5	71.9	81.4	86.9	100
C400	72.6	74.5	82.6	80.7	83.5	100
L402	66.3	69.6	100.8	89.5	88.0	130
C5	51.1	53.6	67.3	70.5	76.9	100

Supplementary information:

Load conditions:

1) *: +12V/12.5A, +12V_Fan/0 A;
2) **: +12V/11.5A, +12V_Fan/1.0 A;
3) ***: +12V/8.33A, +12V_Fan/0 A;
4) #: 75% Load, +12V/5.87A, +12V_Fan/0.375 A;
5) ##: 50% Load +12V/3.92A, +12V_Fan/0.25 A.

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

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5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS105-M)						P
	Supply voltage (V) ..... :	*90V/ 60Hz	**90V/ 60Hz	***90V/ 60Hz	#90V/ 60Hz	##90V/ 60Hz	###90V/ 60Hz	—
	Ambient T_{min} (°C) ..... :	50.0	50.0	50.0	50.0	60.0	70.0	—
	Ambient T_{max} (°C) ..... :	50.0	50.0	50.0	50.0	60.0	70.0	—
	Tma (°C) ..... :	50.0	50.0	50.0	50.0	60.0	70.0	—
Maximum measured temperature T of part/at:		T (°C)						Allowed T_{max} (°C)
Ambient		50.0	50.0	50.0	50.0	60.0	70.0	-
L402		75.9	81.8	98.6	98.1	90.8	90.7	130
F1 (considered as VDR400)		60.4	62.4	81.4	81.8	77.3	84.9	85
F2 (considered as VDR400)		61.9	64.1	77.6	77.4	79.6	84.5	85
C7		64.8	68.3	92.0	91.3	87.6	86.9	125
C6		63.9	66.8	116.8	116.7	99.7	96.5	125
L2		60.1	62.6	81.7	81.3	80.3	81.5	130
C5		51.9	52.9	64.4	63.8	67.7	72.8	100
DB1		76.8	80.2	97.9	97.3	91.8	89.5	130

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

L1	81.8	88.0	102.4	102.9	93.9	90.9	130
C4	64.1	66.8	93.7	95.0	87.8	88.7	105
C28	66.0	69.1	102.9	102.4	94.7	89.8	125
L4	91.9	98.5	113.6	115.0	104.2	98.9	130
T2 Core	85.9	92.9	122.9	123.7	65.5	70.8	130
T2 Coil	85.8	91.4	123.4	123.9	111.7	104.9	130
T1 Core (Class F)	71.8	74.8	102.1	102.6	101.8	99.9	130
T1 Coil (Class F)	80.7	85.1	99.9	100.6	109.9	113.6	130
C43	82.6	87.6	105.3	107.4	100.2	96.9	125
C44	72.7	76.1	80.9	83.6	83.6	83.8	125
L6	71.3	74.7	81.1	85.4	86.8	90.4	130
IC217	82.4	86.8	84.4	86.0	87.1	91.9	100
IC211	83.3	87.6	89.0	91.1	90.4	94.4	100
C400	65.0	67.4	98.5	98.2	92.5	87.8	100

Supplementary information:

Load conditions:
*: +24V/6.25, +12V_Fan/0 A;
**: +24V/5.75A, +12V_Fan/1.0 A;
***: +24V/4.2A, +12V_Fan/0 A;
#: +24V/3.92A, +12V_Fan/0.5 A;
##: 75% Load +24V/2.94A, +12V_Fan/0.375 A;
###: 50% load: +24V/1.96A, +12V_Fan/0.25 A.0 A;

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

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

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS102-M)							P
Supply voltage (V) .....:	*90V /60Hz	**90V /60Hz	***90V /60Hz	#90V /60Hz	##90V /60Hz	^90V /60Hz	^^90V /60Hz	—
Ambient T_{min} (°C) .....:	50.0	50.0	50.0	50.0	50.0	60.0	70.0	—
Ambient T_{max} (°C) .....:	50.0	50.0	50.0	50.0	50.0	60.0	70.0	—
Tma (°C) .....:	50.0	50.0	50.0	50.0	50.0	60.0	70.0	—
Maximum measured temperature T of part/at:	T (°C)							Allowed T_{max} (°C)
Ambient	50.0	50.0	50.0	50.0	50.0	60.0	70.0	-
L402	76.5	75.4	88.1	87.2	81.3	78.6	76.5	130
F1 (Considered as VDR400)	62.3	62.0	84.5	84.7	66.9	83.1	62.3	85
F2 (Considered as VDR400)	60.9	60.7	80.2	81.1	64.5	78.6	60.9	85
C7	68.1	67.8	90.8	90.5	79.9	83.0	68.1	125
C6	68.6	68.2	92.6	92.0	84.8	86.6	68.6	125
L2	58.2	58.1	70.4	70.1	68.9	71.1	58.2	130
DB1	69.2	68.9	83.9	82.8	81.7	79.1	69.2	100
L1	71.4	70.6	87.9	86.4	53.5	85.1	71.4	130
C4	78.4	76.0	104.4	103.1	91.9	97.1	78.4	130
C28	68.2	67.5	102.1	100.7	95.0	89.7	68.2	105
L4	89.2	87.6	117.5	115.7	107.3	101.1	89.2	125
T2 Core	85.7	84.1	114.6	113.2	105.3	100.7	85.7	130
T2 Coil	87.5	85.6	118.2	115.6	106.9	101.2	87.5	130
T1 Core (Class F)	109.8	103.0	129.1	128.0	116.2	110.7	109.8	130
T1 Coil (Class F)	107.5	100.5	128.6	127.4	111.9	106.0	107.5	130
C43	85.8	83.8	108.4	104.6	103.5	95.2	85.8	130
C44	79.2	76.9	89.4	85.1	92.3	83.1	79.2	125
L6	92.3	88.6	102.3	100.1	96.5	86.8	92.3	125
C400	63.7	63.4	85.8	85.5	68.4	79.5	63.7	130
L5	104.1	98.6	129.5	129.1	117.2	109.8	104.1	100
Q6	97.5	93.2	121.8	122.4	111.3	104.6	97.5	100

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

Supplementary information:

Load conditions:

1) *: +5V/24.0A, +12V_Fan/0A;
2) **: +5V/21.6A, +12V_Fan/1.0A;
3) ***: +5V/16A, +12V_Fan/0A;
4) #: +5V/14.8A, +12V_Fan/0.5A;
5) ##: +5.5V/14.55A, +12V_Fan/0A;
6) ^: 75% load: +5V/8.7A, +12V_Fan/0.375A;
7) ^^: 50% load: +5V/7.4A, +12V_Fan/0.25A

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

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5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS104-M)							P
Supply voltage (V) .....:	*90V /60Hz	**90V /60Hz	***90V /60Hz	#90V /60Hz	##90V /60Hz	^90V /60Hz	^^90V /60Hz	—
Ambient T_{min} (°C) .....:	50.0	50.0	50.0	50.0	50.0	60.0	70.0	—
Ambient T_{max} (°C) .....:	50.0	50.0	50.0	50.0	50.0	60.0	70.0	—
Tma (°C) .....:	50.0	50.0	50.0	50.0	50.0	60.0	70.0	—
Maximum measured temperature T of part/at:	T (°C)							Allowed T_{max} (°C)
Ambient	50.0	50.0	50.0	50.0	50.0	60.0	70.0	-
L402	94.4	93.9	113.0	112.7	106.6	95.6	92.9	130
F1 (CONSIDERED AS VDR400)	60.0	60.0	76.6	78.1	78.1	78.7	75.8	85
F2 (CONSIDERED AS VDR400)	70.4	69.1	84.5	83.3	81.8	79.0	82.4	85
C7	83.5	83.0	109.3	105.7	100.3	92.4	93.0	125
C6	80.0	79.8	108.9	104.9	98.4	93.2	96.1	125
L2	67.8	67.7	86.6	95.7	93.4	87.0	88.9	130
DB1	77.5	77.6	100.4	112.8	111.9	101.7	99.5	130
L1	85.2	85.3	109.1	113.6	104.1	97.2	98.1	130
C4	81.9	81.9	104.5	103.8	93.1	93.2	98.7	105
C28	71.8	71.9	114.2	117.8	110.6	100.7	99.9	125
L4	97.9	98.5	126.0	122.7	100.8	103.2	109.1	130
T2 CORE	89.5	90.0	118.8	126.7	110.4	106.8	109.6	130
T2 COIL	87.5	87.9	115.7	125.5	107.7	105.9	109.8	130

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Clause	Requirement + Test	Result - Remark	Verdict

T1 CORE (CLASS F)	83.0	82.7	109.5	93.7	85.7	87.9	95.7	130
T1 COIL (CLASS F)	100.1	100.0	119.4	102.2	91.3	92.7	98.7	130
C43	92.5	93.5	102.2	102.8	83.8	90.6	99.4	125
C44	84.0	85.5	85.1	86.7	72.1	81.3	90.4	125
L6	83.7	87.4	90.0	85.3	70.4	80.3	88.9	130
C400	76.8	76.5	99.2	89.1	83.5	82.4	87.9	100
L5	96.3	97.3	104.8	87.7	77.3	82.7	91.4	130
Q6	93.2	91.6	108.7	87.4	78.2	81.1	88.6	150

Supplementary information:

Load conditions:
1) *: Tested at full load: +15V/10A, +12V_Fan/0A;
2) **: Tested at full load: +15V/9.2A, +12V_Fan/1.0A;
3) ***: Tested at full load: +15V/6.67A, +12V_Fan/0A;
4) #: Tested at full load: +15V/6.27A, +12V_Fan/0.5A;
5) ##:Tested at full load: +16.5V/6.06A, +12V_Fan/0A
6) ^:Tested at 75% load: +15V/4.7A, +12V_Fan/0.375A;
7) ^^: Tested at 50% load: +15V/3.13A, +12V_Fan/0.25A.

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

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5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS108-M)							P
Supply voltage (V) .....:	*90V /60Hz	**90V /60Hz	***90V /60Hz	#90V /60Hz	##90V /60Hz	^90V /60Hz	^^90V /60Hz	—
Ambient T_{min} (°C) .....:	50.0	50.0	50.0	60.0	70.0	50.0	50.0	—
Ambient T_{max} (°C) .....:	50.0	50.0	50.0	60.0	70.0	50.0	50.0	—
Tma (°C) .....:	50.0	50.0	50.0	60.0	70.0	50.0	50.0	—
Maximum measured temperature T of part/at:	T (°C)							Allowed T_{max} (°C)
Ambient	50.0	50.0	50.0	60.0	70.0	50.0	50.0	-
L405	108.2	106.6	109.7	101.0	93.6	86.8	82.7	130
F1 (CONSIDERED AS VDR400)	82.5	80.4	83.7	80.8	82.7	74.4	73.3	85
F2 (CONSIDERED AS VDR400)	80.3	78.6	81.1	77.5	80.1	72.6	71.6	85
C7	107.7	104.8	109.4	102.4	97.1	74.0	72.7	125

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Clause	Requirement + Test	Result - Remark	Verdict

C6	114.1	110.5	115.7	107.6	101.4	75.3	74.2	125
L2	90.7	88.1	93.8	91.1	89.3	71.9	70.9	130
DB1	87.3	85.9	105.0	98.5	94.9	79.3	78.2	130
L1	108.7	104.3	108.7	101.9	95.6	82.4	80.6	130
C4	99.8	97.6	101.0	105.4	99.1	80.3	79.0	105
C28	106.6	105.0	112.3	101.0	96.1	65.4	64.6	125
L4	124.4	122.8	121.7	116.7	104.3	111.5	109.5	130
T2 CORE	127.5	124.8	125.2	124.7	109.8	103.2	100.8	130
T2 COIL	128.8	125.5	128.8	126.1	111.3	105.1	102.7	130
T1 CORE (CLASS F)	105.0	102.4	102.2	100.4	96.8	86.0	84.4	130
T1 COIL (CLASS F)	124.9	121.9	121.0	112.8	103.2	104.0	101.1	130
C43	104.0	103.4	103.4	103.4	96.5	95.2	94.9	125
C44	85.9	86.7	84.5	89.3	89.6	78.7	79.1	125
L6	92.7	91.5	87.8	91.6	89.3	82.6	84.3	130
C400	93.8	91.5	93.1	94.1	91.4	75.0	73.9	100
L5	108.0	109.2	103.2	103.2	96.8	104.7	111.5	130
C5	76.5	74.5	78.2	76.4	81.9	56.3	58.7	100

Supplementary information:

Load conditions:

1) *: Tested at full load: +48V/2.09A; +12V_Fan/0A;
2) **: Tested at full load: +48V/1.96A; +12V_Fan/0.5A;
3) ***: Tested at full load: +52.8V/1.89A; +12V_Fan/0A;
4) #: Tested at 75% load: +48V/1.47A; +12V_Fan/0.375A;
5) ##: Tested at 50% load: +48V/0.98A; +12V_Fan/0.25A;
6) ^: Tested at full load: +48V/3.1A; +12V_Fan/0.1 A;
7) ^^: Tested at full load: +48V/2.88A; +12V_Fan/1.0 A

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

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements (for Model LPS109-M)							P
Supply voltage (V) .....:	*90V /60Hz	**90V /60Hz	***90V /60Hz	#90V /60Hz	##90V /60Hz	^90V /60Hz	^^90V /60Hz	—
Ambient T_{min} (°C) .....:	50.0	50.0	50.0	60.0	70.0	50.0	50.0	—
Ambient T_{max} (°C) .....:	50.0	50.0	50.0	60.0	70.0	50.0	50.0	—
Tma (°C) .....:	50.0	50.0	50.0	60.0	70.0	50.0	50.0	—
Maximum measured temperature T of part/at:	T (°C)							Allowed T_{max} (°C)
Ambient	50.0	50.0	50.0	60.0	70.0	50.0	50.0	-
C400	86.1	86.9	86.7	85.7	84.7	78.0	78.3	100
L401	103.7	104.4	104.4	95.8	90.4	94.5	95.3	130
F1 (CONSIDERED AS VDR400)	80.5	81.5	81.5	82.8	84.1	73.0	73.3	85
F2 (CONSIDERED AS VDR400)	75.0	76.0	75.9	78.5	80.9	72.9	73.1	85
C5	91.5	92.4	92.2	89.3	87.5	65.1	65.4	100
C6	98.3	99.2	99.1	95.6	93.3	78.4	78.8	125
C7	102.1	102.7	102.5	96.0	91.7	87.8	88.0	125
L2	100.1	100.8	100.5	94.8	90.9	62.2	62.4	130
DB1	112.8	113.5	113.4	106.1	99.4	77.9	78.1	130
L1	108.8	108.1	108.2	101.1	95.6	108.2	109.2	130
Q1	121.5	121.6	121.5	110.1	101.6	105.2	106.2	130
C28	113.3	113.8	113.8	105.4	99.1	87.2	88.0	125
C4	96.6	97.5	97.1	94.8	92.6	82.7	82.2	105
T2 COIL	113.7	114.3	115.2	108.9	102.0	107.6	108.4	130
T2 CORE	110.6	111.4	111.4	107.9	100.6	105.3	106.2	130
L4	87.2	89.3	87.0	90.6	89.4	101.9	103.3	130
T1 CORE (CLASS F)	100.8	100.9	100.1	96.5	94.0	120.0	117.0	130
T1 COIL (CLASS F)	99.5	99.8	99.5	96.3	94.6	101.3	99.5	130
C43	80.3	83.0	82.3	87.6	87.1	93.2	95.0	125
C44	68.8	71.8	70.4	78.3	82.8	79.8	81.8	125
L6	64.5	68.3	65.3	74.2	79.3	83.5	88.4	130
L5	84.7	85.5	82.7	84.0	83.8	116.9	115.8	130
IC211	70.4	72.5	72.3	79.6	83.1	84.0	86.3	100
Q5	102.5	103.6	102.3	100.2	94.8	107.6	107.6	130

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

Load conditions:
1) *: Tested at full load: +54V/1.85A, +12VFAN/0A;
2) **: Tested at full load: +54V/1.74A, +12VFAN/0.5A;
3) ***: Tested at full load: +57V/1.754A, +12VFAN/0A;
4) #: Tested at 75% load: +54V/1.31A, +12VFAN/0.375A;
5) ##: Tested at 50% load: +54V/0.87A, +12VFAN/0.25A;
6) ^: Tested at full load: +54V/2.77A, +12VFAN/0 A;
7) ^^: Tested at full load: +54V/2.56A, +12VFAN/1.0 A.

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

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

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics		P
Allowed impression diameter (mm) ..... :		≤ 2 mm	—
Object/Part No./Material	Manufacturer/trademark	Test temperature (°C)	Impression diameter (mm)
T1 Bobbin/ C5 and C25 Insulator (FR530)	E.I. Dupont	125	1.1
Supplementary information:			

5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance						P
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)
Functional insulation:							
L to N before the fuse	354	300	<1	2.0	4.2	3.0	4.2
Basic and supplementary insulation:							
Primary trace near C19 to PE	354	300	131.6	2.6	2.7	3.0	4.5
Primary trace near DB19 to PE	354	300	131.6	2.6	2.7	3.0	4.2

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Clause	Requirement + Test			Result - Remark			Verdict
Primary trace near SK1 and PE	354	300	131.6	2.6	2.8	3.0	5.5
Primary trace near SK4 to PE	354	300	131.6	2.6	5.3	3.0	5.3
Double and reinforced insulation:							
Q5 trace to T1 secondary	354	300	131.6	5.2	5.3	6.0	9.1
Primary to secondary under T1	486	303	131.6	5.5	12.6	6.2	15.0
Primary to secondary under optocoupler IC211/IC217	354	300	131.6	5.2	8.3	6.0	8.3
Supplementary information: 1) Maximum operating altitude up to 3963m above sea level, and the correction factor of Cl. is 1.29. 2) TIW used as transformer T1's primary winding, and core considered as secondary part.							

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			P
	Overvoltage Category (OV):			II
	Pollution Degree:			2
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)
Same as the "TABLE: Minimum Clearances/Creepage distance"		2500Vpeak	1.5 x 1.29 = 2.0 (for BI/SI) 3.0 x 1.29 = 4.0 (for RI/DI)	Same as the "TABLE: Minimum Clearances/Creepage distance"
Supplementary information: - All required clearances were calculated for 3963 m. Therefore the required clearances were multiplied with factor 1.29 according IEC 60664-1.				

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
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Supplementary information: Not used the alternative method to determine the clearances.				

5.4.4.2, 5.4.4.5 c) 5.4.4.9	TABLE: Distance through insulation measurements					P
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)	
Isolated optocoupler	354	>30	--	0.4	Min. 0.4	
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Basic/supplementary		--	--	--
AC input to PE		AC	1769	No
Reinforced: PSU		--	--	--
Primary to secondary output		AC	3000	No
T1 primary winding to secondary winding &core		AC	3000	No
One layer of insulation tape		AC	3000	No
Supplementary information: All Electric Srength tests were successfully conducted after humidity treatment. IEC 60950 was considered for the hi-pot test voltage which is considered worse than IEC62368-1.				

5.5.2.2	TABLE: Stored discharge on capacitors				P
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification
AC 250, 60Hz	a.	N	N/A	2	ES1
AC 250, 60Hz	a.	S (R14 opened)	N/A	90	ES2
Supplementary information: X-capacitors installed for testing are: C400, C5 ☐ 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					

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Clause	Requirement + Test	Result - Remark	Verdict

5.6.6.2	TABLE: Resistance of protective conductors and terminations				N/A
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Supplementary information:					

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		P
Supply voltage .....:		275V/60Hz	—
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)
		1 Normal	1.96mA
		2* Neutral open	2.28mA
		3	--
		4	--
		5	--
		6	--
		8	--

Supplementary Information:

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.

N: Normal condition, R: Reverse condition.

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
A		Power (W) :	--	--	--
		V_A (V) :	--	--	
		I_A (A) :	--	--	

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Clause	Requirement + Test	Result - Remark		Verdict

B		Power (W) :	--	--	--
		V_A (V) :	--	--	
		I_A (A) :	--	--	
C		Power (W) :	--	--	--
		V_A (V) :	--	--	
		I_A (A) :	--	--	
D		Power (W) :	--	--	--
		V_A (V) :	--	--	
		I_A (A) :	--	--	

Supplementary Information:
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits
All internal parts and output are declared as PS3.

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
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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.

Assumption: All circuits are declared as of PS3, arcing and resistive PIS.

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
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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.

Assumption: All circuits inside the equipment enclosure are declared as of PS3, arcing and resistive PIS

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: Input test						P
U (V)	I (mA)	I rated (A)	P (W)*	P rated (W)	Fuse No	I fuse (mA)	Condition/status
For LPS102-M							
100V/50Hz	1535	2.5			F1, F2	1535	Loading condition: +5V/24.0A; +12V_Fan/0A
250V/50Hz	912	2.5			F1, F2	912	Ditto
100V/60Hz	1525	2.5			F1, F2	1525	Ditto

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Clause	Requirement + Test	Result - Remark	Verdict

U (V)	I (mA)	I rated (A)	P (W)*	P rated (W)	Fuse No	I fuse (mA)	Condition/status
250V/60Hz	812	2.5	-	-	F1, F2	812	Ditto
100V/50Hz	1515	2.5	-	-	F1, F2	1515	Loading condition: +5V/21.6A; +12V_Fan/1.0A
250V/50Hz	901	2.5	-	-	F1, F2	901	Ditto
100V/60Hz	1508	2.5	-	-	F1, F2	1508	Ditto
250V/60Hz	804	2.5	-	-	F1, F2	804	Ditto
120VDC	1240	2.0	-	-	F1, F2	1240	Loading condition: +5V/24.0A; +12V_Fan/0A
300VDC	482	2.0	-	-	F1, F2	482	Ditto
120VDC	1224	2.0	-	-	F1, F2	1224	Loading condition: +5V/21.6A; +12V_Fan/1.0A
300VDC	476	2.0	-	-	F1, F2	476	Ditto
For LPS103-M							
100V/50Hz	1731	2.5	-	-	F1, F2	1731	Loading condition: +12V/12.5A, +12VFan/0A
250V/50Hz	782	2.5	-	-	F1, F2	782	Ditto
100V/60Hz	1734	2.5	-	-	F1, F2	1734	Ditto
250V/60Hz	713	2.5	-	-	F1, F2	713	Ditto
100V/50Hz	1737	2.5	-	-	F1, F2	1737	Loading condition: +12V/11.5A, +12VFan/1A
250V/50Hz	781	2.5	-	-	F1, F2	781	Ditto
100V/60Hz	1735	2.5	-	-	F1, F2	1735	Ditto
250V/60Hz	713	2.5	-	-	F1, F2	713	Ditto
100V/50Hz	1745	2.5	-	-	F1, F2	1745	Loading condition: +13.2V/11.36A, +12VFan/0A

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

U (V)	I (mA)	I rated (A)	P (W)*	P rated (W)	Fuse No	I fuse (mA)	Condition/status
250V/50Hz	790	2.5	-	-	F1, F2	790	Ditto
100V/60Hz	1747	2.5	-	-	F1, F2	1747	Ditto
250V/60Hz	717	2.5	-	-	F1, F2	717	Ditto
120V	1578	2.0	-	-	F1, F2	1578	Loading condition: +12V/12.5A, +12VFan/0A
300V	610	2.0	-	-	F1, F2	610	Ditto
120V	1578	2.0	-	-	F1, F2	1578	Loading condition: +12V/11.5A, +12VFan/1A
300V	610	2.0	-	-	F1, F2	610	Ditto
120V	1427	2.0	-	-	F1, F2	1427	Loading condition: +13.2V/11.36A, +12VFan/0A
300V	553	2.0	-	-	F1, F2	553	Ditto
For LPS104-M							
100V/50Hz	1751	2.5	-	-	F1, F2	1751	Loading condition: +15V/10.0A; +12V_Fan/0A
250V/50Hz	1011	2.5	-	-	F1, F2	1011	Ditto
100V/60Hz	1740	2.5	-	-	F1, F2	1740	Ditto
250V/60Hz	886	2.5	-	-	F1, F2	886	Ditto
100V/50Hz	1750	2.5	-	-	F1, F2	1750	Loading condition: +15V/9.2A; +12V_Fan/1.0A
250V/50Hz	1014	2.5	-	-	F1, F2	1014	Ditto
100V/60Hz	1748	2.5	-	-	F1, F2	1748	Ditto
250V/60Hz	887	2.5	-	-	F1, F2	887	Ditto
120V	1422	2.0	-	-	F1, F2	1422	Loading condition: +15V/10.0A; +12V_Fan/0A

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

U (V)	I (mA)	I rated (A)	P (W)*	P rated (W)	Fuse No	I fuse (mA)	Condition/status
300V	550	2.0	-	-	F1, F2	550	Ditto
120V	1425	2.0	-	-	F1, F2	1425	Loading condition: +15V/9.2A; +12V_Fan/1.0A
300V	551	2.0	-	-	F1, F2	551	Ditto
For LPS105-M							
100V/50Hz	1724	2.5	-	-	F1, F2	1724	Loading condition: +24V/6.25A, +12VFan/0A
250V/50Hz	1240	2.5	-	-	F1, F2	1240	Ditto
100V/60Hz	1720	2.5	-	-	F1, F2	1720	Ditto
250V/60Hz	1001	2.5	-	-	F1, F2	1001	Ditto
100V/50Hz	1720	2.5	-	-	F1, F2	1720	Loading condition: +24V/5.75A, +12VFan/1A
250V/50Hz	1071	2.5	-	-	F1, F2	1071	Ditto
100V/60Hz	1718	2.5	-	-	F1, F2	1718	Ditto
250V/60Hz	1004	2.5	-	-	F1, F2	1004	Ditto
120V	1403	2.0	-	-	F1, F2	1403	Loading condition: +24V/6.25A, +12VFan/0A
300V	544	2.0	-	-	F1, F2	544	Ditto
120V	1403	2.0	-	-	F1, F2	1403	Loading condition: +24V/5.75A, +12VFan/1A
300V	543	2.0	-	-	F1, F2	543	Ditto
For LPS108-M							
100V/50Hz	1771.9	2.5	-	-	F1, F2	1772	Loading condition: +48V/3.1A; +12V_Fan/0.1A
250V/50Hz	1027.0	2.5	-	-	F1, F2	1027	Ditto
100V/60Hz	1774.3	2.5	-	-	F1, F2	1774	Ditto

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Clause	Requirement + Test	Result - Remark	Verdict

U (V)	I (mA)	I rated (A)	P (W)*	P rated (W)	Fuse No	I fuse (mA)	Condition/status
250V/60Hz	886.9	2.5	-	-	F1, F2	887	Ditto
100V/50Hz	1763.0	2.5	-	-	F1, F2	1763	Loading condition: +48V/2.88A; +12V_Fan/1.0A
250V/50Hz	1021.6	2.5	-	-	F1, F2	1022	Ditto
100V/60Hz	1762.3	2.5	-	-	F1, F2	1762	Ditto
250V/60Hz	885.3	2.5	-	-	F1, F2	885	Ditto
120V	1455.5	2.0	-	-	F1, F2	1456	Loading condition: +48V/3.1A; +12V_Fan/0.1A
300V	562.2	2.0	-	-	F1, F2	562	Ditto
120V	1435.9	2.0	-	-	F1, F2	1436	Loading condition: +48V/2.88A; +12V_Fan/1.0A
300V	554.8	2.0	-	-	F1, F2	555	Ditto
For LPS109-M							
100V/50Hz	1757	2.5	-	-	F1, F2	1757	Loading condition: +54V/3.1A; +12VFAN/0.1A
250V/50Hz	725	2.5	-	-	F1, F2	725	Ditto
100V/60Hz	1756	2.5	-	-	F1, F2	1756	Ditto
250V/60Hz	714	2.5	-	-	F1, F2	714	Ditto
100V/50Hz	1762	2.5	-	-	F1, F2	1762	Loading condition: +54V/2.88A; +12VFAN/1.0A
250V/50Hz	727	2.5	-	-	F1, F2	727	Ditto
100V/60Hz	1759	2.5	-	-	F1, F2	1759	Ditto
250V/60Hz	716	2.5	-	-	F1, F2	716	Ditto
120V	1351	2.0	-	-	F1, F2	1351	+54V/3.1A; +12VFAN/0.1A
300V	555	2.0	-	-	F1, F2	555	Ditto
120V	1356	2.0	-	-	F1, F2	1356	+54V/2.88A; +12VFAN/1.0A

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Clause	Requirement + Test	Result - Remark	Verdict

U (V)	I (mA)	I rated (A)	P (W)*	P rated (W)	Fuse No	I fuse (mA)	Condition/status
300V	557	2.0	-	-	F1, F2	557	Ditto

Supplementary information:

1) The steady state input current did not exceed the rated current at the rated voltage by more than 10 percent under maximum normal load.

B.3	TABLE: Abnormal operating condition tests (refer to table B.4)							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

Supplementary information:
Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4.

s-c=short circuit, o-c=open circuit, o-l=overload, b-v=blocked ventilation openings.

NB – no indication of dielectric breakdown

NC – Cheesecloth remained intact

NT - Tissue paper remained intact

Output circuit is under ES1 limit.

Note:

Thermocouple location:

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Clause	Requirement + Test	Result - Remark	Verdict

B.4	**TABLE: Fault condition tests (for model LPS103-M)**		P
Ambient temperature (°C) .....:		24.2	—
Power source for EUT: Manufacturer, model/type, output rating .:		--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Q7 (G-S)	S/C	275	30min	F1, F2	0.063	T1 T2	49.8°C 53.5°C	All outputs shutdown immediately.
IC217 Pin 1-2	S/C	275	30min	F1, F2	0.069		56.8°C 53.5°C	All outputs shutdown immediately.
IC217 Pin 3-4	S/C	275	30min	F1, F2	0.070	T1 T2	52.8°C 48.5°C	All outputs shutdown immediately.
IC211 Pin 1-2	S/C	275	1.5h	F1, F2	0.653	T1 T2	89.9°C 87.3°C	All outputs shutdown immediately.
IC211 Pin 3-4	S/C	275	1.5h	F1, F2	0.653	T1 T2	93.7°C 91.0°C	All outputs shutdown immediately.
T1 (4S-4F/5S)	S/C	275	1.5h	F1, F2	0.256	T1 T2	137.1°C 104.1°C	All outputs cycling. +12V output: 0.06A/0.37V to 0.46A/1.03V. +12V_Fan: 0.01A/1.10V to 0.02A/2.01V.
T1 (5F-4F/5S)	S/C	275	2h	F1, F2	0.286	T1 T2	159.8°C1 37.9°C	All outputs cycling. +12V output: 0.06A/0.13V to 0.77A/1.57V. +12V_Fan: 0.01A/1.10V to 0.02A/2.07V.
Q1 (G-S)	S/C	275	1.5h	F1, F2	0.653	T1 T2	92.1°C 85.5°C	No visible effect. Tested until thermal equilibrium.
Q7 (G-D)	S/C	275	30min	F1, F2	0.064	T1 T2	55.7°C 50.0°C	All outputs shutdown immediately.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T2 (2F-2S)	S/C	275	30min	F1, F2	0.099	T1 T2	51.1°C 49.5°C	All outputs shutdown immediately.
T2 (1S-1F)	S/C	275	30min	F1, F2	0.286	T1 T2	54.9°C 50.4°C	All outputs shutdown immediately.
T2 (3S-3F)	S/C	275	30min	F1, F2	0.075	T1 T2	52.9°C 50.1°C	All outputs shutdown immediately.
T1 (1S-1F)	S/C	275	30min	F1, F2	0.076	T1 T2	55.2°C 51.1°C	All outputs shutdown immediately.
T1 (2S-3F)	S/C	275	30min	F1, F2	0.077	T1 T2	54.1°C 51.2°C	All outputs shutdown immediately.
T1 (6F-6S)	S/C	275	30min	F1, F2	0.077	T1 T2	58.7°C 55.3°C	All outputs cycling. +12V output: 0.06A/0.10V to 0.15A/0.55V. +12V_Fan: 0.01A/1.09V to 0.01A/1.48V.
*Q1 (G-D)	S/C	275	10min	F1, F2	>5.75	T1 T2	54.7°C 53.6°C	F1 and F2 opened. Damaged Q1, DB1, R8.
Q1 (D-S)	S/C	275	30min	F1, F2	0.553	T1 T2	54.1°C 63.3°C	All outputs shutdown immediately.
Q7 (D-S)	S/C	275	30min	F1, F2	0.070	T1 T2	49.9°C 46.8°C	All outputs shutdown immediately.
*DB1 Pin 1-2	S/C	275	30min	F1, F2	>5.75	T1 T2	57.9°C 52.8°C	F1 and F2 opened. Damaged DB1.
*DB1 Pin 3-4	S/C	275	30min	F1, F2	>5.75	T1 T2	57.0°C 53.5°C	F1 and F2 opened. Damaged DB1.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
+12V output	S/C	275	2h	F1, F2	0.285	T1 T2	138.1°C1 01.6°C	+12V output shutdown immediately while +12V_Fan cycling from 3.03V to 4.02V. Tested until thermal equilibrium.
+12V_Fan	S/C	275	1.5h	F1, F2	0.777	T1 T2	104.6°C 88.5°C	+12V_Fan shutdown immediately while +12Voutput normal. Tested until thermal equilibrium.
+12V output	O/L	275	4h	F1, F2	0.898	T1 T2	147.9°C1 42.9°C	No visible effect until thermal equilibrium. Overload was conducted at 12.5A (max. output power). Beyond 12.5A load, +12V output shutdown immediately while +12V_Fan is still normal.
+12V_Fan	O/L	275	4h	F1, F2	0.785	T1 T2	114.3°C1 09.6°C	No visible effect until thermal equilibrium. Overload was conducted at 1.3A (max. output power). Beyond 1.3A load, +12V_Fan output shutdown immediately while +12V output is still normal.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T1 (2S/3F)	O/L	275	4h	-	-	T1 T2	161.7°C 141.9°C	No visible effect until thermal equilibrium. Overload was conducted at 15A (max. output power). Beyond 15A load, +12V output shutdown while +12V_Fan is still normal.
T1 (4S/5F)	O/L	275	4h	-	-	T1 T2	143.2°C1 44.1°C	No visible effect until thermal equilibrium. Overload was conducted at 5.2A (max. output power). Beyond 5.2A load, +12V_Fan shutdown while +12V output is still normal.

Supplementary information:

s/c=short circuit, o/c=open circuit, o/l=overload, b/v=blocked ventilation openings.

SELV outputs did not exceed 42.4Vpeak or 60Vdc and did not exceed the limit of 71Vpeak or 120Vdc within 0.2 sec. after abnormal conditions were applied. Electric strength tests were successfully conducted after the completion of fault tests with damaged component result, fuse opened result, output overload, and output short circuit. Refer to table 5.4.9 for Electric Strenght test voltage.

NB – no indication of dielectric breakdown

NC – Cheesecloth remained intact

NT - Tissue paper remained intact

Notes:

B.4	TABLE: Fault condition tests (for model LPS105-M)	P
Ambient temperature (°C) .....:	24.7	—
Power source for EUT: Manufacturer, model/type, output rating .:	--	—

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
IC217 Pin 1-2	S/C	275	30min	F1, F2	0.617	T1 T2	70.4°C 89.6°C	No visible effect. Tested until thermal equilibrium.
IC211 Pin 3-4	S/C	275	30min	F1, F2	0.065	T1 T2	52.5°C 61.8°C	All outputs shutdown immediately.
T1 (4S-4F/5S)	S/C	275	30min	F1, F2	0.065	T1 T2	59.9°C 60.0°C	All outputs shutdown immediately.
T1 (5F-4F/5S)	S/C	275	30min	F1, F2	0.064	T1 T2	58.3°C 59.7°C	All outputs shutdown immediately.
T1 (2S-3F)	S/C	275	30min	F1, F2	0.187	T1 T2	56.3°C 59.7°C	All outputs cycling. +24V output: 0.01A/0.93V to 0.01A/4.71V. +12V_Fan: 0.01A/0.35V to 0.01A/1.45V.
L5	S/C	275	30min	F1, F2	0.617	T1 T2	70.7°C 88.3°C	No visible effect. Tested until thermal equilibrium.
+24V output	S/C	275	1h	F1, F2	0.068	T1 T2	53.1°C 54.4°C	All outputs shutdown immediately.
+24V output	O/L	275	4h	F1, F2	0.939	T1 T2	112.9°C1 39.5°C	No visible effect until thermal equilibrium. Overload was conducted at 6.25A (max. output power). Beyond 6.25A load, +24V output shutdown while +12V_Fan is still normal.

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T1 (2S/3F)	O/L	275	5h	F1, F2	-	T1 T2	120.2°C1 30.9°C	No visible effect until thermal equilibrium. Overload was conducted at 6.79A (max. output power). Beyond 6.79A load, +24V output shutdown while +12V_Fan is still normal.

Supplementary information:

s/c=short circuit, o/c=open circuit, o/l=overload, b/v=blocked ventilation openings.

SELV outputs did not exceed 42.4Vpeak or 60Vdc and did not exceed the limit of 71Vpeak or 120Vdc within 0.2 sec. after abnormal conditions were applied. Electric strength tests were successfully conducted after the completion of fault tests with damaged component result, fuse opened result, output overload, and output short circuit. Refer to table 5.4.9 for Electric Strenght test voltage.

NB – no indication of dielectric breakdown

NC – Cheesecloth remained intact

NT - Tissue paper remained intact

Notes:

B.4	TABLE: Fault condition tests (for model LPS102-M)	P
Ambient temperature (°C) .....:	23.8	—
Power source for EUT: Manufacturer, model/type, output rating .:	--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
IC211 Pin 1-2	S/C	275	2h	F1, F2	0.09	T1 T2	125.6°C1 02.6°C	Input current increased slowly up to 1.88A after 2 hrs. No hazard.
IC211 Pin 3-4	S/C	275	30min	F1, F2	0.065	T1 T2	66.1°C 48.6°C	All outputs shutdown immediately. No hazard.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
IC217 (PIN 3-4)	S/C	275	30min	F1, F2	0.01	T1 T2	66.2°C 48.7°C	All outputs shutdown immediately. No hazard.
IC217 (PIN 1-2)	S/C	275	30min	F1, F2	0.008	T1 T2	66.4°C 49.0°C	All outputs shutdown immediately. No hazard.
L5	S/C	275	2h	F1, F2	0.70	T1 T2	115.2°C9 7.3°C	No visible effect, until thermal equilibrium. No hazard.
T1 (4S – 4F / 5S)	S/C	275	30min	F1, F2	0.007	T1 T2	65.5°C 46.3°C	All outputs shutdown immediately. No hazard.
T1 (5F-4F/ 5S)	S/C	275	30min	F1, F2	0.008	T1 T2	65.9°C 46.5°C	All outputs shutdown immediately. No hazard.
T1 (2S – 3F)	S/C	275	30min	F1, F2	0.01	T1 T2	66.0°C 48.4°C	All outputs shutdown immediately. No hazard.
T1 (2F/3S-Com)	O/L	275	4h	F1, F2	-	T1 T2	143.3°C1 15.5°C	No visible effect until thermal equilibrium. Overload was conducted at 20.5A. (maximum output power) Beyond 20.5A load, all output shutdown.
T2 (CN10-Com)	O/L	275	4h	F1, F2	-	T1 T2	84.2°C 76.4°C	No visible effect until thermal equilibrium. Overload was conducted at 2.10A. (maximum output power) Beyond 2.10A load, all output cycling.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
+5V output	S/C	275	30min	F1, F2	0.2	T1 T2	68.5°C 49.6°C	+5V output cycling: 0.2-0.01A/0.01-0.04V. +12V_fan output cycling: 0.01-0.12A/0.26-0.80V. No hazard.
+12V_Fan output	S/C	275	2h	F1, F2	0.5	T1 T2	120.2°C1 06.9°C	+12V_Fan output shutdown immediately while all other output still normal. No hazard.
+5V output	O/L	275	4h	F1, F2	0.7	T1 T2	157.6°C 126.3°C	No visible effect until thermal equilibrium. Overload test was conducted at 19.90 A (max. output power). Beyond 19.90 A load, all output shutdown.
+12V_Fan output	O/L	275	4h	F1, F2	0.24	T1 T2	80.4°C 83.9°C	No visible effect until thermal equilibrium. Overload test was conducted at 2.01 A (max. output power). Beyond 2.01 A load, all outputs cycling.

Supplementary information:

s/c=short circuit, o/c=open circuit, o/l=overload, b/v=blocked ventilation openings.

SELV outputs did not exceed 42.4Vpeak or 60Vdc and did not exceed the limit of 71Vpeak or 120Vdc within 0.2 sec. after abnormal conditions were applied. Electric strength tests were successfully conducted after the completion of fault tests with damaged component result, fuse opened result, output overload, and output short circuit. Refer to table 5.4.9 for Electric Strenght test voltage.

NB – no indication of dielectric breakdown

NC – Cheesecloth remained intact

NT - Tissue paper remained intact

Notes:

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Clause	Requirement + Test	Result - Remark	Verdict

B.4	TABLE: Fault condition tests (for model LPS104-M)		P
Ambient temperature (°C) .....:		23.7	—
Power source for EUT: Manufacturer, model/type, output rating .:		--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
IC211 Pin 1-2	S/C	275	1.5h	F1, F2	0.70	T1 T2	99.1°C 106.8°C	No visible effect until thermal equilibrium. No hazard.
IC211 Pin 3-4	S/C	275	1.5h	F1, F2	0.70	T1 T2	98.7°C 106.7°C	No visible effect until thermal equilibrium. No hazard.
IC217 (PIN 3-4)	S/C	275	30min	F1, F2	0.016	T1 T2	56.9°C 54.5°C	All outputs shutdown immediately. No hazard.
IC217 (PIN 1-2)	S/C	275	30min	F1, F2	0.016	T1 T2	54.1°C 50.8°C	All outputs shutdown immediately. No hazard.
L5	S/C	275	3h	F1, F2	0.70	T1 T2	102.1°C 109.8°C	No visible effect, until thermal equilibrium. No hazard.
T1 (4S – 4F / 5S)	S/C	275	30min	F1, F2	0.011	T1 T2	55.5°C 54.5°C	All outputs shutdown immediately. No hazard.
T1 (5F-4F/ 5S)	S/C	275	30min	F1, F2	0.013	T1 T2	57.7°C 55.6°C	All outputs shutdown immediately. No hazard.
*C4	S/C	275	30min	F1, F2	>5.75	T1 T2	54.9°C 52.0°C	F1 and F2 opened. No hazard.
T1 (2S – 3F)	S/C	275	30min	F1, F2	0.009	T1 T2	59.7°C 54.4°C	All outputs shutdown immediately. No hazard.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T1 (2F/3S-Com)	O/L	275	30min	-	-	T1 T2	84.2°C 76.4°C	No visible effect until thermal equilibrium. Overload was conducted at 2.40A (maximum output power). Beyond 2.40A load, +12V_Fan output cycling while other output still normal. No hazard.
+15V output	S/C	275	1.5h	F1, F2	0.035	T1 T2	79.1°C 72.7°C	+15V output cycling: 0.03-0.50A / 0.01-0.02V. +12V_fan output cycling: 0.01-0.80A / 0.80-1.51V. No hazard.
+12V_Fan output	S/C	275	1.5h	F1, F2	0.80	T1 T2	92.2°C 95.4°C	+12V_Fan output shutdown immediately while other output still normal. No hazard.
+15V output	O/L	275	4h	F1, F2	1.66	T1 T2	92.2°C 95.4°C	No visible effect until thermal equilibrium. Overload was conducted at 9.50A (maximum output power). Beyond 9.50A load, all outputs shutdown. No hazard.
+12V_Fan output	O/L	275	4h	F1, F2	0.72	T1 T2	101.1°C 71.0°C	No visible effect until thermal equilibrium. Overload was conducted at 1.92A (maximum output power). Beyond 1.92A load, all outputs cycling. No hazard.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Cooling fan	Disconnected	275	3h	F1, F2	0.64	T1 T2	141.7°C 126.8°C	+15V output load decreased to 2.26V/2.18A after 2 hours. +12V_fan output was still normal. No hazard.

Supplementary information:

s/c=short circuit, o/c=open circuit, o/l=overload, b/v=blocked ventilation openings.

SELV outputs did not exceed 42.4Vpeak or 60Vdc and did not exceed the limit of 71Vpeak or 120Vdc within 0.2 sec. after abnormal conditions were applied. Electric strength tests were successfully conducted after the completion of fault tests with damaged component result, fuse opened result, output overload, and output short circuit. Refer to table 5.4.9 for Electric Strenght test voltage.

NB – no indication of dielectric breakdown

NC – Cheesecloth remained intact

NT - Tissue paper remained intact

Notes:

B.4	TABLE: Fault condition tests (for model LPS108-M)	P
Ambient temperature (°C) .....:	24.5	—
Power source for EUT: Manufacturer, model/type, output rating .:	--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
IC211 Pin 1-2	S/C	275	30min	F1, F2	0.64	T1 T2	110.0°C9 5.2°C	No visible effect until thermal equilibrium. No hazard.
IC211 Pin 3-4	S/C	275	30min	F1, F2	0.10	T1 T2	78.2°C 64.3°C	All outputs shutdown immediately. No hazard.
IC217 (PIN 3-4)	S/C	275	30min	F1, F2	0.068	T1 T2	69.8°C 55.9°C	All outputs shutdown immediately. No hazard.

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
IC217 (PIN 1-2)	S/C	275	30min	F1, F2	0.075	T1 T2	T1: 65.3°C; T2: 52.8°C	All outputs shutdown immediately. No hazard.
T1 (4S – 4F / 5S)	S/C	275	30min	F1, F2	0.075	T1 T2	64.6°C 52.7°C	All outputs shutdown immediately. No hazard.
T1 (6S-6F)	S/C	275	30min	F1, F2	0.096	T1 T2	78.9°C 51.6°C	All outputs shutdown immediately. No hazard.
T1 (2S – 2F/3S)	S/C	275	30min	F1, F2	0.096	T1 T2	75.2°C 56.3°C	All outputs shutdown immediately. No hazard.
T1 (2F/3S – 3F)	S/C	275	30min	F1, F2	0.10	T1 T2	75.8°C 66.2°C	All outputs shutdown immediately. No hazard.
T1 (4F/5S – 5F)	S/C	275	30min	F1, F2	0.076	T1 T2	65.3°C 53.9°C	All outputs shutdown immediately. No hazard.
T1 (1S – 1F)	S/C	275	30min	F1, F2	0.12	T1 T2	79.0°C 67.3°C	All outputs shutdown immediately. No hazard.
T1 (7S – 7F)	S/C	275	30min	F1, F2	0.10	T1 T2	73.4°C 65.2°C	+12V_Fan output shutdown immediately. +48V output cycling from 9.76V/0.21A to 0.20V/0.0A. No hazard.
T2 (1S – 1F)	S/C	275	30min	F1, F2	0.068	T1 T2	70.3°C 64.2°C	All outputs shutdown immediately. No hazard.

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T2 (2S – 2F)	S/C	275	30min	F1, F2	0.078	T1 T2	72.2°C 63.4°C	All outputs shutdown immediately. No hazard.
T2 (3S – 3F)	S/C	275	30min	F1, F2	0.078	T1 T2	73.3°C 64.9°C	All outputs shutdown immediately. No hazard.
+48V output	S/C	275	3h	F1, F2	0.11	T1 T2	105.8°C 91.6°C	+48V output shutdown immediately while +12V_Fan dropped to 1.56V/0.01A. Tested until thermal equilibrium. No hazard.
+12V_Fan output	S/C	275	2h	F1, F2	0.075	T1 T2	108.5°C 94.2°C	All outputs shutdown immediately. No hazard.
+48V output	O/L	275	4h	F1, F2	0.802	T1 T2	159.0°C 126.8°C	No visible effect until thermal equilibrium. Overload test was conducted at 2.60A (max. output power). Beyond 2.60A load, input current and output power decreased. No hazard.

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
+12V_Fan output	O/L	275	4h.	F1, F2	0.645	T1 T2	113.3°C 100.3°C	No visible effect until thermal equilibrium. Overload test was conducted at 1.00A (max. output power). Beyond 1.00A load, input current and output power decreased. No hazard.
L5	S/C	275	30min	F1, F2	0.64	T1 T2	115.0°C 97.2°C	No visible effect until thermal equilibrium. No hazard.
Cooling fan	Disconnected	275	2h	F1, F2	0.64	T1 T2	141.7°C 126.8°C	+12V_fan output shutdown after 1 hour. +48V output was still normal. No hazard.

Supplementary information:

s/c=short circuit, o/c=open circuit, o/l=overload, b/v=blocked ventilation openings.

SELV outputs did not exceed 42.4Vpeak or 60Vdc and did not exceed the limit of 71Vpeak or 120Vdc within 0.2 sec. after abnormal conditions were applied. Electric strength tests were successfully conducted after the completion of fault tests with damaged component result, fuse opened result, output overload, and output short circuit. Refer to table 5.4.9 for Electric Strenght test voltage.

NB – no indication of dielectric breakdown

NC – Cheesecloth remained intact

NT - Tissue paper remained intact

Notes:

B.4	TABLE: Fault condition tests (for model LPS109-M)	P
Ambient temperature (°C) .....:	24.5	—
Power source for EUT: Manufacturer, model/type, output rating .:	--	—

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T1 (5F-5S/4F)	S/C	275	30min	F1, F2	0.076	T1	75.4°C	After SC, all outputs shutdown.

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T1 (4S-5S/4F)	S/C	275	30min	F1, F2	0.066	T1	84.5°C	After SC, all outputs shutdown.
T1 (6S-6F)	S/C	275	30min	F1, F2	0.076	T1	67.2°C	After SC, all outputs shutdown.
T1 (2S-2F/3S)	S/C	275	30min	F1, F2	0.092	T1	62.3°C	+54V output cycling from 0.16V/0.03A to 7.36V/0.12A while +12VFAN output still normal.
T1 (3F-2F/3S)	S/C	275	30min	F1, F2	0.083	T1	62.3°C	+54V output cycling from 0.16V/0.03A to 7.07/0.13A while +12VFAN output decreased to +9.61V.
T1 (7S-7F)	S/C	275	30min	F1, F2	0.093	T1	68.4°C	+54V output cycling from 0.21V/0.03A to 12.31V/0.31A while +12VFAN output still normal.
T1 (1S-1F)	S/C	275	30min	F1, F2	0.084	T1	68.6°C	+54V output cycling from 0.38V/0A to 1.41/0A while +12VFAN output decreased to +2.36V.
T1 (2F/3S - 3F)	O/L	275	4.5h	F1, F2	0.588	T1	138.7°C	Overload was conducted at 1.99A. (maximum output power) Beyond 1.99A load, +54V output shutdown while while +12VFAN output srtill normal.

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
T1 (4S-5F)	O/L	275	5h	F1, F2	0.526	T1	103.2°C	Overload was conducted at 1.38A. (maximum output power) Beyond 1.38A load, +12VFAN output decreases while +54V output still normal.
+54V output	S/C	275	30min	F1, F2	0.118	T1	96.4°C	+54V output shutdown immediately while +12VFAN dropped to 5.68V. Tested until thermal equilibrium.
+12VFAN output	S/C	275	30min	F1, F2	0.074	T1	95.5°C	All outputs shutdown immediately.
+54V output	O/L	275	5 hrs.	F1, F2	0.614	T1	136.5°C	Overload test was conducted at 2.11A (max. output power 114.151VA). Beyond 2.11A load, +54V output shutdown while +12VFAN output is cycling.
+12VFAN output	O/L	275	5 hrs.	F1, F2	0.484	T1	86.6°C	Overload test was conducted at 1.34A (max. output power 14.954VA). Beyond 1.34A load, +12VFAN output decreased while +54V output is still normal.

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

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Supplementary information: s/c=short circuit, o/c=open circuit, o/l=overload, b/v=blocked ventilation openings. SELV outputs did not exceed 42.4Vpeak or 60Vdc and did not exceed the limit of 71Vpeak or 120Vdc within 0.2 sec. after abnormal conditions were applied. Electric strength tests were successfully conducted after the completion of fault tests with damaged component result, fuse opened result, output overload, and output short circuit. Refer to table 5.4.9 for Electric Strenght test voltage. NB – no indication of dielectric breakdown NC – Cheesecloth remained intact NT - Tissue paper remained intact Notes:								

Annex M	**TABLE: Batteries**									**N/A**
The tests of Annex M are applicable only when appropriate battery data is not available										
Is it possible to install the battery in a reverse polarity position?..... :										
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										
Test results:										Verdict
- Chemical leaks										
- Explosion of the battery										
- Emission of flame or expulsion of molten metal										
- Electric strength tests of equipment after completion of tests										
Supplementary information:										

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

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

Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
	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)**					**N/A**
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U_{oc} (V)	I_{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Supplementary Information: SC=Short circuit, OC=Open circuit						

T.2, T.3, T.4, T.5	**TABLE: Steady force test**				**P**
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation
Internal components	--	--	10	5	No hazardous #
Supplementary information: # During and after the application of the test force, the energy source did not become accessible, equipment safeguards were not defeated.					

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

T.6, T.9	TABLE: Impact tests				N/A
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Supplementary information: # During and after the application of the test force, the energy source did not become accessible, equipment safeguards were not defeated.					

T.7	TABLE: Drop tests				N/A
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	
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Supplementary information:						

END OF TEST REPORT

Report Reference No.: 211-21180290-000

Attachment No. 1

IEC62368_1B - 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		
	Copyright © 2017 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.		
	CENELEC COMMON MODIFICATIONS (EN)		
	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.		P
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.		P
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

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

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.		P
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		
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

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
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

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
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
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
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		
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

Attachment No. 2

National and Group Differences for IEC 62368-1:2014 (Second Edition) as per CB Bulletin

National Differences covered by this report					
Country	CENELEC Group differ. (see separate attachment)	National differ.	Base standard	National standard	Tested
Argentina	-	Yes	IEC 62368-1 ed1	-	Yes
Belarus	-	-	IEC 62368-1 ed2	-	Yes
BE Belgium	Yes	-	IEC 62368-1 ed2	-	Yes
CA Canada	-	Yes	IEC 62368-1 ed2	CAN/CSA C22.2 No. 62368-1-14	Yes
CH Switzerland	Yes	-	IEC 62368-1 ed2	--	Yes
CN China	-	-	IEC 62368-1 ed2	--	Yes
DE Germany	Yes	-	IEC 62368-1 ed2	EN 62368-1:2014-08	Yes
DK Denmark	Yes	Yes	IEC 62368-1 ed2	DS/EN 62368-1:2014	Yes
FI Finland	Yes	Yes	IEC 62368-1 ed2	-	Yes
FR France	Yes	-	IEC 62368-1 ed2	-	Yes
GB United Kingdom	Yes	-	IEC 62368-1 ed2	-	Yes
HU Hungary	Yes	-	IEC 62368-1 ed2	-	Yes
IT Italy	Yes	Yes	IEC 62368-1 ed2	CEI EN 62368-1:2016	Yes
JP Japan	-	-	IEC 62368-1 ed2	-	Yes
KR Korea	-	-	IEC 62368-1 ed2	-	Yes
NO Norway	Yes	-	IEC 62368-1 ed2	-	Yes
NL Netherlands	Yes	-	IEC 62368-1 ed2	-	Yes
SE Sweden	Yes	Yes	IEC 62368-1 ed2	SS-EN 62368-1:2014+AC1:2015	Yes
SG Singapore	-	-	IEC 62368-1 ed2	-	Yes
SI Slovenia	Yes	-	IEC 62368-1 ed2	-	Yes
US United States of America	-	Yes	IEC 62368-1 ed2	UL 62368-1	Yes

Attachment No. 2

General remarks:

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

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

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

See attachment 1 for European Group Differences and National Differences.

Note: Before placing the products in the different countries, the manufacturer must ensure that:

1. Operating Instructions, Ratings Labels and Warnings Labels written in an Accepted or Official Language of the county in question.
2. The equipment complies with the National Standards and/or Electrical Codes of the country in question.
3. Mains plugs and internal wirings should be assessed to the national standard.(if necessary)

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)

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

AR Argentina			**AR**
	Ratings shall cover 220 Vac - 50 Hz		P
	Class 0 and Class 0I appliances are not allowed	Class I apparatus	N/A
	Safety instructions and manuals shall be written in Spanish language (Resolution 92/98)	Should be evaluated during the national approval	N/A
	Country of origin shall be shown on the marking plate or, if not possible, in the primary packaging (Resolution 92/98)	Marked on marking plate	P
	Address of the importer in Argentina shall be shown on the product or on the primary packaging (Resolution 92/98)	Built-in component, considered end system	N/A
	Class I appliances provided with plugs shall be provided with the label specified in sheet "Class I" (Disposition 731/87)	Built-in component, considered end system	N/A
	Class II appliances provided with plugs shall be provided with the label specified in sheet "Class II" (Disposition 731/87)		N/A
	Plugs shall be in conformity with IRAM 2063 Standard for Class II appliances and IRAM 2073 Standard for Class I appliances (Resolution 524/98)	Built-in component, considered end system	N/A
	Adaptors/Transformers provided with integrated plugs shall be provided with blades which shall meet the geometry of IRAM 2063 standard for Class II appliances or IRAM 2073 standard for Class I appliances (Resolution 524/98)		N/A
	Appliances certified under System Nº 4 (Type Certification scheme) shall be marked with the symbol specified in sheet "St Mark" (Resolution 197/04)		N/A
	Appliances certified under System Nº5 (Mark of Conformity Certification scheme) shall be marked with the symbols specified in sheet "S Mark" (Resolution 799/99)		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
1DV.1	Battery backup systems that are not an integral part of stationary equipment, such as provided in separate cabinets, are subject to the appropriate standard for battery backup systems, such as UL 1973, Batteries for Use in Light Electric Rail (LER) Applications and Stationary Applications.		N/A
1DV.2	For equipment intended for outdoor installation, additional requirements for Information and communication technology equipment are covered by CSA/UL 60950-22 and for Audio/video equipment are covered by the relevant requirements in CSA C22.2 No. 60065 or UL 60065.	Built-in component, considered end system	N/A
1DV.3.1	Standard is applicable to equipment designed to be installed in accordance with the Canadian Electrical Code, Part I, C22.1-12; Canadian Electrical Code, Part II, General Requirements, CAN/CSA C22.2 No. 0-10; the National Electrical Code, NFPA 70-2014; and the National Electrical Safety Code, IEEE C2-2012.		P
1DV.3.2	For equipment designed to be installed in accordance with Article 645 of the National Electrical Code, NFPA 70-2014, and the Standard for the Protection of Information Technology Equipment, NFPA 75-2013, identification by a marking or instruction [see Annex DVK (Annex DVA, Clause 1)] is required.	Built-in component, considered end system	N/A
1DV.3.3	Additional regulatory requirements that apply to this equipment per Annex DVA, as applicable.	Built-in equipment, considered in end system	N/A
1DV.4.1	Additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities per Annex DVB.		N/A
1DV.4.2	This standard includes additional requirements for equipment intended for mounting under kitchen cabinets. See Annex DVC.	Not such apparatus	N/A
1DV.4.3	This standard does not apply to equipment having Remote Feeding Telecommunication (RFT) circuits. Equipment having RFT circuits is covered by CSA/UL 60950-21.		N/A
1DV.4.4	Additional requirements may apply to large data storage equipment. Refer to CSA/UL 60950-23.		N/A
1DV.4.5	Does not cover Modular Data Centers (MDCs) but only the information and communication technology equipment contained within.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
1DV.5.1	Power Distribution Equipment and Sub-Assemblies		N/A
1DV.5.1.1	Power distribution sub-assemblies connected to a mains used to distribute power entirely within a system of equipment, such as power distribution units (PDUs), cord-connected power strips, shelves with multiple power outlets (receptacles) etc., and intended to be installed in system racks, cabinets, home entertainment centers, etc. are covered by this standard		N/A
1DV.5.1.2	For equipment covered by this standard that incorporates components and sub-assemblies that perform a power distribution and control function covered by other standards, such as panelboards, load transfer equipment, or uninterruptible power systems utilized in power conditioners and computer power centers, this standard only may be used for investigation of safety for those aspects not covered by the other standards.		N/A
1DV.5.1.3	This standard also does not apply to stand-alone equipment used for distribution of mains power that is covered by individual power distribution equipment standards.		N/A
1DV.5.1.4	Based on the specific function, the following requirements are applicable to the stand-alone distribution equipment, or apply additionally to power distribution sub-assemblies and components of equipment covered by this standard, as described in 1DV.5.1.2 and 1DV.5.1.3:		N/A
	– For Industrial Control Equipment, see CSA C22.2 No. 14 and UL 508.		N/A
	– For Panelboards, see CSA C22.2 No. 29 and UL 67.		N/A
	– For Switchboards, see CSA C22.2 No 244 and UL 891.		N/A
	– For Transfer Switch Equipment, see CSA C22.2 No 178.1 and UL 1008.		N/A
	– For Uninterruptible Power Systems, see CSA C22.2 No. 107.3 and UL 1778.		N/A
	– For Power Distribution Centers for Communications Equipment, see UL Subject 1801.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
	– Other forms of power distribution units for general applications, such as, • Relocatable Power Taps, CSA-C22.2 No. 21, Cord Sets and Power Supply Cords, and UL 1363, Relocatable Power Taps. • Cord connected Surge Protective Devices, CSA Technical Information Letter No. A-24, Interim Certification Requirements for AC Line Connected Wiring Devices with Varistors, and UL 1449, Surge Protective Devices. • Furniture Power Distribution Units, CSA-C22.2 No. 21, Cord Sets and Power Supply Cords and UL 962A, Furniture Power Distribution Units.		N/A
3.3.1.2DV D2	For additional information regarding low voltage d.c. mains (centralized d.c. power systems) equipment, refer to Annex DVD. This standard covers high voltage d.c. mains up to 600 Vdc.		N/A
3.3.1.3DV. 1	New definition: telecommunication network – metallically terminated transmission medium intended for communication between equipment that may be located in separate buildings, excluding: – the mains system for supply, transmission and distribution of electrical power, if used as a telecommunication transmission medium; – cable distribution systems; – ES1 circuits connecting units of audio/video, information and communication technology equipment.		N/A
4.1.1DV.1 D2	In the U.S. and Canada, components and subassemblies that comply with the standards referenced in Annex DVE are required in addition to or as a replacement for the requirements in this standard. Components complying with these standards are considered acceptable as part of equipment covered by this standard without further evaluation other than to give consideration to the appropriate use of the component or subassembly in the end product.		P
4.1.1DV.2 DC	In the U.S. and Canada, components and subassemblies that comply with the standards referenced in Annex DVG are acceptable as an alternative to requirements as part of equipment covered by this standard without further evaluation other than to give consideration to the appropriate use of the component or subassembly in the end product.		P

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
4.1.2DV DC	In the U.S. and Canada, some UL/CSA component standards may be used as alternatives to referenced IEC standards for the purposes of North America certifications or surveillance programs. Components and subassemblies that comply with the standards referenced in Annex DVF are acceptable as part of equipment covered by this standard without further evaluation other than to give consideration to the appropriate use of the component or subassembly in the end product.		P
4.1.16DV.1	Mains connections	Built-in component, considered end system	N/A
4.1.16DV.1 .1 DE, 4.1.16DV.1 .2 DR	Requirements for Mains Supply Cords for Pluggable (Cord Connected) Equipment (Canadian and U.S. regulatory-based requirements) - Annex G.7 and G.7ADV		N/A
4.1.16DV.1 .3 D2, 4.1.16DV.1 .4 DR	Requirements for Permanently Connected Equipment. (Canadian and U.S. regulatory-based requirements) – Annex DVH		N/A
4.1.17DV.1	External interconnecting cable and wiring		N/A
4.1.17DV.1 .1	General External interconnecting cable and wiring are investigated to the requirements of 6.5 and either 4.1.17DV.1.2 or 4.1.17DV.1.3, as appropriate.		N/A
	– External interconnecting cable and wiring 3,05 m or less may be investigated as part of the equipment (system) to the requirements of this standard. See 4.1.17DV.1.2.		N/A
	– External interconnect cable and wiring longer than 3,05 m are regulated by the Canadian Electrical Code, C22.1, and the National Electrical Code, NFPA 70, and are subject to associated requirements. See 4.1.17DV.1.3.		N/A
	– External interconnect cable longer than 3,05 m designed to carry audio and/or video signals only, and that is not specified by the manufacturer to be routed inside the building structure (e.g., walls, ceilings, etc.), is subject to the applicable requirements of 4.1.17DV.1.2. For purposes of 4.1.17DV.1.2, it is assumed such cables are connected to PS1 circuits.		N/A
	Alternatively, detachable external interconnecting cable and wiring (with terminations) may be excluded from the equipment evaluation if specified by the manufacturer.		N/A
4.1.17DV.1 .2	Equipment (system) interconnecting cable and wiring	Built-in component, considered end system	N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
4.1.17DV.1 .2	The following requirements apply to detachable and nondetachable external interconnecting cable and wiring investigated as part of the equipment (system).	Built-in component, considered end system	N/A
	– The length of the external interconnecting cable or wiring shall not exceed 3,05 m;		N/A
	– For external interconnecting cable and wiring connected to PS2 and PS3 circuits, see 6.5 for fire (flammability) considerations;		N/A
	– There are no fire (flammability) considerations for external interconnecting cable and wiring specified by the manufacturer for connection to circuits that are PS1.		N/A
	– External interconnecting cable and wiring intended to be connected to an ES3 or PS3 circuit require a jacket for mechanical protection in accordance with Table G.7ADV.2, or equivalent;		N/A
	– Detachable external interconnecting cable and wiring (with terminations) intended to be connected to a PS2, PS3, ES2 or ES3 circuit and furnished as part of the equipment shall be either marked, or similarly identified in the installation instructions with (a) the name, trademark or trade name of the organization that is responsible for the equipment, and (b) the organization's identifying number or equivalent designation for the cable. See Annex DVK. – The marking may be applied on the cable and wiring at any location – This marking is not required to comply with the test for permanence of markings, F.3.9		N/A
	Optical fiber interconnecting cables 3,05 m or less are not subject to the above requirements		N/A
4.1.17DV.1 .3	External interconnecting cable and wiring considered part of the building installation.		N/A
4.1.17DV.1 .3	External interconnecting cables and wiring longer than 3,05 m are regulated by the Canadian Electrical Code, C22.1, and the National Electrical Code, NFPA 70. See Annex DVA(Annex Q entry).		N/A

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IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
4.6.2DV D2	Additional examples of compliance: - wire-wrap terminals used for the connection of ES1 and ES2 that are: • provided on equipment that forms part of the telecommunication network, up to and including the demarcation point, and are located in service access areas only. (This equipment is generally considered Central Office Equipment, although it may be deployed elsewhere in similarly controlled environments.) and • provided with a guard or cover that prevents unintentional contact during normal operation. are tested with a steady force of 2,5 N ± 0,25 N.		N/A
4.8.3DV D2	If screws or similar fasteners are used to secure the door/cover providing access to the battery compartment, the fasteners shall be captive to ensure that they remain with the door/cover. This does not apply to side panel doors on larger devices which are necessary for the functioning of the equipment and which are not likely to be discarded or left off the equipment	No batteries used	N/A
4.8.4.5DV D2	0,5 J impact test deleted.		N/A
4.8.5DV.1 D2	Replace 30 N battery compartment door/cover test with 45 N		N/A
4.8.5DV.2 D2	Additional compliance criteria replaced with: - the battery compartment door/cover shall not open; and - the battery shall not become accessible.		N/A
5.4.4.1DV D1	For printed boards, see Clause G.13		P
5.4.4.1DV D1	For antenna terminals, see Clause 5.4.5		N/A
5.4.4.1DV D1	For solid insulation on internal and external wiring, see Clause G.6.		N/A
5.4.4.1DV D1	Additionally, for internal wiring accessible to an ordinary person, see Clause 5.4.6.		N/A
5.6.3DV.1 DR to 5.6.3DV.3 DR	Protective earthing conductors shall comply with the minimum conductor sizes in Table G.5, except as required by • Table G.7ADV.1 for cord connected equipment; or • Annex DVH for permanently connected equipment.		N/A
5.6.4.1DV DR	Minimum conductor size alternative compliance to Table G.5 or Table G.7ADV.1 as applicable , or Table 31 Minimum protective bonding conductor size of copper conductors		P

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
5.6.4.4DV DR	Protective bonding conductor sizes alternative compliance to Table G.7ADV.1 in addition to Table 31 or Table G.5		P
Table 32 DV DR	Include alternative conductor size compliance with Table G.7ADV.1 in the first column heading for protective conductor terminals.		P
5.6.6.1 DV DR	Protective bonding conductors that meet the minimum conductor sizes in Table G.5 or Table G.7ADV.1 as applicable, throughout their length and whose terminals all meet the minimum sizes in Table 32 are considered to comply without test.		P
5.7.6.2DV DE	Clause title modified to read “Prospective touch voltage and touch current to external circuits”		N/A
5.7.7DV.1 D2	Clause 5.7.7 to apply to stationary pluggable equipment type A or pluggable equipment type B		N/A
5.7.7DV.2 D2	Summation of touch currents not exceeding the limits of ES2 exception per Clause 5.7.7(a)(1)		N/A
5.7.7DV.3 D2	Clause 5.7.7(a)(2) replaced with: Such equipment shall comply with Clause 5.7.5. The value of S(I1) shall be added to the measured protective conductor current to determine compliance with the 5 % input current limit per phase specified in Clause 5.7.5.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
5.7.7.1DV D2	Limitation of touch current due to ringing signals Equipment containing input telecommunication network leads over which ringing voltages are applied to the equipment shall be tested using the circuit of Figure 5.7.7.1DV.1 for mains-connected equipment or Figure 5.7.7.1DV.2 for other equipment. For any position of the selector switches, the total touch current including consideration of 5.7.7 shall not exceed the relevant limits for ES2 specified in Table 4, unless the equipment complies with 5.7.7(a) with the protective conductor current due to ringing signal taken into account. An EUT that receives ringing voltages on up to three telecommunication network connection ports shall have simulated ringing applied to each network connection. For four or more ports receiving ringing, simulated ringing shall be applied to three ports and an additional 3 % (rounding down) of the remaining ports. Compliance is checked by the following tests, which are conducted using the measuring network described in IEC 60990, Figure 4. Simulated ringing at 120 V, 50 to 60 Hz, shall be applied to ringing input telecommunication network leads, either one lead at a time or connected together. Other telecommunication network leads shall be left disconnected. Equipment shall be evaluated in each operating state, including ground start. The general test methods of 5.7 shall apply, checking touch current for all positions of switches S1, S2, and S3 in Figure 5.7.7.1DV.1. In case the total touch current exceeds the ES2 limits, the protective conductor current is measured using the test set up of Figure 5.7.7.1DV.1 or Figure 5.7.7.1DV.2 with the measuring instrument replaced with an ammeter having negligible impedance.		N/A
6.5.1DV.1 DC	Add the following text to the end of the second, third and fourth paragraphs: or the insulation of the conductor or cable assembly shall be rated VW-1 or FT-1.		P

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
6.5.1DV.2 D2	Add the following after the third paragraph: PS3 wiring outside a fire enclosure shall comply with single fault testing in B.4. Alternatively, the following constructions are considered to comply: – conductors provided with overcurrent protection in accordance with Article 240 of the National Electrical Code, NFPA 70, and the Canadian Electrical Code, Part I, C22.1, Section 14; – internal conductors supplied by a power source that is limited to the output voltage and current values specified in Table Q.1 or is limited to the output voltage values and provided with an overcurrent protective device with a rated current value as specified in Table Q.2; – interconnecting cables supplied by a limited power source (see Q.1); – a 20-A protective device used with any size wire in the primary.		N/A
6.7DV.1	Safeguards against electrically-caused fire due to overvoltage from power line crosses		N/A
6.7DV.1.1	Equipment with external circuits intended for connection to a telecommunication network that uses outside cable subject to overvoltage from power line failures shall comply with Annex DVI.		N/A
10.6.1DV D2	For telecommunication-network connected equipment, see Annex DVJ.		N/A
F.1DV DR	F.1DV.1 See Annex DVK for U.S. and Canadian markings and instructions.		P
F.3.3.9DV.1	Equipment with output terminals Output terminals provided for supply of other equipment except mains supply shall be marked with the nominal output voltage and frequency, and, in addition, the maximum output current or power, unless the terminals are marked with the type references of the equipment which are permitted to be connected. When intended to be installed or interconnected in the field by a skilled person, the Class of wiring shall be marked adjacent to the terminals.		P
G.4.3DV D2	Delete the 2nd sentence reference to “banana plug” of the EXAMPLE.		N/A
G.7.2DV DR	In the second paragraph, replace the reference to Table G.4 with a reference to Table G.7ADV.1.		N/A
G.7ADV DR	Additional requirements: Power supply cords – detachable and non-detachable		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
G.7ADV.1	General Flexible cords and plugs are permitted for movable equipment, hand-held equipment, stationary equipment and transportable equipment, and for fixed equipment where the fastening means and mechanical connections of the equipment are designed to permit removal for maintenance and repair.		N/A
G.7ADV.2	Methods of connection Flexible cords shall be provided with an attachment plug for connection to the branch circuit.		N/A
G.7ADV.3	Sizing and ratings The attachment plug configuration shall be one that is rated not less than 125 percent of the current rating of the equipment.	Built-in component, considered end system	N/A
G.7ADV.3	Power supply cords shall have conductors with cross-sectional areas sufficient for the rated current of the equipment. Conductors shall be sized based on the requirements in the National Electrical Code (NEC), NFPA 70, and the Canadian Electrical Code, Part I, C22.1.		N/A
G.7ADV.3	Table G.7ADV.1 provides allowable ampacity for flexible cords and cables based on Table 400.5(a)(1) of the NEC. See Table 400.5(a)(2) of the NEC for ampacity information on portable power cables.		N/A
G.7ADV.3	For equipment with a rated current up to and including 2 A, 20 AWG is acceptable provided that the mains plug is provided with a 2 A fuse maximum and the equipment is not provided with a socket outlet.	Built-in equipment, considered in end system	N/A
G.7ADV.4	Serviceability Power supply cords and cord sets shall incorporate flexible cords suitable for the particular application or shall be of a type at least as serviceable for the particular application. Table G.7ADV.2 lists common applications and associated suitable cord types.		N/A
G.7ADV.5.1	Minimum length The minimum length of a power supply cord shall be 1,5 m unless it is intended for a special installation, such as dedicated equipment intended to be mounted near a mains socket-outlet.	Built-in equipment, considered in end system	N/A
G.7ADV.5.1	For equipment provided with an external power supply, the minimum length of the power supply cord shall be 0,5 m, provided that the total length of the conductive path from the receptacle to the equipment is 1,5 m or greater.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
G.7ADV.5.2	Maximum length For equipment intended for installation in ITE Rooms, the length of a power supply cord shall not exceed 4,5 m. For other intended installations, see Table G.7ADV.2.		N/A
H.2DV D2	item a: Continuous ringing signals shall: • be located only in areas where a skilled person has access during servicing; • be so located and guarded that unintentional contact with such parts is unlikely during servicing by a skilled person, or be provided with a marking to warn a skilled person of the presence of continuous ringing signals; and • not become accessible to an ordinary person under single fault conditions.		N/A
H.4DV.1	Other telecommunication signals: Telecommunication signaling systems (e.g., some message waiting systems) using voltages or current, or both, greater than those specified in 5.2.1.1 and 5.2.1.2 shall be permitted if they comply with the following:		N/A
H.4DV.1	– continuous signal: For a signal of duration greater than 5 s, the current through the relevant measuring instrument described in IEC 60990:1999, Figure 4, shall be not greater than 7.1 mA peak a.c., or 30 mA d.c., or the limit shown in Figure H.4DV.1 for combinations of a.c. and d.c., when measured in accordance with 5.7.		N/A
H.4DV.1	– intermittent signal: For a signal of duration less than 5 s, the current through the relevant measuring instrument described in IEC 60990:1999, Figure 4, shall be not greater than the limit specified in Figure H.4DV.2. The signal shall be followed by a quiet interval of at least 1 s before the next intermittent signal. During the quiet interval, either the voltage is less than 56,6 V d.c., or the current measured is less than 0,5 mA.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
M.2.1DV DC	Battery packs with sealed secondary cells and batteries (other than button) containing alkaline or other non-acid electrolyte and used in stationary equipment shall comply with either IEC 62133, UL 2054 or UL 1973. Additionally, such battery packs that rely on solid-state circuits and software controls as safeguards shall comply with either the requirements in UL 1973 for System Safety Analysis (5.7) and Protective Circuit and Controls (5.8), or similar requirements in an appropriate standard for electronic safety-related controls that are suitable for investigation of such protection of secondary cells and batteries.		N/A
P.4.1DV DE	Additional text added to correct for editing error: For metalized coatings, clearances and creepage distances for pollution degree 3 shall be maintained instead of the tests of P.4.2DV.1.		N/A
P.4.2DV DE	Added test requirements text from Clause P.5 as new Clause P.4.2DV DE to correct for editing error.		N/A
P.5DV DE	Added test requirements text from Clause P.5 as new Clause P.4.2DV DE to correct for editing error.		N/A
U.1DV D1	Added test requirements text from Clause P.5 as new Clause P.4.2DV DE to correct for editing error.		N/A
Table W.3DV DE	Modify Table W.3 by replacing the entry for 1.2.8.14 in the first column with the following to correct a typographical error: TNV-3 CIRCUIT TNV ClRCUIT – whose normal operating voltages exceed the limits for an SELV circuit under normal operating conditions and – on which overvoltages from telecommunication networks and cable distribution systems are possible		N/A
Annex DVA	(normative) Canadian and U.S. regulatory-based requirements		P
Annex DVB	(normative) Equipment used in health care facilities		N/A
Annex DVC	(normative) Under kitchen cabinet equipment		N/A
Annex DVD	(informative) D.C. powered equipment and centralized d.c. power systems (DC mains)		N/A
Annex DVE	(normative) UL and CSA component requirements (mandatory)		P
Annex DVF	(normative) UL and CSA component requirements (alternative to IEC standards)		P

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IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

CA Canada			**CA**
Annex DVG	(normative) UL and CSA component requirements (alternative)		P
Annex DVH	(normative) Permanently connected equipment – mains connections		N/A
Annex DVI	(normative) Safeguards against electrically-caused fire due to overvoltage from power line crosses		N/A
Annex DVJ	(normative) Acoustic tests for telecommunications equipment		N/A
Annex DVK	(normative) Canadian and U.S. marking and instructions		P

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

DK Denmark			**DK**
4.1.15	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.”	Built-in component, considered in end system	N/A
5.2.2.2	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.	Built-in component, considered in end system	N/A
5.6.1	**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
5.7.5	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
5.7.6.2	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

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	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

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

IT Italy			**IT**
F.1	**Italy** The following requirements shall be fulfilled: • The power consumption in Watts (W) shall be indicated on TV receivers and in their instruction for use (Measurement according to EN 60555-2). Note/Nota *EN 60555-2 has since been replaced by IEC 60107-1:1997.* • TV receivers shall be provided with an instruction for use, schematic diagrams and adjustments procedure in Italian language. • Marking for controls and terminals shall be in Italian language. Abbreviation and international symbols are allowed provided that they are explained in the instruction for use. • The ECC manufacturers are bound to issue a conformity declaration according to the above requirements in the instruction manual. The correct statement for conformity to be written in the instruction manual, shall be: *Questo apparecchio è fabbricato nella CEE nel rispetto delle disposizioni del D.M. marzo 1992 ed è in particolare conforme alle prescrizioni dell'art. 1 dello stesso D.M.* • The first importers of TV receivers manufactured outside EEC are bound to submit the TV receivers for previous conformity certification to the Italian Post Ministry (PP.TT). The TV receivers shall have on the backcover the certification number in the following form: D.M. 26/03/1992 xxxxx/xxxxx/S or T or pT S for stereo T for Teletext pT for retrofitable teletext *Justification:* Ministerial Decree of 26 March 1992 : National rules for television receivers trade. NOTE/NOTA: *Ministerial decree above contains additional, but not safety relevant requirements*		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
SE Sweden			**SE**
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”	Built-in component, considered in end system	N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
SE Sweden			**SE**
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 1,5 kV. 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
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

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

SE Sweden			**SE**
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

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

US United States of America			**US**
1.1	All equipment is to be designed to allow installation according to the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		P
1.4	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		P
4.1.17	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.8	Lithium coin / button cell batteries have modified special construction and performance requirements.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.5, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment	Built-in component, considered in end system	N/A
5.7.7	Equipment intended to receive telecommunication ringing signals complies with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure complies with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.8)	Output terminals provided for supply of other equipment, except mains, supply are marked with a maximum rating or references to which equipment it is permitted to be connected.		P
Annex G (G.7.1)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
Annex G (G.7.3)	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Built-in component, considered in end system	N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

US United States of America			**US**
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
Annex G (G.7.5)	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V_{peak} or 60 V d.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex M	Battery packs for stationary applications comply with special component requirements.		N/A
Annex DVA (1)	Equipment intended for use in spaces used for environmental air are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. & Canadian Regulations.		N/A
	Baby monitors additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
Annex DVA (5.6.3)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment complies with NFPA 30.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

US United States of America			**US**
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a min. flammability classification of V-1.		N/A
Annex DVA (10.3.1)	Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5.1)	Equipment that produces ionizing radiation complies with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.3)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."	Single phase	N/A
Annex DVA (F.3.3.5)	Equipment identified for ITE (computer) room installation is marked with the rated current		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles complies with NEC 250.146(D) and CEC 10-112 and 10-906(8).		N/A
Annex DVA (G.4.3)	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A

Attachment No. 2

IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

US United States of America			**US**
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (Annex M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	Wiring terminals intended to supply Class 2 outputs according to the NEC or CEC Part 1are marked with the voltage rating and “Class 2” or equivalent; marking is located adjacent to the terminals and visible during wiring.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. Components required to comply include: appliance couplers, attachment plugs, battery back-up systems, battery packs, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultra-capacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, data storage equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are in accordance with the NEC/CEC.		N/A

Attachment No. 2

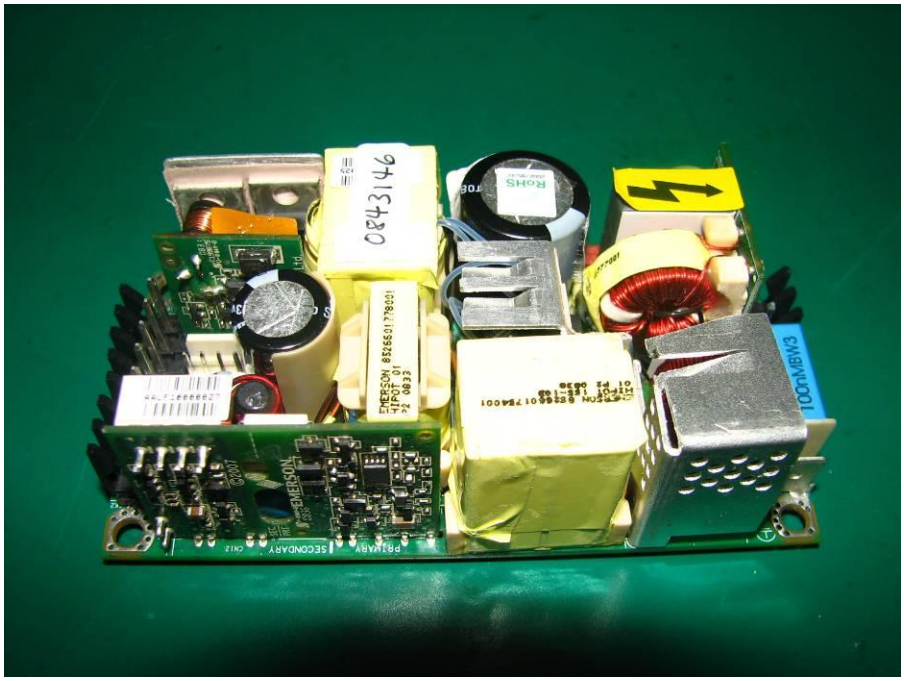
IEC62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

US United States of America			**US**
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and are specially marked when specified.		N/A
Annex DVH (DVH.3.2)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, complies with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

Attachment No. 3

Details of: Overall view 1 (for model LPS102-M)

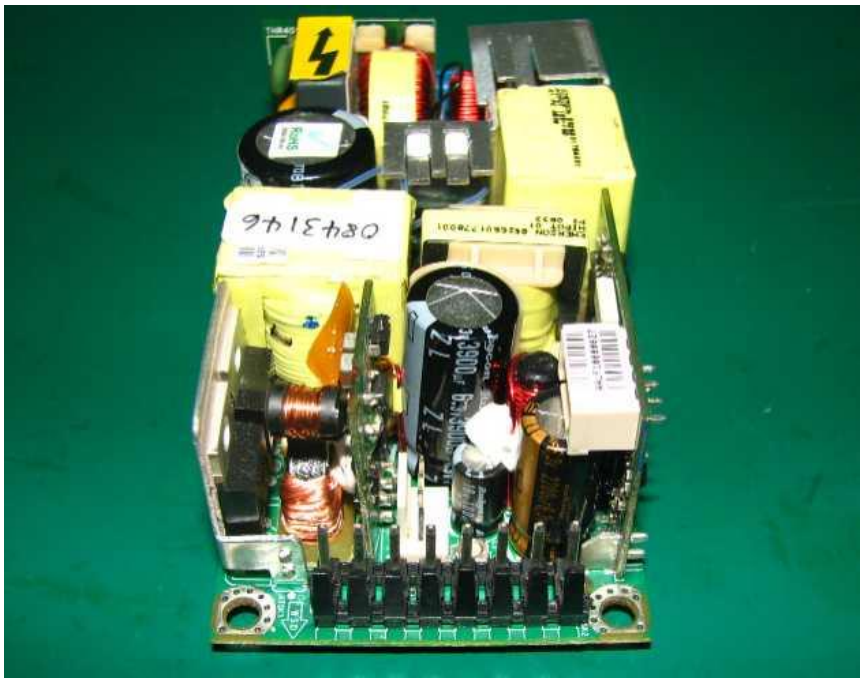
Details of: Overall view 2 (for model LPS102-M)



Attachment No. 3

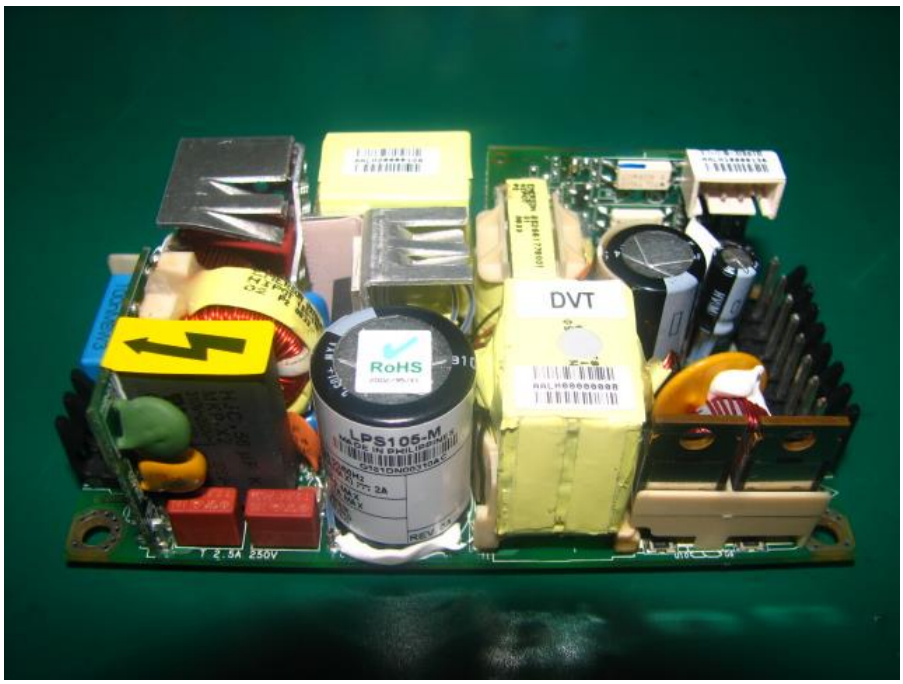
Details of: Input side view (for model LPS102-M)

Details of: Output side view (for model LPS102-M)

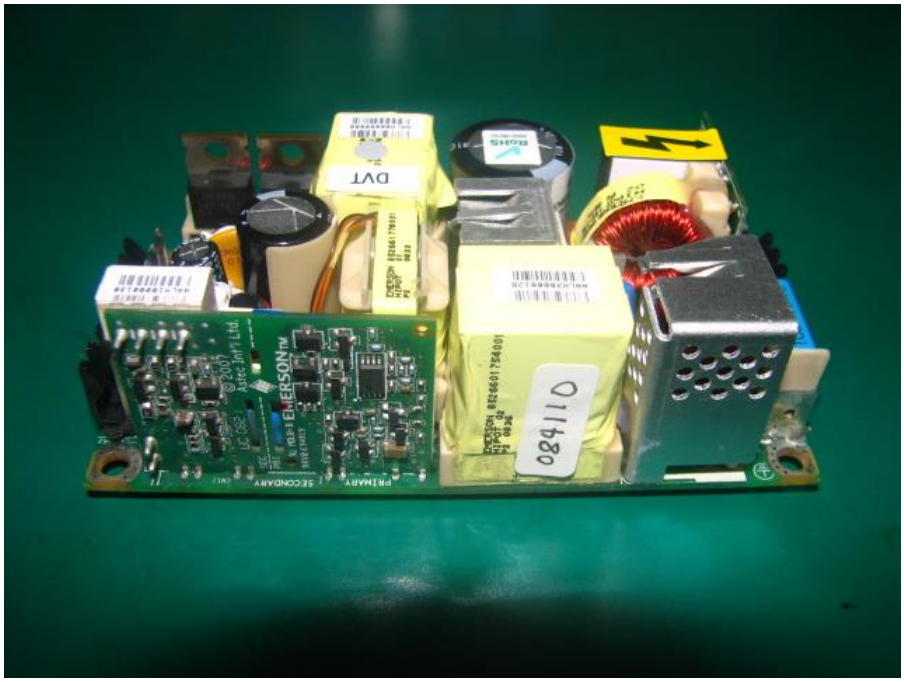


Attachment No. 3

Details of: Overall view 1 (for models LPS103-M, LPS104-M, LPS105-M and LPS108-M)

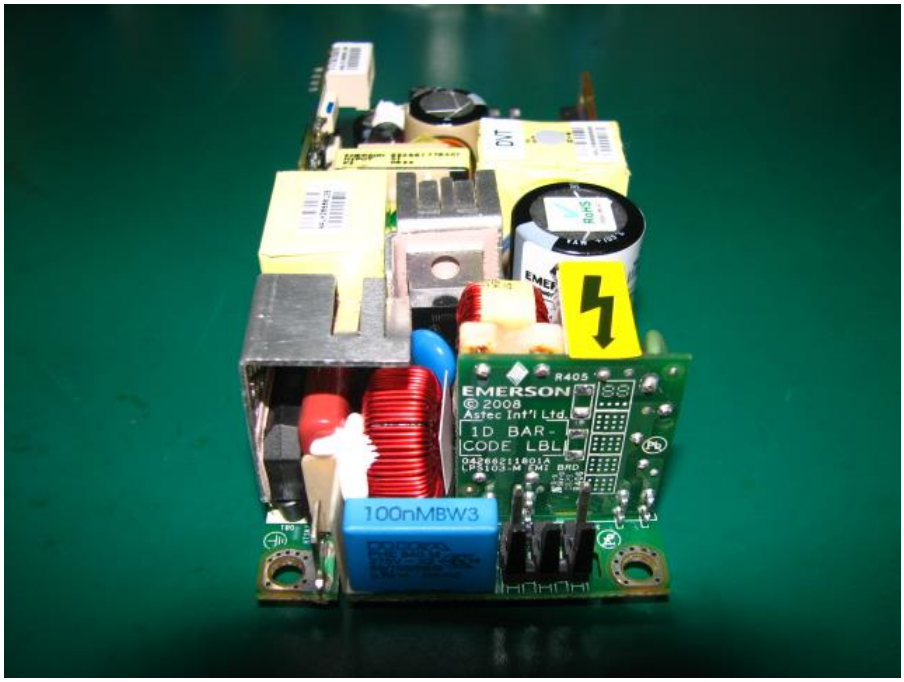


Details of: Overall view 2 (for models LPS103-M, LPS104-M, LPS105-M and LPS108-M)

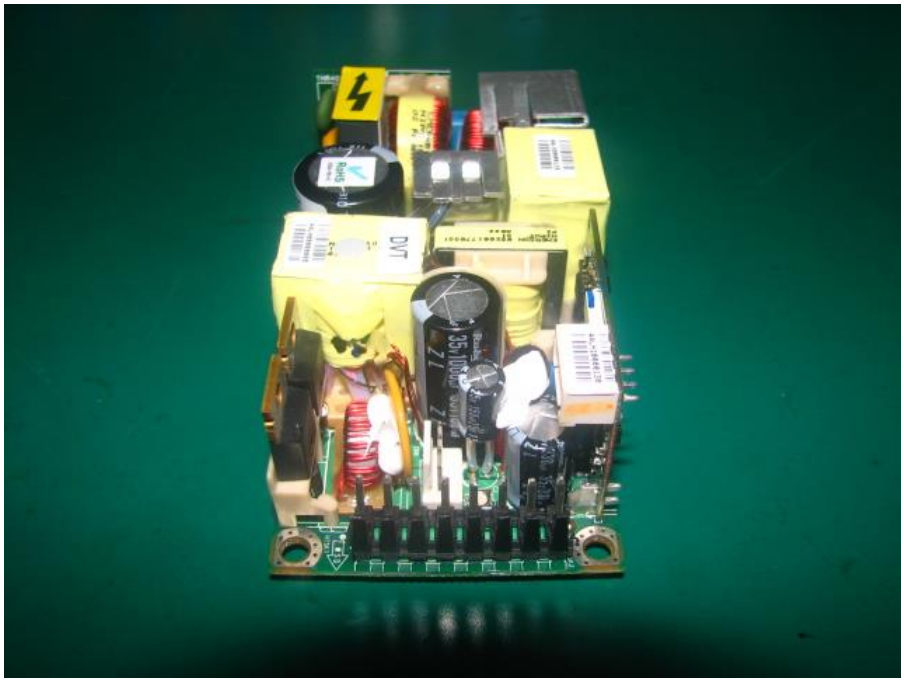


Attachment No. 3

Details of: Input side view (for models LPS103-M, LPS104-M, LPS105-M and LPS108-M)

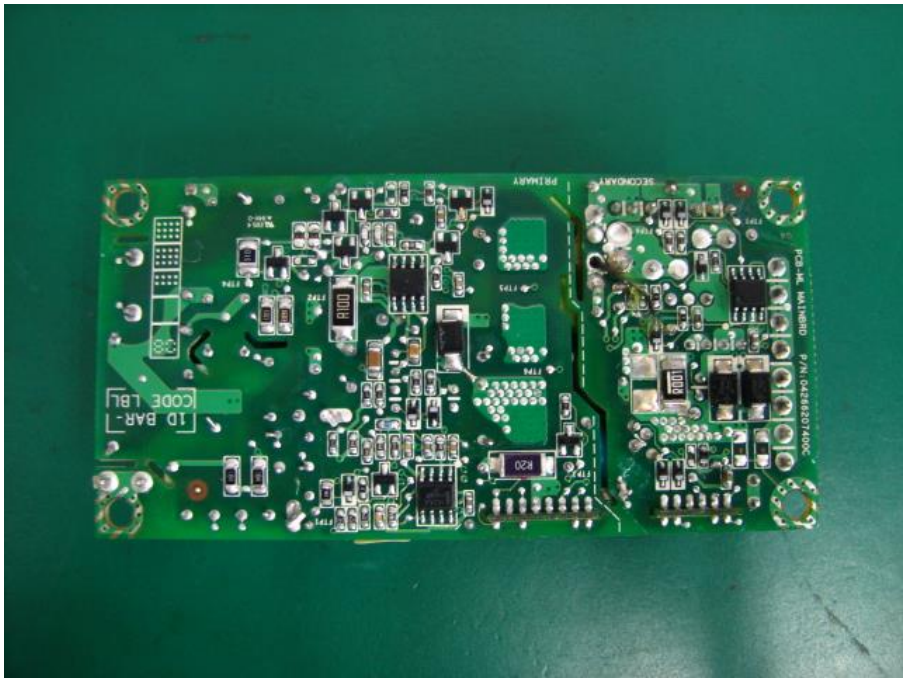


Details of: Output side view (for models LPS103-M, LPS104-M, LPS105-M and LPS108-M)

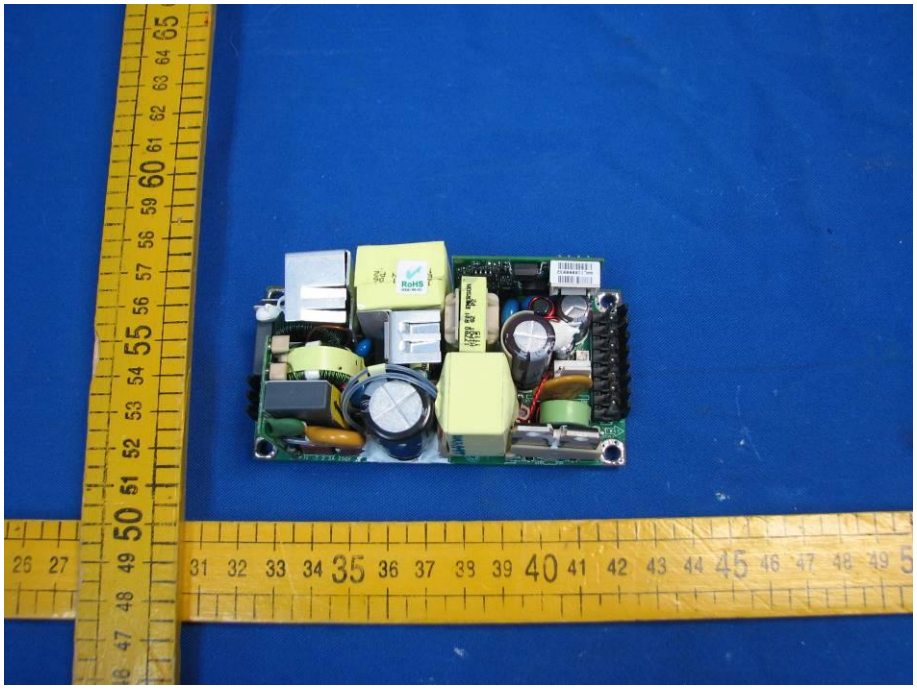


Attachment No. 3

Details of: PCB view (for models LPS102-M, LPS103-M, LPS104-M, LPS105-M and LPS108-M)

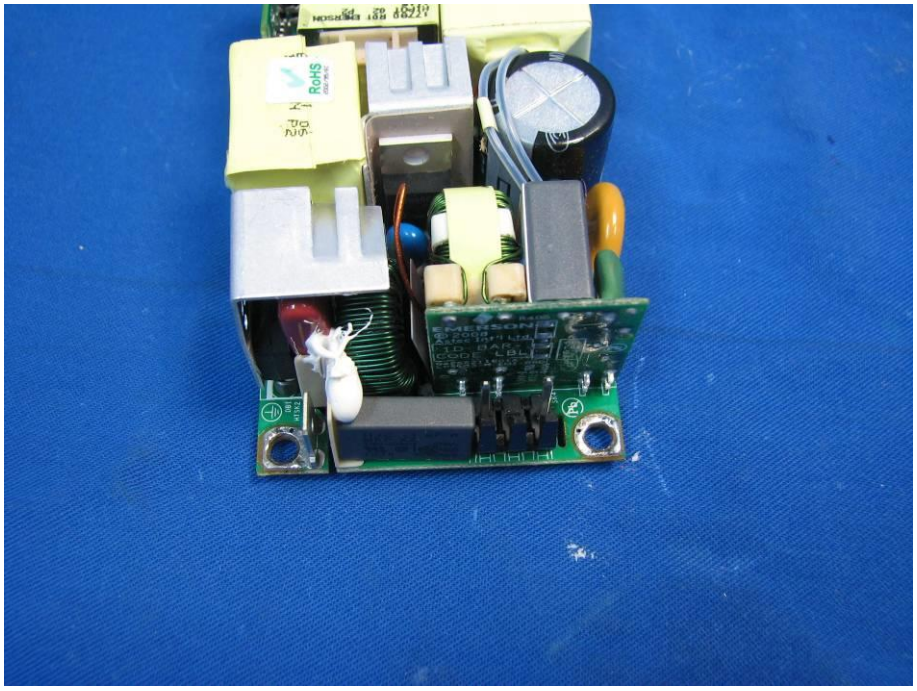


Details of: Overall view (for model LPS109-M)

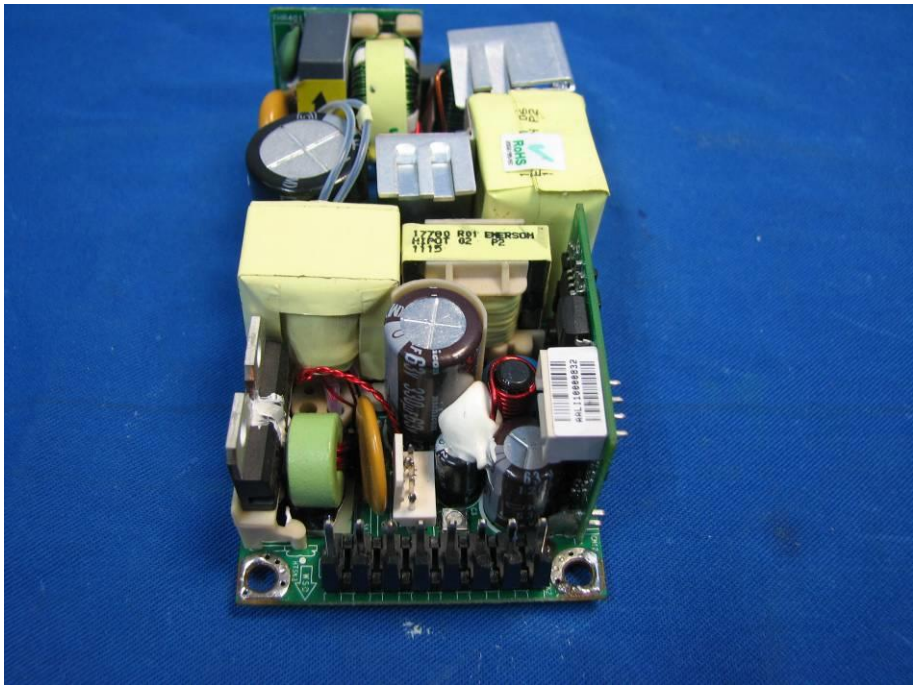


Attachment No. 3

Details of: Input side view (for model LPS109-M)



Details of: Output side view (for model LPS109-M)



Attachment No. 3

Details of: PCB view (for model LPS109-M)