

TEST REPORT

For

Pulse capacitor

Model: MAM80-0.2 (Other model see page 2)

Prepared for: Cook Cooper Electric (shanghai) Co., Ltd.
Room A56, 4th Floor, Block B 505 Xinbei Road Minhang District Shanghai

Prepared by: RED Laboratories Inc.
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Report Number: RED260129214007ED-AM
Date of Test: 2026-01-19 to 2026-01-29
Date of Issue: 2026-01-29

Tested By: Steve Liu

Reviewed By: Zard Ruan

Approved By: Hank Chan

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

Report Number.....: RED260129214007ED-AM

Date of issue.....: 2026-01-29

Name of Testing Laboratory preparing the Report.....: RED Laboratories Inc.

Applicant's name.....: Cook Cooper Electric (shanghai) Co., Ltd.

Address.....: Room A56, 4th Floor, Block B 505 Xinbei Road Minhang District Shanghai

Test specification:

Standard.....: EN IEC 62368-1:2020+A11:2020

Test procedure.....: Test Report

Non-standard test method.....: N/A

Test item description.....: Pulse capacitor

Trade Mark(s): Cooke kolb

Manufacturer.....: Cook Cooper Electric (shanghai) Co., Ltd.
Room A56, 4th Floor, Block B 505 Xinbei Road Minhang District Shanghai

Model/Type reference.....: MAM80-0.2, MAM80-0.1, MAM80-0.25, MAM80-0.3, MAM80-0.4, MAM80-0.5, MAM80-0.6

Ratings.....: Input: 80KV DC, 20KA

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

Appendix 1: National differences.
Appendix 2: Product photographs.

Summary of testing:

Tests performed (name of test and test clause):

All applicable tests as described in the compliance checklist were performed at model MAM80-0.2 under randomly selected from all identical models.

Testing location:

RED Laboratories Inc.
Room 101, Building A, Zhengtailai Hi-Tech Innovation Park, Yintian Creative Park, Yantian Community, Xixiang Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Summary of compliance with National Differences (List of countries addressed):



EU group differences

For National Differences see attachment 1 of this test report.

The product fulfils the requirements of EN IEC 62368-1:2020+A11:2020

Copy of marking plate:

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

Product Name: Pulse capacitor	Cooke kolb
Product model: MAM80-0.2	
Input: 80KV DC, 20KA	
	
Made in China	
Manufacturer: Cook Cooper Electric (shanghai) Co., Ltd.	
Room A56, 4th Floor, Block B 505 Xinbei Road Minhang District	
Shanghai	

Remark:

1. The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. The height of WEEE symbol shall be at least 7 mm.
3. The only difference between product nameplates is the model name, and this time only reflects the product nameplate of model MAM80-0.2.

Test item particulars:

Product group	<input checked="" type="checkbox"/> end product	<input type="checkbox"/> built-in component
Classification of use by	<input checked="" type="checkbox"/> Ordinary person	<input checked="" type="checkbox"/> Children likely present
	<input type="checkbox"/> Instructed person	
	<input type="checkbox"/> Skilled person	
Supply connection	<input checked="" type="checkbox"/> AC mains	<input type="checkbox"/> DC mains
	<input type="checkbox"/> not mains connected:	
	<input type="checkbox"/> ES1	<input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply tolerance	<input checked="" type="checkbox"/> +10%/-10%	
	<input type="checkbox"/> +20%/-15%	
	<input type="checkbox"/> + %/ - %	
	<input type="checkbox"/> None	
Supply connection – type	<input checked="" type="checkbox"/> pluggable equipment type A -	
	<input type="checkbox"/> non-detachable supply cord	
	<input checked="" type="checkbox"/> appliance coupler	
	<input type="checkbox"/> direct plug-in	
	<input type="checkbox"/> pluggable equipment type B -	
	<input type="checkbox"/> non-detachable supply cord	
	<input type="checkbox"/> appliance coupler	
	<input type="checkbox"/> permanent connection	
	<input type="checkbox"/> mating connector	<input type="checkbox"/> other:
Considered current rating of protective device	<input checked="" type="checkbox"/> 16A	
	Location:	<input checked="" type="checkbox"/> building <input type="checkbox"/> equipment
	<input type="checkbox"/> N/A	
Equipment mobility	<input checked="" type="checkbox"/> movable	<input type="checkbox"/> hand-held <input type="checkbox"/> transportable
	<input type="checkbox"/> direct plug-in	<input type="checkbox"/> stationary <input type="checkbox"/> for building-in
	<input type="checkbox"/> wall/ceiling-mounted	<input type="checkbox"/> SRME/rack-mounted
	<input type="checkbox"/> other:	
Overvoltage category (OVC)	<input type="checkbox"/> OVC I	<input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III
	<input type="checkbox"/> OVC IV	<input type="checkbox"/> other:
Class of equipment	<input checked="" type="checkbox"/> Class I	<input type="checkbox"/> Class II <input type="checkbox"/> Class III
	<input type="checkbox"/> Not classified	<input type="checkbox"/>
Special installation location	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> restricted access area
	<input type="checkbox"/> outdoor location	<input type="checkbox"/>
Pollution degree (PD)	<input type="checkbox"/> PD 1	<input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer's specified T_{ma}	45°C	<input type="checkbox"/> Outdoor: minimum °C
IP protection class	<input checked="" type="checkbox"/> IPX0	<input type="checkbox"/> IP_____
Power systems	<input checked="" type="checkbox"/> TN	<input type="checkbox"/> TT <input type="checkbox"/> IT - V _{LL}
	<input type="checkbox"/> not AC mains	
Altitude during operation (m)	<input checked="" type="checkbox"/> 2000 m or less	<input type="checkbox"/> ≤ m
Altitude of test laboratory (m)	<input checked="" type="checkbox"/> 2000 m or less	<input type="checkbox"/> m
Mass of equipment (kg)	Approx. 2.45 kg	

Possible test case verdicts:

- test case does not apply to the test object.... : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement.... : F (Fail)

Testing:

Date of receipt of test item..... : 2026-01-19
Date (s) of performance of tests..... : 2026-01-19 to 2026-01-29

General remarks:

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

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

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

Name and address of factory (ies)..... : Cook Cooper Electric (shanghai) Co., Ltd.
Room A56, 4th Floor, Block B 505 Xinbei Road Minhang
District Shanghai

General product information and other remarks:

1. The equipment is an Pulse capacitor for indoor use only and for the use in Audio/video, information and communication technology equipment. All electronic components are mounted on PWB.
2. The max operated altitude is 2000m which is specified by manufacturer.
3. All models are identical shape of construction, ratings, enclosure dimensions, electronic circuits and PCB layout, except for model name different. Different models are only used to distinguish the marketing purpose.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: All circuits except for output circuits	Ordinary	N/A	N/A	Metal Enclosure, see 5.4.2, 5.4.3, 5.4.4, 5.4.5, 5.4.9, 5.5.3 and 5.5.4
ES3: All circuits except for output circuits	Ordinary	Protective bonding and earthing	N/A	Through the isolation transformer, Primary-secondary isolation capacitor, optocoupler take protective measures
ES1: Internal secondary circuits of power supply board	Ordinary	N/A	N/A	N/A
ES1: Internal circuits of other hoards	Ordinary	N/A	N/A	N/A
ES1: All secondary ports	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3: All circuits inside the metal enclosure	PCB	See 6.3	V-1 or better	N/A
PS2/PS3: All circuits inside the metal enclosure	Internal wire	N/A	N/A	See 6.5
PS2/PS3: All circuits inside the metal enclosure	Other combustible components / material	See 6.3	See 6.4.5, 6.4.6	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R

MS1: Sharp edges and comers	Ordinary	N/A	N/A	N/A
MS1: Mass of the unit (<7kg)	Ordinary	N/A	N/A	N/A
MS1: DC Fan	Ordinary	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: Accessible parts	Ordinary	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
Exempt group: Indicating light only	Ordinary	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.

Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings.

ES PS MS TS RS

Remark: see above table “OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS” for details.

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Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	(See appended table 4.1.2)	P
4.1.3	Equipment design and construction		P
4.1.4	Specified ambient temperature for outdoor use (°C) :		N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Annex T.2, T.3, T.5)	P
4.4.3.3	Drop tests	(See Annex T.7)	N/A
4.4.3.4	Impact tests	(See Annex T.6)	P
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests	No glass used	N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests		N/A
4.4.3.9	Air comprising a safeguard	Considered, but no such barrier or enclosure provided	N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness	During and after the tests, the safeguard remained effective.	P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	(See Annex K)	N/A
4.5	Explosion		P
4.5.1	General		P
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Clause B.4)	P
4.6	Fixing of conductors		P
	Fix conductors not to defeat a safeguard	The conductor cannot defeat a safeguard	P
	Compliance is checked by test..... :	(See Clause T.2)	P
4.7	Equipment for direct insertion into mains socket-outlets		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.2	Mains plug part complies with relevant standard... :	Main Unit under AC inlet	N/A
4.7.3	Torque (Nm)..... :		N/A
4.8	Equipment containing coin/button cell batteries		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard..... :		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		P
4.10	Component requirements		P
4.10.1	Disconnect Device	(See Annex L)	P
4.10.2	Switches and relays	No switches and relays.	N/A

5	ELECTRICALLY-CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current limits..... :	(See appended table 5.2)	P
5.2.2.3	Capacitance limits..... :	(See appended table 5.2)	P
5.2.2.4	Single pulse limits..... :		N/A
5.2.2.5	Limits for repetitive pulses..... :		N/A
5.2.2.6	Ringing signals	(See Annex H)	N/A
5.2.2.7	Audio signals	(See Clause E.1)	N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	Only ES1 part are accessible	P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards	Only ES1 part are accessible	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Accessibility to outdoor equipment bare parts	No outdoor equipment.	N/A
5.3.2.2	Contact requirements		P
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V)..... :	(See appended table 5.4.9)	P
5.3.2.2 b)	Air gap – distance (mm)		N/A
5.3.2.3	Compliance		P
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Material is non-hygroscopic		P
5.4.1.4	Maximum operating temperature for insulating materials..... :	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degrees..... :	Pollution degree 2	P
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 test		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
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat test..... :		N/A
5.4.1.10.3	Ball pressure test..... :	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances		P
5.4.2.1	General requirements		P
	Clearances in circuits connected to AC Mains, Alternative method	(See Annex X)	N/A
5.4.2.2	Procedure 1 for determining clearance	(See appended table 5.4.2)	P
	Temporary overvoltage	2000Vpeak	—
5.4.2.3	Procedure 2 for determining clearance	(See appended table 5.4.2) the required withstand voltage is equal to the peak working voltage	P
5.4.2.3.2.2	a.c. mains transient voltage..... :	2500Vpeak	—
5.4.2.3.2.3	d.c. mains transient voltage		—
5.4.2.3.2.4	External circuit transient voltage..... :		—
5.4.2.3.2.5	Transient voltage determined by measurement..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.4	Determining the adequacy of a clearance using an electric strength test..... :		N/A
5.4.2.5	Multiplication factors for clearances and test voltages..... :	2000m	N/A
5.4.2.6	Clearance measurement..... :	(See appended table 5.4.2)	P
5.4.3	Creepage distances		P
5.4.3.1	General		P
5.4.3.3	Material group..... :	IIIb	—
5.4.3.4	Creepage distances measurement..... :	(See appended table 5.4.3)	P
5.4.4	Solid insulation		P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation :	(See appended table 5.4.4.2)	P
5.4.4.3	Insulating compound forming solid insulation		P
5.4.4.4	Solid insulation in semiconductor devices		P
5.4.4.5	Insulating compound forming 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	For insulation tape used in transformer	P
	Number of layers (pcs)..... :	Min. 2 layers for reinforced insulation	P
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) :		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		P
5.4.4.9	Solid insulation at frequencies >30 kHz, EP, KR, d, VPW (V)..... :	(See appended Table 5.4.4.9)	N/A
	Alternative by electric strength test, tested voltage (V), KR..... :		N/A
5.4.5	Antenna terminal insulation		P
5.4.5.1	General	Performed between mains and output connector which may be connected to an equipment with antenna terminal.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.5.2	Voltage surge test	Surge test with 50 discharges at a maximum rate of 12/min from a 1nF capacitor charged to 10kV performed. Measured insulation resistance between mains supply to output terminals after the surge test, see below for details.	P
5.4.5.3	Insulation resistance (MΩ)..... :	Between input and output terminal: 500MΩ.	P
	Electric strength test..... :	(See appended table 5.4.9)	P
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%), temperature (°C), duration (h)..... :	93%, 40°C, 120h	—
5.4.9	Electric strength test		P
5.4.9.1	Test procedure for type test of solid insulation..... :	(See appended table 5.4.9)	P
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits	No 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
5.4.10.3	Verification for insulation breakdown for impulse test..... :		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		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 U_{sa} :		—
5.4.11.3	Test method and compliance..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid..... :		N/A
5.4.12.3	Compatibility of an insulating liquid..... :		N/A
5.4.12.4	Container for insulating liquid..... :		N/A
5.5	Components as safeguards		P
5.5.1	General	See Annex G	P
5.5.2	Capacitors and RC units		P
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		N/A
5.5.6	Resistors		N/A
5.5.7	SPDs	Complied with Annex G.8 and Gas discharge tube can pass Basic insulation, detail see appended table 5.4.9.	P
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)..... :		—
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation	Yellow and green	P
5.6.3	Requirement for protective earthing conductors	PE pin of AC inlet were considered as protective earthing conductor	P
	Protective earthing conductor size (mm ²) :	(See appended table 4.1.2)	—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm ²)..... :	Earthing wire: Min. 18AWG 0.35mm ²	—

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.4.2	Protective current rating (A)..... :	16A	P
5.6.5	Terminals for protective conductors		P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :	AC inlet	N/A
	Terminal size for connecting protective bonding conductors (mm)..... :	Screw size: 3.89mm	P
5.6.5.2	Corrosion		P
5.6.6	Resistance of the protective bonding system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method..... :	(See appended table 5.6.6)	P
5.6.6.3	Resistance (Ω) or voltage drop..... :	(See appended table 5.6.6)	P
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm ²)..... :		N/A
	Class II with functional earthing marking		N/A
	Appliance inlet cl & cr (mm)..... :		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current		P
5.7.2.2	Measurement of voltage	(See appended table 5.2)	P
5.7.3	Equipment set-up, supply connections and earth connections		P
5.7.4	Unearthed accessible parts..... :	(See appended table 5.7.4)	P
5.7.5	Earthed accessible conductive parts..... :	(See appended table 5.7.5)	P
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA)..... :		N/A
	b) Equipment connected to unearthed external circuits, current (mA)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES..... :		N/A
	Air gap (mm)..... :		N/A
6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of PS and PIS		P
6.2.2	Power source circuit classifications..... :	(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
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	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials..... :	No ignition and no such temperature attained within the equipment. (See appended table 5.4.1.4, 9.3, B.1.5 and B.2.6)	P
	Combustible materials outside fire enclosure..... :		N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method	Method of "control of fire spread" is used.	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		N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions..... :	(See appended table B.3, B.4)	N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits	See below.	P
6.4.5.2	Supplementary safeguards	Compliance detailed as follows: - Printed board: rated V-1 or VTM-1 min. class material; - Internal wire: complying with 6.5. - Other components other than PCB and wires are mounted on PCB rated V-1 or VTM-1 min., or made of V-2, VTM-2 or HF2 min. - Isolating transformer: complying with G.5.3.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.6	Control of fire spread in PS3 circuits	Compliance detailed as follows: – Parts as in 6.4.5 above – Metal enclosure used.	P
6.4.7	Separation of combustible materials from a PIS		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	Metal enclosure provided as fire enclosure.	P
6.4.8.2	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm).....:		N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm).....:		N/A
	Flammability tests for the bottom of a fire enclosure	(See Clause S.3)	N/A
	Instructional Safeguard.....:		N/A
6.4.8.3.5	Side openings and properties		P
	Openings dimensions (mm).....:	Hexagon openings with dimension 3.5mm max. The side openings do not fall within the area shown at an angle of 5 degrees in Figure 44	P
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c).....:		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating.....:	Metal enclosure is used.	P
6.4.9	Flammability of insulating liquid.....:		N/A
6.5	Internal and external wiring		P
6.5.1	General requirements	(See appended table 4.1.2)	P
6.5.2	Requirements for interconnection to building wiring.....:		N/A
6.5.3	Internal wiring size (mm ²) for socket-outlets.....:		N/A
6.6	Safeguards against fire due to the connection to additional equipment		P
7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards or personal protective equipment (PPE)		N/A
	Personal safeguards and instructions..... :		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010)..... :		—
7.6	Batteries and their protection circuits		N/A

8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
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	Sharp edges and Corners: MS1; Equipment mass (2.45 kg): MS1	N/A
	Instructional Safeguard..... :		N/A
8.4.2	Sharp edges or corners	The Sharp edges or corners of the equipment are considered as MS1 classification	N/A
8.5	Safeguards against moving parts		P
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	DC fan is classified as MS1	P
	MS2 or MS3 part required to be accessible for the function of the equipment	MS1	N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard..... :		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m)..... :		N/A
	Space between end point and nearest fixed mechanical part (mm)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly.....		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts..... :		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N)..... :		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test.....		N/A
8.5.5.3	Glass particles dimensions (mm)..... :		N/A
8.6	Stability of equipment		P
8.6.1	General	MS1	P
	Instructional safeguard..... :		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test..... :		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)..... :		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test..... :		N/A
8.7	Equipment mounted to wall, ceiling or other structure		N/A
8.7.1	Mount means type..... :		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N)..... :		N/A
	Test 2, number of attachment points and test force (N)..... :		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm)..... :		N/A
8.8	Handles strength		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of handles..... :		—
	Force applied (N)..... :		—
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test		N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions..... :		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N)..... :		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N)..... :		—
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard..... :		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied..... :		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm)..... :		—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts..... :	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
9.3.2	Test method and compliance		P
9.4	Safeguards against thermal energy sources		P
9.5	Requirements for safeguards		P
9.5.1	Equipment safeguard		P
9.5.2	Instructional safeguard..... :		N/A
9.6	Requirements for wireless power transmitters		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance.....:		N/A
10	RADIATION		P
10.2	Radiation energy source classification		P
10.2.1	General classification	LED indicator light: exempt group	P
	Lasers.....:		—
	Lamps and lamp systems.....:		—
	Image projectors.....:		—
	X-Ray.....:		—
	Personal music player.....:		—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply.....:		N/A
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		P
10.4.1	General requirements	Exempt group: LED indicator, LED indicator used as exempt group.	P
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location.....:		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure.....:		N/A
10.4.3	Instructional safeguard.....:		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons.....:		—
10.5.3	Maximum radiation (pA/kg).....:		—
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....:		N/A
	Unweighted RMS output voltage (mV).....:		N/A
	Digital output signal (dBFS).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30)..... :		N/A
	Warning for MEL \geq 100 dB(A)..... :		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards..... :		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A)..... :		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A)..... :		N/A

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	Normal operating conditions		P
B.2.1	General requirements..... :	(See summary of testing for tested models, each loaded according to its output ratings. See also appended table B.2.5.)	P
	Audio Amplifiers and equipment with audio amplifiers..... :	Considered	N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General		P
B.3.2	Covering of ventilation openings	(See appended table B.3, B.4)	P
	Instructional safeguard..... :		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals		P

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions	Considered	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions..... :	(See appended table B.3, B.4)	P
B.4	Simulated single fault conditions		P
B.4.1	General		P
B.4.2	Temperature controlling device	No such controlling device	N/A
B.4.3	Blocked motor test	(See appended table B.3, B.4)	P
B.4.4	Functional insulation	(See appended table B.3, B.4)	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.3, B.4)	P
B.4.6	Short circuit or disconnection of passive components	(See appended table B.3, B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions..... :	(See appended table B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	N/A
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	TEST GENERATORS		P
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		P
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Electrical energy source classification for audio signals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω) :		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard..... :		—
E.2	Audio amplifier normal operating conditions		N/A
	Audio signal source type..... :		—
	Audio output power (W)..... :		—
	Audio output voltage (V)..... :		—
	Rated load impedance (Ω) :		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	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 according to IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	The required making is located on the bottom of the equipment, and it is easily visible.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification	See copy of marking plate	P
F.3.2.2	Model identification	See copy of marking plate	P
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 the supply voltage..... :	~	P
F.3.3.4	Rated voltage..... :	See copy of marking plate	P
F.3.3.5	Rated frequency..... :	See copy of marking plate	P
F.3.3.6	Rated current or rated power..... :	See copy of marking plate	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.1	Mains appliance outlet and socket-outlet markings.....		N/A
F.3.5.2	Switch position identification marking.....		N/A
F.3.5.3	Replacement fuse identification and rating markings.....	"T10AL/250V" marked on the PCB near fuse F1	P
	Instructional safeguards for neutral fuse.....		N/A
F.3.5.4	Replacement battery identification marking.....		N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location	The marking was not placed on screws washers or other part that can be removed.	P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment		P
F.3.6.1.1	Protective earthing conductor terminal.....	Approved AC inlet used	P
F.3.6.1.2	Protective bonding conductor terminals		N/A
F.3.6.2	Equipment class marking.....		N/A
F.3.6.3	Functional earthing terminal marking.....		N/A
F.3.7	Equipment IP rating marking.....	IPX0, no marking is needed	N/A
F.3.8	External power supply output marking.....		N/A
F.3.9	Durability, legibility and permanence of marking	PVC Sticker printed making	P
F.3.10	Test for permanence of markings	The label was subjected to the permanence of marking test. The label was rubbed for 15 sec. with a piece of cloth soaked with water. And then on different place was rubbed for 15 sec. with a piece of cloth soaked with the n-hexane. After this test there was no damage to the label. The marking on the label did not fade. There was no curling and lifting of the label edge.	P
F.4	Instructions		P
	a) Information prior to installation and initial use		P
	b) Equipment for use in locations where children not likely to be present		N/A
	c) Instructions for installation and interconnection		P
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		N/A
	f) Instructions for audio equipment terminals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	g) Protective earthing used as a safeguard		P
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		P
	j) Permanently connected equipment not provided with all-pole mains switch		N/A
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		P
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	Relays		N/A
G.2.1	Requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices	Approved current fuse provided (See appended table 4.1.2)	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions..... :	(See appended table B.3, B.4)	P
G.4	Connectors		P
G.4.1	Spacings		P
G.4.2	Mains connector configuration..... :	Approved AC inlet used, See appended table 4.1.2.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		P
G.5	Wound components		P
G.5.1	Wire insulation in wound components	Between primary winding and secondary winding of transformer are considered as reinforced insulation.	P
G.5.1.2	Protection against mechanical stress	T1: No crossover in the winding. T2: Insulation tubing and triple insulation wire and margin tape are used for protection against mechanical stress.	P
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle)..... :		—
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		P
G.5.3.1	Compliance method..... :	The isolation transformer meets the requirements given in G.5.3.2 and G.5.3.3	P
	Position..... :	T1, T2	P
	Method of protection..... :	See G.5.3.3.	P
G.5.3.2	Insulation	Electronic protection	P
	Protection from displacement of windings..... :	Fixed by bobbin and insulation tape and insulation tube.	—
G.5.3.3	Transformer overload tests		P
G.5.3.3.1	Test conditions		P
G.5.3.3.2	Winding temperatures		P
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.4.1	General		N/A
	FIW wire nominal diameter..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		P
G.5.4.1	General requirements		P
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		P
G.5.4.6.2	Tested in the unit		P
	Maximum Temperature :	See table B.3,B.4	P
G.5.4.6.3	Alternative method		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 Triple insulation wire used in transformer.	P
G.6.2	Enamelled winding wire insulation		N/A
G.7	Mains supply cords		P
G.7.1	General requirements		P
	Type..... :	See appended table 4.1.2	—
G.7.2	Cross sectional area (mm ² or AWG)..... :	0.75mm ²	P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords	Detachable power supply cords	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage 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	Test method and compliance		N/A
	Overall diameter or minor overall dimension, D (mm)..... :		—
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		P
G.8.1	General requirements	Approved varistors used. (See appended table 4.1.2)	P
G.8.2	Safeguards against fire	Metal enclosure provided as fire enclosure.	N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	Resistors		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		P
G.11.1	General requirements	Approved X-cap. and Y-cap. Used. (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 with specifics	(See appended table 4.1.2)	P
	Type test voltage $V_{ini,a}$:	Equal to the appropriate test voltage in 5.4.9.1	—
	Routine test voltage, $V_{ini,b}$:	Equal to the appropriate test voltage in 5.4.9.2	—
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
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation..... :		N/A
	Number of insulation layers (pcs)..... :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements		N/A
G.15	Pressurized liquid filled components		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test..... :		—
G.16.3	Capacitor discharge test..... :		N/A
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—
H.3.1.4	Single fault current (mA):..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		P
J.1	General		P
	Winding wire insulation..... :	Certified triple insulation wire used.(See appended table 4.1.2)	—
	Solid round winding wire, diameter (mm)..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²)..... :		N/A
J.2/J.3	Tests and Manufacturing		—
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructional safeguard..... :		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance..... :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2..... :		N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		P
L.1	General requirements	Approved AC inlet used as disconnect device	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
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
	Instructional safeguard..... :		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		N/A
M.1	General requirements		N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.3	Protection circuits for batteries provided within the equipment		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance		N/A
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance..... :		N/A
M.4.3	Fire enclosure..... :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%):		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		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
	Calculated hydrogen generation rate..... :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h)..... :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%):		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate:		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%):		N/A
M.7.4	Marking:		N/A
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s):		—
M.8.2.3	Correction factors:		—
M.8.2.4	Calculation of distance d (mm):		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard:		N/A
N	ELECTROCHEMICAL POTENTIALS		P
	Material(s) used:	Complied, the combined electrochemical potential < 0.6 V.	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Value of X (mm):	1.0	—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		P
P.1	General		P
P.2	Safeguards against entry or consequences of entry of a foreign object		P
P.2.1	General		P
P.2.2	Safeguards against entry of a foreign object		P
	Location and Dimensions (mm):	Side enclosure: Sexangle openings with dimension 3.5mm max.	—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts..... :		N/A
P.2.3.2	Consequence of entry test..... :		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T _c (°C)..... :		—
	Duration (weeks)..... :		—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources		P
Q.1.1	Requirements		P
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output	(See appended table Annex Q.1)	P
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance..... :	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
Q.2	Test for external circuits – paired conductor cable	No such external circuit	N/A
	Maximum output current (A) :		N/A
	Current limiting method..... :		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test..... :		—
R.3	Test method		N/A
	Cord/cable used for test..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
R.4	Compliance		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples		—
	Wall thickness (mm)..... :		—
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W		N/A
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
T	MECHANICAL STRENGTH TESTS		P
T.1	General		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)	P
T.4	Steady force test, 100 N		N/A
T.5	Steady force test, 250 N	(See appended table T.5)	P
T.6	Enclosure impact test	(See appended table T.6)	P
	Fall test		P
	Swing test		P

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Clause	Requirement + Test	Result - Remark	Verdict
T.7	Drop test		N/A
T.8	Stress relief test.....		N/A
T.9	Glass Impact Test.....		N/A
T.10	Glass fragmentation test		N/A
	Number of particles counted.....		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm).....		N/A
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard :		N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		P
V.1	Accessible parts of equipment		P
V.1.1	General		P
V.1.2	Surfaces and openings tested with jointed test probes		P
V.1.3	Openings tested with straight unjointed test probes		P
V.1.4	Plugs, jacks, connectors tested with blunt probe		P
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	Accessible part criterion		P
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		N/A
	Clearance.....	(See appended table X)	N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		N/A
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by.....		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure.....		N/A
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3..... :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		N/A
Y.6.1	General		N/A
Y.6.2	Impact test..... :	(See table T.6)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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5.2 TABLE: Classification of electrical energy sources							P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
264VAC/60 Hz	Primary circuits supplied by a.c. mains supply	Normal	--	--	--	--	ES3 (Declared)
		Abnormal	--	--	--	--	
		Single fault-SC/OC:	--	--	--	--	
264VAC/60Hz	Output of internal circuits of power board: J3 pin + to GND	Normal	54.2VDC	--	SS	--	ES1
		Abnormal: overload	Max. 52.08VDC	--	SS	--	
		Single fault: R5 SC	0	--	SS	--	
		Single fault: OT1 1-2 SC	0	--	SS	--	
		Single fault: OT1 3-4 SC	0	--	SS	--	
		Single fault: OT1 1 OC	0	--	SS	--	
		Single fault: OT1 3 OC	0	--	SS	--	
		Single fault: OT2 1-2 SC	0	--	SS	--	
		Single fault: OT2 3-4 SC	0	--	SS	--	
		Single fault: OT2 1 OC	0	--	SS	--	
		Single fault: OT2 3 OC	0	--	SS	--	
		Single fault: OT4 1-2 SC	0	--	SS	--	
		Single fault: OT4 3-4 SC	0	--	SS	--	
		Single fault: OT4 1 OC	0	--	SS	--	
		Single fault: OT4 3 OC	0	--	SS	--	
Single fault: IC1 2-21 SC	0	--	SS	--			
Single fault: IC1 2-8 SC	0	--	SS	--			

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Clause	Requirement + Test			Result - Remark			Verdict
		Single fault: U7 1-7 SC	0	--	SS	--	
264VAC/ 60Hz	POE Port	Normal	54.2VDC	--	SS	--	ES1
		Abnormal: overload	Max. 54.2VDC	--	SS	--	
		Single fault: SC C21 (on power board)	0	--	SS	--	
		Single fault: SC R5 (on power board)	0	--	SS	--	
264VAC/ 60Hz	Between Phase and Neutral (C4)	Normal	376V	--	CP	0.68uF	ES3
264VAC/ 60Hz	Between Phase and Neutral (C17)	Normal	376V	--	CP	0.47uF	ES3
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							
3) SC=Short Circuit, OC=Open Circuit.							

5.4.1.8	TABLE: Working voltage measurement					P
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments		
T1 10-1,2	150	260	5.41k	--		
T1 10-3,4	287	470		Max. Vpeak & Max. Vrms		
T1 10-6	193	416		--		
T1 10-7	204	456		--		
T1 11,12-1,2	168	316		--		
T1 11,12-3,4	245	410		--		
T1 11,12-6	187	360		--		
T1 11,12-7	189	396		--		
T1 13,14-1,2	198	384		--		
T1 13,14-3,4	207	368		--		
T1 13,14-6	194	420		--		
T1 13,14-7	187	388		--		
T2 7,8-5	188	364		5.88K	--	
T2 7,8-4	190	424			--	

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Clause	Requirement + Test		Result - Remark	Verdict
T2 7,8-3		329	568	Max. Vpeak & Max.Vrms 60
T2 7,8-1		295	400	
T2 9,10-5		189	380	
T2 9,10-4		187	388	
T2 9,10-3		320	552	
T2 9,10-1		295	456	
C24		296	400	
C65		160	260	
OT1 1-3		205	375	
OT1 1-4		206	376	
OT1 2-3		186	360	
OT1 2-4		185	359	
OT2 1-3		205	386	
OT2 1-4		206	388	
OT2 2-3		204	385	
OT2 2-4		203	384	
OT4 1-3		194	371	
OT4 1-4		195	372	
OT4 2-3		194	369	
OT4 2-4		194	368	
Supplementary information:				
Input: 240V, 60Hz				

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics			N/A
Method..... :	ISO 306 / B50			—
Object/ Part No./Material	Manufacturer/trademark	Thickness (mm)	T softening (°C)	
--	--	--	--	
--	--	--	--	
Supplementary information:				

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

IEC 62368-1				
Clause	Requirement + Test	Result - Remark		Verdict
AC connector (J1)	ZHE JIANG BEI ER JIA ELECTRONIC CO LTD/ST-A01-001L	Min. 2.5mm	125	1.12
Supplementary information:				
Tests were performed on product with each source listed in table 4.1.2.				

5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance							P
Clearance (cl) and creepage distance (cr) at/of/between:	U _p (V)	U _{rms} (V)	Freq ¹⁾ (Hz)	Required cl (mm)	cl (mm)	E.S. ²⁾ (V)	Required cr (mm)	cr (mm)
L to N before fuse F1 on trace (BI)	420	250	60	1.5	4.1	--	2.5	4.1
Across fuse F1 on trace (BI)	420	250	60	1.5	6.4	--	2.5	6.4
T1 core to primary winding (BI)	420	250	60	1.5	6.7	--	2.5	6.7
T1 core to secondary winding (BI)	420	250	60	1.5	6.7	--	2.5	6.7
Primary to Secondary trace under C24 (RI)	420	250	60	3.0	7.7	--	5.0	7.7
Primary to Secondary trace under C65 (RI)	420	250	60	3.0	7.9	--	5.0	7.9
Primary to Secondary trace under OT1 (RI)	420	250	60	3.0	7.5	--	5.0	7.5
Primary to Secondary trace under OT2 (RI)	420	250	60	3.0	7.5	--	5.0	7.5
Primary to Secondary trace under OT4 (RI)	420	250	60	3.0	7.5	--	5.0	7.5
Primary component C38 to secondary component R26 (RI)	420	250	60	3.0	6.9	--	5.0	6.9
Primary circuit piece to accessible Enclosure outside (BI)	420	250	60	1.5	>10	--	2.5	>10
Primary component to secondary component (RI)	420	250	60	3.0	8.4	--	5.0	>10
T1 primary winding to secondary winding (RI)	470	287	5.41	3.0	8.7	--	5.8	8.7
T2 primary winding to secondary winding (RI)	568	329	5.88	3.0	8.0	--	6.6	8.0

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

T2 core to secondary winding (RI)	568	329	5.88	3.0	6.7	--	6.6	6.7
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Supplementary information:

- 1) Only for frequency above 30 kHz
 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)
 Note 1: Provide Material Group IIIb.
 Note 2: FI=Functional insulation; BI=Basic insulation; SI=Supplementary insulation; RI=Reinforced insulation.
 Note 3: The core of transformer T1 considered as neutral part, the insulation between primary and secondary to core is basic insulation.
 Note 4: The secondary of T2 is used varnished wire, core is considered as primary component of T2.
 Note 5: All conditions were considered and recorded the worst test results.

5.4.4.2	TABLE: Minimum distance through insulation				P
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
Bobbin of T1	470	Reinforced	0.4	0.8	
Insulation tape of T1	470	Reinforced	2 layers	2 layers	
Bobbin of T2	568	Reinforced	0.4	0.8	
Insulation tape of T2	568	Reinforced	2 layers	2 layers	
Optocoupler OT1	376	Reinforced	0.4	Min.0.4	
Optocoupler OT2	388	Reinforced	0.4	Min.0.4	
Optocoupler OT4	372	Reinforced	0.4	Min.0.4	
Insulation sheet under power board	568	Basic	--	0.25	
Heat-shrinkable tubing	568	Reinforced	0.4	0.4	
Supplementary information:					

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz						N/A
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)	
--	--	--	--	--	--	--	
--	--	--	--	--	--	--	
Supplementary information:							

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes/No	
L to N (disconnect fuse F1)	DC	2500	No	

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Clause	Requirement + Test	Result - Remark	Verdict
L/N to earthed metal enclosure	DC	2500	No
Mylar sheet under power supply board	DC	2500	No
T1: core to primary winding	DC	2500	No
T1: core to secondary winding	DC	2500	No
L/N to secondary output terminals	DC	4000	No
T1: primary winding to secondary winding	DC	4000	No
T2: primary winding to secondary winding	DC	4000	No
T2: core winding to secondary winding	DC	4000	No
One layer insulation tape used on transformer	DC	4000	No
Heat-shrinkable tubing	DC	4000	No
Supplementary information:			
All sources of each material have been considered to conduct test, see table 4.1.2 for details.			

5.5.2.2 TABLE: Stored discharge on capacitors					P
Location	Supply voltage (V)	Operating and fault condition ¹⁾	Switch position	Measured voltage (Vpk)	ES Class
L to N	264V/60Hz	Normal	-	18	ES1
		R58 opened	-	48	ES1
Supplementary information:					
X-capacitors installed for testing are: C17=0.47uF, C4=0.68uF					
<input checked="" type="checkbox"/> Bleeding resistor rating: R3=R32=R40=R58=1000KΩ					
<input type="checkbox"/> ICX:					
Notes:					
A. Test Location:					
Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth					
B. Operating condition abbreviations:					
N – Normal operating condition (e.g., normal operation, or open fuse);					
S –Single fault condition					

5.6.6 TABLE: Resistance of protective conductors and terminations					P
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Input earth pin to farthest earth	32	2	0.67	0.021	
Supplementary information:					

5.7.4 TABLE: Unearthed accessible parts				P
Location	Operating and fault	Supply	Parameters	ES class

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Clause	Requirement + Test	Result - Remark	Verdict
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	conditions	Voltage (V)	Voltage (V _{rms} or V _{pk})	Current (A _{rms} or A _{pk})	Freq. (Hz)	
Secondary output terminals to earth	Normal	264V/60Hz	--	0.035mA _{pk}	60	ES1
	Abnormal: overload	264V/60Hz	--	0.035mA _{pk}	60	ES1
	Single fault: SC U7 pin 1-7	264V/60Hz	--	0.035mA _{pk}	60	ES1
	Single fault: Earth open	264V/60Hz	--	0.035mA _{pk}	60	ES1

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit.

5.7.5 **TABLE: Earthed accessible conductive part** **P**

Supply voltage (V).....:	264VAC/60Hz	—
Phase(s)	<input checked="" type="checkbox"/> Single Phase; <input type="checkbox"/> Three Phase: <input type="checkbox"/> Delta <input type="checkbox"/> Wye	—
Power Distribution System	<input checked="" type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT	—

Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment
Metal enclosure to earth	1	Normal: 0.426mA _{pk} Reversed: 0.426mA _{pk}	e opened, normal and reverse polarity
	2*	--	--
	3	--	--
	4	--	--
	5	--	--
	6	--	--
	8	--	--

Supplementary Information:

- [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.

5.8 **TABLE: Backfeed safeguard in battery backed up supplies** **N/A**

Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
--	--	--	--	--	--	--

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

Abbreviation: SC= short circuit, OC= open circuit

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (s)	PS class
All internal circuits of power board	--	--	--	--	--	Declared PS3
PoE pin 4, 5-pin 7, 8	Normal	52.08	0.928	48.33	After 5s	PS2
	Single fault: SC C21 (on power board)	0	0	0	After 3s	PS1
	Single fault: SC R5 (on power board)	0	0	0	After 3s	PS1
SFP pin 15,16-GND	Normal	3.32	0.35	1.16	After 3s	PS1
	Single fault: SC C21 (on power board)	0	0	0	After 3s	PS1
	Single fault: SC R5 (on power board)	0	0	0	After 3s	PS1

Supplementary information: for both HDMI and DP ports, the test results were the same.

Abbreviation: SC= short circuit; OC= open circuit.

Measured after 3 s for PS1 and measured after 5 s for PS2.

6.2.3.1	TABLE: Determination of Arcing PIS			P
Location	Open circuit voltage after 3s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
All power board circuits	>50V	--	--	Yes*

Supplementary information:

*All power board circuits were considered as Arcing PIS.

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

6.2.3.2	TABLE: Determination of resistive PIS		P
Location	Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No
All internal circuits	--	>15	Yes*

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict
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Abbreviation: SC= short circuit; OC= open circuit
*All internal circuits were considered as resistive PIS.

8.5.5	TABLE: High pressure lamp				N/A
Lamp manufacturer	Lamp type		Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No
--	--		--	--	--

Supplementary information:

9.6	TABLE: Temperature measurements for wireless power transmitters							N/A
Supply voltage (V).....:							—	
Max. transmit power of transmitter (W).....:							—	
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
--	--	--	--	--	--	--	--	--

Supplementary information:

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements			P
Supply voltage (V).....:	90Vac, 60Hz		264Vac, 60Hz	—
Ambient temperature during test T_{amb} (°C).....:	22.4°C		23.3°C	—
Maximum measured temperature T of part/at:	T (°C)			Allowed T_{max} (°C)
AC inlet	58.1		52.5	--
Y Capacitor C58	82.4		77.2	125
Resistance RT1	105.0		82.4	130
MOV1 body	83.7		78.3	85
X Capacitor C17	73.6		57.6	100
L1 winding	84.7		61.5	130
X Capacitor C4	74.0		58.2	100
L2 winding	85.2		60.5	130
PCB near BRG2	88.0		62.4	130
PCB near BRG1	89.2		62.7	130
X Capacitor C3	70.9		57.3	100

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Clause	Requirement + Test	Result - Remark	Verdict	
L8 winding		71.3	55.8	130
X Capacitor C1		73.1	65.9	100
PCB near Q1		90.0	72.4	130
PCB near Q8		90.4	73.2	130
Capacitor C32		78.8	71.0	105
T1 coil		104.6	100.0	110
T1 core		89.1	85.1	110
PCB near Q6		80.2	76.6	130
Optocoupler OT1		77.6	73.9	110
Optocoupler OT4		77.3	74.6	110
Y Capacitor C24		75.5	75.4	125
Y Capacitor C65		76.3	75.4	125
T2 coil		92.4	91.1	110
T2 core		91.3	88.7	110
Capacitor C29		66.3	64.1	105
L6 winding		63.2	60.8	130
Capacitor C28		66.3	64.0	105
PCB near D1		81.3	78.2	130
L3 winding		61.6	59.5	130
C55 body		58.4	56.3	105
J2 Output wire		58.8	56.6	105
J4 Output wire		56.9	54.7	105
Capacitor PC1 (Upper board)		54.1	51.7	105
PCB near FD1 (Upper board)		55.6	53.2	130
PCB near U3 (Upper board)		54.1	52.1	130
PCB near TU1 (Upper board)		53.0	51.1	130
Capacitor PC2 (Upper board)		53.2	51.8	105
Capacitor C3 (Lower board)		55.3	52.6	105
PCB near RC2 (Lower board)		58.9	56.3	130
PCB near U8 (Lower board)		57.0	54.6	130
PCB near U20 (Lower board)		51.1	49.5	130
PCB near U9 (Lower board)		52.5	50.4	130
PCB near FD2 (Lower board)		58.3	56.1	130

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Clause	Requirement + Test				Result - Remark		Verdict
PCB near FD4 (Lower board)				53.6	51.5	130	
DC Fan winding 1				60.4	54.0	Ref.	
DC Fan winding 2				57.5	54.3	Ref.	
Ambient				45.0*	45.0*	--	
Accessible parts							
Metal enclosure near PCB				40.2	35.7	60	
Ambient				25.0	25.0	--	
Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							
* The test is performed at a temperature between 20°C and 25°C, all results are adjusted to reflect a value of 45°C							
Note 1: The apparatus was submitted and evaluated for maximum manufacturer's recommended ambient (T _{ma}) of 45°C.							
Note 2: The temperatures were measured under the worse case normal mode defined in clause B.2.1.							

B.2.5 TABLE: Input test								P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
90V	50	3.170	--	282.4	--	F1	3.170	Normal condition PoE ports total 20 channel load: 240W
90V	60	3.180	--	282.5	--	F1	3.180	
100V	50	2.855	5	278.8	--	F1	2.855	
100V	60	2.855	5	279.8	--	F1	2.855	
220V	50	1.346	5	276.2	--	F1	1.346	
220V	60	1.348	5	276.8	--	F1	1.348	
240V	50	1.206	5	267.4	--	F1	1.206	
240V	60	1.208	5	267.5	--	F1	1.208	
264V	50	1.106	--	266.8	--	F1	1.106	
264V	60	1.151	--	266.8	--	F1	1.151	
Supplementary information:								
All PoE ports are connected to the load.								

B.3, B.4 TABLE: Abnormal operating and fault condition tests							P
Ambient temperature T _{amb} (°C)..... :						See below	—
Power source for EUT: Manufacturer, model/type, outputrating... :						--	—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	

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Clause	Requirement + Test			Result - Remark	Verdict
Ventilation Openings	Blocked	264	1hrs 52mins	F1 1.153	EUT normal working. After testing, no damaged, no hazard. Output terminal: Touch current (output +/-toearth): 0.035mApk,output+to-: 54.2 Vdc. Measured max. temperature: T1 coil: 136.0°C T1 core: 122.2°C T2 coil: 104.0°C T2 core: 106.3°C Ambient: 45.0°C Metal enclosure near PCB: 52.9°C Ambient: 25.0°C
DC Fan	Locked	264	7hrs	F1 1.159	After 7h, the packaging thin cotton paper and gauze were not ignited. Others: After the motor is blocked, the temperature of each element is as follows: T1 coil: 109.1°C T1 core: 97.4°C T2 coil: 106.0°C T2 core: 101.6°C DC Fan winding 1: 69.2°C DC Fan winding 2: 69.9°C Ambient: 45.0°C Metal enclosure near PCB: 61.2°C Ambient: 25.0°C Output terminal: Touch current (output +/-toearth): 0.035mApk,output+to-: 54.2 Vdc.

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Clause	Requirement + Test			Result - Remark	Verdict
T1 (Secondary circuits after D1)	OL	264	2hrs 31mins	F1	<p>1.151 ↓ 1.248 ↓ 1.355 ↓ 0.01A</p> <p>EUT normal working. Output max. loading 1.0A, when loading was increased to 1.01A, the POE output shutdown. After testing, no damaged, no hazard.</p> <p>Output terminal: Touch current (output +/-toearth): 0.035mApk,output+to-: 54.2 Vdc.</p> <p>Measured max. temperature:</p> <p>T1 coil: 105.1°C T1 core: 85.7°C T2 coil: 92.3°C T2 core: 89.3°C Ambient:45.0°C Metal enclosure near PCB: 36.1°C Ambient: 25.0°C</p>
T2 (Secondary circuits after D22)	OL	264	1hrs 49mins	F1	<p>1.151 ↓ 1.144 ↓ 1.210 ↓ 0.01A</p> <p>EUT normal working. Output max. loading 0.2A, when loading was increased to 0.3A, the POE output shutdown. After testing, no damaged, no hazard.</p> <p>Output terminal: Touch current (output +/-toearth): 0.035mApk,output+to-: 12.05 Vdc.</p> <p>Measured max. temperature:</p> <p>T1 coil: 101.1°C T1 core: 87.4°C T2 coil: 92.6°C T2 core: 89.9°C Ambient: 45.0°C Metal enclosure near PCB:38.7°C Ambient:25.0°C</p>
Q3 Pin G-S	SC	264	10mins	F1	<p>0.01</p> <p>Unit shut down immediately, recoverable, no damage, no hazard.</p> <p>Touch current (output +/-toearth): 0.035mApk,output+to-: 0 Vdc.</p>

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Clause	Requirement + Test			Result - Remark		Verdict
Q3 Pin D-S	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- to earth): 0.056mApk, output+to-: 0 Vdc.
Q3 Pin D-G	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- to earth): 0.056mApk, output+to-: 0 Vdc.
Q1 Pin G-S	SC	264	10mins	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Touch current (output +/- to earth): 0.035mApk, output+to-: 0 Vdc.
Q1 Pin D-S	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- to earth): 0.056mApk, output+to-: 0 Vdc.
Q1 Pin D-G	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- to earth): 0.056mApk, output+to-: 0 Vdc.
Q8 Pin G-S	SC	264	10mins	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Touch current (output +/- to earth): 0.035mApk, output+to-: 0 Vdc.
Q8 Pin D-S	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- to earth): 0.056mApk, output+to-: 0 Vdc.
Q8 Pin D-G	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- to earth): 0.056mApk, output+to-: 0 Vdc.

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Clause	Requirement + Test				Result - Remark	Verdict
C17	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- toearth): 0.056mApk,output+to-: 0 Vdc.
C4	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- toearth): 0.056mApk,output+to-: 0Vdc.
BRG1	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- toearth): 0.056mApk,output+to-: 0Vdc.
BRG2	SC	264	1s	F1	0	Fuse F1 opened immediately, no hazard. Touch current (output +/- toearth): 0.056mApk,output+to-: 0Vdc.
T1 pin 1-3	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
T1 pin 6-7	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
T1 pin 10-11	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.

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Clause	Requirement + Test					Result - Remark	Verdict
T1 pin 12-14	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
IC1 2-21	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
IC1 2-8	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
U7 1-7	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT1 pin 1-2	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT1 pin3-4	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT1 pin 1	OC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	

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Clause	Requirement + Test					Result - Remark	Verdict
OT1 pin 3	OC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT2 pin1-2	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT2 pin3-4	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT2 pin 1	OC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT2 pin 3	OC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT4 pin 1-2	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	

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Clause	Requirement + Test					Result - Remark	Verdict
OT4 pin 3-4	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT4 pin 1	OC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
OT4 pin 3	OC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
MOV1	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
C78	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	
T2 pin 1-3	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.	

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Clause	Requirement + Test				Result - Remark	Verdict
T2 pin 4-5	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
T2 pin 8-9	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
D22	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
C29	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
D21	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
C21	SC	264V/60Hz	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.

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Clause	Requirement + Test	Result - Remark	Verdict
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PoE output	SC	264V/60Hz	10mins	F1	1.513	The current POE shut down, other POE terminal working normally. Recoverable, no damage, no hazard. Output terminal Touch current (output +/-toearth): 0.035mApk, output+to-: 0 Vdc.
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Supplementary information:

- 1) SC: short circuit; OC: open circuit; OL: overload.
- 2) The Hi-pot test conducted successfully after the completion of fault condition test.
- 3) All alternate components source had been considered, recorded most unfavourable result.
- 4) Temperature limits under the abnormal condition:
 - Transformer T1, T2 winding/bobbin: 165°C;
 - Metal enclosure outside: 70°C.

M.3	TABLE: Protection circuits for batteries provided within the equipment	N/A
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Is it possible to install the battery in a reverse polarity position?.....:	--	---
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Equipment Specification	Charging					
	Voltage (V)			Current (A)		
	-			-		
Manufacturer/type	Battery specification					
	Non-rechargeable batteries			Rechargeable batteries		
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)
			Voltage (V)	Current (A)		
--	--	--	--	--	--	--

Note: The tests of M.3.2 are applicable only when above appropriate data is not available.

Specified battery temperature (°C).....:	--	--
--	----	----

Component No.	Fault condition	Charge/discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	--	--	--	--	--	--	--

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.

M.4.2	TABLE: Charging safeguards for equipment containing a secondary lithium battery	N/A
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Clause	Requirement + Test	Result - Remark	Verdict		
	Maximum specified charging voltage (V).....:	--	—		
	Maximum specified charging current (A)	--	—		
	Highest specified charging temperature (°C)	--	—		
	Lowest specified charging temperature (°C)	--	—		
Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	
--	--	--	--	--	--
Supplementary information:					
Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature.					

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)							P
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)		
				Meas.	Limit	Meas.	Limit	
PoE pin 4, 5-pin 7, 8	Normal operation	54.2	5	0.928	8	48.38	100	
	Single fault: SC C21 (on power board)	0	5	0	8	0	100	
	Single fault: SC R5 (on power board)	0	5	0	8	0	100	
SFP pin 15, 16-GND	Normal operation	3.32	5	0.35	8	1.16	100	
	Single fault: SC C21 (on power board)	0	5	0	8	0	100	
	Single fault: SC R5 (on power board)	0	5	0	8	0	100	
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)	Probe	Force (N)	Test Duration (s)	Observation	
Top enclosure	Metal	1.0	Circular plane surface 30 mm in diameter	250	5	No damage, no hazard.	
Side enclosure	Metal	1.0	Circular plane surface 30 mm in diameter	250	5	No damage, no hazard.	
Bottom enclosure	Metal	1.0	Circular plane surface 30 mm in diameter	250	5	No damage, no hazard.	

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Clause	Requirement + Test			Result - Remark		Verdict
For construction check: All internal components/wires	--	--	--	10	5	No damage, no hazard.
For construction check: All internal components/wires	--	--	--	30	5	No damage, no hazard.
Supplementary information:						

T.6, T.9	TABLE: Impact test					P
Location/part	Material	Thickness (mm)	Height (mm)	Observation		
Top enclosure	Metal	1.0	1300mm	No damage, no hazard		
Side enclosure	Metal	1.0	1300mm	No damage, no hazard		
Bottom enclosure	Metal	1.0	1300mm	No damage, no hazard		
Supplementary information:						

T.7	TABLE: Drop test					N/A
Location/part	Material	Thickness (mm)	Height (mm)	Observation		
--	--	--	--	--		
Supplementary information:						

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

X	TABLE: Alternative method for determining minimum clearances distances				N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)		
--	--	--	--		
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict
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4.1.2 TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
PCB	Jian Xintonglian Circuit Co Ltd	TL-1	V-0, 130°C	IEC 62368- 1:2018, UL 796	Tested within appliance UL E339347
		TL-2	V-0, 130°C	IEC 62368- 1:2018, UL 796	Tested within appliance UL E339347
	Interchangeable	--	V-0, 130°C	IEC 62368- 1:2018, UL 796	--
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. License available upon request.					

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Clause	Requirement + Test	Result - Remark	Verdict

Attachment 1:

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 IEC 62368-1:2020+A11:2020			
Attachment Form No.....: EU_GD_IEC62368_1E			
Attachment Originator.....: UL(Demko)			
Master Attachment.....: 2021-02-04			
Copyright © 2021 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	CENELEC COMMON MODIFICATIONS (EN)		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed "Z".		P
	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
1	Modification to Clause 3 .		N/A
3.3.19	Sound exposure <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		N/A
3.3.19.1	momentary exposure level, MEL metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.3	<p>sound exposure, E</p> <p>A-weighted sound pressure (p) squared and integrated over a stated period of time, T</p> <p>Note 1 to entry: The SI unit is Pa² s.</p> $E = \int_0^T p(t)^2 dt$		N/A
3.3.19.4	<p>sound exposure level, SEL</p> <p>logarithmic measure of sound exposure relative to a reference value, E_0, typically the 1 kHz threshold of hearing in humans.</p> <p>Note 1 to entry: SEL is measured as A-weighted levels in dB.</p> $SEL = 10 \lg \left(\frac{E}{E_0} \right) \text{ dB}$ <p>Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.</p>		N/A
3.3.19.5	<p>digital signal level relative to full scale, dBFS</p> <p>levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused</p> <p>Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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2	Modification to Clause 10		N/A
10.6	Safeguards against acoustic energy sources Replace 10.6 of IEC 62368-1 with the following:		N/A
10.6.1.1	<p>Introduction</p> <p>Safeguard requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an ordinary person, that:</p> <ul style="list-style-type: none"> – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and – has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). <p>EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment.</p> <p>Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3.</p> <p>NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360.</p> <p>NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible.</p> <p>Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none"> – professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p> <ul style="list-style-type: none"> – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: <ul style="list-style-type: none"> • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and 		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	• cassette player/recorder;		


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Clause	Requirement + Test	Result - Remark	Verdict
Cont'd	<p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>– a player while connected to an external amplifier that does not allow the user to walk around while in use.</p> <p>For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1: 2011, 4.20 and the related tests methods and measurement distances apply.</p>		N/A
10.6.1.2	<p>Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</p> <p>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.</p>		N/A
10.6.2	<p>Classification of devices without the capacity to estimate sound dose</p>		N/A
10.6.2.1	<p>General</p> <p>This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3.</p> <p>For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period.</p> <p>For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song.</p> <p>NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	long as the average sound level of the song is not above the basic limit of 85 dB.		
10.6.2.2	<p>RS1 limits (to be superseded, see 10.6.3.2)</p> <p>RS1 is a class 1 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2. 		N/A
10.6.2.3	<p>RS2 limits (to be superseded, see 10.6.3.3)</p> <p>RS2 is a class 2 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1. 		N/A
10.6.2.4	<p>RS3 limits</p> <p>RS3 is a class 3 acoustic energy source that exceeds RS2 limits.</p>		N/A
10.6.3	Classification of devices (new)		N/A
10.6.3.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.		
10.6.3.2	<p>RS1 limits (new)</p> <p>RS1 is a class 1 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq, \tau}$ acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. 		N/A
10.6.3.3	<p>RS2 limits (new)</p> <p>RS2 is a class 2 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. 		N/A
10.6.4	Requirements for maximum sound exposure		N/A
10.6.4.1	<p>Measurement methods</p> <p>All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.4.2	<p>Protection of persons</p> <p>Except as given below, protection requirements for parts accessible to ordinary persons, instructed persons and skilled persons are given in 4.3.</p> <p>NOTE 1 Volume control is not considered a safeguard.</p> <p>Between RS2 and an ordinary person, the basic safeguard may be replaced by an instructional safeguard in accordance with Clause F.5, except that the instructional safeguard shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the instructional safeguard may be given through the equipment display during use.</p> <p>The elements of the instructional safeguard shall be as follows:</p> <ul style="list-style-type: none"> – element 1a: the symbol , IEC 60417-6044 (2011-01) – element 2: “High sound pressure” or equivalent wording – element 3: “Hearing damage risk” or equivalent wording – element 4: “Do not listen at high volume levels for long periods.” or equivalent wording <p>An equipment safeguard shall prevent exposure of an ordinary person to an RS2 source without intentional physical action from the ordinary person and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off.</p> <p>The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time.</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off.</p> <p>A skilled person shall not be unintentionally exposed to RS3.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.5	Requirements for dose-based systems		N/A
10.6.5.1	<p>General requirements</p> <p>Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause.</p> <p>The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration.</p> <p>The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.</p>		N/A
10.6.5.2	<p>Dose-based warning and requirements</p> <p>When a dose of 100 % CSD is reached, and at least at every 100 % further increase of CSD, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1.</p> <p>The warning shall at least clearly indicate that listening above 100 % CSD leads to the risk of hearing damage or loss.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.5.3	<p>Exposure-based requirements</p> <p>With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at.</p> <p>The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3.</p> <p>The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster.</p> <p>Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface.</p> <p>NOTE In case the source is known not to be music (or test signal), the EL may be disabled.</p>		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	<p>Corded listening devices with analogue input</p> <p>With 94 dB LAeq acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV.</p> <p>NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.</p>		N/A
10.6.6.2	<p>Corded listening devices with digital input</p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the LAeq,7 acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict																																																												
10.6.6.3	<p>Cordless listening devices In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq, \tau}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.</p>		N/A																																																												
10.6.6.4	<p>Measurement method <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i></p>		N/A																																																												
3	<p>Modification to the whole document</p>		N/A																																																												
	<p>Delete all the “country” notes in the reference document according to the following</p> <table border="1" data-bbox="363 1122 1299 1895"> <tbody> <tr> <td>0.2.1</td> <td>Note 1 and 2</td> <td>1</td> <td>Note 4 and 5</td> <td>3.3.8.1</td> <td>Note 2</td> </tr> <tr> <td>3.3.8.3</td> <td>Note 1</td> <td>4.1.15</td> <td>Note</td> <td>4.7.3</td> <td>Note 1 and 2</td> </tr> <tr> <td>5.2.2.2</td> <td>Note</td> <td>5.4.2.3.2.2 Table 12</td> <td>Note c</td> <td>5.4.2.3.2.4</td> <td>Note 1 and 3</td> </tr> <tr> <td>5.4.2.3.2.4 Table 13</td> <td>Note 2</td> <td>5.4.2.5</td> <td>Note 2</td> <td>5.4.5.1</td> <td>Note</td> </tr> <tr> <td>5.4.10.2.1</td> <td>Note</td> <td>5.4.10.2.2</td> <td>Note</td> <td>5.4.10.2.3</td> <td>Note</td> </tr> <tr> <td>5.5.2.1</td> <td>Note</td> <td>5.5.6</td> <td>Note</td> <td>5.6.4.2.1</td> <td>Note 2 and 3 and 4</td> </tr> <tr> <td>5.6.8</td> <td>Note 2</td> <td>5.7.6</td> <td>Note</td> <td>5.7.7.1</td> <td>Note 1 and Note 2</td> </tr> <tr> <td>8.5.4.2.3</td> <td>Note</td> <td>10.2.1 Table 39</td> <td>Note 3 and 4 and 5</td> <td>10.5.3</td> <td>Note 2</td> </tr> <tr> <td>10.6.1</td> <td>Note 3</td> <td>F.3.3.6</td> <td>Note 3</td> <td>Y.4.1</td> <td>Note</td> </tr> <tr> <td>Y.4.5</td> <td>Note</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>list:</p>	0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2	10.6.1	Note 3	F.3.3.6	Note 3	Y.4.1	Note	Y.4.5	Note						N/A
0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2																																																										
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5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4																																																										
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8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2																																																										
10.6.1	Note 3	F.3.3.6	Note 3	Y.4.1	Note																																																										
Y.4.5	Note																																																														

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Clause	Requirement + Test	Result - Remark	Verdict
4	Modification to Clause 1		N/A
1	<p>Add the following note:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</p>		N/A
5	Modification to 4.Z1		N/A
4.Z1	<p>Add the following new subclause after 4.9:</p> <p>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):</p> <p>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;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N/A
6	Modification to 5.4.2.3.2.4		N/A
5.4.2.3.2.4	<p>Add the following to the end of this subclause:</p> <p>The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.</p>		N/A
7	Modification to 10.2.1		N/A
10.2.1	<p>Add the following to ^{c)} and ^{d)} in table 39:</p> <p>For additional requirements, see 10.5.1.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8	Modification to 10.5.1		N/A
10.5.1	<p>Add the following after the first paragraph:</p> <p>For RS 1 compliance is checked by measurement under the following conditions:</p> <p>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 pre-sets 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.</p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p>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.</p> <p>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.</p> <p>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>		N/A
9	Modification to G.7.1		N/A
G.7.1	<p>Add the following note:</p> <p>NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10	Modification to Bibliography		N/A
	Add the following notes for the standards indicated:		N/A
	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.		
11	ADDITION OF ANNEXES		N/A
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N/A
4.1.15	Denmark, Finland, Norway and Sweden		N/A
	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"		

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Clause	Requirement + Test	Result - Remark	Verdict
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

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Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	<p>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.</p>		N/A
5.4.11.1 and Annex G	<p>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</p> <ul style="list-style-type: none"> • 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. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> • 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. <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> • 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; <p>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.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).		N/A
5.5.6	Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.		N/A
5.6.1	Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> 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
5.6.4.2.1	France After the indent for pluggable equipment type A , the following is added: – in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.		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
5.6.8	Norway To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as class I equipment . See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		N/A
5.7.6	Denmark To the end of the subclause the following is added: The installation instruction shall be affixed to the		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		
5.7.6.2	<p>Denmark</p> <p>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.</p>		N/A
5.7.7.1	<p>Norway and Sweden</p> <p>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</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.”.		
8.5.4.2.3	United Kingdom Add the following after the 2 nd dash bullet in 3 rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		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

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Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	<p>Denmark</p> <p>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.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase 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.</p> <p>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.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>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</p> <p><i>Justification:</i> Heavy Current Regulations, Section 6c</p>		N/A
G.4.2	<p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>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.</p> <p>Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N/A

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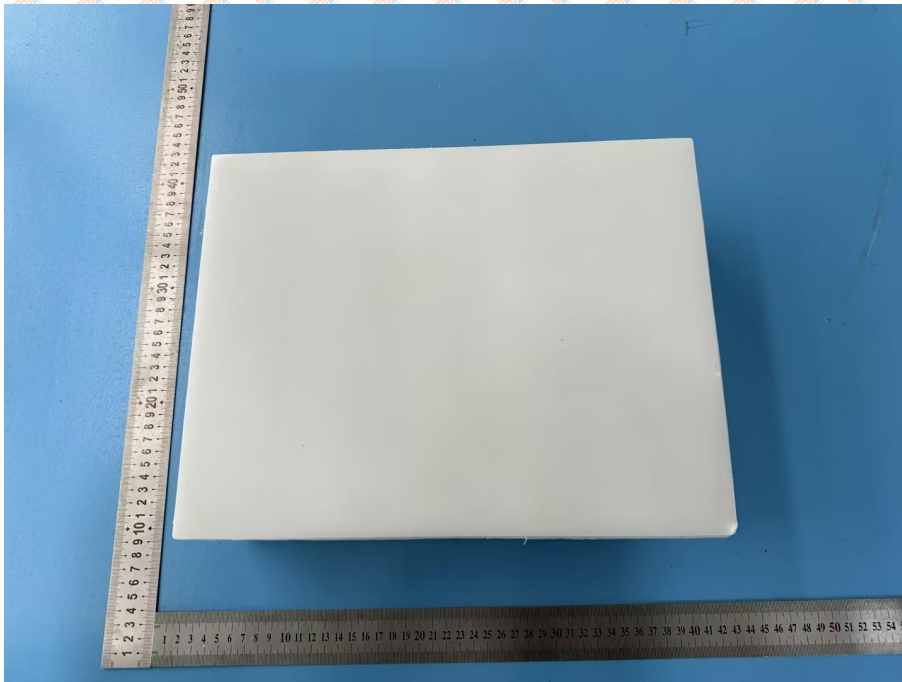
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	<p>United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord 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.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
G.7.1	<p>Ireland</p> <p>To the first paragraph the following is added:</p> <p>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</p>		N/A
G.7.2	<p>Ireland and United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	<p>Germany</p> <p>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.</p> <p><i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p>NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de</p>		N/A
ZD	IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Type of flexible cord	Code designations		N/A
	IEC	CENELEC	
PVC insulated cords			
Flat twin tinsel cord	60227 IEC 41	H03VH-Y	
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F	
Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 53	H05VV-F H05VVH2-F	
Rubber insulated cords			
Braided cord	60245 IEC 51	H03RT-F	
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F	
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F	
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F	
Cords having high flexibility			
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H	
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H	
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H	
Cords insulated and sheathed with halogen-free thermoplastic compounds			
Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F	
Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F	

**Attachment 2:
Photo-documentation**
Model: MAM80-0.2



***** End of Test Report *****