



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

**Report Number** .....: SUES260300064501

**Date of issue**.....: 2026-03-24

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**Name of CB Testing Laboratory preparing the Report**.....: SGS-CSTC Standards Technical Services Co., Ltd. Suzhou Branch

**Applicant's name** .....: ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.

**Address** .....: No.1399, Binxing Road, Binjiang District, Hangzhou, P.R. China

**Test specification:**

**Standard** .....: IEC 62368-1:2023

**Test procedure** .....: SGS-CSTC

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

**TRF template used** .....: IECEE OD-2020-F1:2024, Ed.1.7

**Test Report Form No.**.....: IEC62368\_1F

**Test Report Form(s) Originator** ....: UL Solutions (US)

**Master TRF** .....: Dated 2025-06-13

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**General disclaimer:**

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

This report shall not be reproduced, except in full, without the written approval of the Issuing NCB. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

<b>Test item description</b> ..... :	IP CAMERA	
<b>Trademark(s)</b> ..... :		
<b>Manufacturer</b> ..... :	Same as applicant	
<b>Model/Type reference</b> ..... :	See general product information	
<b>Ratings</b> ..... :	12 V d.c., 0,5 A or PoE(802.3af); Class III	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>Testing Laboratory:</b>	SGS-CSTC Standards Technical Services Co., Ltd. Suzhou Branch
	<b>Testing location/ address</b> .....:	No.10, Weiye Rd, Kunshan Development Zone, Suzhou, Jiangsu, China
	<b>Tested by (name, function, signature)</b> .....:	Sara Chen <i>Sara Chen</i> Project Engineer
	<b>Approved by (name, function, signature)</b> ...:	Ade Wu <i>Ade Wu</i> Reviewer
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	
	<b>Testing location/ address</b> .....:	
	<b>Tested by (name, function, signature)</b> .....:	
	<b>Approved by (name, function, signature)</b> ...:	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	
	<b>Testing location/ address</b> .....:	
	<b>Tested by (name + signature)</b> .....	
	<b>Witnessed by (name, function, signature)</b> ..:	
	<b>Approved by (name, function, signature)</b> ...:	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	
	<b>Testing location/ address</b> .....:	
	<b>Tested by (name, function, signature)</b> .....:	
	<b>Witnessed by (name, function, signature)</b> ..:	
	<b>Approved by (name, function, signature)</b> ...:	
	<b>Supervised by (name, function, signature) :</b>	

<p><b>List of Attachments (including a total number of pages in each attachment):</b></p> <p>Attachment 1 – 10 pages of Photos documents;</p> <p>Attachment 2 – 27 pages of European group differences and national differences;</p>	
<p><b>Summary of testing:</b></p> <p>The sample(s) tested complies with the requirements of IEC 62368-1: 2023 and EN IEC 62368-1:2024+A11:2024.</p> <p>Unless otherwise specified, the EUT with model DH-IPC-HFW1639TC-A-IL was selected as representative model for full testing.</p> <p>All data in this report are based on SGS test report SUES240200008503 dated on 2025-09-02, with the following changes:</p> <ul style="list-style-type: none"> <li>- Upgrade test standard to IEC 62368-1: 2023 and EN IEC 62368-1:2024+ A11: 2024</li> <li>- Add new model IPC-UFW2869TC-A-IL-0280B-S6 which is identical to previous model except for model name which have no impact for safety, please see the bold name in the model list.</li> </ul> <p>After comparison, no additional test was considered necessary.</p> <p>Heating test: Tma = 60°C (declared by manufacturer) K-type thermocouple used for temperature measurement.</p>	
<p><b>Tests performed (name of test, test clause and date test performed):</b></p> <p><input checked="" type="checkbox"/> 4. General requirements</p> <p><input checked="" type="checkbox"/> 5. Electrically-caused injury</p> <p><input checked="" type="checkbox"/> 6. Electrically-caused fire</p> <p><input type="checkbox"/> 7. Injury caused by hazardous substances</p> <p><input checked="" type="checkbox"/> 8. Mechanically-caused injury</p> <p><input checked="" type="checkbox"/> 9. Thermal burn injury</p> <p><input checked="" type="checkbox"/> 10. Radiation</p> <p><input checked="" type="checkbox"/> Annex B. Normal operating condition tests, abnormal operating condition tests and single fault condition tests</p> <p><input checked="" type="checkbox"/> Annex F.3.9. Performance of Marking test</p> <p><input type="checkbox"/> Annex M Equipment containing batteries and their protection circuits</p> <p><input checked="" type="checkbox"/> Annex Q. Limited Power Source</p> <p><input type="checkbox"/> Annex T. Mechanical strength tests</p> <p><input checked="" type="checkbox"/> Annex V. Determination of accessible parts</p> <p>Test date see page 7</p>	<p><b>Testing location: (CBTL, SPTL, CTF, Subcontractor)</b></p> <p>SGS-CSTC Standards Technical Services Co., Ltd. Suzhou Branch No.10, Weiye Rd, Kunshan Development Zone, Suzhou, Jiangsu, China</p>

**Summary of compliance with National Differences**

- IECEE Member countries that are also CENELEC members  
Compliance with Group Differences evaluated  **yes**  **No**  N/A
- IECEE Member countries with published National Differences which were evaluated:  
N/A
- IECEE Member countries that did not publish any National Differences:  
N/A

To support compliance with published National Differences, attach a compilation of relevant ND and/or GD TRFs to the Test Report

**Use of uncertainty of measurement for decisions on conformity (decision rule) :**

No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

Other: ... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

**Information on uncertainty of measurement:**

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

**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.

Marking for model DH-IPC-HFW1639TC-A-IL

IP CAMERA

**dhua**  
TECHNOLOGY

DH-IPC-HFW1639TC-A-IL

12V  ,0.5A;POE(802.3af)

P/N: 1.0.01.04.43123

3.6mm/S6

MAC: AA:BB:CC:11:22:04



S/N: 2M0024EPAG85688



MADE IN CHINA

**Remark:**

1. The Height of CE logo shall not be less than 5 mm; Height of WEEE logo shall not be less than 7 mm.
2. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark and the postal address will be marked on the packagings before being placed on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.
3. The marking plates for other models are of the same pattern except for model name and trade mark.

<b>Test item particulars:</b>	
<b>Product group</b> .....	End product
<b>Classification of use by</b> .....	Ordinary person / Children likely present / Instructed person / Skilled person
<b>Supply connection</b> .....	not mains connected: ES1
<b>Supply tolerance</b> .....	None
<b>Supply connection – type</b> .....	other: Not directly connected to mains
<b>Considered current rating of protective device</b> ....	N/A
<b>Equipment mobility</b> .....	Movable / wall/ceiling-mounted
<b>Overvoltage category (OVC)</b> .....	other: Not directly connected to mains
<b>Class of equipment</b> .....	Class III
<b>Special installation location</b> .....	N/A
<b>Pollution degree (PD)</b> .....	PD 2
<b>Manufacturer's specified <math>T_{ma}</math></b> .....	60 °C
<b>IP protection class</b> .....	IPX0
<b>Power systems</b> .....	not AC mains
<b>Altitude during operation (m)</b> .....	2000 m or less
<b>Altitude of test laboratory (m)</b> .....	100 m
<b>Mass of equipment (kg)</b> .....	0,43Kg

<b>Possible test case verdicts:</b>	
- 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)	
<b>Testing .....</b>	
<b>Date of receipt of test item.....</b> : Original: 2024-03-06	
<b>Date (s) of performance of tests .....</b> : Original: 2024-03-06 to 2024-03-07	
<b>General remarks:</b>	
<p>"(See Enclosure #)" refers to additional information appended to the report.          "(See appended table)" refers to a table appended to the report.</p> <p><b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b></p> <p>This document is issued by the Company subject to its General Conditions of Service, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx">http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.</p> <p>Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.</p> <p>Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IECCE 02:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies).....</b> :	1. ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD. No.1399, Binxing Road, Binjiang District, Hangzhou, P.R. China 2. ZHEJIANG DAHUA ZHILIAN CO., LTD. No. 28, Dongqiao Road, Dongzhou Street, Fuyang District, Hangzhou, P.R. China.

**General product information and other remarks:**

Functions	The equipment under test is a Class III IP CAMERA, powered by 12 V --- or PoE, which complies with limited power source or PS2.
Material of enclosure	Plastic & glass & Metal
Model Differences	All the models are identical except for model name and model appearance color which have no impact for safety.
Others	Indoor use only

Model / Type Ref.	
DH-IPC-HFW1639TC-A-IL	IPC-HFW1639TC-A-IL
DH-IPC-HFW1639TCP-A-IL-0280B-S6	DH-IPC-HFW1639TCP-A-IL-0360B-S6
DH-IPC-HFW1839TCP-A-IL-0280B-S6	DH-IPC-HFW1839TCP-A-IL-0360B-S6
IPC-HFW1639TCP-A-IL-0280B-S6	IPC-HFW1639TCP-A-IL-0360B-S6
IPC-HFW1839TCP-A-IL-0280B-S6	IPC-HFW1839TCP-A-IL-0360B-S6
DH-IPC-HFW1839TC-A-IL	IPC-HFW1839TC-A-IL
IPC-HFW1839TC-A-IL-0280B-S6-BLACK	IPC-HFW1639TC-A-IL-0280B-S6-BLACK
DH-IPC-HFW1639TCP-A-IL-0280B-S6-QH	DH-IPC-HFW1639TCP-A-IL-0360B-S6-QH
IPC-HFW1639TCP-A-IL-0280B-S6-QH	IPC-HFW1639TCP-A-IL-0360B-S6-QH
DH-IPC-HFW1839TCP-A-IL-0280B-S6-QH	DH-IPC-HFW1839TCP-A-IL-0360B-S6-QH
IPC-HFW1839TCP-A-IL-0280B-S6-QH	IPC-HFW1839TCP-A-IL-0360B-S6-QH
DH-IPC-HFW1639TCP-A-IL-0280B-S6-QH2	DH-IPC-HFW1639TCP-A-IL-0360B-S6-QH2
IPC-HFW1639TCP-A-IL-0280B-S6-QH2	IPC-HFW1639TCP-A-IL-0360B-S6-QH2
DH-IPC-HFW1839TCP-A-IL-0280B-S6-QH2	DH-IPC-HFW1839TCP-A-IL-0360B-S6-QH2
IPC-HFW1839TCP-A-IL-0280B-S6-QH2	IPC-HFW1839TCP-A-IL-0360B-S6-QH2
<b>IPC-UFW2869TC-A-IL-0280B-S6</b>	--
Na1EFbcd (a=1-16, b=A-Z or 1-9, c=A-Z or 1-9, d=-B or blank)	

<b>OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS</b>				
<b>Clause</b>	<b>Possible Hazard</b>			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: Power input	Ordinary person	N/A	N/A	N/A
ES1: Internal circuit	Ordinary person	N/A	N/A	N/A
ES1: Output	Ordinary person	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 <sup>st</sup> S	2 <sup>nd</sup> S
PS2: Internal circuits	Internal combustible materials	1. No ignition occurred. 2. No parts exceeding 90% of its spontaneous ignition temperature. 3. combustible material outside fire enclosure is of min HB	1. PCB is of min V-1 material 2. All other components were mounted on min V-1 PCB or of min V-2 or small parts of combustible material less than 4g.	N/A
PS1: Output	Output	N/A	N/A	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 corners	Ordinary person	N/A	N/A	N/A
MS1: Equipment mass	Ordinary person	N/A	N/A	N/A
MS3: Wall/ceiling mount	Ordinary person	N/A	N/A	Complied with clause 8.7.2
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 person	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: White/IR LED	Ordinary person	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

**See OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS**

ES     PS     MS     TS     RS

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>GENERAL REQUIREMENTS</b>		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	<p>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of this standard and the relevant component standard.</p> <p>Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of this standard.</p>	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, refrigerants and liquid filled components (LFCs)	(See Clause G.15)	N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness		N/A
4.4.3.1	General		N/A
4.4.3.2	Steady force tests	(See Clause T.3, T.4, T.5)	N/A
4.4.3.3	Drop tests	(See Clause T.7)	N/A
4.4.3.4	Impact tests	(See Clause T.6)	N/A
4.4.3.5	Internal accessible safeguard tests	(See Clause T.3)	N/A
4.4.3.6	Glass impact tests	(See Clause T.9)	N/A
4.4.3.7	Glass fixation test		N/A
	Glass impact test (1J)	(See Clause T.9)	N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	(See Clause T.8)	N/A
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		N/A
4.4.4	Displacement of a safeguard by an insulating liquid		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.4.5	Safety interlocks	(See Annex K)	N/A
<b>4.5</b>	<b>Explosion</b>		N/A
4.5.1	General	(See Annex M for batteries)	N/A
4.5.2	No explosion during normal/abnormal operating conditions	(See Clause B.2, B.3)	N/A
	No harm by explosion during single fault conditions	(See Clause B.4)	N/A
<b>4.6</b>	<b>Fixing of conductors and conductive parts</b>		N/A
	Fix conductors and conductive parts not to defeat a safeguard		N/A
	Compliance is checked by test.....:	(See Clause T.2)	N/A
<b>4.7</b>	<b>Equipment for direct insertion into mains socket-outlets</b>		N/A
4.7.2	Mains plug part complies with relevant standard.....:		N/A
4.7.3	Torque (Nm) .....		N/A
<b>4.8</b>	<b>Equipment containing coin or button cell batteries</b>		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard.....:		N/A
4.8.3	Coin or button cell battery compartment, door or cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test	(See Clause T.8)	N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test	(See Clause T.7)	N/A
4.8.4.5	Impact test	(See Clause T.6)	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
<b>4.9</b>	<b>Likelihood of fire or shock due to entry of conductive object</b>		P
<b>4.10</b>	<b>Component requirements</b>		N/A
4.10.1	Disconnect device	(See Annex L)	N/A
4.10.2	Switches and relays	(See Annex G)	N/A
4.10.3	Mains power supply cords	(See Clause G.7)	N/A
4.10.4	Batteries and their protection circuits	(See Annex M)	N/A
<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		P
<b>5.2</b>	<b>Classification and limits of electrical energy sources</b>		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2	ES1 and ES2 limits	The equipment is powered by ES1 source and no voltage boosting circuit existed inside of EUT.	P
5.2.2.2	Steady-state voltage and current limits .....	The equipment is powered by ES1 source and no voltage boosting circuit existed inside of EUT.	P
5.2.2.3	Capacitance limits .....	(See appended table 5.2)	N/A
5.2.2.4	Single pulse limits.....	(See appended table 5.2)	N/A
5.2.2.5	Limits for repetitive pulses.....	(See appended table 5.2)	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
<b>5.3</b>	<b>Protection against electrical energy sources</b>		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.1 a)	ES2/ES3 circuits that are not ES2/ES3 mains		N/A
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	The equipment is powered by ES1 source and no voltage boosting circuit existed inside of EUT.	P
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		N/A
	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)	N/A
5.3.2.2 b)	Air gap – distance (mm) .....		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
<b>5.4</b>	<b>Insulation materials and requirements</b>		P
5.4.1.2	Properties of insulating material		N/A
5.4.1.3	Compliance		N/A
	Non-hygroscopic materials		N/A
5.4.1.4	Maximum operating temperature for insulating materials .....	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
5.4.1.5	Pollution degrees.....	2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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)	N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat test.....	(See appended table 5.4.1.10.2)	N/A
5.4.1.10.3	Ball pressure test.....	(See appended table 5.4.1.10.3)	N/A
5.4.2	Clearances		N/A
5.4.2.1	General requirements		N/A
	Clearances in circuits connected to AC Mains, Alternative method	(See Annex X)	N/A
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage .....		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	AC mains transient voltages.....		—
5.4.2.3.2.3	DC mains transient voltages .....		—
5.4.2.3.2.4	External circuit transient voltages .....		—
5.4.2.3.2.5	Transient voltage determined by measurement.....		—
5.4.2.3.3	Exceptions of determining required withstand voltage.....		N/A
5.4.2.3.4	Determining clearances using required withstand voltage.....	(See appended table 5.4.2, 5.4.3)	N/A
5.4.2.4	Determining the adequacy of a clearance using an electric strength test .....	(See appended table 5.4.2, 5.4.3)	N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....		—
5.4.2.6	Clearance measurement.....	(See appended table 5.4.2, 5.4.3)	N/A
5.4.3	Creepage distances		N/A
5.4.3.1	General		N/A
5.4.3.3	Material group and CTI .....		—
5.4.3.4	Creepage distances measurement.....	(See appended table 5.4.2, 5.4.3)	N/A
5.4.4	Solid insulation		N/A
5.4.4.1	General requirements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.2	Minimum distance through insulation .....	(See appended table 5.4.4.2)	N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material	(See appended table 5.4.9)	N/A
	Number of layers (pcs) .....		N/A
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 .....	(See appended table 5.4.9)	N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz, $E_P$ , $K_R$ , $d$ , $V_{PW}$ (V).....	(See appended table 5.4.4.9)	N/A
	Alternative by electric strength test, tested voltage (V), $K_R$ .....	(See appended tables 5.4.4.9 and 5.4.9)	N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance ( $M\Omega$ ) .....		N/A
	Electric strength test .....	(See appended table 5.4.9)	N/A
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		N/A
	Relative humidity (%), temperature ( $^{\circ}C$ ), duration (h).....		—
5.4.9	Electric strength test	(See appended table 5.4.9)	N/A
5.4.10	Safeguards against transient voltages from external circuits		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.....	(See appended table 5.4.9)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.3	Verification for insulation breakdown .....		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
	Surge suppressors 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 $\Delta U_{sp}$ .....		—
	Max increase due to ageing $\Delta U_{sa}$ .....		—
5.4.11.3	Test method and compliance .....	(See appended table 5.4.9)	N/A
	Test voltage (V) of additional test .....		—
	Measured current (mA) of additional test.....		N/A
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.....	(See appended table 5.4.9)	N/A
5.4.12.3	Compatibility of an insulating liquid		N/A
	Thermal classification of IEC 60085 .....		—
5.4.12.4	Container for insulating liquid		N/A
<b>5.5</b>	<b>Components as safeguards</b>		N/A
5.5.1	General		N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Capacitor discharge after disconnection of a connector.....	(See appended table 5.5.2.2)	N/A
5.5.3	Transformers	(See Clause G.5.3)	N/A
5.5.4	Optocouplers	(See Clause 5.4 or Clause G.12)	N/A
5.5.5	Relays	(See Clause 5.4)	N/A
5.5.6	Resistors	(See Clause G.10)	N/A
	Application type of resistors .....		—
5.5.7	Surge suppressors	(See Clause G.8)	N/A
	GDT.....		N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable.....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulation resistance (M $\Omega$ ) .....		N/A
	Electric strength test .....	(See appended table 5.4.9)	N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA).....		—
<b>5.6</b>	<b>Protective conductor</b>		N/A
5.6.2	Requirements for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirements for protective earthing conductors		N/A
	Protective earthing conductor size (mm <sup>2</sup> ) .....		—
	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		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm <sup>2</sup> ).....		—
5.6.4.2	Protective current rating (A) .....		—
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm).....		N/A
	Terminal size for connecting protective bonding conductors (mm) .....		N/A
	Relevant IEC standard.....		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test method.....	(See appended table 5.6.6)	N/A
5.6.6.3	Resistance ( $\Omega$ ) or voltage drop.....	(See appended table 5.6.6)	N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm <sup>2</sup> ).....		N/A
	Class II with functional earthing marking .....		N/A
	Appliance inlet cl & cr (mm).....		N/A
<b>5.7</b>	<b>Prospective touch voltage, touch current and protective conductor current</b>		N/A
5.7.2	Measuring devices and networks		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.1	Measurement of touch current		N/A
5.7.2.2	Measurement of voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts.....:	(See appended table 5.7.4)	N/A
5.7.5	Earthed accessible conductive parts.....:	(See appended table 5.7.5)	N/A
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 an earthed external circuit, current (mA).....:		N/A
	b) Equipment connected to an unearthed external circuit, current (mA).....:		N/A
<b>5.8</b>	<b>Backfeed safeguard in battery backed up supplies</b>		N/A
	Mains terminal ES.....:	(See appended table 5.8)	N/A
	Air gap (mm).....:	(See appended table 5.4.2, 5.4.3)	N/A

<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		P
<b>6.2</b>	<b>Classification of power sources and potential ignition sources</b>		P
6.2.2	Power source circuit classifications.....:	Powered by PS2.	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS.....:		N/A
6.2.3.2	Resistive PIS.....:	The internal circuit is considered as resistive PIS without test.	P
<b>6.3</b>	<b>Safeguards against fire under normal operating and abnormal operating conditions</b>		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.....:	(See appended table 5.4.1.4, 9.3, B.1.5 and B.2.6)	P
	Combustible materials not inside a fire enclosure.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>6.4</b>	<b>Safeguards against fire under single fault conditions</b>		P
6.4.1	Safeguard method.....:	Control fire spread used.	—
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.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		P
6.4.5.2	Supplementary safeguards		P
6.4.6	Control of fire spread in PS3 circuits		N/A
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		N/A
6.4.8.2	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm).....:		N/A
	Flammability tests for the top of a fire enclosure	(See Clause S.2)	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		N/A
	Openings dimensions (mm).....:		N/A
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.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.9	Flammability of insulating liquid		N/A
	Auto ignition temperature (°C).....:		N/A
	Flashpoint temperature (°C).....:		N/A
<b>6.5</b>	<b>Internal and external wiring</b>		P
6.5.1	General requirements		P
6.5.2	Requirements for interconnection to building wiring .....:		N/A
6.5.3	Internal wiring size (mm <sup>2</sup> ) for socket-outlets .....		N/A
<b>6.6</b>	<b>Safeguards against fire due to the connection to additional equipment</b>		P

<b>7</b>	<b>INJURY CAUSED BY HAZARDOUS SUBSTANCES</b>		N/A
<b>7.2</b>	<b>Reduction of exposure to hazardous substances</b>		N/A
<b>7.3</b>	<b>Ozone exposure</b>		N/A
<b>7.4</b>	<b>Use of personal safeguards or personal protective equipment (PPE)</b>		N/A
	Personal safeguards and instructions.....:		—
<b>7.5</b>	<b>Use of instructional safeguards and instructions</b>		N/A
	Instructional safeguard (ISO 7010).....:		—

<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		P
<b>8.2</b>	<b>Mechanical energy source classifications</b>		P
<b>8.3</b>	<b>Safeguards against mechanical energy sources</b>		P
<b>8.4</b>	<b>Safeguards against parts with sharp edges and corners</b>		N/A
8.4.1	Requirements	No sharp edges or corners, MS1	N/A
	Instructional Safeguard.....:		N/A
8.4.2	Compliance criteria		N/A
<b>8.5</b>	<b>Safeguards against moving parts</b>		N/A
8.5.1	Requirements		N/A
	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	A manually activated stopping device for moving MS3		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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
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
<b>8.6</b>	<b>Stability of equipment</b>		N/A
8.6.1	Requirements	Equipment mass: MS1	N/A
	Instructional safeguard for MS2 and MS3 television sets.....:		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).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test.....:		N/A
<b>8.7</b>	<b>Equipment mounted to wall, ceiling or other structure</b>		P
8.7.1	Requirements	Mounted > 2m MS3	P
	Mount means type.....:	Mounting means provided with the equipment.	P
8.7.2	Test methods		P
	Test 1, additional downwards force (N).....:	Test 1: additional downwards force of 13N is applied to the gravity centre for 1 min	P
	Horizontal force to a wall or another structure	additional horizontal force of 50N is applied laterally for 1 min.	P
	Test 2, number of attachment points and test force (N).....:		N/A
	Test 3, nominal diameter (mm) and applied torque (Nm).....:		N/A
<b>8.8</b>	<b>Handles strength</b>		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles.....:		—
	Weight applied (kg).....:		—
<b>8.9</b>	<b>Wheels or casters attachment requirements</b>		N/A
8.9.2	Pull test		N/A
<b>8.10</b>	<b>Carts, stands and similar carriers</b>		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	(See Clause T.6)	N/A
	Loading force applied (N) on each supporting surface.....:		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N).....:		N/A
8.10.6	Thermoplastic temperature stability	(See Clause T.8)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>8.11</b>	<b>Mounting means for slide-rail mounted equipment (SRME)</b>		N/A
8.11.1	General		N/A
8.11.2	Requirements		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force applied (N).....:		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 criteria		N/A
<b>8.12</b>	<b>Telescoping or rod antennas</b>		N/A
	No sharp edges or points		N/A
	Button/ball diameter (mm).....:		N/A

<b>9</b>	<b>THERMAL BURN INJURY</b>		P
<b>9.2</b>	<b>Thermal energy source classifications</b>		P
<b>9.3</b>	<b>Touch temperature limits</b>		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
<b>9.4</b>	<b>Safeguards against thermal energy sources</b>		N/A
<b>9.5</b>	<b>Requirements for safeguards</b>		N/A
9.5.1	Equipment safeguard		N/A
9.5.2	Instructional safeguard.....:		N/A
<b>9.6</b>	<b>Requirements for wireless power transmitters</b>		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance criteria .....	(See appended table 9.6)	N/A

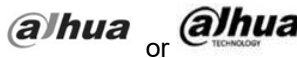

<b>10</b>	<b>RADIATION</b>		P
<b>10.2</b>	<b>Radiation energy source classifications</b>		P
10.2.1	General classification		P
	Lasers .....		—
	Lamps and lamp systems.....:	Exempt group: White/IR LED	—
	Image projectors .....		—
	X-Ray .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Personal music player.....:		—
<b>10.3</b>	<b>Safeguards against laser radiation</b>		N/A
	The standard(s) equipment containing laser(s) comply .....		N/A
<b>10.4</b>	<b>Safeguards against optical radiation from lamps and lamp systems (including LED types)</b>		P
10.4.1	General requirements	Exempt group: White/IR LED	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 equipment safeguards		N/A
	UV radiation exposure .....	(See Annex C)	N/A
10.4.3	Instructional safeguard.....:		N/A
<b>10.5</b>	<b>Safeguards against X-radiation</b>		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons.....:		N/A
10.5.3	Maximum radiation (pA/kg) .....	(See appended tables B.3 & B.4)	N/A
<b>10.6</b>	<b>Safeguards against acoustic energy sources</b>		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
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

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Clause	Requirement + Test	Result - Remark	Verdict
	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>B</b>	<b>NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS</b>		P
<b>B.1</b>	<b>General</b>		P
B.1.5	Temperature measurement conditions	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
B.1.6	Specific output conditions		N/A
<b>B.2</b>	<b>Normal operating conditions</b>		P
B.2.1	General requirements.....:	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment containing an audio amplifiers.....:	No such part.	N/A
B.2.3	Supply voltage and tolerances		N/A
B.2.5	Input test.....:	(See appended table B.2.5)	P
B.2.6.4	Equipment intended for building-in or rack-mounting		N/A
<b>B.3</b>	<b>Simulated abnormal operating conditions</b>		N/A
B.3.1	General	(See appended table B.3)	N/A
B.3.2	Covering of ventilation openings	(See appended table B.3)	N/A
	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	(See appended table B.3)	N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions	(See Clause E.3.2)	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions.....:	(See appended table B.3)	N/A
<b>B.4</b>	<b>Simulated single fault conditions</b>		P
B.4.1	General		P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
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		N/A
B.4.6	Short circuit or disconnection of passive components		P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance criteria 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
<b>C</b>	<b>UV RADIATION</b>		N/A
<b>C.1</b>	<b>Protection of materials in equipment from UV radiation</b>		N/A
C.1.2	Requirements		N/A
C.1.3	Test method and compliance criteria		N/A
<b>C.2</b>	<b>UV light conditioning test</b>		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
<b>D</b>	<b>TEST GENERATORS</b>		N/A
<b>D.1</b>	<b>Impulse test generators</b>		N/A
<b>D.2</b>	<b>Antenna interface test generator</b>		N/A
<b>D.3</b>	<b>Electronic pulse generator</b>		N/A
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT INTENDED TO AMPLIFY AUDIO SIGNALS</b>		N/A
<b>E.1</b>	<b>Electrical energy source classification for audio signals</b>		N/A
	Maximum non-clipped output power (W) .....		—
	Rated load impedance ( $\Omega$ ) .....		—
	Open-circuit output voltage (V).....:		—
	Instructional safeguard.....:		—
<b>E.2</b>	<b>Audio signals used during test</b>		N/A
E.2.1	Pink noise test signal		N/A
E.2.2	Sine-wave signal		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>E.3</b>	<b>Operating conditions of equipment containing an audio amplifier</b>		N/A
E.3.1	Normal operating conditions	(See appended table B.2.5, E.3.1)	N/A
E.3.2	Abnormal operating conditions	(See appended table B.3, B.4)	N/A
E.3.3	Audio equipment temperature measurement conditions.....:		N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		P
<b>F.1</b>	<b>General</b>		P
	Language .....	English	—
<b>F.2</b>	<b>Letter symbols and graphical symbols</b>		P
F.2.1	Letter symbols according to IEC 60027-1		P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
<b>F.3</b>	<b>Equipment markings</b>		P
F.3.1	Equipment marking locations	Exterior of equipment.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....	 or 	P
F.3.2.2	Model identification .....	See model list	P
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		P
F.3.3.3	Nature of the supply voltage.....:	DC	P
F.3.3.4	Rated voltage .....	12 V d.c. or PoE(802.3af)	P
F.3.3.5	Rated frequency .....	DC	N/A
F.3.3.6	Rated current or rated power .....	0,5 A	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Markings on terminals and operating devices		N/A
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.....:		N/A
	Instructional safeguards for neutral fuse.....:		N/A
F.3.5.4	Replacement battery identification marking .....	(See Clause M.10)	N/A
F.3.5.5	Neutral conductor terminal		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		N/A
F.3.6.1	Class I equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal .....		N/A
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 .....		N/A
F.3.8	External power supply unit output marking .....		N/A
F.3.9	Durability, legibility and permanence of markings		P
F.3.10	Test for permanence of markings	The label was subject to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. with cloth soaked with petroleum spirit. 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
<b>F.4</b>	<b>Instructions</b>		P
	– Information prior to installation and initial use		P
	– Equipment for use in locations where children not likely to be present		N/A
	– Instructions for installation and interconnection		N/A
	– Equipment intended for use only in restricted access area		N/A
	– Equipment intended to be fastened in place		N/A
	– Instructions for audio equipment terminals		N/A
	– Protective earthing used as a safeguard		N/A
	– Protective conductor current exceeding ES2 limits		N/A
	– Graphic symbols used on equipment		P
	– Permanently connected equipment not provided with all-pole mains switch		N/A
	– Replaceable components or modules providing safeguard function		N/A
	– Equipment containing insulating liquid		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– Installation instructions for outdoor equipment		N/A
<b>F.5</b>	Instructional safeguards		P
<b>G</b>	<b>COMPONENTS</b>		P
<b>G.1</b>	<b>Switches</b>		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 criteria		N/A
<b>G.2</b>	<b>Relays</b>		N/A
G.2.1	Requirements and compliance criteria		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 criteria		N/A
<b>G.3</b>	<b>Protective devices</b>		N/A
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730-1 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 criteria		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 criteria		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions .....	(See appended table B.3, B.4)	N/A
<b>G.4</b>	<b>Connectors</b>		P
G.4.1	Spacings		N/A
G.4.2	Mains connectors configuration .....		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		P
<b>G.5</b>	<b>Wound components</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.1	Wire insulation in wound components		N/A
G.5.1.2	Protection against mechanical stress		N/A
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	Compliance criteria		N/A
G.5.3	Transformers		N/A
G.5.3.1	General		N/A
	Compliance method .....		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings.....		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
	Position.....		N/A
	Method of protection .....		N/A
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
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.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test .....	(See appended table 5.4.9)	N/A
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test .....	(See appended table 5.4.9)	N/A
G.5.4.5.3	Alternative method		N/A
	Electric strength test .....	(See appended table 5.4.9)	N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature (°C).....	See annex B.4	N/A
	Electric strength test .....	(See appended table 5.4.9)	N/A
G.5.4.6.3	Alternative method		N/A
	Electric strength test .....	(See appended table 5.4.9)	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 (V).....		—
<b>G.6</b>	<b>Wire Insulation</b>		N/A
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation		N/A
<b>G.7</b>	<b>Mains power supply cords and interconnection cables</b>		N/A
G.7.1	General requirements		N/A
	Type .....		—
G.7.2	Cross sectional area (mm <sup>2</sup> or AWG).....		N/A
G.7.3	Cord anchorages and strain relief		N/A
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 criteria		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
<b>G.8</b>	<b>Varistors</b>		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		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
<b>G.9</b>	<b>Integrated circuit (IC) current limiters</b>		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 criteria		N/A
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
	Changes of resistance (%).....:		N/A
	Measured current with the lowest resistance value :		N/A
G.10.4	Voltage surge test		N/A
	Changes of resistance (%).....:		N/A
G.10.5	Impulse test		N/A
	Changes of resistance (%).....:		N/A
G.10.6	Overload test		N/A
	Changes of resistance (%).....:		N/A
<b>G.11</b>	<b>Capacitors and RC units</b>		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.11.3	Rules for selecting capacitors		N/A
<b>G.12</b>	<b>Optocouplers</b>		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics		N/A
	Type test voltage $V_{ini,a}$ .....		—
	Routine test voltage, $V_{ini,b}$ .....		—
<b>G.13</b>	<b>Printed boards</b>		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 criteria		N/A
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements .....	(See Clause G.13)	N/A
<b>G.15</b>	<b>Pressurized liquid filled components or LFC assemblies</b>		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance criteria for self-contained LFC		N/A
G.15.2.1	Hydrostatic pressure test, applied test pressure .....		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test, the change of tensile strength (%).....		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test, test temperature (°C).....		N/A
G.15.2.6	Force test		N/A
G.15.2.7	Compliance criteria		N/A
G.15.3	Test methods and compliance for a modular LFC		N/A
G.15.3.2	Hydrostatic pressure test, applied test pressure .....		N/A
G.15.3.3	Creep resistance test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.3.4	Tubing and fittings compatibility test, the change of tensile strength (%).....:		N/A
G.15.3.5	Thermal cycle test, test temperature (°C).....:		N/A
G.15.3.6	Force test		N/A
G.15.3.7	Compliance criteria		N/A
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		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.....:	(See appended table 5.5.2.2)	N/A
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		N/A
<b>H.1</b>	<b>General</b>		N/A
<b>H.2</b>	<b>Method A</b>		N/A
<b>H.3</b>	<b>Method B</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 condition 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
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		N/A
<b>J.1</b>	<b>General</b>		N/A
	Winding wire insulation.....:		—
	Solid round winding wire, diameter (mm).....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm <sup>2</sup> ) .....		N/A
<b>J.2/J.3</b>	Tests and Manufacturing	(See separate test report)	—
<b>K</b>	<b>SAFETY INTERLOCKS</b>		N/A
<b>K.1</b>	<b>General requirements</b>		N/A
	Instructional safeguard.....		N/A
<b>K.2</b>	<b>Components of safety interlock safeguard mechanism</b>		N/A
<b>K.3</b>	<b>Inadvertent change of operating mode</b>		N/A
<b>K.4</b>	<b>Interlock safeguard override</b>		N/A
<b>K.5</b>	<b>Fail-safe</b>		N/A
K.5.1	Under single fault condition		N/A
<b>K.6</b>	<b>Mechanically operated safety interlocks</b>		N/A
K.6.1	Endurance requirement		N/A
<b>K.7</b>	<b>Interlock circuit isolation</b>		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.....	(See appended table 5.4.9)	N/A
K.7.2	Overload test, Current (A) .....		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test	(See appended table 5.4.9)	N/A
<b>L</b>	<b>DISCONNECT DEVICES</b>		N/A
<b>L.1</b>	<b>General requirements</b>		N/A
<b>L.2</b>	<b>Permanently connected equipment</b>		N/A
	Instructions for permanently connected equipment		N/A
<b>L.3</b>	<b>Parts that remain energized</b>		N/A
<b>L.4</b>	<b>Single-phase equipment</b>		N/A
	Instructions for single pole disconnect device		N/A
<b>L.5</b>	<b>Three-phase equipment</b>		N/A
<b>L.6</b>	<b>Switches as disconnect devices</b>		N/A
<b>L.7</b>	<b>Plugs as disconnect devices</b>		N/A
	Instructions for pluggable equipment		—
<b>L.8</b>	<b>Multiple power sources</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructional safeguard.....:		N/A
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		N/A
<b>M.1</b>	<b>General requirements</b>		N/A
<b>M.2</b>	<b>Safety of batteries and their cells</b>		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards.....:		N/A
<b>M.3</b>	<b>Protection circuits for batteries provided within the equipment</b>		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 criteria	(See appended table M.3)	N/A
<b>M.4</b>	<b>Additional safeguards for equipment containing a secondary lithium battery</b>		N/A
M.4.1	General		N/A
	IEC 62133-2 batteries used for sub-system power powering application .....		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Test		N/A
M.4.2.2.1	General		N/A
M.4.2.2.2	Abnormal operating conditions		N/A
M.4.2.2.3	Single fault conditions		N/A
M.4.2.3	Compliance criteria .....	(See appended table M.4.2)	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 criteria		N/A
<b>M.5</b>	<b>Risk of burn due to short-circuit during carrying</b>		N/A
M.5.1	Requirement		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.5.2	Test method and compliance criteria		N/A
<b>M.6</b>	<b>Safeguards against short-circuits</b>		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance criteria		N/A
<b>M.7</b>	<b>Risk of explosion from lead acid and NiCd batteries</b>		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 criteria		N/A
	Minimum air flow rate, Q (m <sup>3</sup> /h).....:		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
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
<b>M.8</b>	<b>Protection against internal ignition from external spark sources of rechargeable batteries with aqueous electrolyte</b>		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 <sup>3</sup> /s).....:		—
M.8.2.3	Correction factors.....:		—
M.8.2.4	Calculation of distance $d$ (mm).....:		—
<b>M.9</b>	<b>Preventing electrolyte spillage</b>		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
<b>M.10</b>	<b>Instructions to prevent reasonably foreseeable misuse</b>		N/A
	Instructional safeguard.....:		N/A
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		N/A
	Material(s) used.....:		—
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		N/A
	Value of X (mm).....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
<b>P</b>	<b>SAFEGUARDS AGAINST CONDUCTIVE OBJECTS</b>		P
<b>P.1</b>	<b>General</b>		P
<b>P.2</b>	<b>Safeguards against entry or consequences of entry of a foreign object</b>		P
P.2.1	General		P
	Location and Dimensions (mm) .....	No openings	—
P.2.2	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.4 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts .....		N/A
P.2.3	Consequence of entry test .....		N/A
<b>P.3</b>	<b>Safeguards against spillage of internal liquids</b>		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 criteria		N/A
<b>P.4</b>	<b>Metallized coatings and adhesives securing parts</b>		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T <sub>c</sub> (°C).....		—
	Duration (weeks).....		—
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		P
<b>Q.1</b>	<b>Limited power sources</b>		P
Q.1.1	Requirements		P
	a) Inherently limited output		P
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	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 criteria .....	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
<b>Q.2</b>	<b>Test for external circuits – paired conductor cable</b>		N/A
	Maximum output current (A) .....		N/A
	Current limiting method .....		—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		N/A
<b>R.1</b>	<b>General</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>R.2</b>	<b>Test setup</b>		N/A
	Overcurrent protective device for test.....:		—
<b>R.3</b>	<b>Test method</b>		N/A
	Cord/cable used for test.....:		—
<b>R.4</b>	<b>Compliance criteria</b>		N/A
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
<b>S.1</b>	<b>Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W</b>		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
<b>S.2</b>	<b>Flammability test for fire enclosure and fire barrier integrity</b>		N/A
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	- Material did not show any additional holes for combustible materials		N/A
	- Cheesecloth did not ignite for top openings		N/A
<b>S.3</b>	<b>Flammability test for the bottom of a fire enclosure</b>		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance criteria		N/A
	Mounting of samples.....:		—
	Wall thickness (mm).....:		—
	Cheesecloth did not ignite		N/A
<b>S.4</b>	<b>Flammability classification of materials</b>		N/A
<b>S.5</b>	<b>Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W</b>		N/A
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
<b>S.6</b>	<b>Grille covering material, cloth, and reticulated foam</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Samples, material .....		—
	Measured distance from the centre of the fuel tablet (mm).....		N/A
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		N/A
<b>T.1</b>	<b>General</b>		N/A
<b>T.2</b>	<b>Steady force test, 10 N .....</b>	(See appended table T.2, T.3, T.4, T.5)	N/A
<b>T.3</b>	<b>Steady force test, 30 N .....</b>	(See appended table T.2, T.3, T.4, T.5)	N/A
<b>T.4</b>	<b>Steady force test, 100 N .....</b>	(See appended table T.2, T.3, T.4, T.5)	N/A
<b>T.5</b>	<b>Steady force test, 250 N .....</b>	(See appended table T.2, T.3, T.4, T.5)	N/A
<b>T.6</b>	<b>Enclosure impact test</b>	(See appended table T.6, T.9)	N/A
	Fall test		N/A
	Swing test		N/A
<b>T.7</b>	<b>Drop test .....</b>	(See appended table T.7)	N/A
<b>T.8</b>	<b>Stress relief test.....</b>	(See appended table T.8)	N/A
<b>T.9</b>	<b>Glass Impact Test.....</b>	(See appended table T.6, T.9)	N/A
<b>T.10</b>	<b>Glass fragmentation test</b>		N/A
	Number of particles counted .....		N/A
<b>T.11</b>	<b>Test for telescoping or rod antennas</b>		N/A
	Torque value (Nm) .....		N/A
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		N/A
<b>U.1</b>	<b>General</b>		N/A
	Instructional safeguard.....		N/A
<b>U.2</b>	<b>Test method and compliance for non-intrinsically protected CRTs</b>		N/A
<b>U.3</b>	<b>Protective screen</b>		N/A
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS</b>		P
<b>V.1</b>	<b>Accessible parts of equipment</b>		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		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>V.2</b>	<b>Accessible part criterion</b>		P
<b>X</b>	<b>ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)</b>		N/A
	Clearance .....	(See appended table X)	N/A
<b>Y</b>	<b>CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES</b>		N/A
<b>Y.1</b>	<b>General</b>		N/A
<b>Y.2</b>	<b>Resistance to UV radiation</b>		N/A
<b>Y.3</b>	<b>Resistance to corrosion</b>		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 criteria		N/A
<b>Y.4</b>	<b>Gaskets</b>		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests, changes of tensile strength and elongation.....		N/A
	Alternative test methods.....		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance, change of swell / shrink (%).....		N/A
Y.4.6	Securing means	(See Clause P.4)	N/A
<b>Y.5</b>	<b>Protection of equipment within an outdoor enclosure</b>		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
	Relevant tests of IEC 60529 or Y.5.5.2 or Y.5.5.3..:		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
<b>Y.6</b>	<b>Mechanical strength of enclosures</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.6.1	General		N/A
Y.6.2	Impact test.....:	(See appended table T.6, T.9)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5.2	TABLE: Classification of electrical energy sources						N/A
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type <sup>1)</sup>	Additional Info <sup>2)</sup>	
--	--	--	--	--	--	--	--
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.							

5.4.1.8	TABLE: Working voltage measurement				N/A
Location	Peak voltage (V)	RMS voltage (V)	Frequency (Hz)	Comments	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information:					

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				N/A
Allowed impression diameter (mm) .....				≤ 2 mm	—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
--	--	--	--	--	
--	--	--	--	--	
Supplementary information:					

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
<b>5.4.2, 5.4.3</b>	<b>TABLE: Minimum Clearances/Creepage distance</b>							N/A
Clearance (cl) and creepage distance (cr) at/of/between:	$U_p$ (V)	$U_{rms}$ (V)	Freq <sup>1)</sup> (Hz)	Required cl (mm)	cl (mm)	E.S. <sup>2)</sup> (V)	Required cr (mm)	cr (mm)
--	--	--	--	--	--	--	--	--
Supplementary information:								
1) Only for frequency above 30 kHz 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								

<b>5.4.4.2</b>	<b>TABLE: Minimum distance through insulation</b>				N/A
Distance through insulation (DTI) at/of	Peak voltage (V)		Insulation	Required DTI (mm)	Measured DTI (mm)
--	--		--	--	--
Supplementary information:					

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

<b>5.4.9</b>	<b>TABLE: Electric strength tests</b>			N/A
Test voltage applied between:		Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No
--		--	--	--
--		--	--	--
Supplementary information:				

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
<b>5.5.2.2</b>	<b>TABLE: Stored discharge on capacitors</b>				N/A
Location	Supply voltage (V)	Operating and fault condition <sup>1)</sup>	Switch position	Measured voltage (Vpk)	ES Class
--	--	--	--	--	--
Supplementary information:					
X-capacitors installed for testing:					
[ ] bleeding resistor rating:					
[ ] ICX:					
1) Normal operating condition (e.g., normal operation), SC= short circuit, OC= open circuit					

<b>5.6.6</b>	<b>TABLE: Resistance of protective conductors and terminations</b>				N/A
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance ( $\Omega$ )	
--	--	--	--	--	
Supplementary information:					

<b>5.7.4</b>	<b>TABLE: Unearthed accessible parts</b>					N/A
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage ( $V_{rms}$ or $V_{pk}$ )	Current ( $A_{rms}$ or $A_{pk}$ )	Freq. (Hz)	
--	--	--	--	--	--	--
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

<b>5.7.5</b>	<b>TABLE: Earthed accessible conductive part</b>				N/A
Supply voltage (V) .....					—
Phase(s) .....	[ ] Single Phase; [ ] Three Phase: [ ] Delta [ ] Wye				
Power Distribution System .....	[ ] TN [ ] TT [ ] IT				
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment		
--	--	--	--		
Supplementary Information:					

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
<b>5.8</b>	<b>TABLE: Backfeed safeguard in battery backed up supplies</b>					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
--	--	--	--	--	--	--
Supplementary information:						
Abbreviation: SC= short circuit, OC= open circuit						

<b>6.2.2</b>	<b>TABLE: Power source circuit classifications</b>					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power <sup>1)</sup> (W)	Time (S)	PS class
All internal circuits	--	--	--	--	--	PS2 declared by manufacturer
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						

<b>6.2.3.1</b>	<b>TABLE: Determination of Arcing PIS</b>				N/A
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No	
--	--	--	--	--	
Supplementary information:					

<b>6.2.3.2</b>	<b>TABLE: Determination of resistive PIS</b>			P
Location	Operating and fault condition	Dissipate power (W)		Resistive PIS? Yes / No
All internal circuits	--	--		Yes
Supplementary information:				
Abbreviation: SC= short circuit; OC= open circuit				
The internal circuits are considered as resistive PIS without test.				

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Clause	Requirement + Test	Result - Remark		Verdict
<b>8.5.5</b>	<b>TABLE: High pressure lamp</b>			N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No
--	--	--	--	--
Supplementary information:				

IEC 62368-1									
Clause	Requirement + Test				Result - Remark			Verdict	
<b>9.6</b>	<b>TABLE: Temperature measurements for wireless power transmitters</b>							N/A	
Supply voltage (V)..... :				--			—		
Max. transmitting power (W)..... :				--			—		
Part A <sup>1)</sup>									
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)	
Steel disc	--	--	--	--	--	--	--	--	
Aluminium ring	--	--	--	--	--	--	--	--	
Aluminium foil	--	--	--	--	--	--	--	--	
Measurement temperature T of part/at:	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		
	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	
--	--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	--	
Part B <sup>2)</sup>									
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)	
Steel disc	--	--	--	--	--	--	--	--	
Aluminium ring	--	--	--	--	--	--	--	--	
Aluminium foil	--	--	--	--	--	--	--	--	
Measurement temperature T of part/at:	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		
	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	T (°C)	Ambient (°C)	
--	--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	--	
Supplementary information:									
1) The test is performed by powering up the transmitter and then placing each of the foreign objects specified in 9.6.2 in direct contact with the transmitter.									
2) The test is performed by first placing each of the foreign objects specified in 9.6.2 in direct contact with the transmitter and then powering up transmitter.									

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Clause	Requirement + Test					Result - Remark	Verdict
<b>5.4.1.4, 9.3, B.1.5, B.2.6</b>	<b>TABLE: Temperature measurements</b>						P
Supply voltage (V).....:	12 V d.c.	PoE 37 V d.c.	PoE 57 V d.c.	--	--	---	
Ambient temperature during test $T_{amb}$ (°C) ....:	22,1 -25,0	23,2 -25,0	23,4 -25,0	--	--	---	
Maximum measured temperature $T$ of part/at:	$T$ (°C)					Allowed $T_{max}$ (°C)	
PCB near T1 for 52_785	76,1	90,7	95,7	--	--	105	
PCB near HD1/HD2 for 52_785	80,9	100,7	93,5	--	--	105	
PCB near U2 for 52_785	78,7	97,6	101,7	--	--	105	
PCB near D3 for 103_040	91,6	97,1	88,7	--	--	105	
Sensor board	86,6	93,0	91,4	--	--	105	
PCB near U1 for 103_040	91,9	99,1	88,1	--	--	105	
LED board	95,4	98,2	91,0	--	--	105	
Glass near LED*	34,1	36,2	44,9	--	--	85	
Plastic near LED*	36,8	39,1	46,2	--	--	94	
Metal near LED*	35,9	38,2	42,1	--	--	70	
Temperature $T$ of winding:	$t_1$ (°C)	$R_1$ ( $\Omega$ )	$t_2$ (°C)	$R_2$ ( $\Omega$ )	$T$ (°C)	Allowed $T_{max}$ (°C)	Insulation class
--	--	--	--	--	--	--	--
Supplementary information:							
Supplementary information: Note 1: $T_{ma}$ should be considered as directed by applicable requirement. Note 2: $T_{ma}$ is not included in assessment of Touch Temperatures (Clause 9). * The test results of touchable surface temperature were considered base on ambient temperature 25°C. Other temperature point list in this table has shifted to $T_{ma}$ 60°C.							

<b>B.2.5</b>	<b>TABLE: Input test</b>								P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	

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Clause	Requirement + Test				Result - Remark			Verdict
12 V d.c.	--	0,290	0,5	3,480	--	--	--	Max. normal load with IR LED on
PoE 36 V d.c.	--	0,120	0,35	4,320	--	--	--	
PoE 57 V d.c.	--	0,077	0,35	4,389	--	--	--	
12 V d.c.	--	0,308	0,5	3,696	--	--	--	Max. normal load with White LED on
PoE 36 V d.c.	--	0,130	0,35	4,680	--	--	--	
PoE 57 V d.c.	--	0,081	0,35	4,617	--	--	--	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured.								

B.2.5, E.3.1		TABLE: Input test for equipment containing audio amplifiers										N/A	
Operation Condition:	Signal type		Frequency (Hz)		Output loads ( $\Omega$ )		Load setup						
A1	Sine wave input		1000		--		All channels driven, (maximum) non-clipped output power						
A2	Peak response frequency		--		--		All channels driven, (maximum) non-clipped output power						
B1	Sine wave input		1000		--		All channels driven, 1/8 non-clipped output power						
B2	Peak response frequency		--		--		All channels driven, 1/8 non-clipped output power						
C	Band-limited pink noise signal		N/A		--		All channels driven, 1/8 non-clipped output power						
D	--		--		--		--						
Input										Amplifier Output			
Cond.	U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Ch.	U (V)	P (W)	Load ( $\Omega$ )	
--	--	--	--	--	--	--	--	--	--	--	--	--	
Supplementary information:													

B.3, B.4		TABLE: Abnormal operating and fault condition tests										P
----------	--	---	--	--	--	--	--	--	--	--	--	---

IEC 62368-1						
Clause	Requirement + Test				Result - Remark	Verdict
Ambient temperature $T_{amb}$ (°C) .....					25°C if not specified	—
Power source for EUT: Manufacturer, model/type, outputrating....					--	—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
D6	Sc	12 Vd.c.	10 min	--	--	Normal operation, no damage, no hazard.
D7	Sc	12 Vd.c.	10 min	--	--	Unit shut down, no damage, no hazard.
Supplementary information:						
Sc=Short circuit.						

M.3	TABLE: Protection circuits for batteries provided within the equipment						N/A
Is it possible to install the battery in a reverse polarity position? .....					--	—	
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
-------	---	--	--	--	--	--	-----

IEC 62368-1					
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 <sub>oc</sub> (V)	Time (s)	I <sub>sc</sub> (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
RJ45 to GND	Normal	0	--	0	8	0	100
Supplementary Information:							

T.2, T.3, T.4, T.5	TABLE: Steady force test						N/A
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
--	--	--	--	--	--	--	
Supplementary information:							

T.6, T.9	TABLE: Impact test				N/A
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
--	--	--	--	--	
Supplementary information:					

T.7	TABLE: Drop test	N/A

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

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
<b>4.1.2</b>	<b>TABLE: List of critical components</b>				<b>P</b>
<b>Object / part No.</b>	<b>Manufacturer/ trademark</b>	<b>Type / model</b>	<b>Technical data</b>	<b>Standard</b>	<b>Mark(s) of conformity<sup>1</sup></b>
Metal enclosure	Interchangeable	Interchangeable	Min. thickness: 1,8mm	IEC 62368-1: 2023 and EN IEC 62368-1:2024+ A11:2024	Test with appliance
Small size glass	Interchangeable	Interchangeable	<7inch, Min. thickness: 1,5mm	IEC 62368-1: 2023 and EN IEC 62368-1:2024+ A11:2024	Test with appliance
Plastic enclosure	TEIJIN POLYCARBONATE SINGAPORE PTE LTD	L-1250U(#)(f1),L-1250V(#)(f1), L-1250Z(#)(f1)	V-2, min. thickness 1,0mm,80°C	UL 746 UL 94	UL E195100
-Alt.	KINGFA SCI & TECH CO LTD	PP-112(c)(r2), PP-116(c)(r2), PP-201(c)(r2), AP-203(%)(r2)	HB, min. thickness 1,5mm, 65°C	UL 746 UL 94	UL E171666
PCB	SUNTAK MULTILAYER PCB CO LTD	STM-1	V-0,130°C	UL 796 UL 94	UL E207844
Alternative	SUNTAK MULTILAYER PCB CO LTD	STM-5	V-0,130°C	UL 796 UL 94	UL E207844
Alternative	KIN YIP TECHNOLOGY ELECTRONICS (HUIZHOU) CO LTD	DS-206F	V-0,130°C	UL 796 UL 94	UL E303478
Alternative	GUANGDONG KINGSHINE ELECTRONIC TECHNOLOGY CO LTD	ML2A	V-0,130°C	UL 796 UL 94	UL E358874
Alternative	Interchangeable	Interchangeable	V-0 or better, 105°C	UL 796 UL 94	UL

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
White/IR LED	Shenzhen Xusheng Semiconductor Co., Ltd	3535W, HL-C3535F77W1E A(Ra1)-FC, 3535Y3YCZ-P23	IF: 350mA, VF: 2,9-3,1V, Exempt group	IEC 62471:2014 EN62471: 2008	Shenzhen Southern LCS Compliance Testing Laboratory Ltd with CNAS logo and CMA logo Report No.: LCS2107220 10BS
Wires	Interchangeable	Interchangeable	VW-1	UL 758 or UL 2556	UL
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 2) Description line content is optional. Main line description needs to clearly detail the component used for testing					

--- End of report---

Details of: General view



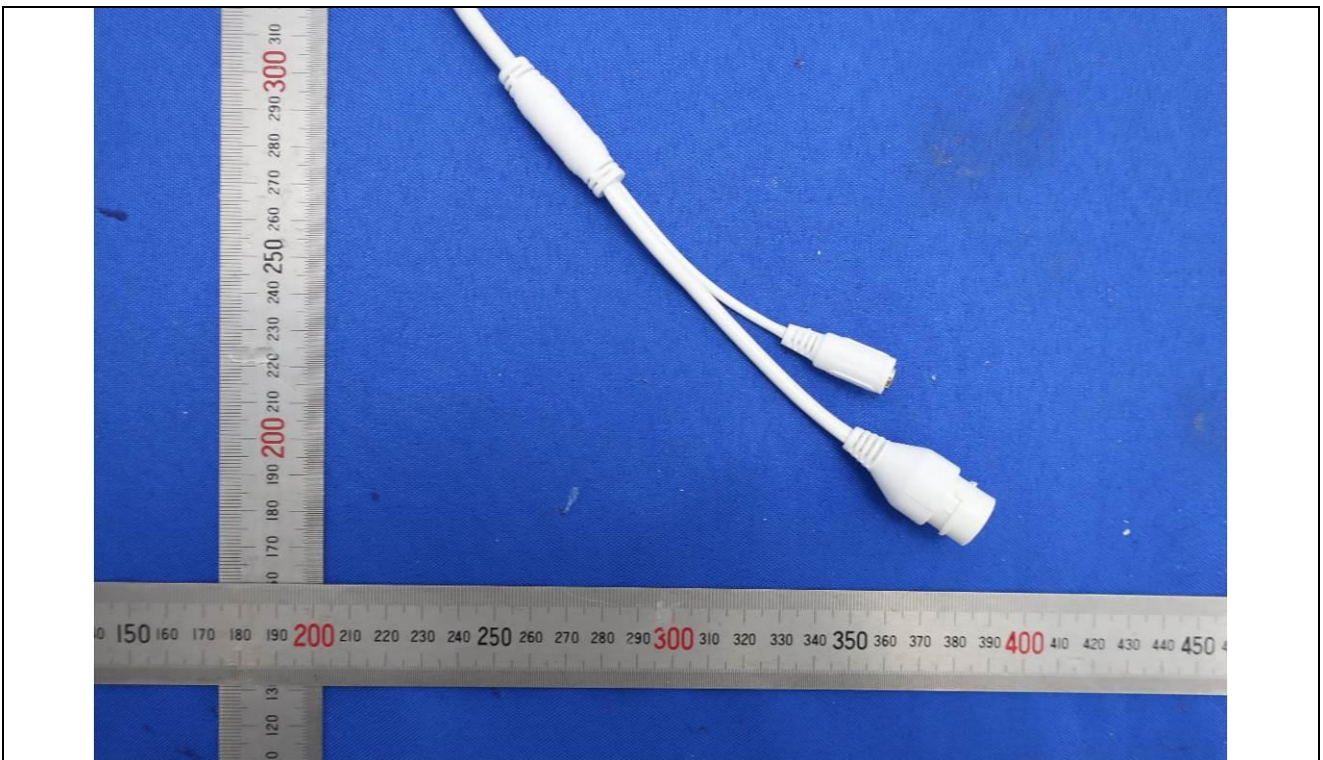
Details of: General view



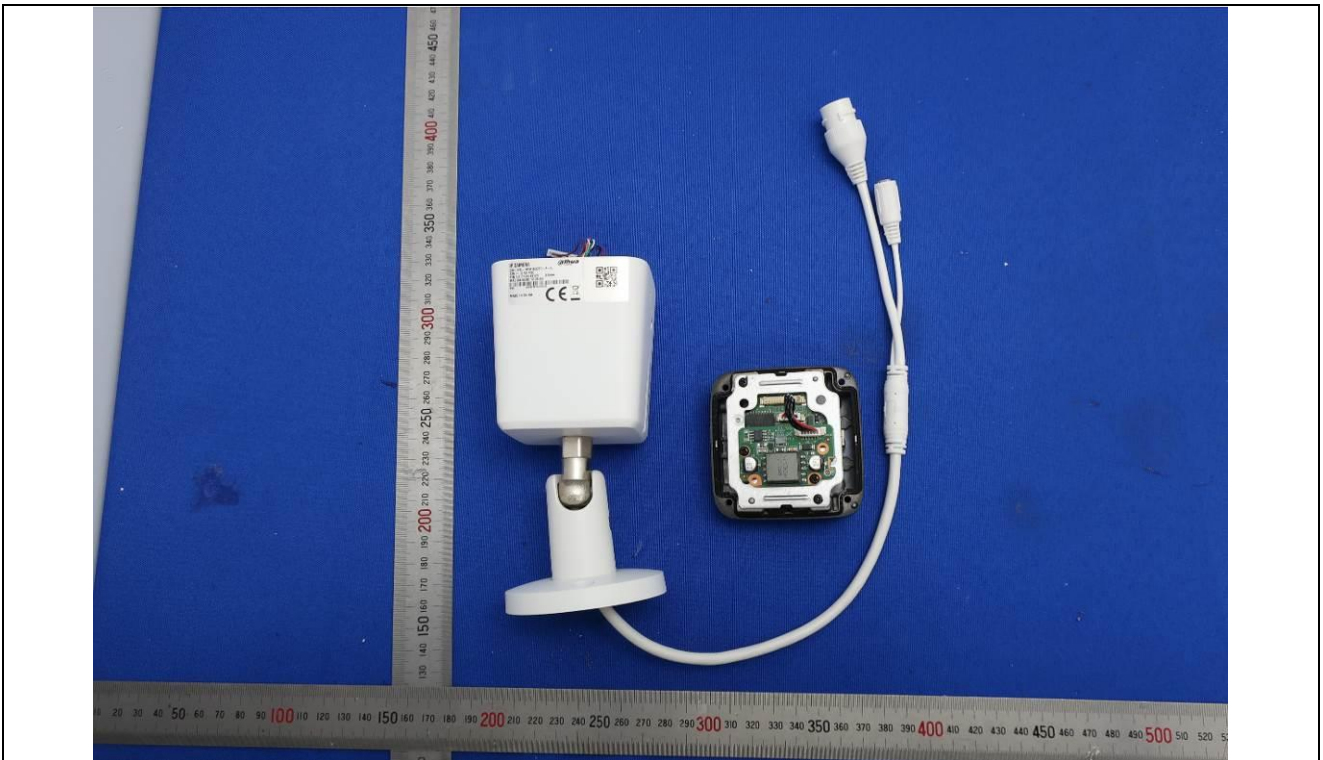
Details of: General view



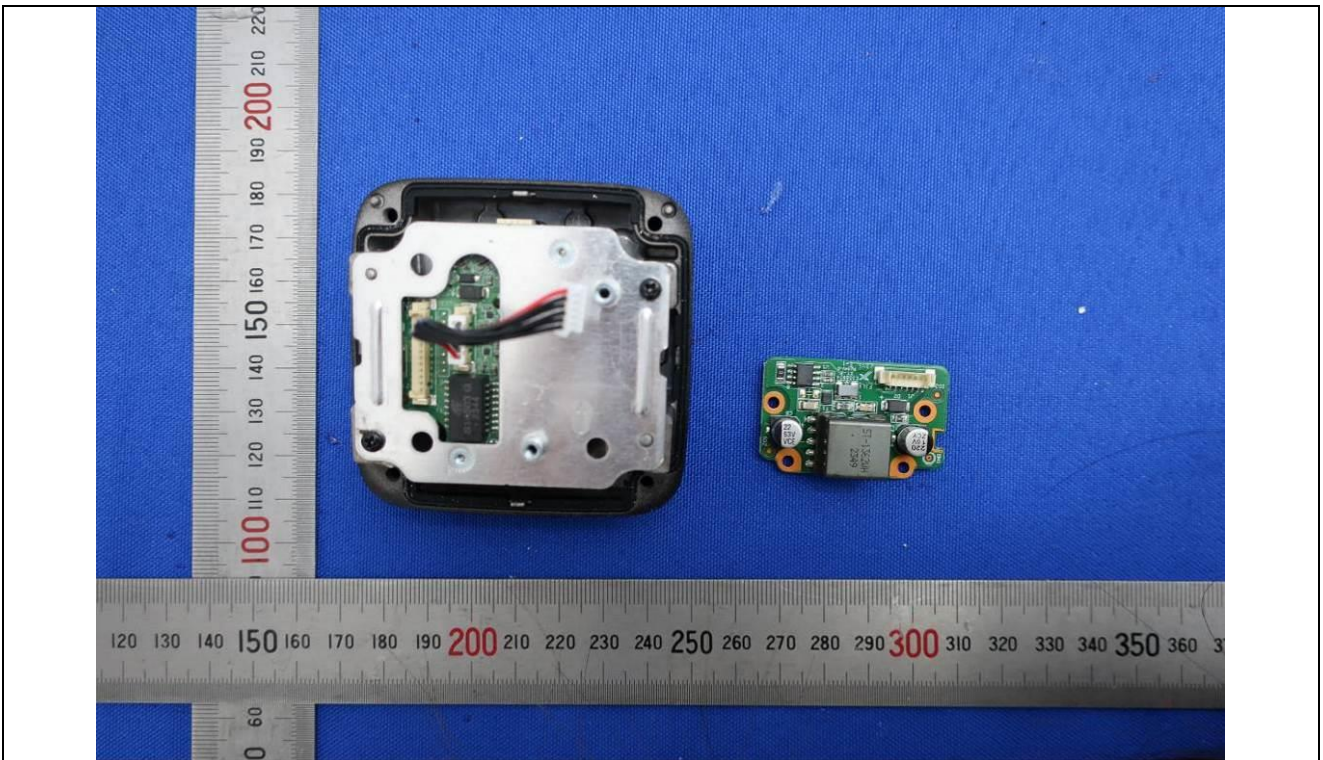
Details of: Terminals view



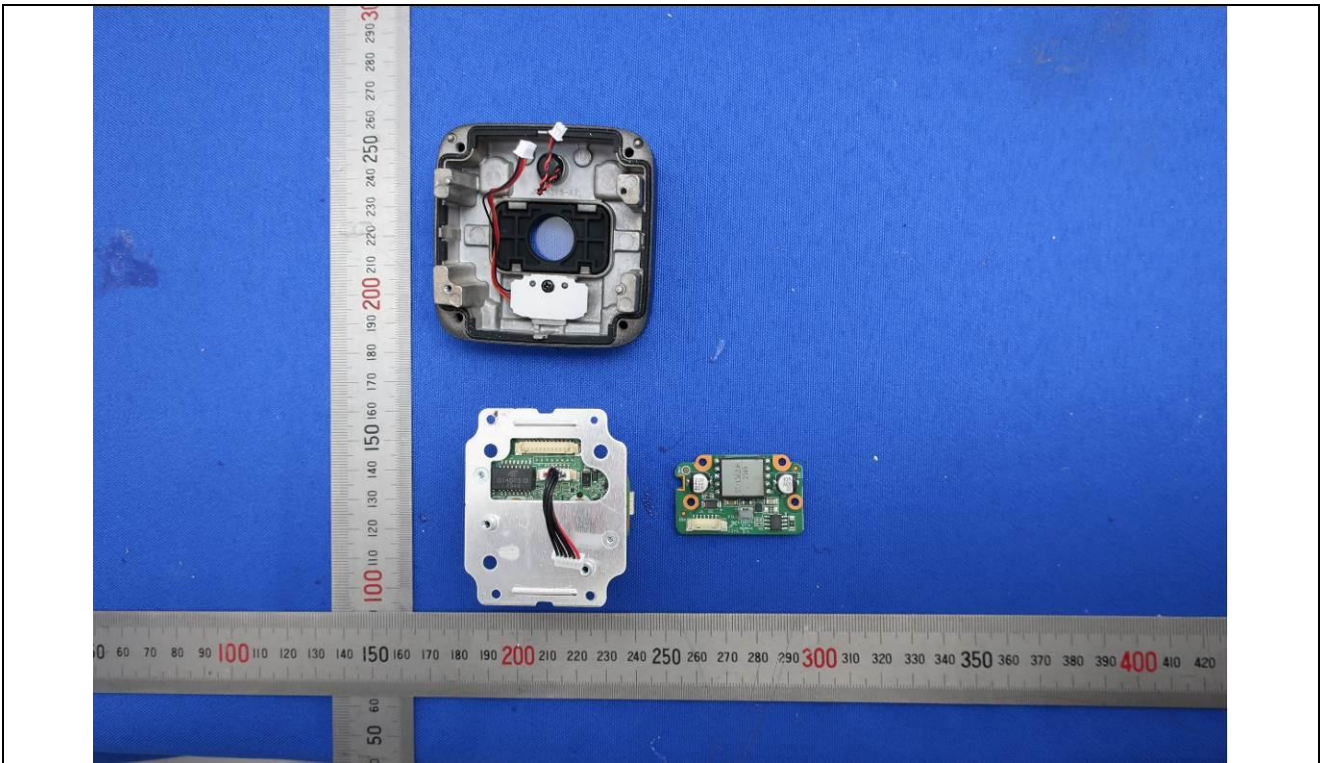
Details of: Internal view



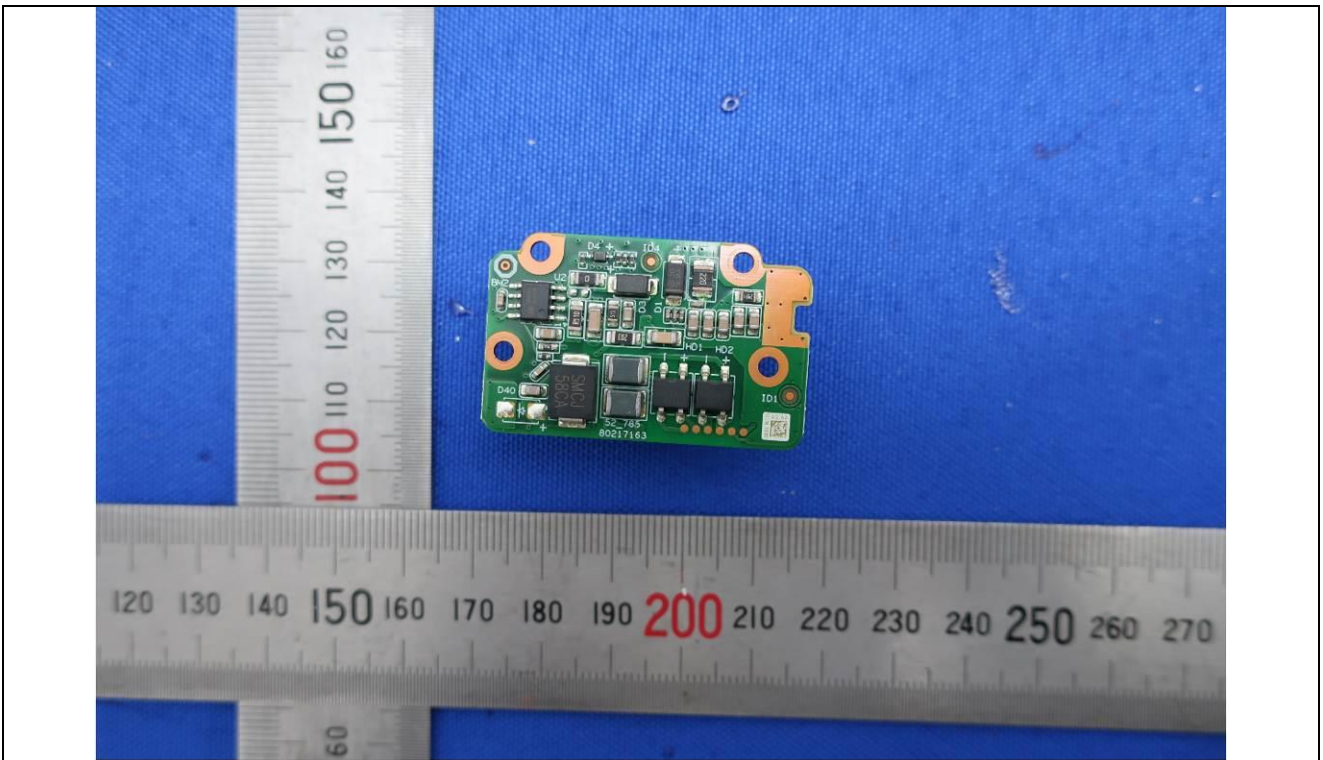
Details of: Internal view



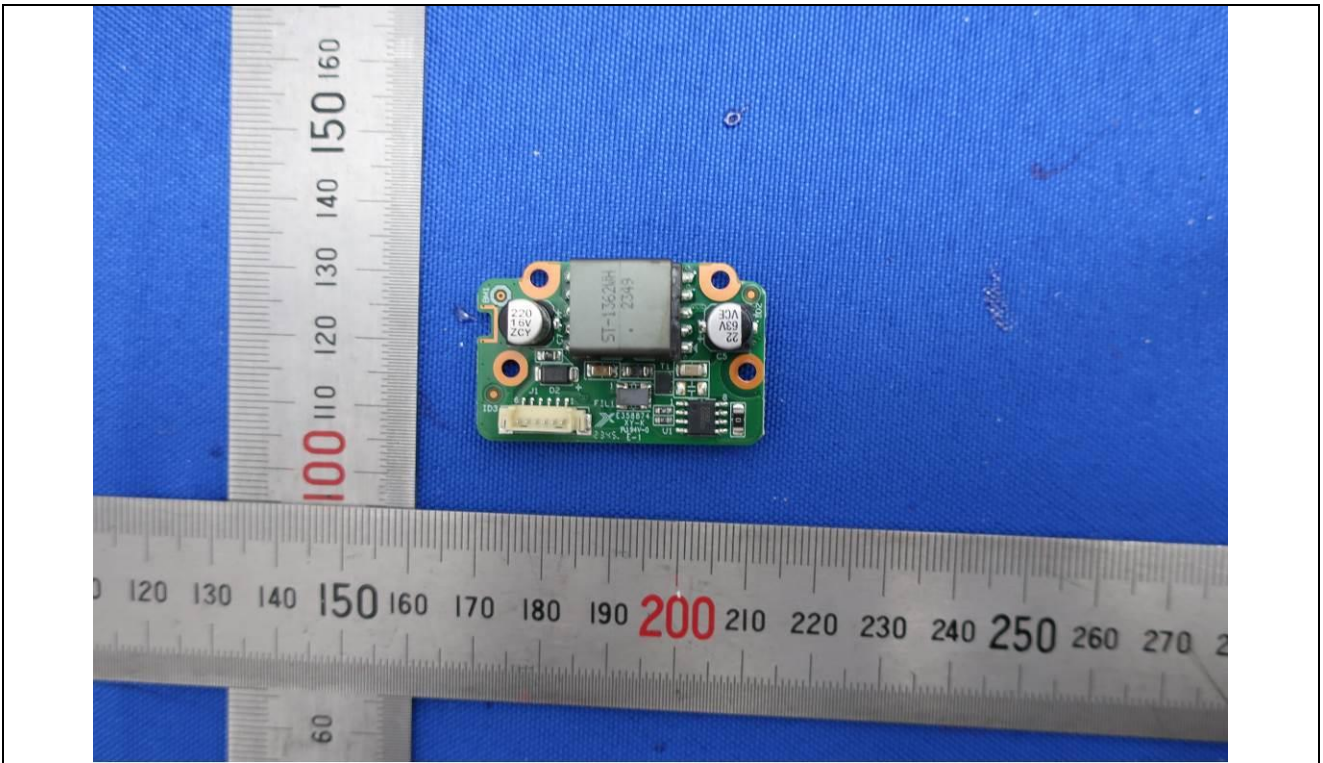
Details of: Internal view



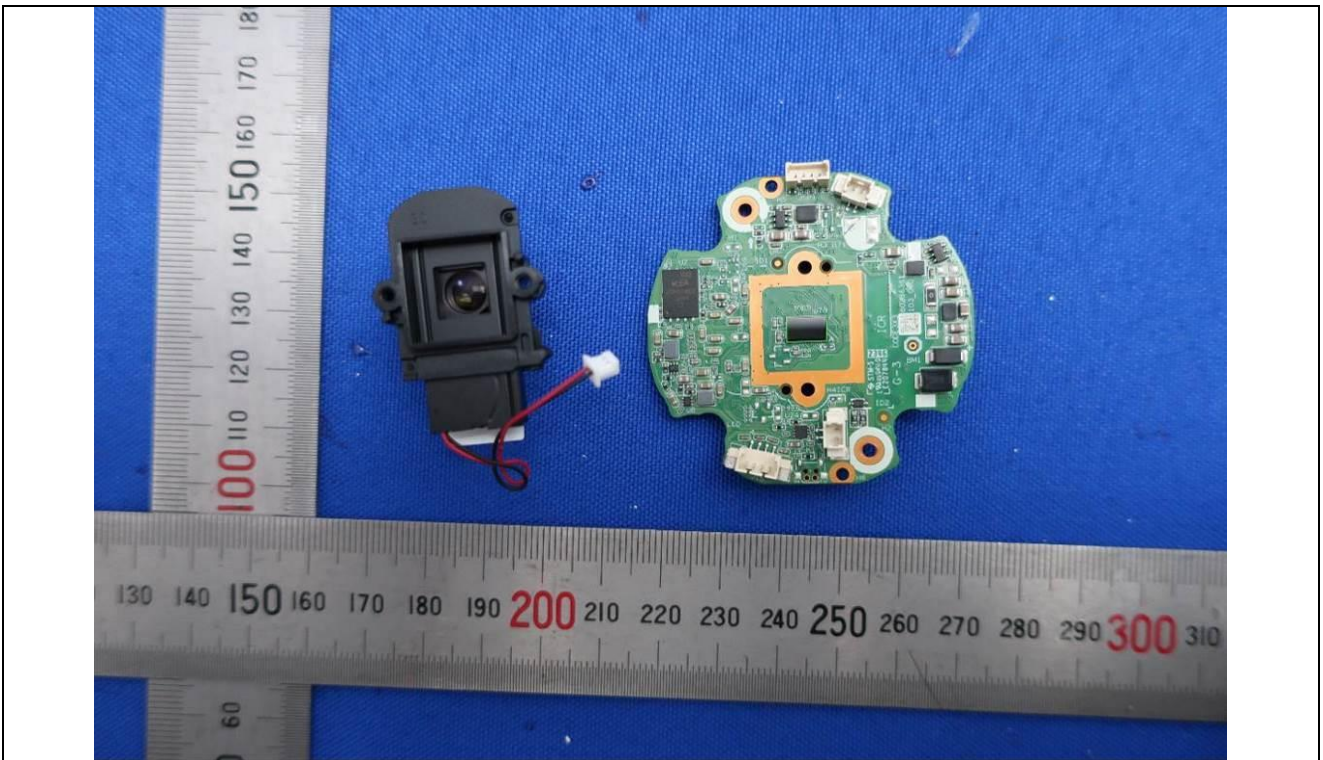
Details of: PCB-1



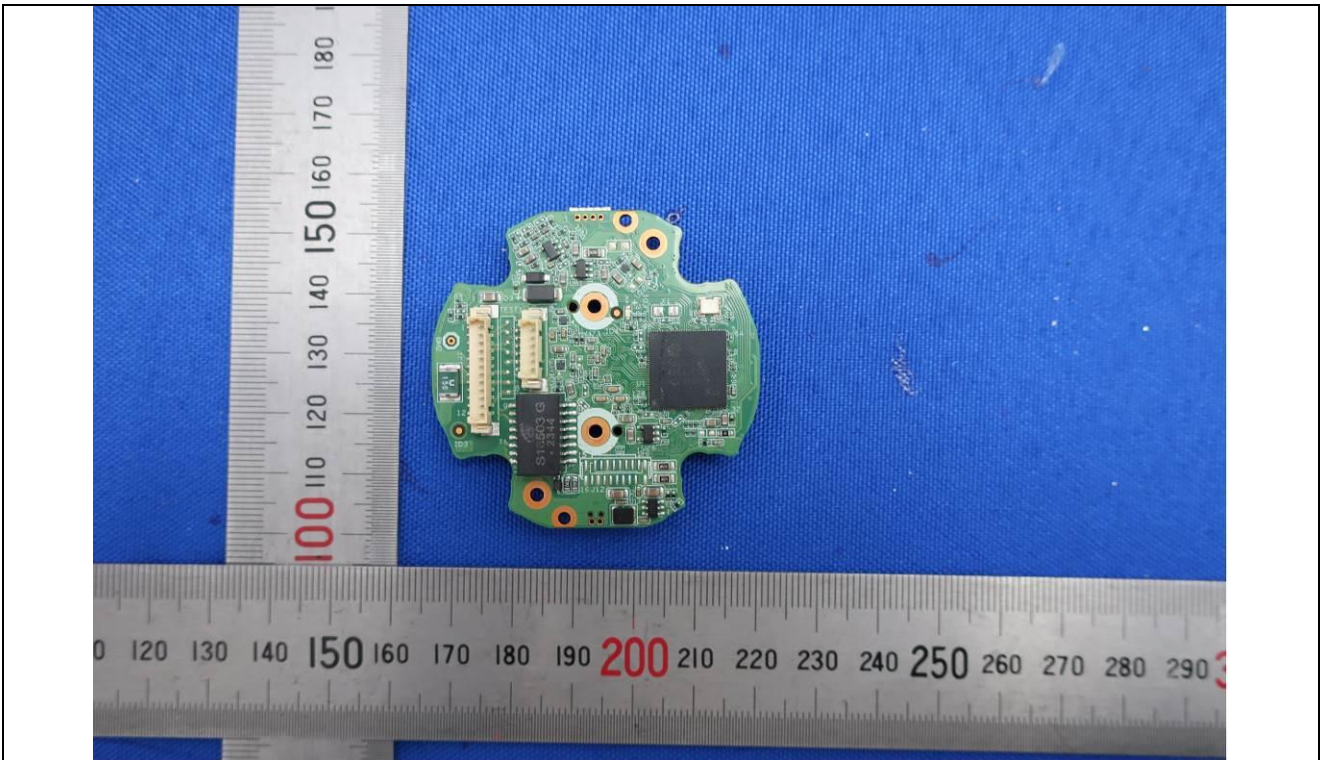
Details of: PCB-1



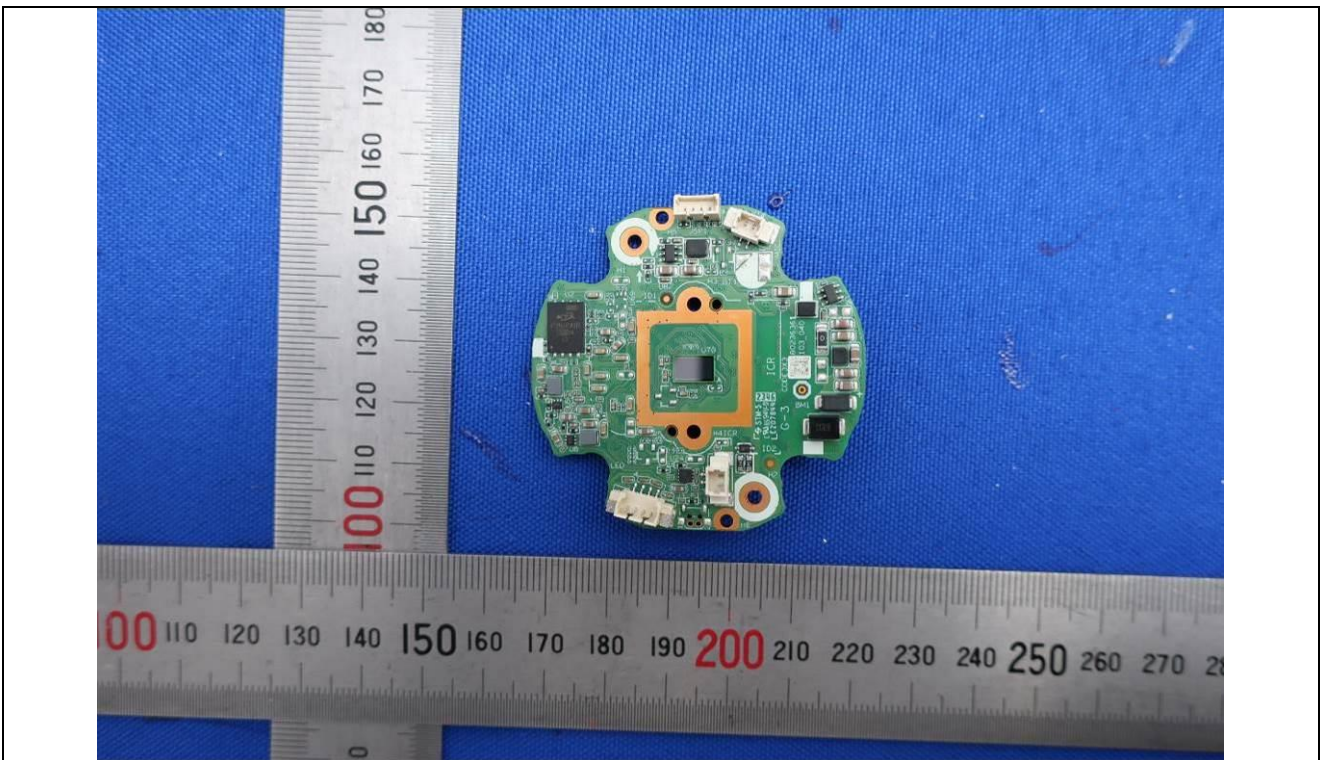
Details of: Internal view



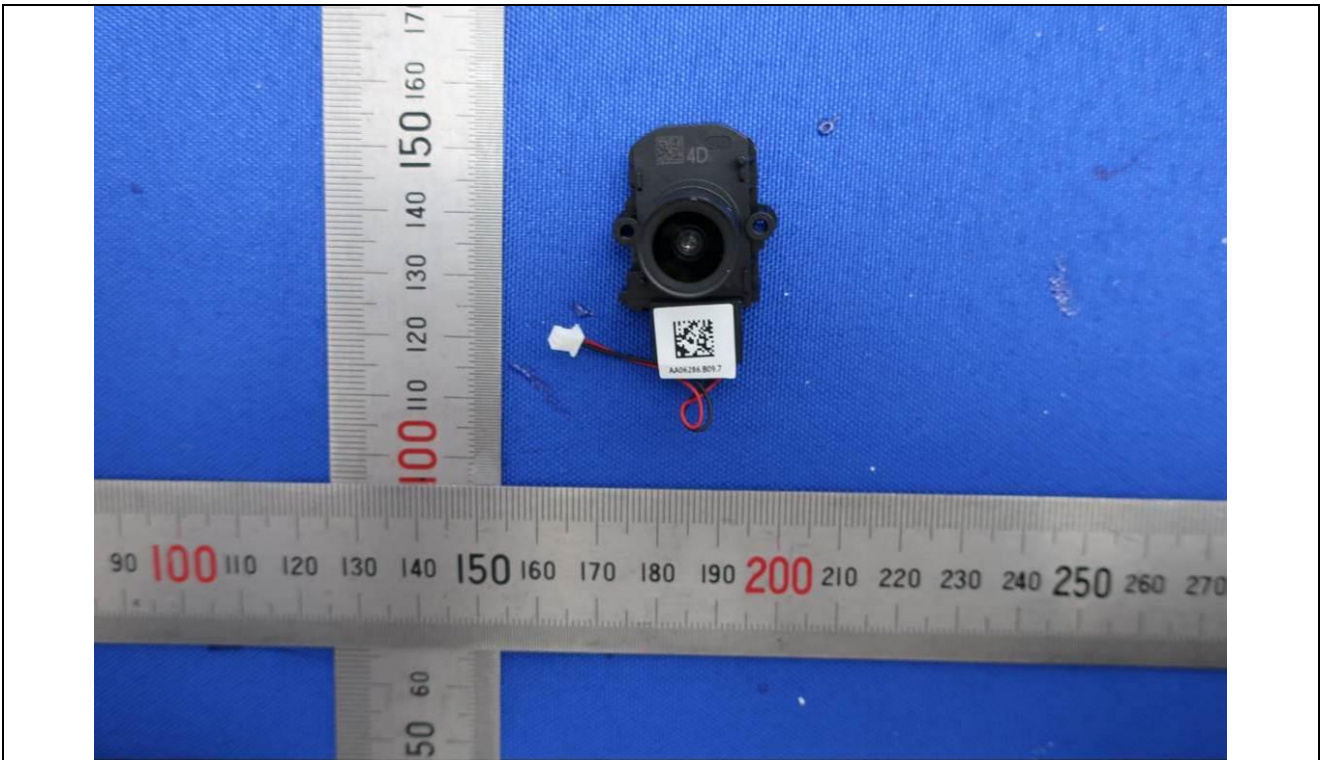
Details of: PCB-2



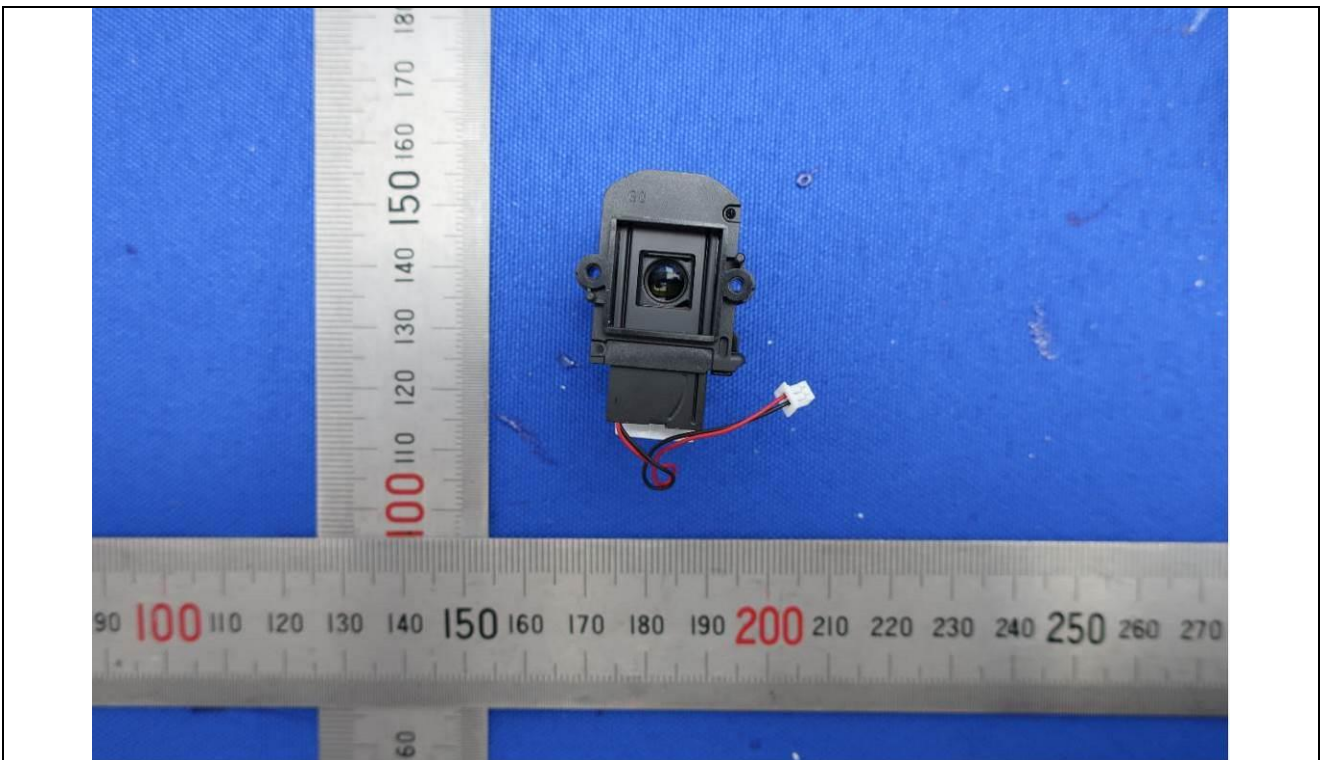
Details of: PCB-2



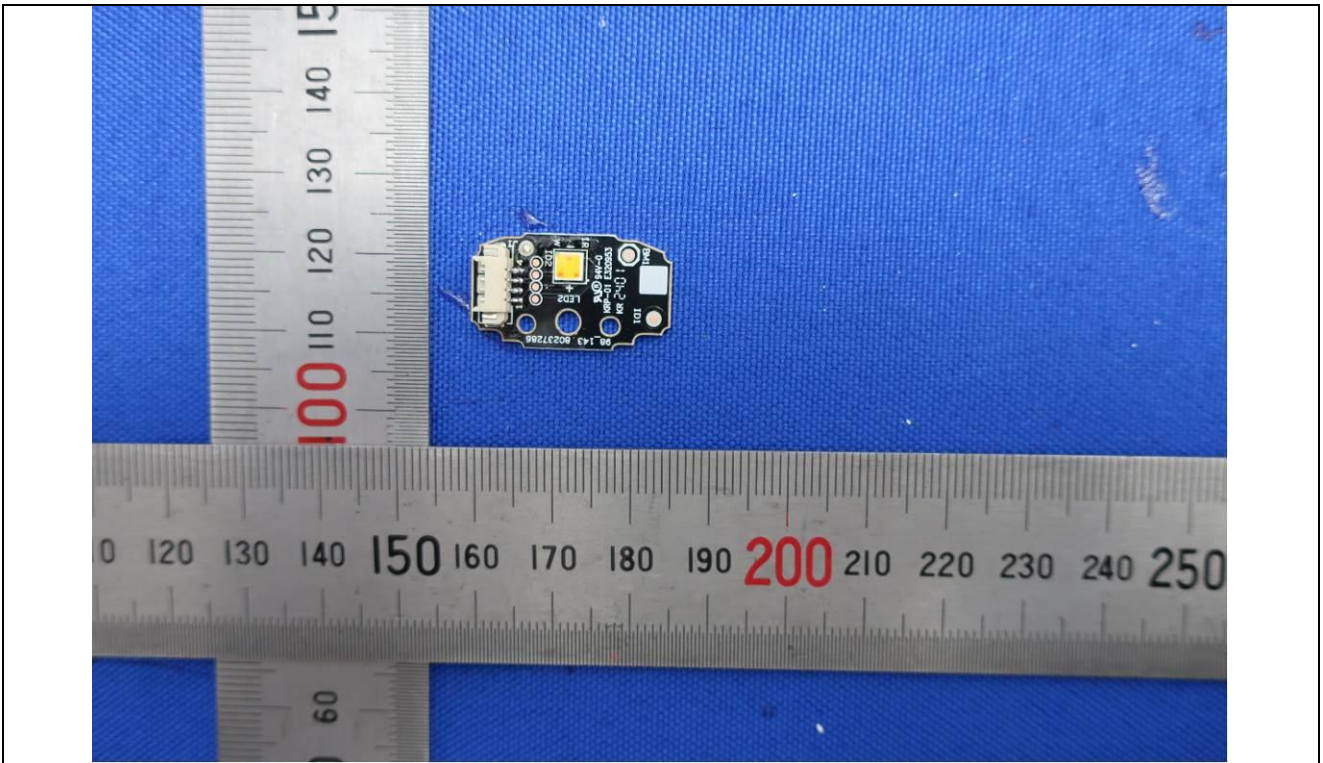
Details of:   Lens



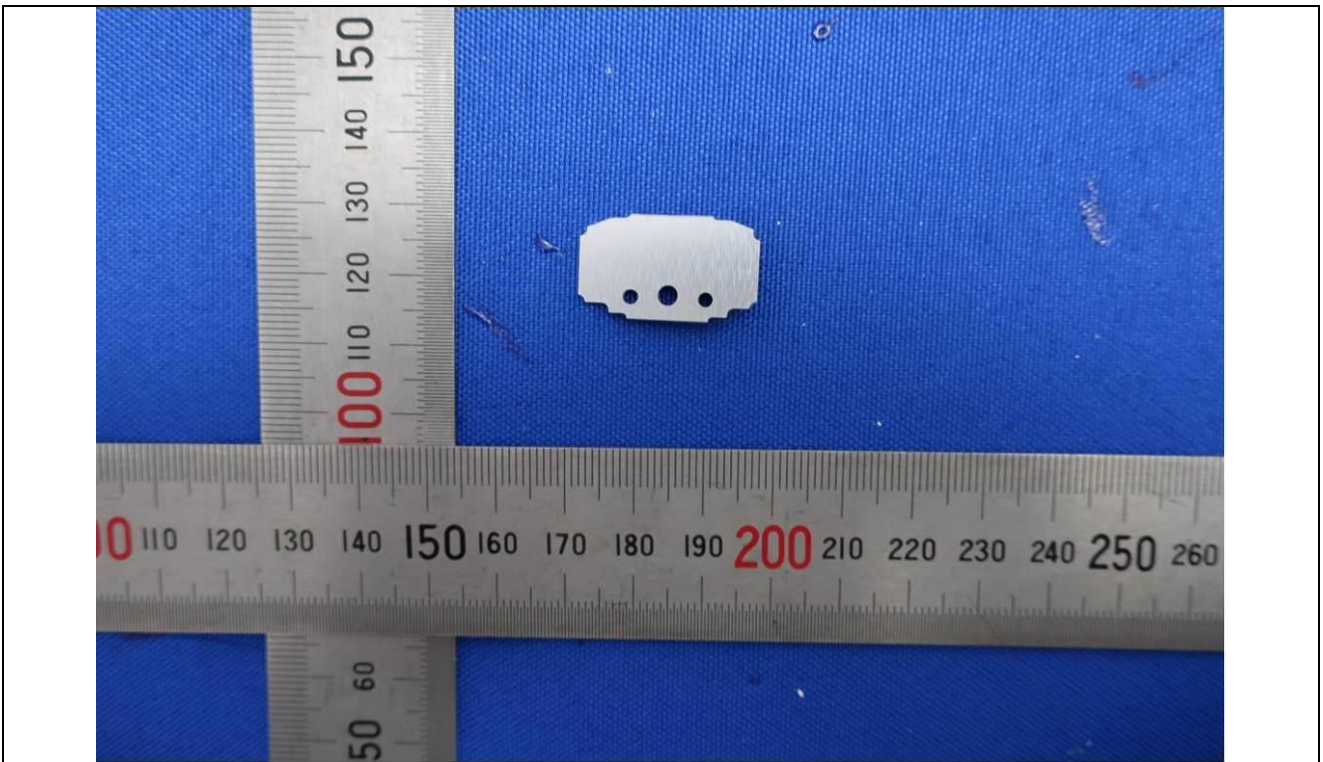
Details of:   Lens



Details of: LED Board



Details of: LED Board



**Attachment 1: Photo documentation**

Report No.: SUES260300064501

Details of: General view (alternative bracket)



Details of: General view (alternative bracket)



**Attachment 1: Photo documentation**

Report No.: SUES260300064501

Details of: General view (alternative bracket)

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**\*\*\*\*\*End of Attachment 1\*\*\*\*\***

ATTACHMENT to IEC 62368-1:2023			
Clause	Requirement + Test	Result - Remark	Verdict
<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1:2023</b> <b>EUROPEAN GROUP DIFFERENCES AND EUROPEAN NATIONAL DIFFERENCES</b> (Audio/video, information and communication technology equipment Part 1: Safety requirements)			
<b>Differences according to</b> .....: EN IEC 62368-1:2024 + A11:2024			
<b>TRF template used</b> .....: IECEE OD-2020-F2:2024, Ed. 2			
<b>Attachment Form No.</b> .....: EU_GD_IEC62368_1F			
<b>Attachment Originator</b> .....: UL Solutions (Demko)			
<b>Master Attachment</b> .....: 2025-08-29			
<b>Copyright © 2025 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	<b>CENELEC COMMON MODIFICATIONS</b>		P
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2024+A11:2024. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2023.  Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2023 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

Clause	Requirement + Test	Result - Remark	Verdict																																																												
<b>1</b>	<b>MODIFICATION to the whole document</b>		N/A																																																												
	<p><b>Delete all the “country” notes in the reference document according to the following list:</b></p> <table border="1"> <tbody> <tr> <td>0.2.1</td> <td>Note 1 and Note 2</td> <td>1</td> <td>Note 4 and Note 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 Note 2</td> </tr> <tr> <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 Note 3</td> <td>5.4.2.3.2.4 Table 13</td> <td>Note 2</td> </tr> <tr> <td>5.4.2.5</td> <td>Note 2</td> <td>5.4.5.1</td> <td>Note</td> <td>5.4.10.2.1</td> <td>Note</td> </tr> <tr> <td>5.4.10.2.2</td> <td>Note</td> <td>5.4.10.2.3</td> <td>Note</td> <td></td> <td></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 Note 3 and Note 4</td> </tr> <tr> <td>5.6.8</td> <td>Note 2</td> <td>5.7.7.1</td> <td>Note 1 and Note 2</td> <td>8.5.4.2.3</td> <td>Note</td> </tr> <tr> <td>10.2.1 Table 39</td> <td>Note 3 and Note 4 and Note 5</td> <td>10.5.3</td> <td>Note 2</td> <td>10.6.1</td> <td>Note 3</td> </tr> <tr> <td>F.3.3.4</td> <td>Note 2</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>		0.2.1	Note 1 and Note 2	1	Note 4 and Note 5	3.3.8.1	Note 2	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and Note 2	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and Note 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 Note 3 and Note 4	5.6.8	Note 2	5.7.7.1	Note 1 and Note 2	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and Note 4 and Note 5	10.5.3	Note 2	10.6.1	Note 3	F.3.3.4	Note 2	F.3.3.6	Note 3	Y.4.1	Note	Y.4.5	Note					N/A
0.2.1	Note 1 and Note 2	1	Note 4 and Note 5	3.3.8.1	Note 2																																																										
3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and Note 2																																																										
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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																																																												
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F.3.3.4	Note 2	F.3.3.6	Note 3	Y.4.1	Note																																																										
Y.4.5	Note																																																														
<b>2</b>	<b>Modification to Clause 1</b>		P																																																												
1	<p><b>Add the following note at the end of Clause 1:</b></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> <p><b>Add the following paragraph and note after Note 5:</b></p> <p>“This document is a type test standard.</p> <p>NOTE Z2 Routine tests of complete equipment, sub-assemblies or components are covered by EN 62911.”</p>		P																																																												
<b>3</b>	<b>Modification to Clause 2</b>		N/A																																																												

Clause	Requirement + Test	Result - Remark	Verdict
2	<p>Add the following references:</p> <p>EN 71-1:2014+A1:2018, Safety of toys - Part 1: Mechanical and physical properties</p> <p>EN 50332-1:2013, Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 1: General method for "one package equipment"</p> <p>EN 50332-2:2013, Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 2: Matching of sets with headphones if either or both are offered separately, or are offered as one package equipment but with standardised connectors between the two allowing to combine components of different manufacturers or different design</p> <p>EN 50332-3:2017, Sound system equipment: headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 3: Measurement method for sound dose management</p> <p>IEC/TR 62471-2, Photobiological safety of lamps and lamp systems - Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety</p>		N/A
<b>4</b>	<b>Modification to Clause 4</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
4.Z1	<p>Add the following new subclause 4.Z1 after subclause 4.9:</p> <p>“For compliance with B.3 and B.4 in circuits connected to an AC mains, protective devices shall be provided, subject to the following:</p> <p>- for pluggable equipment type A, the protective devices shall be included as parts of the equipment, with the exception of components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, for which the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet;</p> <p>- for pluggable equipment type B or permanently connected equipment, the protection may be the dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, for example a fuse or circuit breaker, is fully specified in the installation instructions.</p> <p>Where protective devices are required within the equipment, the protective devices within the equipment shall operate before or at the same time the expected building installation protection will operate.</p> <p>For earth faults in single-phase equipment, it is not necessary to provide 2 protective devices. It is expected that the building installation will protect against earth faults. This applies also in countries where an IT power distribution system is used.”</p>		N/A
<b>5</b>	<b>Modification to subclause 4.1.9</b>		N/A
4.1.9	<p>Add the following paragraph at the end of this subclause:</p> <p>“Products need to comply with the requirements of this document with appropriate measurement uncertainty.</p> <p>NOTE Z1 See also the RED ADCO position on ‘Measurement uncertainty in published harmonized standards’.”</p>		N/A
<b>6</b>	<b>Modification to subclause 5.4.9.1</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
5.4.9.1	Add the following note after the 5th paragraph:  "NOTE Z1 For guidance on the use of high voltage source, see IEC 60060-1, Clause 8 of IEC 60243-1 and IEC 61180."		N/A
<b>7</b>	<b>Modification to subclause 5.4.2.3.2.4</b>		N/A
5.4.2.3.2.4	Add the following at the end of this subclause:  "The requirement for interconnection with external circuit in a HBES/BACS network is in addition given in EN IEC 63044-3:2018."		N/A
<b>8</b>	<b>Modification to subclause 5.6.6.2</b>		N/A
5.6.6.2	Replace item d) with the following:  "d) For equipment powered from a DC mains, if the protective current rating of the circuit under test exceeds 25 A, the test current shall be minimum as required in item a), unless the manufacturer specifies a higher value."		N/A
<b>9</b>	<b>Modification to subclause 9.3.1</b>		N/A
9.3.1	Replace the second paragraph with the following:  "An accessible part that, while in contact with the body, is likely to drop in temperature upon touch can be evaluated under the limits of Annex A of IEC Guide 117:2010 using the test method of 4.5 of IEC Guide 117."		N/A
<b>10</b>	<b>Modification to subclause 10.2.1</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
10.2.1	Add the following to <sup>c)</sup> and <sup>d)</sup> in Table 38:  "For additional requirements, see 10.5.1."		N/A
<b>11</b>	<b>Modification to subclause 10.4.1</b>		N/A
10.4.1	Replace the second paragraph of 10.4.1 with:  "Electronic light effect equipment does not have to comply with the requirements of 10.4. However, 114 IEC/TR 62471-2 shall be considered and proper installation instructions shall be provided."  Replace the ninth paragraph of 10.4.1 with:  "The following information shall be provided in the user manual for safe operation and installation. This information shall also be provided for safe operation by a skilled person who may be exposed to Risk Group 3 energy levels.  Adequate instructions for proper assembly, installation, maintenance and safe use, including clear warnings concerning precautions to avoid possible exposure to hazardous optical radiation; and  Advice on safe operating procedures and warnings concerning reasonably foreseeable misuse, malfunctions and hazardous failure modes. Where servicing and maintenance procedures are detailed, they shall include explicit instructions on safe procedures to be followed; and  The marking on the equipment shall be reproduced in the user manual. A yellow background is not required in the user manual."		N/A
<b>12</b>	<b>Modification to subclause 10.4.4</b>		N/A
10.4.4	Replace the last paragraph of 10.4.4 with:  "Compliance against material degradation from UV radiation is checked by the applicable tests of Annex C."		N/A
<b>13</b>	<b>Modification to subclause 10.5.1</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	<p>Add the following after the first paragraph:</p> <p>“For RS1 compliance is checked by measurement under the following conditions:</p> <p>In addition to the normal operating conditions, all controls adjustable from the outside of the equipment 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 cm<sup>2</sup>, at any point at a distance of 10 cm from the outer surface of the equipment.</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 2013/59/Euratom of 5 December 2013.”</p>		N/A
<b>14</b>	<b>Modification to subclause 10.5.3</b>		N/A
10.5.3	<p>Replace the second paragraph of 10.5.3 with:</p> <p>“The amount of radiation is determined by means of a radiation monitor of the ionizing chamber type with an effective area of 1 000 mm<sup>2</sup> ± 10 mm<sup>2</sup> or by measuring equipment of other types giving equivalent results.”</p>		N/A
<b>15</b>	<b>Modification to Clause 10</b>		N/A
	Replace 10.6 with the following:		N/A



Clause	Requirement + Test	Result - Remark	Verdict
10.6	<b>Safeguards against acoustic energy sources</b>		N/A
10.6.1	<b>General</b>		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.</p> <p>A personal music player is a portable equipment intended for use by an ordinary person, that:</p> <ul style="list-style-type: none"> <li>- is designed to allow the user to listen to audio or audiovisual content / material; and</li> <li>- uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and</li> <li>- 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.).</li> </ul> <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>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	<p>Listening devices sold separately shall comply with the requirements of 10.6.6.</p> <p>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"> <li>- professional equipment;</li> </ul> <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores or general public sales channels are considered not to be professional equipment.</p> <ul style="list-style-type: none"> <li>- hearing aid equipment and other devices for assistive listening;</li> <li>- the following type of analogue personal music players: <ul style="list-style-type: none"> <li>- long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and</li> <li>- cassette player/recorder;</li> </ul> </li> </ul> <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> <ul style="list-style-type: none"> <li>- a player while connected to an external amplifier that does not allow the user to walk around while in use;</li> <li>- hearing protection devices (HPD) that comply with EN 352-8</li> </ul> <p>For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply.</p> <p>The relevant requirements are given in EN 71-1:2014+A1:2018, 4.20 and the related tests methods and measurement distances apply.</p>		N/A
10.6.2	<b>Classification of devices without the capacity to estimate sound dose</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
10.6.2.1	<p data-bbox="395 264 496 293">General</p> <p data-bbox="395 327 995 477">This standard is transitioning from short-term based (30 s) requirements to long-term based (40 h) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3:2017.</p> <p data-bbox="395 510 927 629">For classifying the acoustic output <math>LA_{eq,T}</math>, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period.</p> <p data-bbox="395 663 991 875">For music where the average sound pressure (long term <math>LA_{eq,T}</math>) 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, <math>T</math> becomes the duration of the song.</p> <p data-bbox="395 909 991 1178">NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term <math>LA_{eq,T}</math>) 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.</p> <p data-bbox="395 1211 983 1424">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 long as the average sound level of the song is not above the basic limit of 85 dB.</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
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"> <li>- 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 <math>L_{Aeq,T}</math> acoustic output shall be <math>\leq 85</math> dB when playing the fixed "programme simulation noise" described in EN 50332-1:2013;</li> <li>- for equipment provided with a standardized connector (for example, a 3,5 mm headphone/earphone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be <math>\leq 27</math> mV (analogue interface) or <math>-25</math> dBFS (digital interface) when playing the fixed 214 "programme simulation noise" described in EN 50332-1:2013.</li> </ul> <p>The RS1 limits will be updated for all devices as per 10.6.3.2.</p>		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"> <li>- 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 detection, the <math>L_{Aeq,T}</math> acoustic output shall be <math>\leq 100</math> dB(A) when playing the fixed "programme simulation noise" as described in EN 50332-1:2013:</li> <li>- 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 <math>\leq 150</math> mV (analogue interface) or <math>-10</math> dBFS (digital interface) when playing the fixed "programme simulation noise" as described in EN 50332-1:2013.</li> </ul>		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	<b>Classification of devices (new)</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
10.6.3.1	<p>General</p> <p>Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision 2009/490/EC of 23 June 2009, are given below.</p>		N/A
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"> <li>- 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 LAeq,T acoustic output shall be <math>\leq 80</math> dB when playing the fixed "programme simulation noise" described in EN 50332-1:2013;</li> <li>- 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 <math>\leq 15</math> mV (analogue interface) or <math>-30</math> dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1:2013.</li> </ul>		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"> <li>- 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 50332-3:2017, shall be <math>\leq 80</math> dB when playing the fixed "programme simulation noise" described in 249 EN 50332-1:2013;</li> <li>- 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 EN 50332-3:2017, shall be <math>\leq 15</math> mV (analogue interface) or <math>-30</math> dBFS when playing the fixed "programme simulation noise" described in EN 50332-1:2013.</li> </ul>		N/A
10.6.4	<b>Requirements for maximum sound exposure</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
10.6.4.1	<p>Measurement methods</p> <p>All volume controls shall be turned to maximum during tests.</p> <p>Measurements shall be made in accordance with EN 50332-1:2013 or EN 50332-2:2013 as applicable.</p>		N/A
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 to be 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> <p style="text-align: center;">  </p> <ul style="list-style-type: none"> <li>- element 1a: the symbol , IEC 60417-6044 (2011-01)</li> <li>- element 2: "High sound pressure" or equivalent text</li> <li>- element 3: "Hearing damage risk" or equivalent text</li> <li>- element 4: "Do not listen at high volume levels for long periods." or equivalent text</li> </ul> <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 level exceeding RS1 limits. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output level exceeding RS1 limits. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time.</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	<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
10.6.5	<b>Requirements for dose-based systems</b>		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 50332-3:2017, 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 a level in compliance with class RS1 limits.</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

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 50332-3:2017. The EL settling time (time from starting level reduction to reaching target output level) shall be 10 s or less.</p> <p>Test of EL functionality is conducted according to EN 50332-3:2017, 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 un-weighted 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>In case the source is known not to be music (or test signal), the EL may be disabled.</p>		N/A
10.6.6	<b>Requirements for listening devices (headphones, earphones, etc.)</b>		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 maximizes the measured acoustic output level, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1:2013 shall be <math>\geq 75</math> mV.</p> <p>NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV in 10.6.2.2. or 100 dB and 150 mV in 10.6.2.3.</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
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 50332-1:2013, 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 <math>LA_{eq,T}</math> acoustic output of the listening device shall be <math>\leq 100</math> dB with an input signal of <math>-10</math> dBFS.</p>		N/A
10.6.6.3	<p>Cordless listening devices</p> <p>In cordless mode,</p> <p>with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1:2013; and</p> <p>respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and</p> <p>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 <math>LA_{eq,T}</math> acoustic output of the listening device shall be <math>\leq 100</math> dB with an input signal of <math>-10</math> dBFS.</p>		N/A
10.6.6.4	<p>Measurement method</p> <p>Measurements shall be made in accordance with EN 50332-2:2013 as applicable.”</p>		N/A
<b>16</b>	<b>Modification to subclause G.3.1.2</b>		N/A
G.3.1.2	<p>Add the following note after the first paragraph:</p> <p>“NOTE Z1 An IEC 60730 series standard is considered relevant if the component in question falls within its scope.”</p>		N/A
<b>17</b>	<b>Modification to subclause G.7.1</b>		N/A
G.7.1	<p>Add the following note at the end of the subclause:</p> <p>“NOTE Z1 The harmonized code designations corresponding to the IEC cable types are given in Annex ZD.”</p>		N/A
<b>18</b>	<b>Modification to subclause M.2</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
M.2	<p>Add the following paragraph after the first paragraph:</p> <p>“The size of the battery compartment shall be designed taking into account the battery compartment recommendations of the relevant battery standard.</p> <p>NOTE For general guidance on the design of the battery compartment, see Clause 8 of IEC 62485-4.”</p>		N/A
<b>19</b>	<b>Modification to Bibliography</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	<p>Add the following references:</p> <p>EN 60060-1, High-voltage test techniques – Part 1: General definitions and test requirements</p> <p>EN 60898-1, Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations – Part 1: Circuit-breakers for a.c. operation</p> <p>EN 62911, Audio, video and information technology equipment – Routine electrical safety testing in production</p> <p>ADCO RED Position on ‘Measurement uncertainty in published harmonized standards’ – <a href="https://ec.europa.eu/docsroom/documents/32381">https:// ec.europa .eu/ docsroom/ documents/ 32381</a></p> <p>Add the following notes for the standards indicated:</p> <p>IEC 60060-1      NOTE    Harmonized as EN 60060-1.</p> <p>IEC 60130-9      NOTE    Harmonized as EN 60130-9.</p> <p>IEC 60204-1      NOTE    Harmonized as EN IEC 60204-1.</p> <p>IEC 60204-11     NOTE    Harmonized as EN IEC 60204-11.</p> <p>IEC 60243-1      NOTE    Harmonized as EN 60243-1.</p> <p>IEC 60269-2      NOTE    Harmonized as HD 60269-2.</p> <p>IEC 60309-1      NOTE    Harmonized as EN 60309-1.</p> <p>IEC 60364         NOTE    some parts harmonized in HD 384/HD 60364 series.</p> <p>IEC 60601-2-4     NOTE    Harmonized as EN 60601-2-4.</p> <p>IEC 60664-5:2005 NOTE    Harmonized as EN 60664-5:2007.</p> <p>IEC 60721-3-4     NOTE    Harmonized as EN IEC 60721-3-4.</p> <p>IEC 61032:1997    NOTE    Harmonized as EN 61032:1998 (not modified).</p> <p>IEC 61180         NOTE    Harmonized as EN 61180.</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	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 61643-21     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 IEC 61643-331. IEC 61140:2016    NOTE    Harmonized as EN 61140:2016. IEC 61439-5:2014 NOTE    Harmonized as EN 61439-5:2015. IEC 61969-3      NOTE    Harmonized as EN 61969-3. IEC 62040:2017    NOTE    Harmonized as EN IEC 62040:2019. IEC 62305-1      NOTE    Harmonized as EN 62305-1. IEC 62368-3      NOTE    Harmonized as EN 62368-3. IEC 62485-4      NOTE    Harmonized as EN IEC 62485-4. ISO 10218-1      NOTE    Harmonized as EN ISO 10218-1. ISO 10218-2      NOTE    Harmonized as EN ISO 10218-2. ISO 13482         NOTE    Harmonized as EN ISO 13482. ISO 13850         NOTE    Harmonized as EN ISO 13850.		N/A
<b>20</b>	<b>Addition of annexes</b>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS</b>		N/A
4.1.15	<p>Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>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.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N/A
4.7.3	<p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>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.</p>		N/A
5.4.11.1 and Annex G	<p>Finland and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>- two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	<p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>- passes the tests and inspection criteria of 5.4.7 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</li> <li>- is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.10;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 60384-14;</li> <li>- 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.</li> </ul>		N/A
5.5.2.1	<p>Norway</p> <p>After the 3rd paragraph the following is added:</p> <p>Due to the IT power distribution system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
5.5.6	<p>Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>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.10.3.</p>		N/A
5.6.4.2.1	<p>Ireland and United Kingdom</p> <p>After the indent for pluggable equipment type A, the following is added:</p> <ul style="list-style-type: none"> <li>- the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.</li> </ul>		N/A
5.6.4.2.1	<p>France</p> <p>After the indent for pluggable equipment type A, the following is added:</p> <ul style="list-style-type: none"> <li>- in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.</li> </ul> <p><i>Justification:</i></p> <p>In France, according to NF C15-100 standard, in certain cases, the maximum rated current of the protective device circuit-breaker is 20 A.</p>		N/A
5.6.5.1	<p>Ireland and United Kingdom</p> <p>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<sup>2</sup> to 1,5 mm<sup>2</sup> in cross-sectional area.</p>		N/A
5.6.8	<p>Norway</p> <p>To the end of the subclause the following is added:</p> <p>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.</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
5.7.7.1	<p>Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>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.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“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)”</p> <p>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 RMS, 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“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.”</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	<p>Translation to Swedish:</p> <p>"Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet."</p>		N/A
8.5.4.2.3	<p>United Kingdom</p> <p>Add the following after the 2nd dash bullet in 3rd paragraph:</p> <p>An emergency stop system complying with the requirements of EN IEC 60204-1 and EN ISO 13850 is required where there is a risk of personal injury.</p>		N/A
B.3.1 and B.4	<p>Ireland and United Kingdom</p> <p>The following is applicable:</p> <p>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</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. 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

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 mm<sup>2</sup> is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>		N/A

Clause	Requirement + Test	Result - Remark	Verdict
<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS</b>		N/A
10.5.2	<p>Germany</p> <p>The following requirement applies:</p> <p>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: <a href="http://www.ptb.de">http://www.ptb.de</a></p>		N/A
<b>ZD</b>	<b>IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS</b>		N/A

Clause	Requirement + Test	Result - Remark		Verdict																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="405 282 954 360" rowspan="2">Type of flexible cord</th> <th colspan="2" data-bbox="954 282 1366 320">Code designations</th> </tr> <tr> <th data-bbox="954 320 1161 360">IEC</th> <th data-bbox="1161 320 1366 360">CENELEC</th> </tr> </thead> <tbody> <tr> <td data-bbox="405 360 954 577"> <b>PVC insulated cords</b>  Flat twin tinsel cord  Light polyvinyl chloride sheathed flexible cord  Ordinary polyvinyl chloride sheathed flexible cord </td> <td data-bbox="954 360 1161 577"> 60227 IEC 41  60227 IEC 52  60227 IEC 53 </td> <td data-bbox="1161 360 1366 577"> H03VH-Y  H03VV-F  H03VVH2-F  H05VV-F  H05VVH2-F </td> </tr> <tr> <td data-bbox="405 577 954 779"> <b>Rubber insulated cords</b>  Braided cord  Ordinary tough rubber sheathed flexible cord  Ordinary polychloroprene sheathed flexible cord  Heavy polychloroprene sheathed flexible cord </td> <td data-bbox="954 577 1161 779"> 60245 IEC 51  60245 IEC 53  60245 IEC 57  60245 IEC 66 </td> <td data-bbox="1161 577 1366 779"> H03RT-F  H05RR-F  H05RN-F  H07RN-F </td> </tr> <tr> <td data-bbox="405 779 954 936"> <b>Cords having high flexibility</b>  Rubber insulated and sheathed cord  Rubber insulated, crosslinked PVC sheathed cord  Crosslinked PVC insulated and sheathed cord </td> <td data-bbox="954 779 1161 936"> 60245 IEC 86  60245 IEC 87  60245 IEC 88 </td> <td data-bbox="1161 779 1366 936"> H03RR-H  H03RV4-H  H03V4V4-H </td> </tr> <tr> <td data-bbox="405 936 954 1137"> <b>Cords insulated and sheathed with halogen-free thermoplastic compounds</b>  Light halogen-free thermoplastic insulated and sheathed flexible cords  Ordinary halogen-free thermoplastic insulated and sheathed flexible cords </td> <td data-bbox="954 936 1161 1137"></td> <td data-bbox="1161 936 1366 1137"> H03Z1Z1-F  H03Z1Z1H2-F  H05Z1Z1-F  H05Z1Z1H2-F </td> </tr> </tbody> </table>	Type of flexible cord	Code designations		IEC	CENELEC	<b>PVC insulated cords</b> Flat twin tinsel cord Light polyvinyl chloride sheathed flexible cord Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 41 60227 IEC 52 60227 IEC 53	H03VH-Y H03VV-F H03VVH2-F H05VV-F H05VVH2-F	<b>Rubber insulated cords</b> Braided cord Ordinary tough rubber sheathed flexible cord Ordinary polychloroprene sheathed flexible cord Heavy polychloroprene sheathed flexible cord	60245 IEC 51 60245 IEC 53 60245 IEC 57 60245 IEC 66	H03RT-F H05RR-F H05RN-F H07RN-F	<b>Cords having high flexibility</b> Rubber insulated and sheathed cord Rubber insulated, crosslinked PVC sheathed cord Crosslinked PVC insulated and sheathed cord	60245 IEC 86 60245 IEC 87 60245 IEC 88	H03RR-H H03RV4-H H03V4V4-H	<b>Cords insulated and sheathed with halogen-free thermoplastic compounds</b> Light halogen-free thermoplastic insulated and sheathed flexible cords Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F H05Z1Z1-F H05Z1Z1H2-F		N/A
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--- End of Attachment 2 ---