



Test Report issued under the responsibility of:



## TEST REPORT

IEC 62368-1

### Audio/video, information and communication technology equipment

#### Part 1: Safety requirements

Report Number ..... : SHES230601032001

Date of issue..... : 2023-11-09

Total number of pages ..... : 52 pages

Name of Testing Laboratory preparing the Report..... : SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Applicant's name ..... : Hangzhou Hikvision Digital Technology Co., Ltd.

Address..... : No. 555 Qianmo Road, Binjiang District, Hangzhou 310052, China

#### Test specification:

Standard..... : IEC 62368-1:2014

Test procedure ..... : CB Scheme

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

TRF template used..... : IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No. .... : IEC62368\_1D

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

Master TRF..... : Dated 2022-04-14

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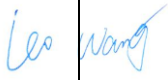
If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

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

#### General disclaimer:

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

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Test Item description .....		Parking Guidance LED Screens
Trade Mark(s) .....		<b>HIKVISION</b>
Manufacturer.....		Same as applicant
Model/Type reference .....		See page 8
Ratings .....		100V - 240V a.c., 50/60Hz, 0,74A Max; Class I
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing location/ address .....		588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.
Tested by (name, function, signature) .....		Emilien Li  Project Engineer
Approved by (name, function, signature) .....		Leo Wang  Reviewer
<b>Testing procedure: CTF Stage 1:</b>		
Testing location/ address .....		
Tested by (name, function, signature) .....		
Approved by (name, function, signature) .....		
<b>Testing procedure: CTF Stage 2:</b>		
Testing location/ address .....		
Tested by (name, function, signature) .....		
Witnessed by (name, function, signature) .....		
Approved by (name, function, signature) .....		
<b>Testing procedure: CTF Stage 3 :</b>		
<b>Testing procedure: CTF Stage 4:</b>		
Testing location/ address .....		
Tested by (name, function, signature) .....		
Witnessed by (name, function, signature) .....		
Approved by (name, function, signature) .....		
Supervised by (name, function, signature) .....		

<b>List of Attachments (including a total number of pages in each attachment):</b> Attachment 1 – 13 pages of Photos documents; Attachment 2 – 10 pages of European group differences and national differences. Attachment 3 – 2 pages of Safety information.	
<b>Summary of testing:</b> The sample(s) tested complies with the requirements of IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017.  Max normal load: Login to the software “LED Test Tools V1.6”. After searching for the device, select the device, and the color test selects full-screen red.  Heating test: Tma = 60°C (declared by manufacturer)  K-type thermocouple used for temperature measurement.	
<b>Tests performed (name of test and test clause):</b> <input checked="" type="checkbox"/> 4. General requirements <input checked="" type="checkbox"/> 5. Electrically-caused injury <input checked="" type="checkbox"/> 6. Electrically-caused fire <input type="checkbox"/> 7. Injury caused by hazardous substances <input checked="" type="checkbox"/> 8. Mechanically-caused injury <input checked="" type="checkbox"/> 9. Thermal burn injury <input checked="" type="checkbox"/> 10. Radiation <input checked="" type="checkbox"/> Annex B. Normal operating condition tests, abnormal operating condition tests and single fault condition tests <input checked="" type="checkbox"/> Annex F.3.9. Performance of Marking test <input type="checkbox"/> Annex M Equipment containing batteries and their protection circuits <input checked="" type="checkbox"/> Annex Q. Limited Power Source <input checked="" type="checkbox"/> Annex T. Mechanical strength tests <input checked="" type="checkbox"/> Annex V. Determination of accessible parts	<b>Testing location:</b> SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.
<b>Summary of compliance with National Differences (List of countries addressed):</b> 1. EU Group Differences (EN 62368-1:2014+A11:2017) 2. EU Special National Conditions, EU A-deviations: DE, DK, FI, GB, IE, NO, SE Explanation of used codes: DE=Germany, DK=Denmark, FI=Finland, GB= United Kingdom, IE=Ireland, NO=Norway, SE=Sweden <input checked="" type="checkbox"/> <b>The product fulfils the above requirements.</b>	
<b>Use of uncertainty of measurement for decisions on conformity (decision rule):</b>  <input checked="" type="checkbox"/> 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 DS-TVL121-3-5D****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 products 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.

TEST ITEM PARTICULARS:	
Classification of use by .....	<input checked="" type="checkbox"/> Ordinary person <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person <input checked="" type="checkbox"/> Children likely to be present
Supply Connection .....	<input checked="" type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input type="checkbox"/> External Circuit - not Mains connected - <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply % Tolerance .....	<input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> other:
Supply Connection – Type .....	<input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input checked="" type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input type="checkbox"/> other: not directly connected to mains
Considered current rating of protective device as part of building or equipment installation.....	<input checked="" type="checkbox"/> 20 A for or North America; <input checked="" type="checkbox"/> 16 A for other markets except North America. Installation location: <input checked="" type="checkbox"/> building; <input type="checkbox"/> equipment
Equipment mobility.....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input checked="" type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input checked="" type="checkbox"/> wall-mounted
Over voltage category (OVC) .....	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
Class of equipment .....	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Class II with functional earthing <input type="checkbox"/> Not classified
Access location .....	<input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> N/A
Pollution degree (PD) .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer's specified maximum operating ambient .....	60 °C
IP protection class .....	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP____
Power Systems .....	<input checked="" type="checkbox"/> TN <input checked="" type="checkbox"/> TT <input type="checkbox"/> IT - V L-L <input type="checkbox"/> dc mains <input type="checkbox"/> N/A
Altitude during operation (m) .....	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> m
Altitude of test laboratory (m) .....	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> m

<b>Mass of equipment (kg) .....</b> :	<input type="checkbox"/> : (<=1kg); <input type="checkbox"/> : (<=7kg); <input checked="" type="checkbox"/> : 7,25 kg (with support) (>7kg, <=25kg); <input type="checkbox"/> : (>25kg)
<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> :	2023-06-01
<b>Date (s) of performance of tests .....</b> :	2023-06-13 to 2023-06-21
<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 printed overleaf, 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. 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 IEC62368-1:</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 checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable <b>Factory declaration.pdf, dated 2023-09-20</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies).....:</b>	1. Hangzhou Hikvision Technology Co., Ltd. No.700, Dongliu Road, Binjiang District, Hangzhou City, Zhejiang, 310052, China 2. Hangzhou Hikvision Electronics Co., Ltd. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, Zhejiang, 311500, China 3. Chongqing Hikvision technology Co., Ltd. No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, Chongqing, 401325, China

**General product information and other remarks:****Product Description –**

Functions	The equipment under test is a Class I Parking Guidance LED Screens which powered by certified built-in power supply.
Material of enclosure	Metal & Plastic
Model difference	All models are identical except for model No., sales channel which have no impact for safety.
Others	Indoor use only

**Model list:**

DS-TVL121-3-5	DS-TVL121-3-6	DS-TVL121-3-5D	DS-TVL121-3-6D
DS-TVL121-3-5/4	DS-TVL121-3-6/4	DS-TVL121-3-5D/4	DS-TVL121-3-6D/4
DS-TVL121-4-5	DS-TVL121-4-6	DS-TVL121-4-5D	DS-TVL121-4-6D
DS-TVL131-4-5	DS-TVL131-4-6	DS-TVL131-4-5D	DS-TVL131-4-6D
DS-TVL121-6-5	DS-TVL121-6-6	DS-TVL121-6-5D	DS-TVL121-6-6D
DS-TVL121-6-5/4	DS-TVL121-6-6/4	DS-TVL121-6-5D/4	DS-TVL121-6-6D/4
DS-TVL121-8-5	DS-TVL121-8-6	DS-TVL121-8-5D	DS-TVL121-8-6D
DS-TVL131-8-5	DS-TVL131-8-6	DS-TVL131-8-5D	DS-TVL131-8-6D
DS-TVL121-9-5	DS-TVL121-9-6	DS-TVL121-9-5D	DS-TVL121-9-6D
DS-TVL121-9-5/4	DS-TVL121-9-6/4	DS-TVL121-9-5D/4	DS-TVL121-9-6D/4
DS-TVL121-10-5	DS-TVL121-10-6	DS-TVL121-10-5D	DS-TVL121-10-6D
DS-TVL131-10-5	DS-TVL131-10-6	DS-TVL131-10-5D	DS-TVL131-10-6D
DS-TVL121-12-5	DS-TVL121-12-6	DS-TVL121-12-5D	DS-TVL121-12-6D
DS-TVL131-12-5	DS-TVL131-12-6	DS-TVL131-12-5D	DS-TVL131-12-6D
DS-TVL121-16-5	DS-TVL121-16-6	DS-TVL121-16-5D	DS-TVL121-16-6D
DS-TVL131-16-5	DS-TVL131-16-6	DS-TVL131-16-5D	DS-TVL131-16-6D
DS-TVL221-1-5	DS-TVL221-1-6	DS-TVL221-1-5D	DS-TVL221-1-6D
DS-TVL221-2-5	DS-TVL221-2-6	DS-TVL221-2-5D	DS-TVL221-2-6D
DS-TVL222-2-5	DS-TVL222-2-6	DS-TVL222-2-5D	DS-TVL222-2-6D
DS-TVL221-3-5	DS-TVL221-3-6	DS-TVL221-3-5D	DS-TVL221-3-6D
DS-TVL221-4-5	DS-TVL221-4-6	DS-TVL221-4-5D	DS-TVL221-4-6D
DS-TVL221-6-5	DS-TVL221-6-6	DS-TVL221-6-5D	DS-TVL221-6-6D
DS-TVL222-3-5	DS-TVL222-3-6	DS-TVL222-3-5D	DS-TVL222-3-6D
DS-TVL222-4-5	DS-TVL222-4-6	DS-TVL222-4-5D	DS-TVL222-4-6D
DS-TVL222-6-5	DS-TVL222-6-6	DS-TVL222-6-5D	DS-TVL222-6-6D
DS-TVL231-3-5	DS-TVL231-3-6	DS-TVL231-3-5D	DS-TVL231-3-6D
DS-TVL231-4-5	DS-TVL231-4-6	DS-TVL231-4-5D	DS-TVL231-4-6D
DS-TVL231-6-5	DS-TVL231-6-6	DS-TVL231-6-5D	DS-TVL231-6-6D

**Model Differences –**

N/A

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

N/A



**ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:**

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)

(Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.

**Electrically-caused injury (Clause 5):**

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)

Example: +5 V dc input

ES1

**Source of electrical energy****Corresponding classification (ES)**

Primary circuit

ES3

Internal circuit except primary

ES1

All accessible parts

ES1

**Electrically-caused fire (Clause 6):**

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts):

PS2

**Source of power or PIS****Corresponding classification (PS)**

Power input

PS3

All internal circuits

PS3

Output

PS1

**Injury caused by hazardous substances (Clause 7)**

(Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.)

Example: Liquid in filled component

Glycol

**Source of hazardous substances****Corresponding chemical**

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**Source of kinetic/mechanical energy****Corresponding classification (MS)**

Sharp edges and corners

MS1

Equipment mass

MS2

Wall-mounted

MS3

**Thermal burn injury (Clause 9)**

(Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.)

Example: Hand-held scanner – thermoplastic enclosure

TS1

**Source of thermal energy****Corresponding classification (TS)**

All accessible parts

TS1

**Radiation (Clause 10)**

(Note: List the types of radiation present in the product and the corresponding energy source classification.)

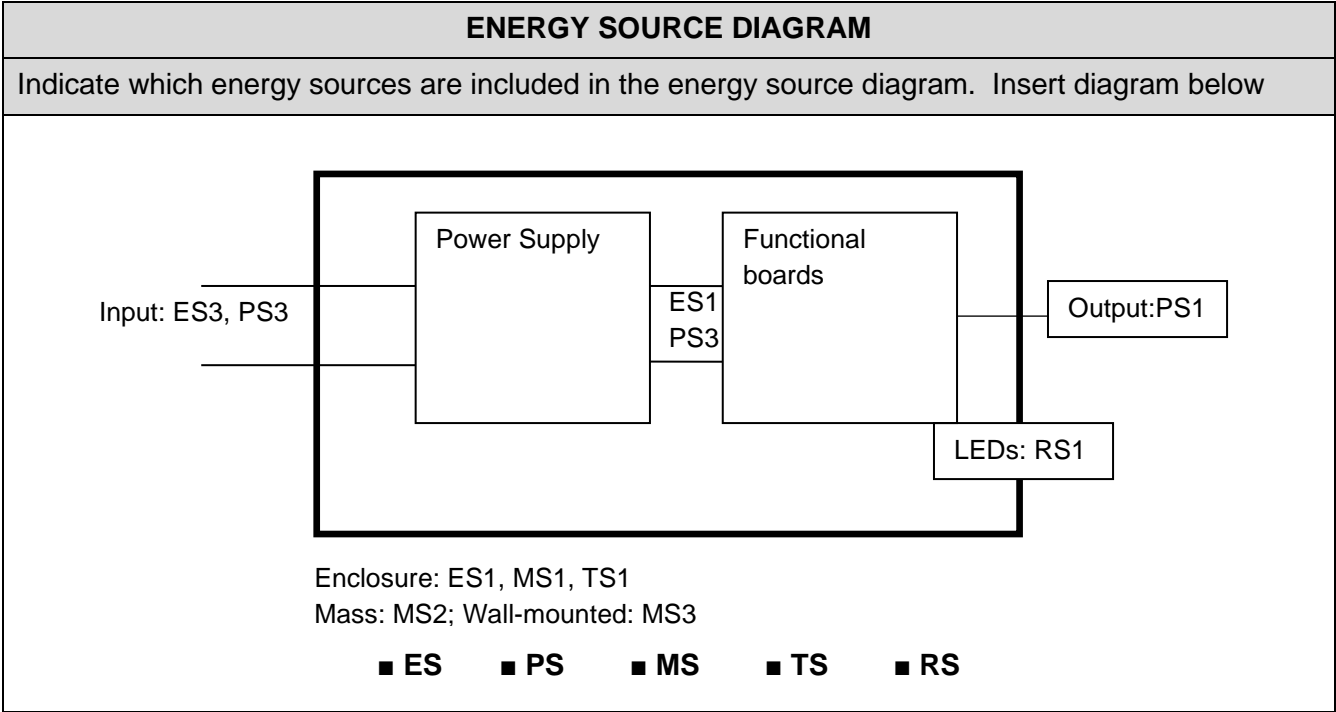
Example: DVD – Class 1 Laser Product

RS1

**Type of radiation****Corresponding classification (RS)**

LEDs

RS1



OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementa ry	Reinforced (Enclosure)
Ordinary person	ES3: Power input	Basic Insulation	Protective Earthing	Enclosure
Ordinary person	ES1: Internal circuit except primary	N/A	N/A	N/A
Ordinary person	ES1: All accessible parts	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementa ry	Reinforced
Internal combustible materials	PS3: Internal circuits	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. 3. Fire enclosure provided	N/A
Output	PS1: Output	N/A	N/A	N/A
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementa ry	Reinforced
N/A	N/A	N/A	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementa ry	Reinforced (Enclosure)

Ordinary person	MS1: Sharp edges and corners	N/A	N/A	N/A
Ordinary person	MS2: Equipment mass	N/A	N/A	Fixed installation
Ordinary person	MS3: Wall-mounted	N/A	N/A	Comply with CI 8.7
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	TS1: Accessible parts	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	RS1: LEDs	N/A	N/A	N/A
Supplementary Information:				
(1) See attached energy source diagram for additional details.				
(2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault				

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Clause	Requirement + Test	Result - Remark	Verdict
<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
4.1.3	Equipment design and construction		P
4.1.15	Markings and instructions.....:	(See Annex F)	P
4.4.4	Safeguard robustness		P
4.4.4.2	Steady force tests.....:	(See Annex T.2, T.3, T.4, T.5)	P
4.4.4.3	Drop tests.....:		N/A
4.4.4.4	Impact tests.....:	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:		N/A
4.4.4.6	Glass Impact tests.....:		N/A
4.4.4.7	Thermoplastic material tests.....:	(See Annex T.8)	P
4.4.4.8	Air comprising a safeguard.....:		N/A
4.4.4.9	Accessibility and safeguard effectiveness		P
4.5	Explosion		P
4.6	Fixing of conductors		P
4.6.1	Fix conductors not to defeat a safeguard		P
4.6.2	10 N force test applied to.....:	all conductors that may defeat a safeguard	P
4.7	Equipment for direct insertion into mains socket - outlets		N/A
4.7.2	Mains plug part complies with the relevant standard.....:		N/A
4.7.3	Torque (Nm).....:		N/A
4.8	Products containing coin/button cell batteries		N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery.....:		—
4.8.4	Battery Compartment Mechanical Tests.....:		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object.....:	(See Annex P)	P
<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		P
5.2.1	Electrical energy source classifications.....:	(See appended table 5.2)	P
5.2.2	ES1, ES2 and ES3 limits		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	Steady-state voltage and current..... :	See appended table 5.2)	P
5.2.2.3	Capacitance limits ..... :		N/A
5.2.2.4	Single pulse limits ..... :		N/A
5.2.2.5	Limits for repetitive pulses ..... :		N/A
5.2.2.6	Ringing signals ..... :		N/A
5.2.2.7	Audio signals ..... :		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.2.1	Accessibility to electrical energy sources and safeguards		P
5.3.2.2	Contact requirements		P
	a) Test with test probe from Annex V ..... :	Checked by V.1.2 (Figure V.1), V.1.3, V.1.6.	P
	b) Electric strength test potential (V) ..... :		N/A
	c) Air gap (mm) ..... :	More than 2mm	P
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Humidity conditioning ..... :	(See sub-clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials ..... :	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degree ..... :	2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage	Internal approved power supply	P
5.4.1.9	Insulating surfaces		P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	Internal approved power supply	P
5.4.1.10.2	Vicat softening temperature..... :		N/A
5.4.1.10.3	Ball pressure ..... :	Internal approved power supply	P
5.4.2	Clearances		P
5.4.2.2	Determining clearance using peak working voltage		P
5.4.2.3	Determining clearance using required withstand voltage ..... :		P
	a) a.c. mains transient voltage ..... :	2500	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	b) d.c. mains transient voltage .....		—
	c) external circuit transient voltage .....		—
	d) transient voltage determined by measurement .....		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....		N/A
5.4.3	Creepage distances .....	Internal approved power supply	P
5.4.3.1	General		P
5.4.3.3	Material Group .....	IIIb	—
5.4.4	Solid insulation		P
5.4.4.2	Minimum distance through insulation .....	Internal approved power supply	P
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices	Internal approved power supply	P
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material	Internal approved power supply	P
5.4.4.6.1	General requirements	Internal approved power supply	P
5.4.4.6.2	Separable thin sheet material	Internal approved power supply	P
	Number of layers (pcs) .....	Internal approved power supply	P
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz .....		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ).....		—
5.4.6	Insulation of internal wire as part of supplementary safeguard .....		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning	approved internal power supply	P
	Relative humidity (%).....	40°C, 93%	—
	Temperature (°C) .....		—
	Duration (h) .....		—
5.4.9	Electric strength test .....	(See appended table 5.4.9)	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.9.1	Test procedure for a solid insulation type test		P
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....		N/A
5.4.10.2.3	Steady-state test.....		N/A
5.4.11	Insulation between external circuits and earthed circuitry .....		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage $U_{op}$ (V).....		—
	Nominal voltage $U_{peak}$ (V).....		—
	Max increase due to variation $U_{sp}$ .....		—
	Max increase due to ageing $\Delta U_{sa}$ .....		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ .....		—
5.5	Components as safeguards		P
5.5.1	General	Approved in internal power supply.	P
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector.....		N/A
5.5.3	Transformers	Internal approved power supply	P
5.5.4	Optocouplers	Internal approved power supply	P
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPD's	Internal approved power supply	P
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable.....		N/A
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements		P
5.6.2.2	Colour of insulation		P



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Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Requirement for protective earthing conductors		P
	Protective earthing conductor size (mm <sup>2</sup> ) .....:	min. 0,75	—
5.6.4	Requirement for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm <sup>2</sup> ). .....:	min. 0,75 mm <sup>2</sup>	—
	Protective current rating (A) ..... :	20A MAX	—
5.6.4.3	Current limiting and overcurrent protective devices		P
5.6.5	Terminals for protective conductors		P
5.6.5.1	Requirement		P
	Conductor size (mm <sup>2</sup> ), nominal thread diameter (mm). .....:	min. 0,75mm <sup>2</sup> , Min. 3,5mm	P
5.6.5.2	Corrosion		P
5.6.6	Resistance of the protective system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method Resistance ( $\Omega$ ).....:	(See appended table 5.6.6.2)	P
5.6.7	Reliable earthing		P
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current .....:	(See appended table 5.7.4)	P
5.7.2.2	Measurement of prospective touch voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P
	System of interconnected equipment (separate connections/single connection) .....:		—
	Multiple connections to mains (one connection at a time/simultaneous connections) .....:		—
5.7.4	Earthed conductive accessible parts.....:	(See appended Table 5.7.4)	P
5.7.5	Protective conductor current		N/A
	Supply Voltage (V).....:		—
	Measured current (mA).....:		—
	Instructional Safeguard.....:	(See F.4 and F.5)	N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Equipment with earthed external circuits Measured current (mA).....:		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA).....:		N/A

<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications		P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault ... :	The internal circuit is considered as PS3 without test.	P
6.2.2.3	Power measurement for worst-case power source fault.....:		P
6.2.2.4	PS1.....:		P
6.2.2.5	PS2.....:		N/A
6.2.2.6	PS3.....:	The product is powered by PS3. And internal circuit is considered as PS3 without test.	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS.....:	Primary circuit as Arcing PIS without test.	P
6.2.3.2	Resistive PIS.....:	The internal circuit is considered as resistive PIS without test.	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials.....:	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure		P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method		P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
6.4.5.2	Supplementary safeguards .....		N/A
6.4.6	Control of fire spread in PS3 circuit		P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General.....		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		P
6.4.8.1	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm) .....	Top side: numerous regular circular shape openings with Max 4,48mm diameter. Front: no opening. Rear: no opening. Left side: no opening. Right side: no opening.	P
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) .....	No openings.	P
	Flammability tests for the bottom of a fire enclosure .....		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c) .....	No door or cover.	N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating.....	Fire enclosure is metal and V-0 plastic enclosure	P
6.5	Internal and external wiring		P
6.5.1	Requirements		P
6.5.2	Cross-sectional area (mm <sup>2</sup> ) .....		—
6.5.3	Requirements for interconnection to building wiring .....	(See Annex Q.)	N/A
6.6	Safeguards against fire due to connection to additional equipment		P

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Clause	Requirement + Test	Result - Remark	Verdict
	External port limited to PS2 or complies with Clause Q.1		P

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

<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		P
8.1	General		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners	No sharp edges or corners, MS1	N/A
8.4.1	Safeguards		N/A
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard .....		—
8.5.4	Special categories of equipment comprising moving parts		N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks .....		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard .....		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N) .....		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test .....	(See appended table 8.5.5.2)	N/A
8.6	Stability	MS2, fixed equipment.	N/A
8.6.1	Product classification		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructional Safeguard .....		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force .....		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt.....		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force).....		N/A
	Position of feet or movable parts.....		—
8.7	Equipment mounted to wall or ceiling		P
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) .....	Mounted > 2m MS3 Mounting means provided with the equipment.	P
8.7.2	Direction and applied force.....	Test 1: Additional downwards force of 213,15N is applied to the gravity centre for 1 min; additional horizontal force of 50N is applied laterally for 1 min.	P
8.8	Handles strength		N/A
8.8.1	Classification		N/A
8.8.2	Applied Force .....		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.1	Classification		N/A
8.9.2	Applied force .....		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard .....		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force .....		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N) .....		—
8.10.6	Thermoplastic temperature stability (°C).....		N/A
8.11	Mounting means for rack mounted equipment		N/A
8.11.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i> .....		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas .....	(See Annex T)	N/A
	Button/Ball diameter (mm) .....		—

<b>9</b>	<b>THERMAL BURN INJURY</b>		<b>P</b>
9.2	Thermal energy source classifications		P
9.3	Safeguard against thermal energy sources		P
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard		N/A
9.4.2	Instructional safeguard .....		N/A

<b>10</b>	<b>RADIATION</b>		<b>P</b>
10.2	Radiation energy source classification		P
10.2.1	General classification	RS1 for LEDs	P
10.3	Protection against laser radiation	No such part.	N/A
	Laser radiation that exists in the equipment:		—
	Normal, abnormal, single-fault .....		N/A
	Instructional safeguard .....		—
	Tool.....		—
10.4	Protection against visible, infrared, and UV radiation	RS1 for LEDs	P
10.4.1	General		P
10.4.1.a)	RS3 for Ordinary and instructed persons .....		N/A
10.4.1.b)	RS3 accessible to a skilled person.....		N/A
	Personal safeguard (PPE) instructional safeguard.....		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 .....	RS1 for LEDs	P
10.4.1.d)	Normal, abnormal, single-fault conditions .....		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque.....		N/A
10.4.1.f)	UV attenuation.....		N/A
10.4.1.g)	Materials resistant to degradation UV .....		N/A
10.4.1.h)	Enclosure containment of optical radiation.....		N/A
10.4.1.i)	Exempt Group under normal operating conditions .....		P

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Clause	Requirement + Test	Result - Remark	Verdict
10.4.2	Instructional safeguard .....		N/A
10.5	Protection against x-radiation		N/A
10.5.1	X- radiation energy source that exists equipment :	(See appended table B.3 & B.4)	N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards.....		N/A
	Instructional safeguard for skilled person.....		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation .....		—
	Abnormal and single-fault condition .....	(See appended table B.3 & B.4)	N/A
	Maximum radiation (pA/kg) .....		N/A
10.6	Protection against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A).....		N/A
	Output voltage, unweighted r.m.s.....		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards .....		N/A
	Equipment safeguard prevent ordinary person to RS2.....		—
	Means to actively inform user of increase sound pressure.....		—
	Equipment safeguard prevent ordinary person to RS2.....		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) $L_{Aeq}$ acoustic pressure output.....		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A).....		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A).....		—

<b>B</b>	<b>NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS</b>		P
B.2	Normal Operating Conditions		P
B.2.1	General requirements.....	(See Test Item Particulars and appended test tables)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Audio Amplifiers and equipment with audio amplifiers .....	(See Annex E)	N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test.....	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements.....		P
B.3.2	Covering of ventilation openings		P
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector .....		N/A
B.3.5	Maximum load at output terminals .....		N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited .....		N/A
B.4.3	Motor tests		N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature .....		N/A
B.4.4	Short circuit of functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		P
B.4.6	Short circuit or disconnect of passive components		P
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		P
B.4.9	Battery charging under single fault conditions ...	(See Annex M)	N/A
<b>C</b>	<b>UV RADIATION</b>		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
<b>D</b>	<b>TEST GENERATORS</b>		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS</b>		N/A
E.1	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V) .....		—
	Rated load impedance ( $\Omega$ ) .....		N/A
E.2	Audio amplifier abnormal operating conditions		N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		P
F.1	General requirements		P
	Instructions – Language .....	with all target countries local language	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations		P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....	See copy of marking plate	—
F.3.2.2	Model identification .....	See copy of marking plate	—
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of supply voltage .....	See copy of marking plate	—
F.3.3.4	Rated voltage .....	See copy of marking plate	—
F.3.3.5	Rated frequency .....	See copy of marking plate	—
F.3.3.6	Rated current or rated power .....	See copy of marking plate	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		P
F.3.5.1	Mains appliance outlet and socket-outlet markings .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.2	Switch position identification marking ..... :		N/A
F.3.5.3	Replacement fuse identification and rating markings ..... :	Approved in internal power supply.	P
F.3.5.4	Replacement battery identification marking ..... :		N/A
F.3.5.5	Terminal marking location		P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I Equipment		P
F.3.6.1.1	Protective earthing conductor terminal		P
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		P
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking ..... :		—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings		P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use		P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		P
	g) Protective earthing conductor current exceeding ES 2 limits		N/A
	h) Symbols used on equipment		N/A
	i) Permanently connected equipment not provided with all-pole mains switch		P
	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards		P
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		P

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Clause	Requirement + Test	Result - Remark	Verdict
<b>G</b>	<b>COMPONENTS</b>		<b>P</b>
<b>G.1</b>	<b>Switches</b>		<b>N/A</b>
G.1.1	General requirements		<b>N/A</b>
G.1.2	Ratings, endurance, spacing, maximum load		<b>N/A</b>
<b>G.2</b>	<b>Relays</b>		<b>N/A</b>
G.2.1	General requirements		<b>N/A</b>
G.2.2	Overload test		<b>N/A</b>
G.2.3	Relay controlling connectors supply power		<b>N/A</b>
G.2.4	Mains relay, modified as stated in G.2		<b>N/A</b>
<b>G.3</b>	<b>Protection Devices</b>		<b>P</b>
G.3.1	Thermal cut-offs		<b>N/A</b>
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		<b>N/A</b>
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		<b>N/A</b>
G.3.1.2	Thermal cut-off connections maintained and secure		<b>N/A</b>
G.3.2	Thermal links		<b>N/A</b>
G.3.2.1a)	Thermal links separately tested with IEC 60691		<b>N/A</b>
G.3.2.1b)	Thermal links tested as part of the equipment		<b>N/A</b>
	Aging hours (H) .....		—
	Single Fault Condition .....		—
	Test Voltage (V) and Insulation Resistance ( $\Omega$ ). :		—
G.3.3	PTC Thermistors		<b>N/A</b>
G.3.4	Overcurrent protection devices	Internal approved power supply	<b>P</b>
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		<b>N/A</b>
G.3.5.1	Non-resettable devices suitably rated and marking provided		<b>N/A</b>
G.3.5.2	Single faults conditions.....	(See appended Table B.4)	<b>N/A</b>
<b>G.4</b>	<b>Connectors</b>		<b>N/A</b>
G.4.1	Spacings		<b>N/A</b>
G.4.2	Mains connector configuration .....		<b>N/A</b>
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		<b>N/A</b>
<b>G.5</b>	<b>Wound Components</b>		<b>P</b>
G.5.1	Wire insulation in wound components.....	Approved in internal power supply.	<b>P</b>
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		<b>N/A</b>
G.5.1.2 b)	Construction subject to routine testing		<b>N/A</b>

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s) .....		—
	Temperature (°C) .....		—
G.5.2.3	Wound Components supplied by mains		N/A
<b>G.5.3</b>	<b>Transformers</b>		P
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) .....	Approved in internal power supply.	P
	Position.....		—
	Method of protection .....		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings .....		—
G.5.3.3	Overload test .....	(See appended table B.3)	N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
<b>G.5.4</b>	<b>Motors</b>		N/A
G.5.4.1	General requirements		N/A
	Position .....		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) .....		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V) .....		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) .....		N/A
	Electric strength test (V) .....		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature .....		N/A
	Electric strength test (V) .....		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Electric strength test (V) .....		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage .....		—
<b>G.6</b>	<b>Wire Insulation</b>		P
G.6.1	General	Internal approved power supply	P
G.6.2	Solvent-based enamel wiring insulation		N/A
<b>G.7</b>	<b>Mains supply cords</b>		P
G.7.1	General requirements		P
	Type.....	See table 4.1.2	—
	Rated current (A) .....	See table 4.1.2	—
	Cross-sectional area (mm <sup>2</sup> ), (AWG) .....	See table 4.1.2	—
G.7.2	Compliance and test method		P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		P
G.7.3.2	Cord strain relief		P
G.7.3.2.1	Requirements		P
	Strain relief test force (N) .....	100N	—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).....	0,12	—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry .....	(See appended table 5.4.11.1)	N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g) .....		—
	Diameter (m) .....		—
	Temperature (°C) .....		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
<b>G.8</b>	<b>Varistors</b>		P
G.8.1	General requirements	Internal approved power supply	P
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test .....		N/A
G.8.3.3	Temporary overvoltage .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>G.9</b>	<b>Integrated Circuit (IC) Current Limiters</b>		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA .....		—
G.9.1 d)	IC limiter output current (max. 5A) .....		—
G.9.1 e)	Manufacturers' defined drift .....		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General requirements		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
<b>G.11</b>	<b>Capacitor and RC units</b>		P
G.11.1	General requirements	Internal approved power supply	P
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
<b>G.12</b>	<b>Optocouplers</b>		P
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) .....	Internal approved power supply	P
	Type test voltage Vini .....		—
	Routine test voltage, Vini,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
	Compliance with cemented joint requirements (Specify construction) .....		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation .....	(See appended table 5.4.4.5)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Number of insulation layers (pcs) .....		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements .....		N/A
<b>G.15</b>	<b>Liquid filled components</b>		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		N/A
a)	Humidity treatment in accordance with sc 5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage .....		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage .....		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance .....		—
D3)	Resistance .....		—
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz) .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
H.3.1.2	Voltage (V) .....		—
H.3.1.3	Cadence; time (s) and voltage (V) .....		—
H.3.1.4	Single fault current (mA): .....		—
H.3.2	Tripping device and monitoring voltage .....		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) .....		—
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		N/A
	General requirements		N/A
<b>K</b>	<b>SAFETY INTERLOCKS</b>		N/A
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism .....		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance .....		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method .....		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) .....		N/A
K.7.2	Overload test, Current (A) .....		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test .....		N/A
<b>L</b>	<b>DISCONNECT DEVICES</b>		P
L.1	General requirements		P
L.2	Permanently connected equipment		P
L.3	Parts that remain energized		P
L.4	Single phase equipment		P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		N/A
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		N/A
M.1	General requirements		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
M.2	Safety of batteries and their cells		N/A
M.2.1	Requirements		N/A
M.2.2	Compliance and test method (identify method) .. :		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance ..... :		N/A
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature ..... :		—
M.4.2.2 b)	Single faults in charging circuitry ..... :		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method) .....		N/A
M.6.2	Leakage current (mA) .....		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume $V_z$ (m <sup>3</sup> /s).....		—
M.8.2.3	Correction factors .....		—
M.8.2.4	Calculation of distance $d$ (mm) .....		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) .....		N/A
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		P
	Metal(s) used .....	Pollution degree considered	—
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		P
	Figures O.1 to O.20 of this Annex applied .....		—
<b>P</b>	<b>SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS</b>		P
P.1	General requirements		P
P.2.2	Safeguards against entry of foreign object		P
	Location and Dimensions (mm) .....	Top side: numerous regular circular shape openings with Max 4,48mm diameter. Front: no opening. Rear: no opening. Left side: no opening. Right side: no opening.	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Transportable equipment with metalized plastic parts .....		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) .....		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C) .....		—
	Tr (°C) .....		—
	Ta (°C) .....		—
P.4.2 b)	Abrasion testing .....		N/A
P.4.2 c)	Mechanical strength testing .....		N/A
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		P
Q.1	Limited power sources		P
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		P
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method		P
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) .....		—
	Current limiting method .....		—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)). .....		N/A
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosure materials of equipment with a steady-state power exceeding 4000 W		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (test condition), (°C) .....		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		<b>P</b>
T.1	General requirements		P
T.2	Steady force test, 10 N .....		P
T.3	Steady force test, 30 N .....		N/A
T.4	Steady force test, 100 N .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
T.5	Steady force test, 250 N .....	(See appended table T.2, T.3, T.4, T.5)	P
T.6	Enclosure impact test	(See appended table T.6)	P
	Fall test		P
	Swing test		P
T.7	Drop test .....		N/A
T.8	Stress relief test .....	(See appended table T.8)	P
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J).....		—
	Height (m) .....		—
T.10	Glass fragmentation test .....		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm) .....		—
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen.....	(See Annex T)	N/A
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)</b>		P
V.1	Accessible parts of equipment		P
V.2	Accessible part criterion		P

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1</sup>	
Metal enclosure	Interchangeable	Interchangeable	Min.1,2 mm thickness	IEC 62368-1: 2014 EN 62368-1:2014 +A11:2017	Tested with appliance	
Plastic enclosure	LG Chem (Guangzhou) Engineering Plastics Co Ltd	GN-2109F(#)	V-0, Min. 1,6 mm thickness, 80°C	UL 94, UL746	UL E248280	
Switch Power Supply	MEAN WELL Enterprises Co., Ltd.	LRS-35-5	Input: 100 – 240 V; 50/60Hz; 0,74 A; 1,0A; Class I; DC Output: 5 VDC /7A;50°C; LPS	IEC 62368-1 : 2014	UL CB Cert: DK-80195-UL; Report No.: E183223-4788385300-1 Original	
PCB	NANYA NEW MATERIAL TECHNOLOGY CO., LTD	NY2140	V-0, 130°C	UL 796 UL 94	UL E213990	
Alternative	Interchangeable	Interchangeable	V-1 or better, 130°C	UL796 UL94	UL	
Primary wire	SHEN ZHEN HENGDIAN ELECTRIC CO LTD	2464	300V a.c., 18 AWG, 80°C,	UL 758	UL E252861	
Internal secondary wire	SHEN ZHEN HENGDIAN ELECTRIC CO LTD	2468	300V a.c., 16 AWG, 80°C,	UL 758	UL E252861	
Earthing wire	SHEN ZHEN HENGDIAN ELECTRIC CO LTD	1007	300V a.c., 16 AWG, 80°C,	UL 758	UL E252861	
LED (white)	Hangzhou Hikvision Digital Technology Co., Ltd	3535	DC5V ,724nm, Exempt Group	IEC 62471:2006	Test with appliance	
LED (red)	Hangzhou Hikvision Digital Technology Co., Ltd	3535	DC5V ,724nm , Exempt Group	IEC 62471:2006	Test with appliance	
LED (blue)	Hangzhou Hikvision Digital Technology Co., Ltd	3535	DC5V ,548nm, Exempt Group	IEC 62471:2006	Test with appliance	
Earthing Screw	Interchangeable	Interchangeable	Screw type, Min. Ø3,5mm	IEC 62368-1:2014	Tested with equipment	

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

<sup>1)</sup> Provided evidence ensures the agreed level of compliance. See OD-CB2039.

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Clause	Requirement + Test	Result - Remark	Verdict

4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N/A
(The following mechanical tests are conducted in the sequence noted.)				
4.8.4.2	TABLE: Stress Relief test			—
Part		Material	Oven Temperature (°C)	Comments
--		--	--	--
4.8.4.3	TABLE: Battery replacement test			—
Battery part no. ....:		--	—	
Battery Installation/withdrawal			Battery Installation/Removal Cycle	Comments
--			1	--
			2	--
			3	--
			4	--
			5	--
			6	--
			8	--
			9	--
4.8.4.4	TABLE: Drop test			—
Impact Area		Drop Distance	Drop No	Observations
--		--	--	--
--		--	--	--
--		--	--	--
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
--		--	--	--
4.8.4.6	TABLE: Crush test			—
Test position		Surface tested	Crushing Force (N)	Duration force applied (s)
--		--	--	--
Supplementary information:				

<b>4.8.5</b>	<b>TABLE: Lithium coin/button cell batteries mechanical test result</b>			N/A
	Test position	Surface tested	Force (N)	Duration force applied (s)
	--	--	--	--



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

Supplementary information:

5.2		Table: Classification of electrical energy sources					P
5.2.2.2 – Steady State Voltage and Current conditions							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
1	264 V a.c.	Screen to earth	Normal	0,256Vpk	--	1,3K	ES1
			Abnormal – Opening blocked	0,304Vpk	--	13,2K	
			Single fault-	0,164Vpk	--	3,7K	
2	264 V a.c.	LAN to earth	Normal	2,4Vpk	--	6K	ES1
			Abnormal – Opening blocked	3,04Vpk	--	4,3K	
			Single fault	1,8Vpk	--	2,7M	
3	264 V a.c.	Metal enclosure to earth	Normal	1,68 Vpk	--	1,4M	ES1
			Abnormal – Opening blocked	1,92 Vpk	--	834K	
			Single fault	0,96 Vpk	--	80	

#### 5.2.2.3 - Capacitance Limits

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

#### 5.2.2.4 - Single Pulses

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

#### 5.2.2.5 - Repetitive Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				

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Clause	Requirement + Test			Result - Remark			Verdict
			Abnormal				
			Single fault – SC/OC				
Test Conditions: Normal – Abnormal - Supplementary information: SC=Short Circuit, OC=Short Circuit							

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Clause	Requirement + Test			Result - Remark			Verdict
5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements						P
		Supply voltage (V) ..... :	90VAC/60Hz	264VAC/50Hz	—		
		Ambient T <sub>min</sub> (°C) ..... :	23,9	23,7	—		
		Ambient T <sub>max</sub> (°C) ..... :	24,3	23,8	—		
		Tma (°C) ..... :	60	60	—		
Maximum measured temperature T of part/at:			T (°C)			Allowed T <sub>max</sub> (°C)	
Main board							
PCB near U5 (top side)		66,9	68,2	130			
PCB near J4 (top side)		65,3	66,7	130			
PCB center (bottom side)		68,5	69,8	130			
LED board (HX_ARROE2_V2.1)							
PCB near LED center		67,8	69,0	130			
PCB near U12		75,5	76,8	130			
PCB near U10		65,4	66,7	130			
LED board (3535(RGB))							
PCB between U9 and U12 (top side)		71,5	72,6	130			
PCB near LED		65,3	66,5	130			
Power supply board							
T1 coil		74,0	75,6	110			
T1 core		74,7	76,3	110			
LF1 coil		71,2	70,8	130			
C5 body		72,7	73,2	105			
U2 body		72,5	74,1	110			
Plastic enclosure inside near LED		66,7	67,8	Ref			
Plastic enclosure outside near LED*		30,6	31,7	77			
Metal enclosure near power supply*		27,7	28,9	60			
Metal enclosure near main board*		27,6	28,9	60			
Supplementary information:							
Temperature T of winding:	t <sub>1</sub> (°C)	R <sub>1</sub> (Ω)	t <sub>2</sub> (°C)	R <sub>2</sub> (Ω)	T (°C)	Allowed T <sub>max</sub> (°C)	Insulation class
--	--	--	--	--	--	--	--

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

## Supplementary information:

Supplementary information:

Note 1: Tma should be considered as directed by applicable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

\*: the measured temperature for this part is under ambient temperature of 25 °C.

Other temperature point list in this table has shifted to Tma 60°C.

The limited value of power supply unit temperature refers to the power supply test report.

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

<b>5.4.1.10.3</b>	<b>TABLE: Ball pressure test of thermoplastics</b>			N/A
Allowed impression diameter (mm) ..... :		≤ 2 mm		—
Object/Part No./Material		Manufacturer/trademark	Test temperature (°C)	Impression diameter (mm)
--		--	--	--
Supplementary information:				
Evaluated in power supply test report.				

5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance						P
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz) <sup>1</sup>	Required cl (mm)	cl (mm) <sup>2</sup>	Required <sup>3</sup> cr (mm)	cr (mm)
Transformer and metal enclosure	340	240	--	1,5	> 11mm	2,67	> 11mm
Supplementary information:							
Note 1: Only for frequency above 30 kHz							
Note 2: See table 5.4.2.4 if this is based on electric strength test							
Note 3: Provide Material Group							

<b>5.4.2.3</b>	<b>TABLE: Minimum Clearances distances using required withstand voltage</b>			P
	<b>Overvoltage Category (OV):</b>			II
	<b>Pollution Degree:</b>			2
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)

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Clause	Requirement + Test	Result - Remark	Verdict
Primary and PE	2500Vpk	1,5	--
Supplementary information:			

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

<b>5.4.4.2, 5.4.4.5 c) 5.4.4.9</b>	<b>TABLE: Distance through insulation measurements</b>				N/A
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)
Supplementary information:					
Evaluated in power supply test report.					

<b>5.4.9</b>	<b>TABLE: Electric strength tests</b>			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Functional:				
--		--	--	--
Basic/supplementary:				
L/N and Metal enclosure		DC	2500	No
Reinforced:				
L/N and screen		DC	4000	No
L/N and output port		DC	4000	No
Supplementary information:				

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

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Clause	Requirement + Test	Result - Remark	Verdict

X-capacitors installed for testing are:

[ ] bleeding resistor rating:

[ ] ICX:

Notes:

A. Test Location:

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

B. Operating condition abbreviations:

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

Evaluated in power supply test report.

<b>5.6.6.2</b>	<b>TABLE: Resistance of protective conductors and terminations</b>				<b>P</b>
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Metal enclosure and earth	32	2	0,96	30mΩ	
Metal enclosure and earth	40	2	1,16	29mΩ	
Supplementary information:					

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		P
Supply voltage .....	264	—	
Location	Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (mA)	
L/N to metal enclosure	1	Normal: 1,2mA <sub>p</sub> k Reverse: 1,0 mA <sub>p</sub> k	
	2*		
	3		
	4		
	5		
	6		
	8		
Supplementary Information:			
Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.			

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

[5] (\*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

6.2.2	Table: Electrical power sources (PS) measurements for classification					P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s <sup>*)</sup>	PS Classification	
Input	--	Power (W) :	--	--	PS3 without test	
		V <sub>A</sub> (V) :	--	--		
		I <sub>A</sub> (A) :	--	--		
LAN	Normal	Power (W) :	0	--	PS1	
		V <sub>A</sub> (V) :	0	--		
		I <sub>A</sub> (A) :	0	--		
Supplementary Information:						
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits.						

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)			P
Location	Open circuit voltage After 3 s (V <sub>p</sub> )	Measured r.m.s current (I <sub>rms</sub> )	Calculated value (V <sub>p</sub> x I <sub>rms</sub> )	Arcing PIS? Yes / No
All primary circuit	--	--	--	Yes
Supplementary information:				
Primary circuit as Arcing PIS without test.				
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V <sub>p</sub> ) and normal operating condition rms current (I <sub>rms</sub> ) is greater than 15.				

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)				P
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No
The internal circuit	--	--	--	--	Yes
Supplementary Information:					
The internal circuit is considered as resistive PIS without test.					
A combination of voltmeter, VA and ammeter I <sub>A</sub> may be used instead of a wattmeter.					
If a separate voltmeter and ammeter are used, the product of (V <sub>A</sub> x I <sub>A</sub> ) is used to determine Resistive PIS classification.					
A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, <u>or</u> (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.					

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.5	TABLE: High Pressure Lamp		N/A
Description	Values	Energy Source Classification	
Lamp type .....		—	
Manufacturer .....		—	
Cat no. ....		—	
Pressure (cold) (MPa).....		MS_	
Pressure (operating) (MPa) .....		MS_	
Operating time (minutes) .....		—	
Explosion method .....		—	
Max particle length escaping enclosure (mm) .:		MS_	
Max particle length beyond 1 m (mm).....		MS_	
Overall result .....			
Supplementary information:			

B.2.5		TABLE: Input test						P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
90	50	0,32	--	16,09	--	FS1	0,32	Max normal load
90	60	0,33	--	16,02	--	FS1	0,33	
100	50	0,29	0,74	15,57	--	FS1	0,29	
100	60	0,28	0,74	15,93	--	FS1	0,28	
240	50	0,18	0,74	16,07	--	FS1	0,18	
240	60	0,17	0,74	16,02	--	FS1	0,17	
264	50	0,18	--	16,17	--	FS1	0,18	
264	60	0,17	--	16,11	--	FS1	0,17	
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured								

<b>B.3</b>	<b>TABLE: Abnormal operating condition tests</b>	P
------------	--	---



IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
Ambient temperature (°C) .....						See below		—
Power source for EUT: Manufacturer, model/type, output rating ..						See table 4.1.2		—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Ventilation Openings	blocked	90V	2h	FS1	0,32	K	Max temperature as below: T1 coil: 38,2°C; T1 core: 38,9°C; PCB near U12:40,5°C Metal enclosure near power supply: 27,8°C; Plastic enclosure outside near LED: 30,7°C; Ambient: 24,1°C	EUT normal work No damage, no hazard.
Supplementary information:								
Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4. Sc=Short circuit.								

B.4	TABLE: Fault condition tests							P
Ambient temperature (°C) .....						See below		—
Power source for EUT: Manufacturer, model/type, output rating ..						See table 4.1.2		—
Component No.	Fault Condition	Supply voltage, (V)	Test time	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
LAN	Sc	90	10min	FS1	0,32	--	--	LAN out shutdown. No damage, no hazard.
LED	Sc	90	10min	FS1	0,15	--	--	LED shutdown. No damage, no hazard.
U9 pin1-24	Sc	90	10min	FS1	0	--	--	Unit shut down. No damage, no hazard.
U10 pin8- 16	Sc	90	10min	FS1	0	--	--	Unit shut down. No damage, no hazard.
Supplementary information:								
Sc=Short circuit								

Annex M.3	TABLE: Batteries	N/A
The tests of Annex M are applicable only when appropriate battery data is not available		N/A
Is it possible to install the battery in a reverse polarity position?.....:		N/A

IEC 62368-1									
Clause	Requirement + Test			Result - Remark				Verdict	
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	--	--	--	--	--	--	--	--	--
Max. current during fault condition	--	--	--	--	--	--	--	--	--
Test results:							Verdict		
- Chemical leaks							N/A		
- Explosion of the battery							N/A		
- Emission of flame or expulsion of molten metal							N/A		
- Electric strength tests of equipment after completion of tests						--	N/A		
Supplementary information:									

Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries					N/A
Battery/Cell No.	Test conditions	Measurements			Observation	
		U	I (A)	Temp (C)		
	Normal					
	Abnormal					
	Single fault –SC/OC					
Supplementary Information:						
Battery identification	Charging at T <sub>lowest</sub> (°C)	Observation		Charging at T <sub>highest</sub> (°C)	Observation	
Supplementary Information:						

IEC 62368-1						
Clause	Requirement + Test		Result - Remark		Verdict	
Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U <sub>oc</sub> (V)	I <sub>sc</sub> (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
LAN	Normal	0	0	8	0	100
Supplementary Information:						
SC=Short circuit						
The USB port is protected by certified IC current limiting components						

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thicknes s (mm)	Force (N)	Test Duration (sec)	Observation	
Internal components and parts	--	--	10	5	Intact	
Enclosure	Metal	1,2	250	5	Intact	
Enclosure	Plastic	1,6	250	5	Intact	
Supplementary information:						

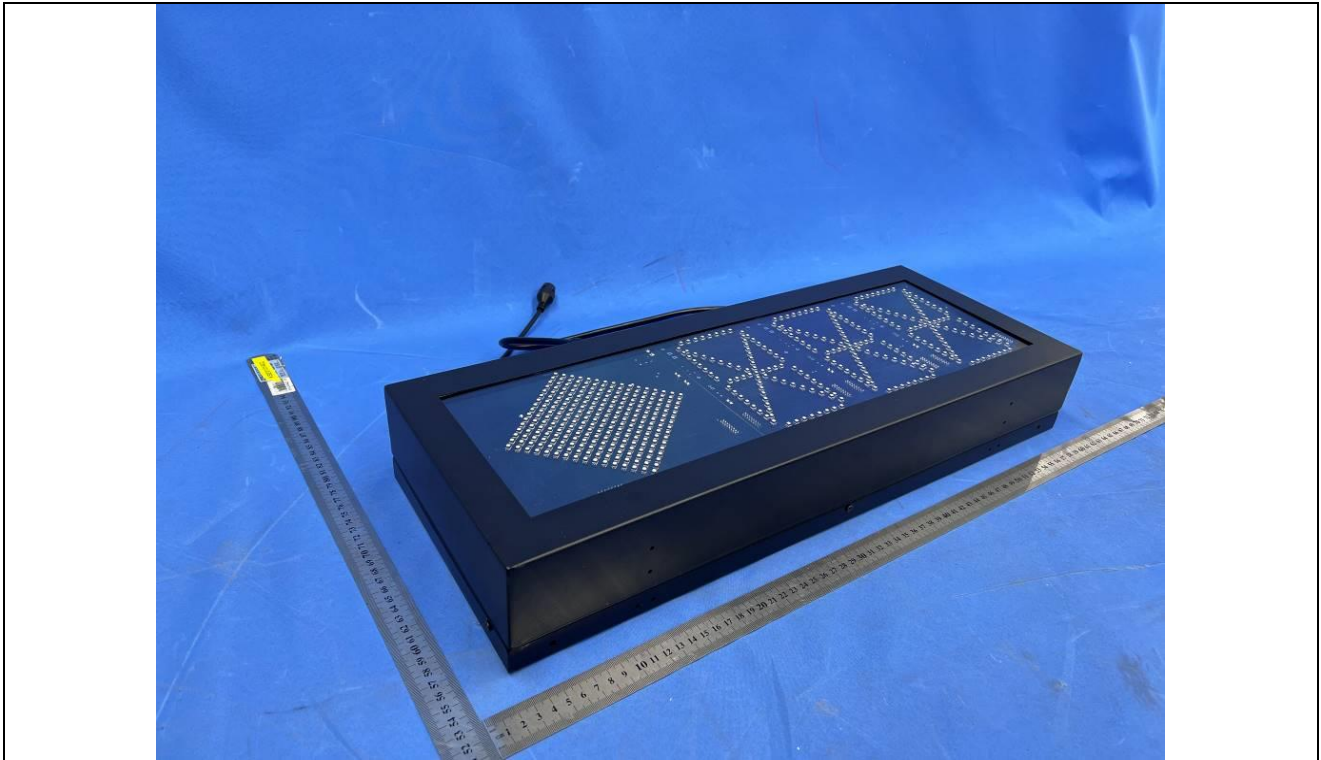
T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Enclosure	Metal	1,2	1300	Intact	
Enclosure	Plastic	1,6	1300	Intact	
Supplementary information:					

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

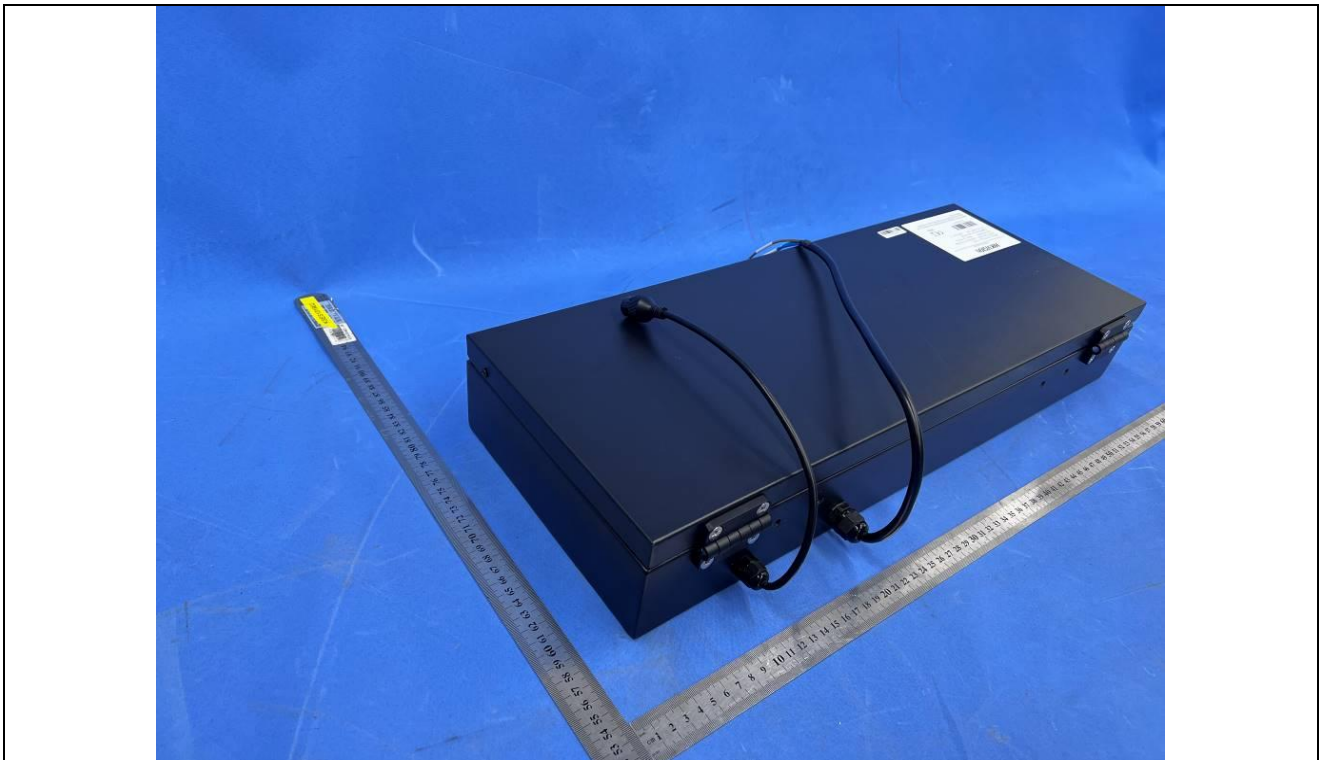
IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
T.8	TABLE: Stress relief test					P
Part/Location		Material	Thicknes s (mm)	Oven Temperat ure (°C)	Duration (h)	Observation
Enclosure		Plastic	1,60	77,8	7	Intact
Supplementary information:						

- - - End of Report - - -

Details of: General View

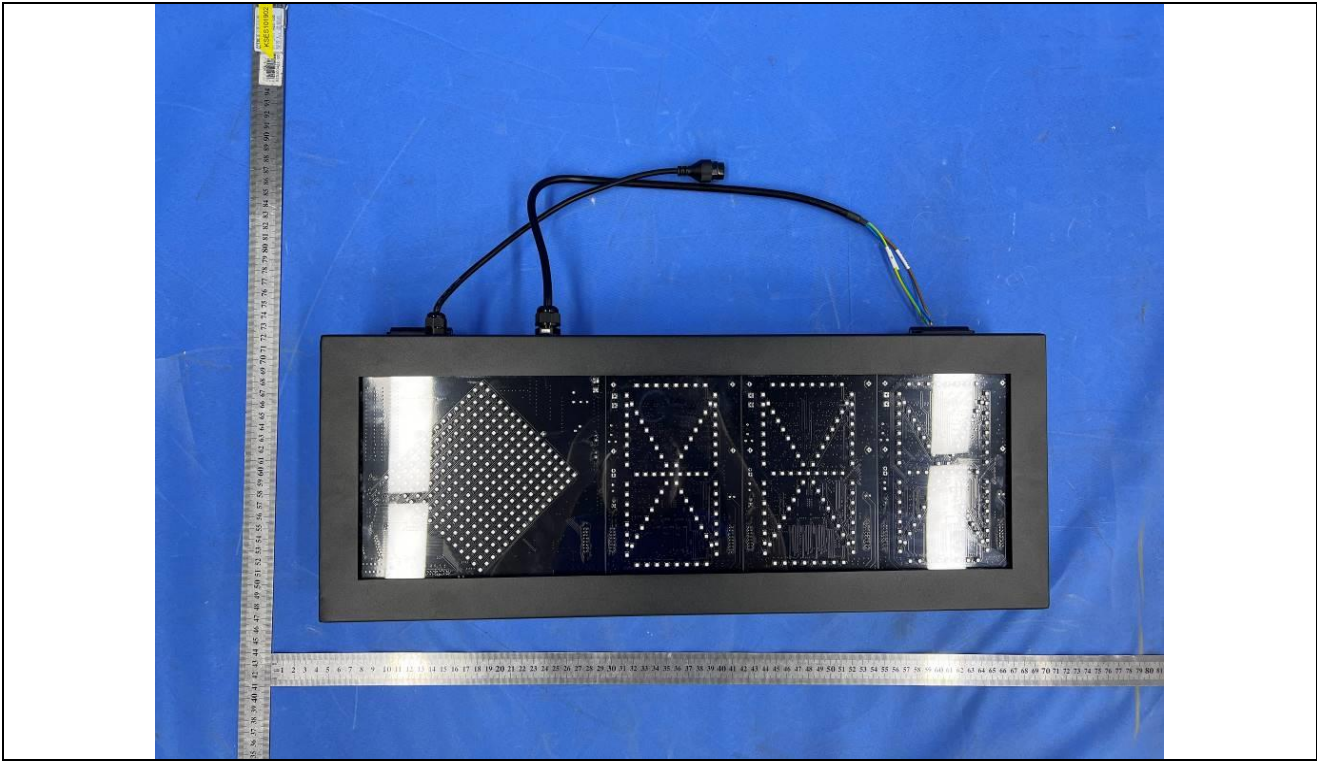


Details of: General View

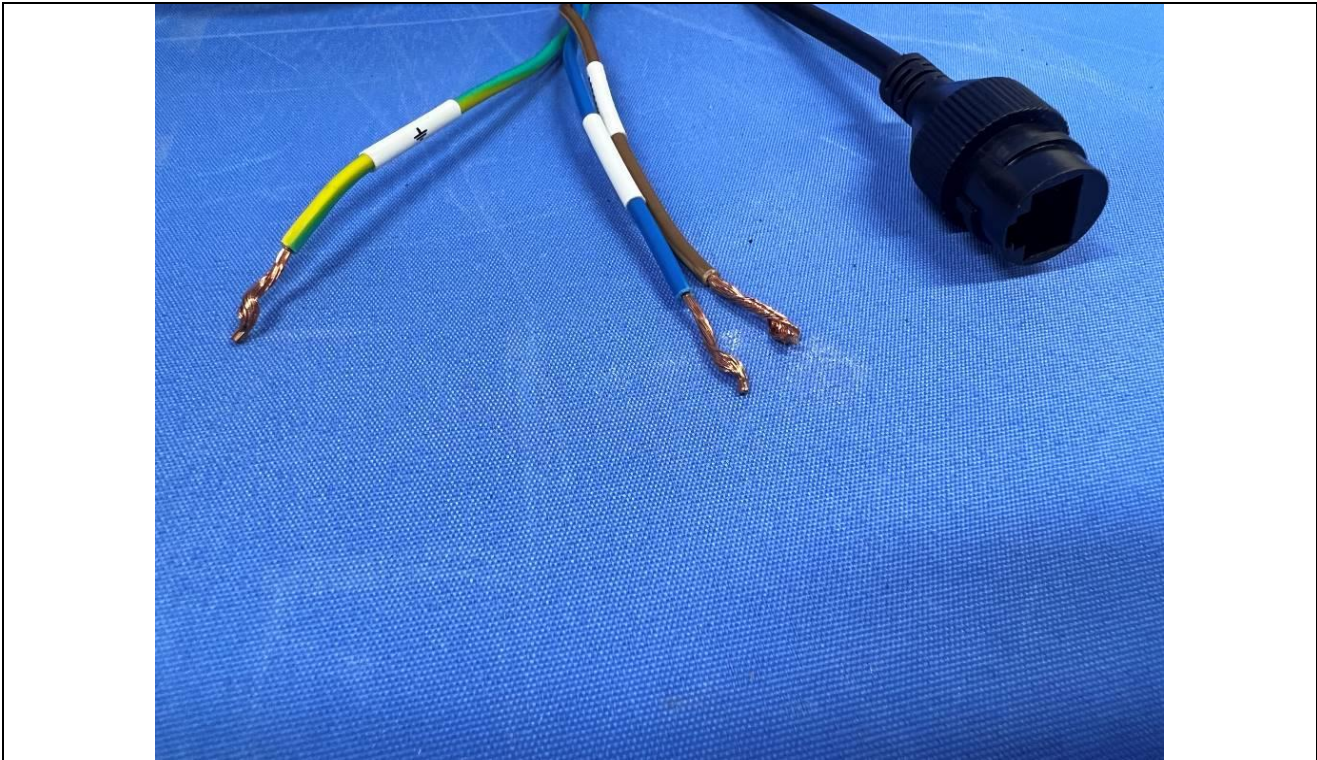




Details of: Terminal View

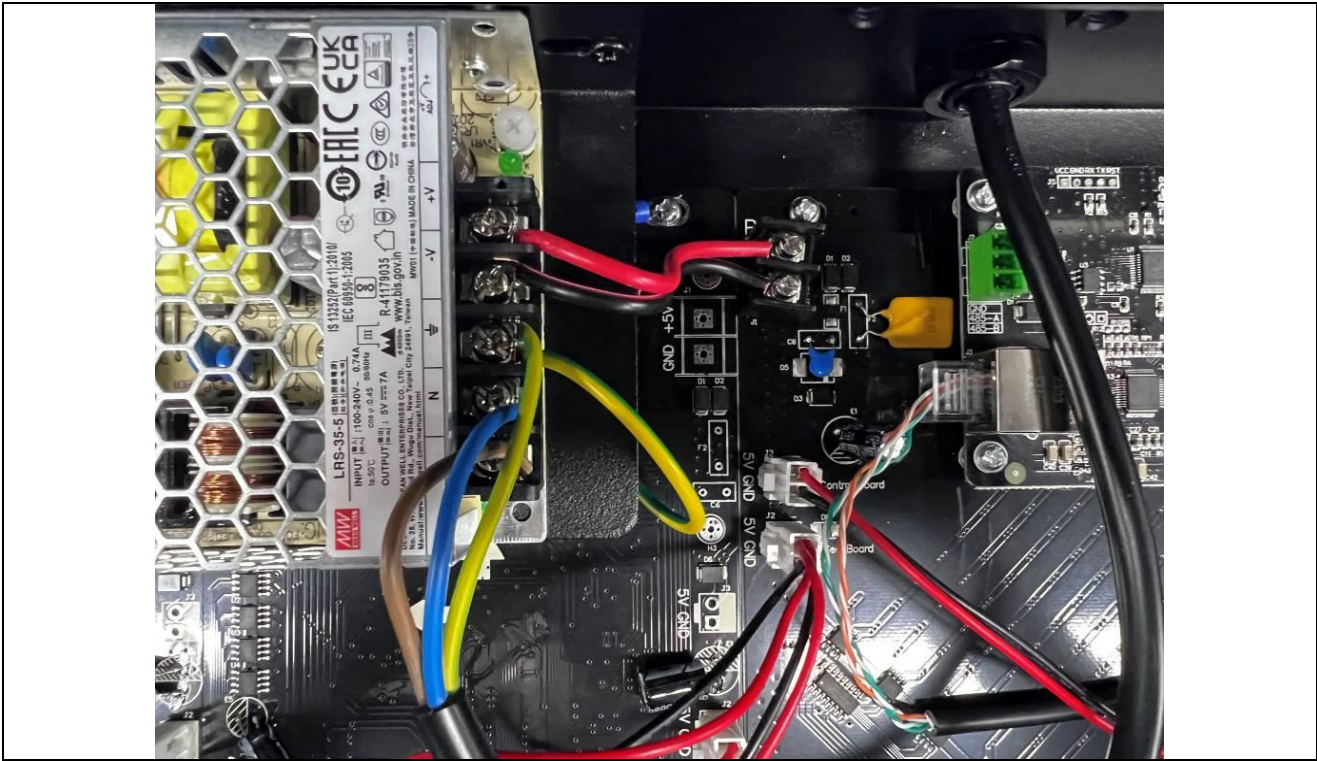


Details of: Terminal View

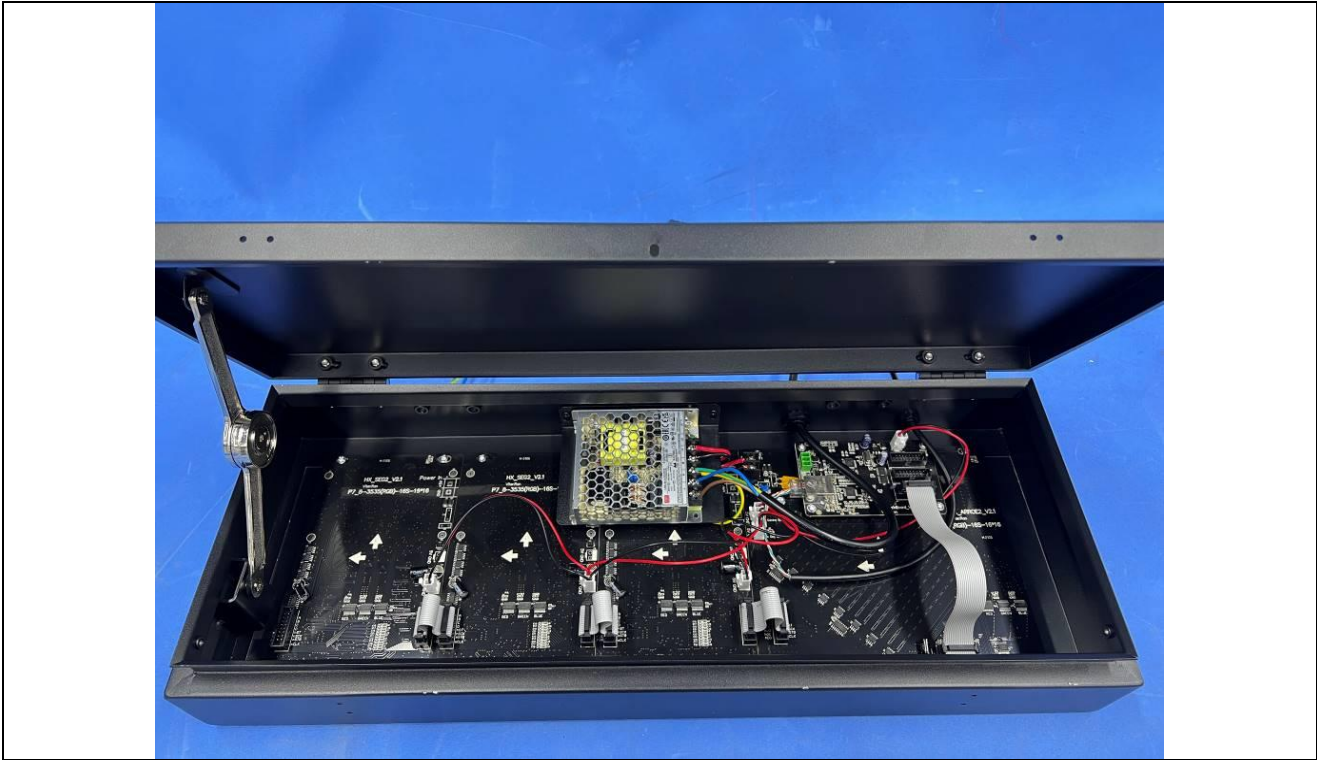




Details of: Protective earthing terminal



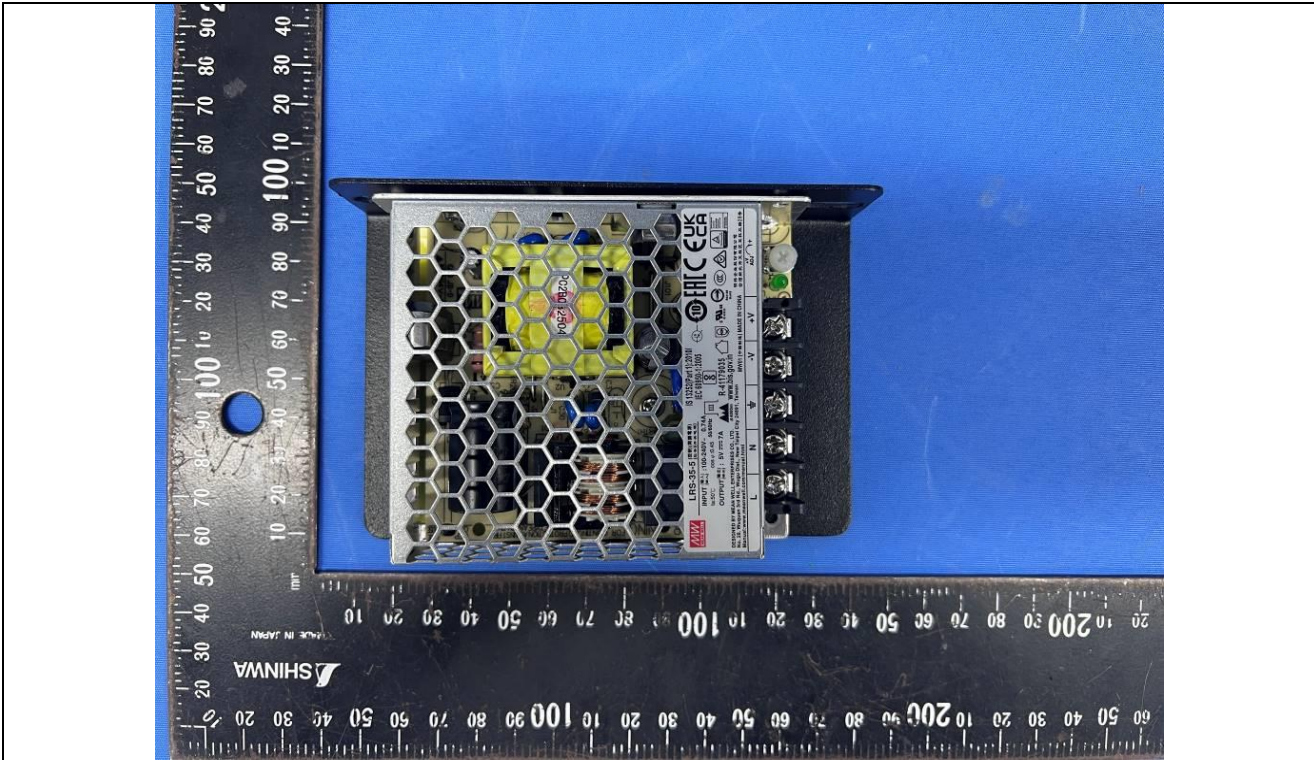
Details of: Internal view



Details of: Internal view



Details of: Internal power supply view



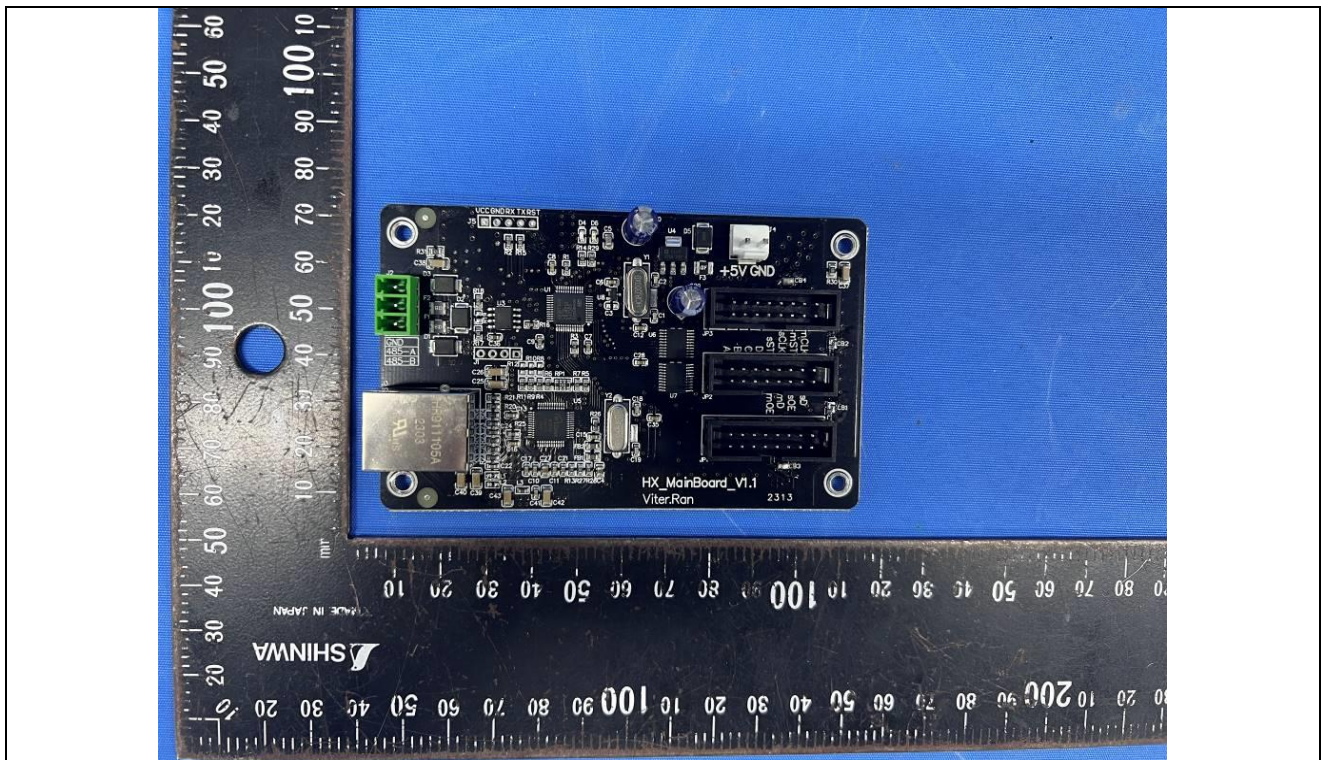


**Attachment 1: Photo documentation**

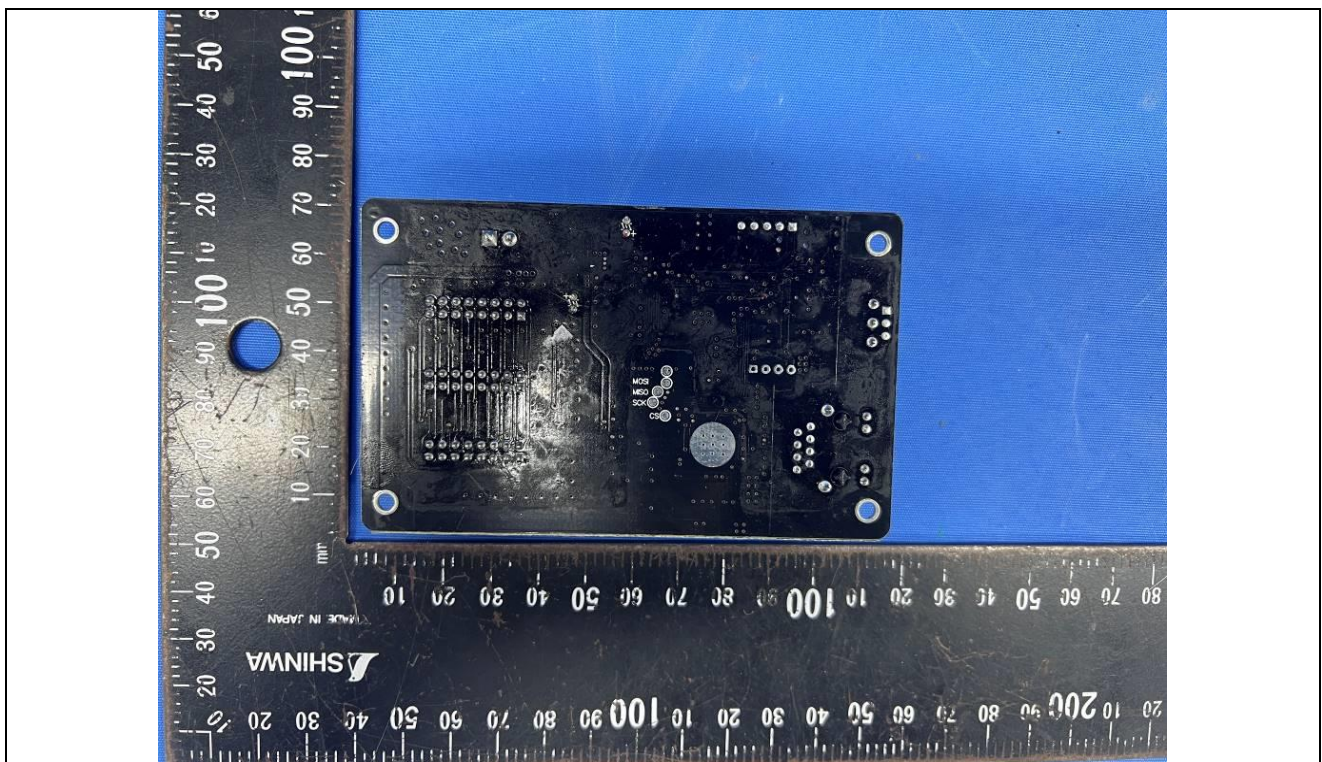
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Details of: PCB-1

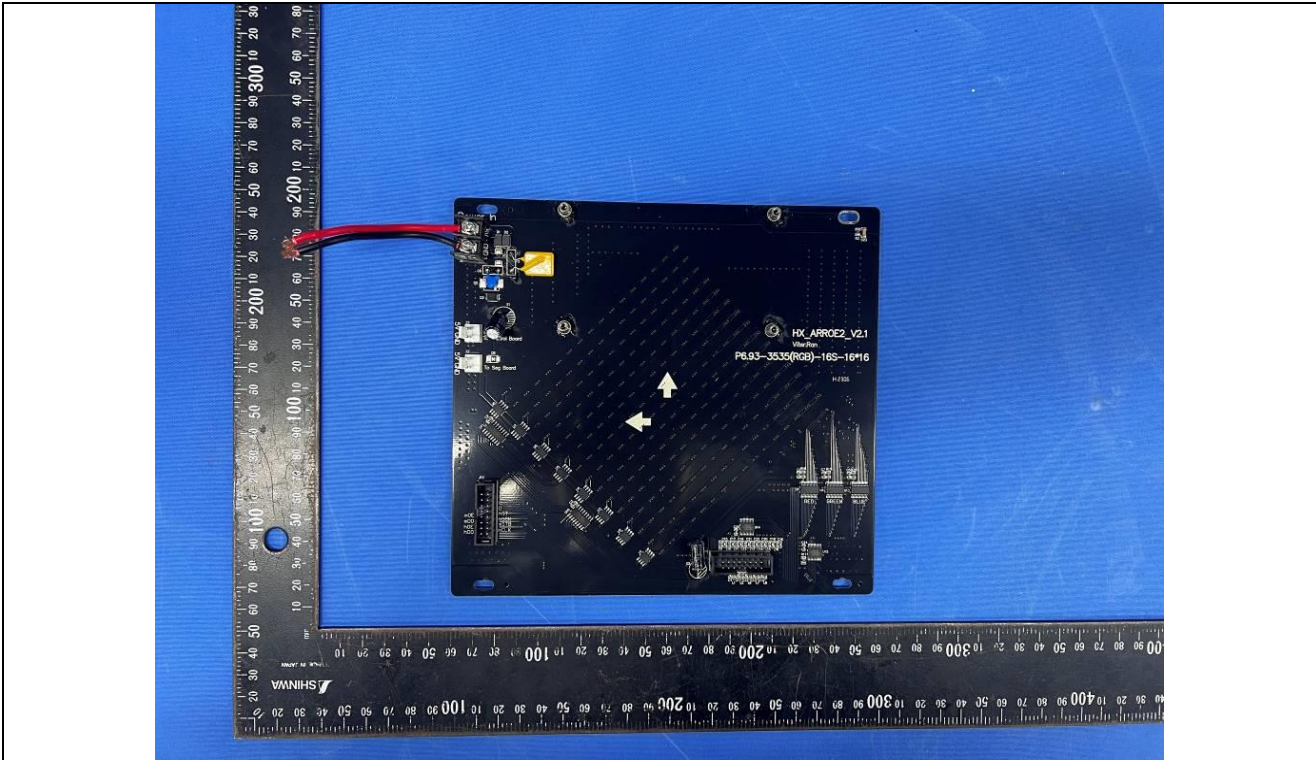


Details of: PCB-1

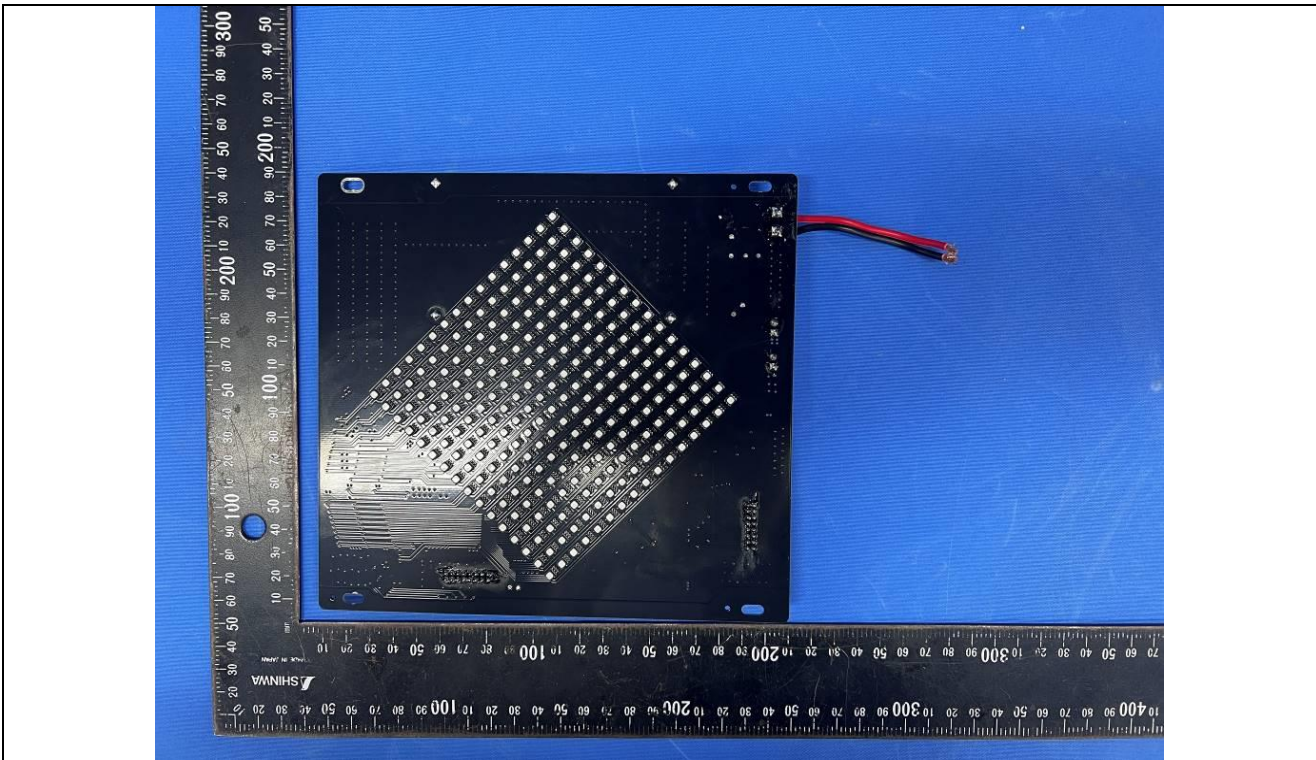




Details of: PCB-2



Details of: PCB-2



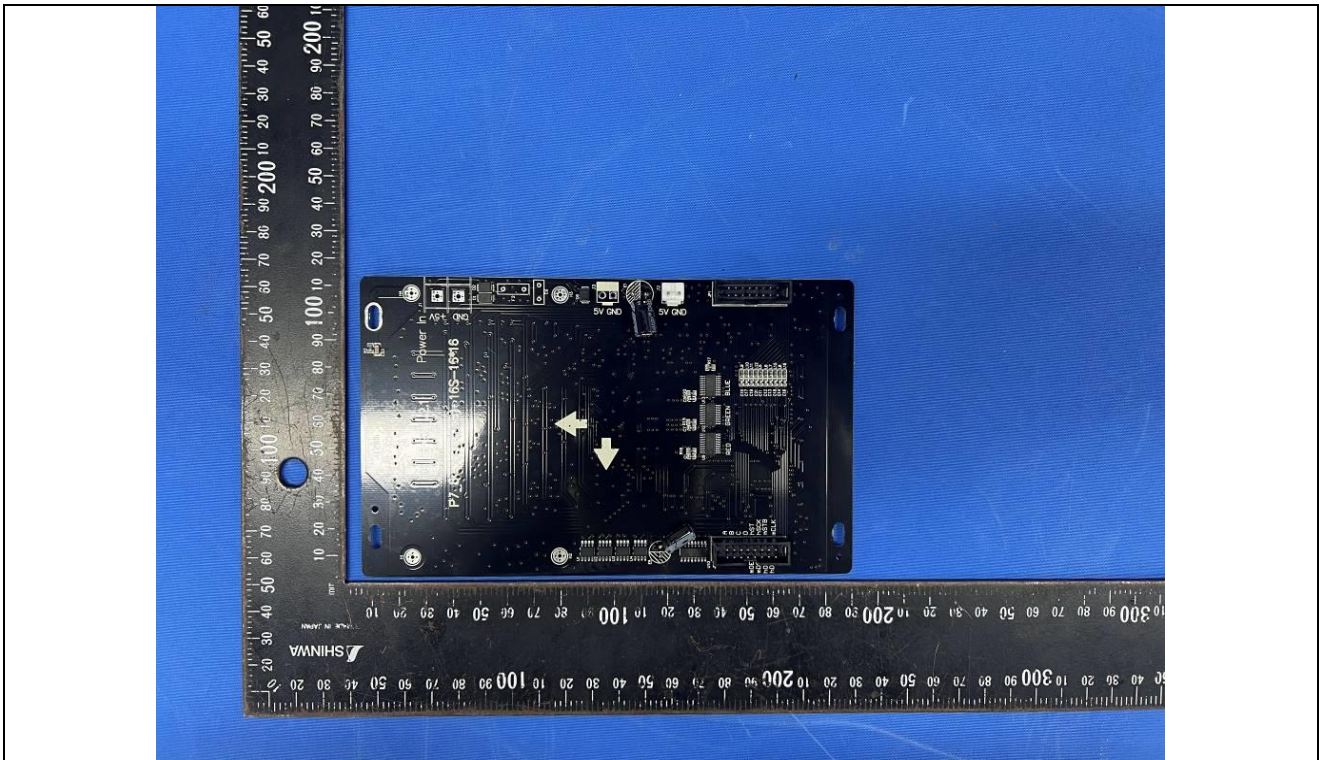


**Attachment 1: Photo documentation**

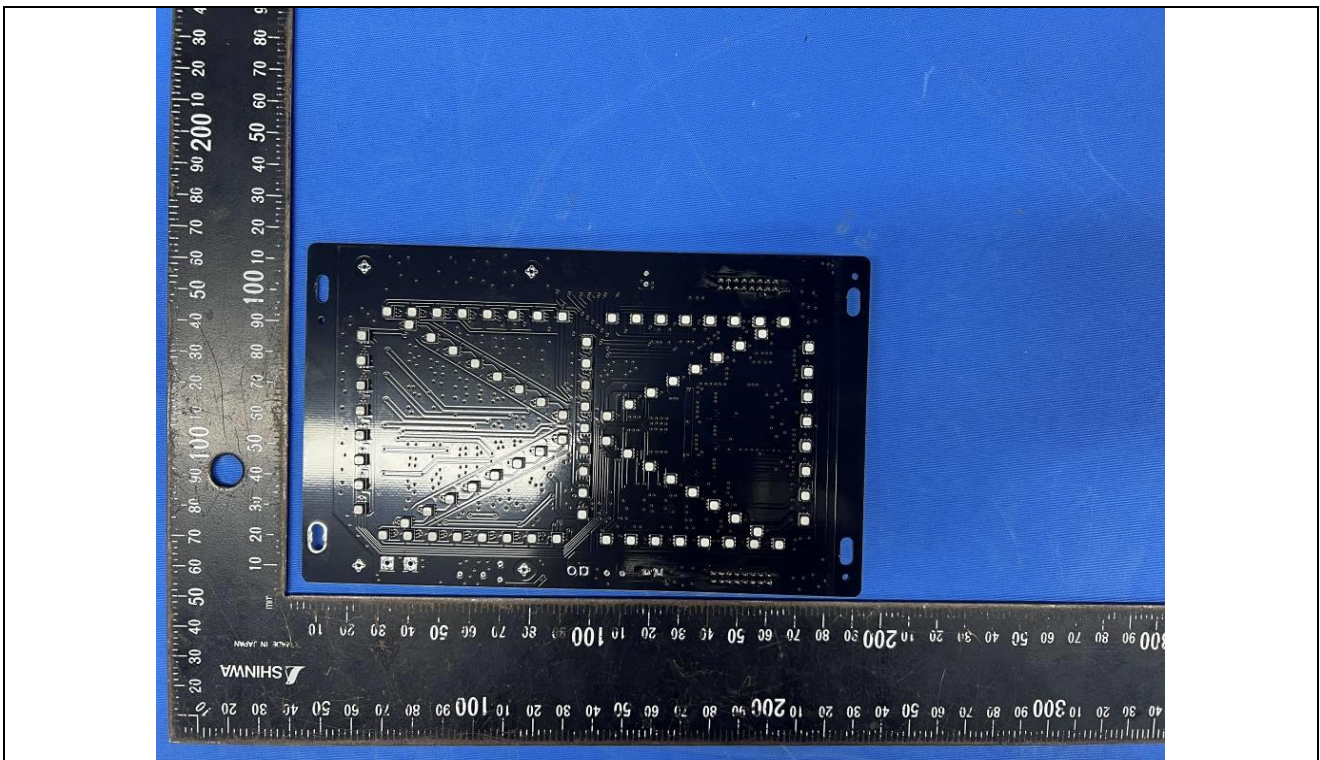
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Report No.: SHES230601032001

Details of: PCB-3



Details of: PCB-3



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

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IEC62368_1D – ATTACHMENT 2																																									
Clause	Requirement + Test			Result - Remark	Verdict																																				
<div>ATTACHMENT TO TEST REPORT</div> <div>IEC 62368-1</div> <div>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</div> <div>(Audio/video, information and communication technology equipment - Part 1: Safety requirements)</div>																																									
Differences according to ..... : EN 62368-1:2014+A11:2017																																									
Attachment Form No. .... : EU_GD_IEC62368_1D_II																																									
Attachment Originator ..... : Nemko AS																																									
Master Attachment..... : Date 2021-02-04																																									
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	CENELEC COMMON MODIFICATIONS (EN)				P																																				
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed “Z”.				P																																				
CONTENTS	<div>Add the following annexes:</div> <div><div>Annex ZA (normative)</div><div>Normative references to international publications with their corresponding European publications</div><div>Annex ZB (normative)</div><div>Special national conditions</div><div>Annex ZC (informative)</div><div>A-deviations</div><div>Annex ZD (informative)</div><div>IEC and CENELEC code designations for flexible cords</div></div>				P																																				
	<div>Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list:</div> <table><tr><td>0.2.1</td><td>Note</td><td>1</td><td>Note 3</td><td>4.1.15</td><td>Note</td></tr><tr><td>4.7.3</td><td>Note 1 and 2</td><td>5.2.2.2</td><td>Note</td><td>5.4.2.3.2.2 Table 13</td><td>Note c</td></tr><tr><td>5.4.2.3.2.4</td><td>Note 1 and 3</td><td>5.4.2.5</td><td>Note 2</td><td>5.4.5.1</td><td>Note</td></tr><tr><td>5.5.2.1</td><td>Note</td><td>5.5.6</td><td>Note</td><td>5.6.4.2.1</td><td>Note 2 and 3</td></tr><tr><td>5.7.5</td><td>Note</td><td>5.7.6.1</td><td>Note 1 and 2</td><td>10.2.1 Table 39</td><td>Note 2, 3 and 4</td></tr><tr><td>10.5.3</td><td>Note 2</td><td>10.6.2.1</td><td>Note 3</td><td>F.3.3.6</td><td>Note 3</td></tr></table>				0.2.1	Note	1	Note 3	4.1.15	Note	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c	5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3	5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4	10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3	P
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	For special national conditions, see Annex ZB.				P																																				
1	<div>Add the following note:</div> <div>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</div>				P																																				

## IEC62368\_1D – ATTACHMENT 2

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

## IEC62368\_1D – ATTACHMENT 2

Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	<p><b>Add</b> the following after the first paragraph:  <i>For RS 1 compliance is checked by measurement under the following conditions:</i></p> <p><i>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</i></p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p><i>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm<sup>2</sup>, at any point 10 cm from the outer surface of the apparatus.</i></p> <p><i>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.</i></p> <p><i>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</i></p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>		N/A
10.6.1	<p><b>Add</b> the following paragraph to the end of the subclause:  EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.</p>		N/A
10.Z1	<p><b>Add</b> the following new subclause after 10.6.5.  <b>10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</b></p> <p>The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz).</p> <p>For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body-mounted devices, attention is drawn to EN 50360 and EN 50566</p>		N/A
G.7.1	<p><b>Add</b> the following note:  NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>		N/A

IEC62368_1D – ATTACHMENT 2			
Clause	Requirement + Test	Result - Remark	Verdict
Bibliography	<p><b>Add</b> the following standards:</p> <p><b>Add</b> the following notes for the standards indicated:</p> <p>IEC 60130-9 NOTE Harmonized as EN 60130-9.</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 NOTE Harmonized as EN 60664-5.</p> <p>IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified).</p> <p>IEC 61508-1 NOTE Harmonized as EN 61508-1.</p> <p>IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1.</p> <p>IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4.</p> <p>IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6.</p> <p>IEC 61643-1 NOTE Harmonized as EN 61643-1.</p> <p>IEC 61643-21 NOTE Harmonized as EN 61643-21.</p> <p>IEC 61643-311 NOTE Harmonized as EN 61643-311.</p> <p>IEC 61643-321 NOTE Harmonized as EN 61643-321.</p> <p>IEC 61643-331 NOTE Harmonized as EN 61643-331.</p>		--
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>		--
4.1.15	<p><b>Denmark, Finland, Norway and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p><b>Class I pluggable equipment type A</b> 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 <b>accessible</b> parts, have a marking stating that the equipment shall be connected to an earthed <b>mains</b> socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In <b>Denmark</b>: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In <b>Finland</b>: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In <b>Norway</b>: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In <b>Sweden</b>: "Apparaten skall anslutas till jordat uttag"</p>		N/A
4.7.3	<p><b>United Kingdom</b></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>		P

## IEC62368\_1D – ATTACHMENT 2

Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	<p><b>Denmark</b></p> <p>After the 2nd paragraph add the following:  A warning (marking <b>safeguard</b>) for high <b>touch current</b> is required if the <b>touch current</b> exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>		N/A
5.4.11.1 and Annex G	<p><b>Finland and Sweden</b></p> <p>To the end of the subclause the following is added:  For separation of the telecommunication network from earth the following is applicable:  If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <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> <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 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and</li> <li>• is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <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 5.4.11;</li> <li>• the additional testing shall be performed on all the test specimens as described in EN 60384-14;</li> </ul> <p>the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</p>		N/A
5.5.2.1	<p><b>Norway</b></p> <p>After the 3rd paragraph the following is added:  Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>		P



## IEC62368\_1D – ATTACHMENT 2

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

## IEC62368\_1D – ATTACHMENT 2

Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.1	<p><b>Norway and Sweden</b></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 r.m.s., 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> <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

## IEC62368\_1D – ATTACHMENT 2

Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.2	<b>Denmark</b> To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .		N/A
B.3.1 and B.4	<b>Ireland and United Kingdom</b> The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of <b>direct plug-in equipment</b> , 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 <b>direct plug-in equipment</b> , until the requirements of Annexes B.3.1 and B.4 are met		P
G.4.2	<b>Denmark</b> To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a <i>Justification:</i> Heavy Current Regulations, Section 6c		N/A

## IEC62368\_1D – ATTACHMENT 2

Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	<b>United Kingdom</b> To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
G.7.1	<b>United Kingdom</b> To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.		P
G.7.1	<b>Ireland</b> To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard		N/A
G.7.2	<b>Ireland and United Kingdom</b> To the first paragraph the following is added: 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.		N/A

## IEC62368\_1D – ATTACHMENT 2

Clause	Requirement + Test	Result - Remark	Verdict
<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		<b>--</b>
10.5.2	<p><b>Germany</b></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></p> <p>German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p><b>NOTE</b> 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

---End of Attachment 2---



## Safety Usage Precautions

The purpose of this content is to ensure users use this product correctly to avoid danger or property damage. Before using this product, please read this instruction manual carefully and keep it properly for future reference.

As shown below, the precautionary measures are divided into "Warning" and "Caution" sections:

**Warning:** Disregarding warning items may result in death or serious injury.

**Caution:** Disregarding caution items may result in injury or property damage.

<b>Warning:</b> These reminders alert users to the potential danger of death or serious injury.	<b>Caution:</b> These reminders alert users to the potential danger of injury or property damage.



### Warning

- During the installation and use of this product, it is essential to strictly adhere to the electrical safety regulations of your country and region.
- Please use a stable power circuit with a power supply requirement of AC 220V, 50Hz/60Hz.
- When performing operations such as wiring and disassembly, always ensure that the power supply is disconnected and avoid working on live circuits.
- If the equipment is not functioning properly, contact the place of purchase or the nearest service center. Do not attempt to disassemble or modify the equipment in any way. (The company is not responsible for issues caused by unauthorized modifications or repairs).



**Caution:**

- Please do not drop objects onto the equipment, subject it to strong vibrations, and keep the equipment away from places with magnetic interference. Avoid installing the equipment in areas prone to surface vibrations or impacts. (Neglecting this could damage the equipment)
- Do not install the equipment in high-temperature locations (above 60°C) or low-temperature locations (below -25°C).
- Provide adequate ventilation.
- Do not operate in humid environments.
- Do not operate in explosive environments.
- Keep the product surface clean.
- Avoid contact with exposed circuits. When the product is powered, do not touch exposed contacts and components.

\*\*\*\*\*End of attachment 3\*\*\*\*\*