






Test Report issued under the responsibility of:



**Eurofins Electrical and Electronic  
Testing NA, Inc.**

<b>TEST REPORT</b> <b>IEC 62368-1</b> <b>Audio/video, information and communication technology equipment</b> <b>Part 1: Safety requirements</b>	
<b>Report Number.....</b>	US-2406-MET EN 124880 M0A0
<b>Date of issue .....</b>	January 27, 2023
<b>Total number of pages .....</b>	106
<b>Name of Testing Laboratory preparing the Report .....</b>	Eurofins Electrical and Electronic Testing NA, Inc.
<b>Applicant's name .....</b>	Texas Instruments Incorporated
<b>Address .....</b>	12500 TI Boulevard Dallas, Texas 75243, USA
<b>Test specification:</b>	
<b>Standard .....</b>	IEC 62368-1:2018
<b>Test procedure.....</b>	CB Scheme
<b>Non-standard test method.....</b>	N/A
<b>TRF template used .....</b>	IECEE OD-2020-F1:2020, Ed.1.3
<b>Test Report Form No.....</b>	IEC62368_1E
<b>Test Report Form(s) Originator.....</b>	UL(US)
<b>Master TRF .....</b>	Dated 2021-02-04
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<b>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.</b>	
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<b>Test item description .....</b>	Component IC Current Limited	
<b>Trade Mark(s) .....</b>		
<b>Manufacturer .....</b>	Texas Instruments Incorporated	
<b>Model/Type reference .....</b>	TPS2552, TPS2552-1, TPS2553, TPS2553-1; may be followed by additional characters that do not impact the safety of the device	
<b>Ratings .....</b>	Input Voltage: 2.5 to 6.5 VDC Output Continuous Rating: 1.5 A Output Current Limit: 1.7 A Maximum Operating Ambient: 60°C	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	Eurofins Electrical and Electronic Testing NA, Inc.
<b>Testing location/ address .....</b>		13501 McCallen Pass Austin, Texas 78753, USA
<b>Tested by (name, function, signature) .....</b>		Johanna Goforth, Engineer 
<b>Approved by (name, function, signature) ..</b>		Deniz Kozdereli, Reviewer 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	N/A
<b>Testing location/ address .....</b>		N/A
<b>Tested by (name, function, signature) .....</b>		N/A
<b>Approved by (name, function, signature) ..</b>		N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	N/A
<b>Testing location/ address .....</b>		N/A
<b>Tested by (name, function, signature) .....</b>		N/A
<b>Witnessed by (name, function, signature) .</b>		N/A
<b>Approved by (name, function, signature) ..</b>		N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	N/A
<b>Testing location/ address .....</b>		N/A
<b>Tested by (name, function, signature) .....</b>		N/A
<b>Witnessed by (name, function, signature) .</b>		N/A
<b>Approved by (name, function, signature) ..</b>		N/A
<b>Supervised by (name, function, signature) :</b>		N/A

<b>List of Attachments (including a total number of pages in each attachment):</b>	
Attachment 1 – National Differences (53 pages)	
Attachment 2 – Photographs and Illustrations (1 page)	
<b>Summary of testing:</b>	
General	This test report is based on CB Test Certificate US-34989-UL with CB Test Report E169910-A6015-CB-1 (dated 2019-12-17). This report was leveraged to support the evaluation of the equipment to IEC 62368-1:2018 (Third Edition) upon review of the testing completed during the previous UL evaluation; additionally, the technical documentation was reviewed to confirm the equipment remains the same as what was evaluated previously.
Clauses 5.4.1.4, 6.2, 9.2.5, Annex B.2: Temperature measurements	Representative testing requirements from IEC 60950-1, Clauses 4.5.1, 1.4.12 and 1.4.13.
Clause 6.4.2 and Annex B.4: Fault condition tests	Representative testing requirements from IEC 60950-1, Clause 5.3.1-5.3.9.
Annex F: Marking and instruction	The marking label provided is representative of all models.  Electrical ratings, including voltage range, maximum continuous current, protective current and operating temperatures shall be provided on the manufacturer's device specific datasheet. Electrical ratings are optional. The datasheet maybe web-based provided it is publicly accessible on the internet (see TPS2552 and TPS2553 datasheet).
Annex G.9: Integrated Circuit (IC) current limiters	Representative testing requirements from IEC 60950-1, Annex CC.
Annex Q.1: Circuits intended for interconnection with building wiring	Representative testing requirements from IEC 60950-1, Clause 2.5.
<b>Tests performed (name of test and test clause):</b>	<b>Testing location:</b>
Temperature measurements 5.4.1.4, 6.3.2, 9.0, B.2.6	UL Melville
Fault conditions B.4	1285 Walt Whitman Road
IC current limiters G.9	Melville, New York 11747, USA
<b>Summary of compliance with National Differences (List of countries addressed): US, CA, CENELEC, AU/NZ, SA.</b>	
<input checked="" type="checkbox"/> <b>The product fulfils the requirements of IEC 62368-1:2018.</b>	

**Statement concerning the uncertainty of the measurement systems used for the tests**

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

**Procedure number, issue date and title:**

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

☒ **Statement not required by the standard used for type testing**

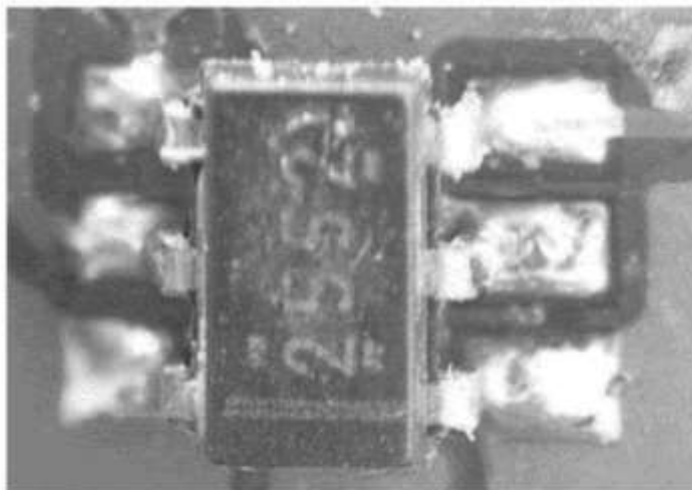
(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

**Statements of conformity to specifications (Pass/Fail) and/or reported test result values are presented in datasheets and reports without taking measurement uncertainty into account; except in cases where required by a standard, or where a customer has made a specific request, in writing. Therefore, statements of conformity will be made utilizing the following “Simple Acceptance” Decision Rules except when one of the above conditions is present (see Appendix 1).  
Pass – Results within the specified limits; Fail – Results outside the specified limits**

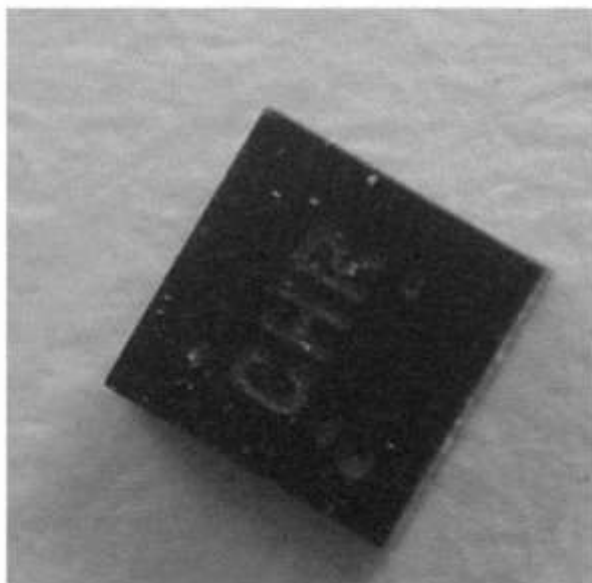
**Copy of marking plate:**

**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.**

TPS2552DBV



TPS2552DRV



<b>Test item particulars:</b>			
<b>Product group</b> .....	<input type="checkbox"/> end product	<input checked="" type="checkbox"/> built-in component	
<b>Classification of use by</b> .....	<input type="checkbox"/> Ordinary person <input type="checkbox"/> Children likely present <input type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person		
<b>Supply connection</b> .....	<input type="checkbox"/> AC mains <input type="checkbox"/> DC mains <input checked="" type="checkbox"/> not mains connected: <input checked="" type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3		
<b>Supply tolerance</b> .....	<input type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> +        %/ -        % <input checked="" type="checkbox"/> None		
<b>Supply connection – type</b> .....	<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"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: None		
<b>Considered current rating of protective device</b> .....	<input type="checkbox"/> A; Location: <input type="checkbox"/> building <input type="checkbox"/> equipment <input checked="" type="checkbox"/> N/A		
<b>Equipment mobility</b> .....	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> direct plug-in <input type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> wall/ceiling-mounted <input type="checkbox"/> SRME/rack-mounted <input type="checkbox"/> other:		
<b>Overvoltage category (OVC)</b> .....	<input checked="" type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:		
<b>Class of equipment</b> .....	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III <input type="checkbox"/> Not classified <input type="checkbox"/>		
<b>Special installation location</b> .....	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> restricted access area <input type="checkbox"/> outdoor location <input type="checkbox"/>		
<b>Pollution degree (PD)</b> .....	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3		
<b>Manufacturer's specified T<sub>ma</sub></b> .....	60 °C <input type="checkbox"/> Outdoor: minimum                      °C		
<b>IP protection class</b> .....	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP____		
<b>Power systems</b> .....	<input type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT -                      V <sub>L-L</sub> <input checked="" type="checkbox"/> not AC mains		
<b>Altitude during operation (m)</b> .....	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> m		
<b>Altitude of test laboratory (m)</b> .....	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> 214 m		
<b>Mass of equipment (kg)</b> .....	< 0.1 kg		

<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> : 2008-12-02, 2009-05-18, 2013-04-29, 2022-01-18 <b>Date (s) of performance of tests .....</b> : 2009-02-02 to 2009-02-03, 2009-08-03 to 2009-08-18, 2013-05-15 to 2013-05-17	
<b>General remarks:</b> "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
<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"/> <b>Yes</b> <input type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies) .....</b> : ASE ASSEMBLY & TEST (SHANGHAI) LTD #669 GUOSHOUJING RD ZHANGJIANG HI-TECH PARK PUDONG NEW AREA SHANGHAI 201203 CHINA  UTAC THAI LTD WELGROW INDUSTRIAL ESTATE, 73 MOO5 BANGNA-TRAD (KM 38) RD A BANGPAKONG, T BANGSAMAK CHACHOENGSAO 24180 THAILAND  TONGFU MICROELECTRONICS CO LTD NO 288 CHONGCHUAN RD CHONGCHUAN DEVELOPMENT ZONE NANTONG JIANGSU 226006 CHINA  TI (PHILIPPINES) INC	

CLARK TI SPECIAL ECONOMIC ZONE  
 CLARK FREEPORT ZONE  
 ANGELES PAMPANGA PHILIPPINES

TEXAS INSTRUMENTS DE MEXICO S DE R L DE C V  
 JESUS RIVERA FRANCO # 507  
 CD INDUSTRIAL  
 20290 AGUASCALIENTES  
 AGS MEXICO

TEXAS INSTRUMENTS MALAYSIA SDN BHD  
 1 LORONG ENGGANG 33  
 AMPANG/ULU KLANG  
 54200 KUALA LUMPUR MALAYSIA

HANA SEMICONDUCTOR (AYUTTHAYA) CO LTD  
 HI-TECH IND ESTATE AUTH OF THAILAND  
 100 MOO1, T BAAN-LEN, A BANG PA-IN  
 KM 59 ASIA RD  
 AYUTTHAYA 13160 THAILAND

TEXAS INSTRUMENTS TAIWAN LTD  
 142 HSIN NAN RD, SEC 1  
 CHUNG HO  
 TAIPEI HSIEN  
 235 TAIWAN

TEXAS INSTRUMENTS SEMICONDUCTOR  
 MANUFACTURING (CHENGDU) CO., LTD.  
 NO. 8-8 & NO.8-10, KEXIN RD  
 WEST ZONE OF CHENGDU  
 HI-TECH INDUSTRIAL DEVELOPMENT ZONE  
 CHENGDU  
 SICHUAN 611731 CHINA

**General product information and other remarks:**

The component power distribution switch (IC Current Limiter) limits the output current to within the specified output ratings. These devices provide current limiting and short-circuit protection when supplied by a power source (e.g., 250 VA) in accordance with those specified for LPS outputs. These devices are for use in SELV circuits only.

**Model differences:**

Models TPS2552 and TPS2553 are identical except TPS2552 is enable low, while TPS2253 is enable high.

Models TPS2552 and TPS2553 limit the output current to a safe level by switching into a constant-current mode when the output load exceeds the current-limit threshold.

Models TPS2552-1 and TPS2553-1 are identical to Models TPS2552 and TPS2553, respectively, except



provide current interruption functionality by latching off the power switch during overcurrent or reverse-voltage situations.

**Engineering conditions of acceptability:**

When installed in an end-product, consideration must be given to the following:

- These devices are integrated circuits and electrical spacings within the device are not specified.
- These devices are entirely electronic in nature and have no means for manual operation or reset.
- The terminals of these devices are for factory wiring only and are intended to be mounted on printed wiring board.
- These devices have only been evaluated for supplementary overcurrent protection of secondary circuits supplied by the load side of a transformer or battery and have not been evaluated for branch-circuit protection.
- These devices have not been subjected to tests for telecom applications and their suitability for connection to telecommunication networks with outside plant connections should be determined in the end-use.
- These devices were evaluated with respect to continuous current operation at the current levels shown in the electrical ratings section of this report.
- These devices have been subjected to environmental conditionings with respect to the following conditions:
  - Shipping and Storage: -30 to 70°C
  - Temperature Range: - 10 to 60 °C
  - Thermal Cycling
  - Endurance
  - Abnormal
- Latch-off devices Models TPS2552-1 and TPS2553-1 have been evaluated to limit output current to protective current ratings described in this report. These devices remain off and do not resume normal operation until the surrounding system either toggles the enable or cycles power to the device. They have not been evaluated to reset to normal operation. This feature, if applicable, will need to be determined in the end-product evaluation.
- The short circuit current limit of 1.7A noted under the electrical ratings is based on the Rilim (R2 as indicated in the schematics in Item 10) value of 15k ohm provided on the samples evaluated.
- The devices were tested up to a maximum of 60°C ambient during the temperature test.
- Energy sources and safeguards to be evaluated in the end-product.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1*: Input/Output (2.5 to 6.5 VDC)	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 <sup>st</sup> S	2 <sup>nd</sup> S
PS2^: Input/Output	Component	N/A	N/A	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
Supplementary Information:				
“B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				
* No safeguards required for Class 1 sources.				
^ Due to mass and volume of material, no safeguard required for component.				

ENERGY SOURCE DIAGRAM
<p><b>Optional.</b> Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems.</p> <p>Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings</p>
<div><input type="checkbox"/> ES    <input type="checkbox"/> PS    <input type="checkbox"/> MS    <input type="checkbox"/> TS    <input type="checkbox"/> RS</div>

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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	Materials accepted.	P
4.1.2	Use of components		P
4.1.3	Equipment design and construction		P
4.1.4	Specified ambient temperature for outdoor use (°C) ..... :	60°C.	P
4.1.5	Constructions and components not specifically covered		P
4.1.8	Liquids and liquid filled components (LFC)	No such parts present.	N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness	Such hazards and safeguards to be evaluated in end-product.	N/A
4.4.3.1	General		N/A
4.4.3.2	Steady force tests		N/A
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests		N/A
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests		N/A
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		N/A
4.4.4	Displacement of a safeguard by an insulating liquid	No such liquids present.	N/A
4.4.5	Safety interlocks	No interlocks present.	N/A
<b>4.5</b>	<b>Explosion</b>		N/A
4.5.1	General	No parts liable to explode present.	N/A
4.5.2	No explosion during normal/abnormal operating condition		N/A
	No harm by explosion during single fault conditions		N/A
<b>4.6</b>	<b>Fixing of conductors</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Fix conductors not to defeat a safeguard	No such parts present.	N/A
	Compliance is checked by test .....		N/A
<b>4.7</b>	<b>Equipment for direct insertion into mains socket-outlets</b>		N/A
4.7.2	Mains plug part complies with relevant standard ..	Equipment not intended for insertion into plug.	N/A
4.7.3	Torque (Nm) .....		N/A
<b>4.8</b>	<b>Equipment containing coin/button cell batteries</b>		N/A
4.8.1	General	No such parts present.	N/A
4.8.2	Instructional safeguard .....		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
<b>4.9</b>	<b>Likelihood of fire or shock due to entry of conductive object</b>		N/A
<b>4.10</b>	<b>Component requirements</b>		N/A
4.10.1	Disconnect Device	No such devices present or required.	N/A
4.10.2	Switches and relays	(See Annex G)	P

<b>5</b>	<b>ELECTRICALLY-CAUSED INJURY</b>		P
<b>5.2</b>	<b>Classification and limits of electrical energy sources</b>		P
5.2.2	ES1, ES2 and ES3 limits	Equipment is ES1.	P
5.2.2.2	Steady-state voltage and current limits .....	Equipment rated < 60 VDC.	P
5.2.2.3	Capacitance limits .....	Equipment is not a capacitor.	N/A
5.2.2.4	Single pulse limits .....	Energy source is not a single pulse.	N/A
5.2.2.5	Limits for repetitive pulses .....	Energy source is not a repetitive pulse.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.6	Ringling signals	No such signals present.	N/A
5.2.2.7	Audio signals	No such signals present.	N/A
<b>5.3</b>	<b>Protection against electrical energy sources</b>		N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	Equipment is ES1; other energy sources and safeguards to be evaluated in end-product.	N/A
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements		N/A
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V) .....		N/A
5.3.2.2 b)	Air gap – distance (mm) .....		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
<b>5.4</b>	<b>Insulation materials and requirements</b>		N/A
5.4.1.2	Properties of insulating material	ES1; no safeguards required.	N/A
5.4.1.3	Material is non-hygroscopic		N/A
5.4.1.4	Maximum operating temperature for insulating materials .....		N/A
5.4.1.5	Pollution degrees .....		N/A
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage .....		N/A
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat test.....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10.3	Ball pressure test .....		N/A
5.4.2	Clearances		N/A
5.4.2.1	General requirements		N/A
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage .....		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	a.c. mains transient voltage .....		—
5.4.2.3.2.3	d.c. mains transient voltage .....		—
5.4.2.3.2.4	External circuit transient voltage.....		—
5.4.2.3.2.5	Transient voltage determined by measurement .....		—
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
5.4.2.6	Clearance measurement .....		N/A
5.4.3	Creepage distances		N/A
5.4.3.1	General		N/A
5.4.3.3	Material group .....		—
5.4.3.4	Creepage distances measurement .....		N/A
5.4.4	Solid insulation		N/A
5.4.4.1	General requirements		N/A
5.4.4.2	Minimum distance through insulation .....		N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A
	Number of layers (pcs) .....		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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, $E_P$ , $K_R$ , $d$ , $V_{PW}$ (V) .....		N/A
	Alternative by electric strength test, tested voltage (V), $K_R$ .....		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (M $\Omega$ ) .....		N/A
	Electric strength test .....		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%), temperature (°C), duration (h) .....		—
5.4.9	Electric strength test		N/A
5.4.9.1	Test procedure for type test of solid insulation .....		N/A
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....		N/A
5.4.10.2.3	Steady-state test .....		N/A
5.4.10.3	Verification for insulation breakdown for impulse test .....		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage $U_{op}$ (V) .....		—
	Nominal voltage $U_{peak}$ (V) .....		—
	Max increase due to variation $\Delta U_{sp}$ .....		—
	Max increase due to ageing $\Delta U_{sa}$ .....		—
5.4.11.3	Test method and compliance .....		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid .....		N/A
5.4.12.3	Compatibility of an insulating liquid .....		N/A
5.4.12.4	Container for insulating liquid .....		N/A
<b>5.5</b>	<b>Components as safeguards</b>		N/A
5.5.1	General	No components used as safeguard present.	N/A
5.5.2	Capacitors and RC units		N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector .....		N/A
5.5.3	Transformers		N/A
5.5.4	Optocouplers		N/A
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPDs		N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable .....		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA) .....		—
<b>5.6</b>	<b>Protective conductor</b>	Equipment is Class III.	N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm <sup>2</sup> ) .....		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm <sup>2</sup> ). ..... :		—
5.6.4.2	Protective current rating (A)..... :		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N/A
	Terminal size for connecting protective bonding conductors (mm) ..... :		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method..... :		N/A
5.6.6.3	Resistance ( $\Omega$ ) or voltage drop..... :		N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm <sup>2</sup> )...... :		N/A
	Class II with functional earthing marking ..... :		N/A
	Appliance inlet cl & cr (mm) ..... :		N/A
<b>5.7</b>	<b>Prospective touch voltage, touch current and protective conductor current</b>		N/A
5.7.2	Measuring devices and networks		N/A
5.7.2.1	Measurement of touch current	Such hazards and safeguards to be evaluated in end-product.	N/A
5.7.2.2	Measurement of voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		N/A
5.7.4	Unearthed accessible parts ..... :		N/A
5.7.5	Earthed accessible conductive parts ..... :		N/A
5.7.6	Requirements when touch current exceeds ES2 limits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Protective conductor current (mA) .....		N/A
	Instructional Safeguard .....		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA) .....		N/A
	b) Equipment connected to unearthed external circuits, current (mA) .....		N/A
<b>5.8</b>	<b>Backfeed safeguard in battery backed up supplies</b>		N/A
	Mains terminal ES .....	No such parts present.	N/A
	Air gap (mm) .....		N/A

<b>6</b>	<b>ELECTRICALLY- CAUSED FIRE</b>		<b>P</b>
<b>6.2</b>	<b>Classification of PS and PIS</b>		<b>P</b>
6.2.2	Power source circuit classifications .....	Equipment is PS2.	<b>P</b>
6.2.3	Classification of potential ignition sources	See below:	N/A
6.2.3.1	Arcing PIS .....	No arcing PIS present.	N/A
6.2.3.2	Resistive PIS .....	No resistive PIS present.	N/A
<b>6.3</b>	<b>Safeguards against fire under normal operating and abnormal operating conditions</b>		<b>P</b>
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials .....	(See appended table B.1.5 and B.3)	<b>P</b>
	Combustible materials outside fire enclosure .....	No safeguard required; equipment size > 1,750mm <sup>3</sup> .	N/A
<b>6.4</b>	<b>Safeguards against fire under single fault conditions</b>		<b>N/A</b>
6.4.1	Safeguard method	Exception met; see Clause 6.3.1.	N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions ..... :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits	Exception met; see Clause 6.3.1.	N/A
6.4.5.2	Supplementary safeguards		N/A
6.4.6	Control of fire spread in PS3 circuits		N/A
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		N/A
6.4.8.2	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c) ..... :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating ..... :		N/A
6.4.9	Flammability of insulating liquid..... :		N/A
<b>6.5</b>	<b>Internal and external wiring</b>		N/A
6.5.1	General requirements	No such parts present.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.2	Requirements for interconnection to building wiring ..... :		N/A
6.5.3	Internal wiring size (mm <sup>2</sup> ) for socket-outlets..... :		N/A
<b>6.6</b>	<b>Safeguards against fire due to the connection to additional equipment</b>		N/A

<b>7</b>	<b>INJURY CAUSED BY HAZARDOUS SUBSTANCES</b>		N/A
<b>7.2</b>	<b>Reduction of exposure to hazardous substances</b>		N/A
<b>7.3</b>	<b>Ozone exposure</b>		N/A
<b>7.4</b>	<b>Use of personal safeguards or personal protective equipment (PPE)</b>		N/A
	Personal safeguards and instructions ..... :	No hazardous substances produced, consumed or encountered in normal use; no PPE required.	—
<b>7.5</b>	<b>Use of instructional safeguards and instructions</b>		N/A
	Instructional safeguard (ISO 7010)..... :	No instructional safeguards present or required.	—
<b>7.6</b>	<b>Batteries and their protection circuits</b>		N/A

<b>8</b>	<b>MECHANICALLY-CAUSED INJURY</b>		N/A
<b>8.2</b>	<b>Mechanical energy source classifications</b>		N/A
<b>8.3</b>	<b>Safeguards against mechanical energy sources</b>		N/A
<b>8.4</b>	<b>Safeguards against parts with sharp edges and corners</b>		N/A
8.4.1	Safeguards	Such hazards and safeguards to be evaluated in end-product.	N/A
	Instructional Safeguard..... :		N/A
8.4.2	Sharp edges or corners		N/A
<b>8.5</b>	<b>Safeguards against moving parts</b>		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard..... :		N/A
8.5.4	Special categories of equipment containing moving parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....:		N/A
	Space between end point and nearest fixed mechanical part (mm) .....		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly .....		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts .....		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N).....:		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test .....		N/A
8.5.5.3	Glass particles dimensions (mm) .....		N/A
<b>8.6</b>	<b>Stability of equipment</b>		N/A
8.6.1	General		N/A
	Instructional safeguard.....:		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test .....		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Wheels diameter (mm) .....		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test .....		N/A
<b>8.7</b>	<b>Equipment mounted to wall, ceiling or other structure</b>		N/A
8.7.1	Mount means type .....		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N).....		N/A
	Test 2, number of attachment points and test force (N).....		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm).....		N/A
<b>8.8</b>	<b>Handles strength</b>		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles.....		—
	Force applied (N) .....		—
<b>8.9</b>	<b>Wheels or casters attachment requirements</b>		N/A
8.9.2	Pull test		N/A
<b>8.10</b>	<b>Carts, stands and similar carriers</b>		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions.....		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N) .....		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N) .....		—
8.10.6	Thermoplastic temperature stability		N/A
<b>8.11</b>	<b>Mounting means for slide-rail mounted equipment (SRME)</b>		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard.....		N/A
8.11.3	Mechanical strength test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.11.3.1	Downward force test, force (N) applied .....		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
<b>8.12</b>	<b>Telescoping or rod antennas</b>		N/A
	Button/ball diameter (mm) .....		—

<b>9</b>	<b>THERMAL BURN INJURY</b>		N/A
<b>9.2</b>	<b>Thermal energy source classifications</b>		N/A
<b>9.3</b>	<b>Touch temperature limits</b>		N/A
9.3.1	Touch temperatures of accessible parts .....	To be evaluated in end-product.	N/A
9.3.2	Test method and compliance		N/A
<b>9.4</b>	<b>Safeguards against thermal energy sources</b>		N/A
<b>9.5</b>	<b>Requirements for safeguards</b>		N/A
9.5.1	Equipment safeguard		N/A
9.5.2	Instructional safeguard.....		N/A
<b>9.6</b>	<b>Requirements for wireless power transmitters</b>		N/A
9.6.1	General	No such parts present.	N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance .....		N/A

<b>10</b>	<b>RADIATION</b>		N/A
<b>10.2</b>	<b>Radiation energy source classification</b>		N/A
10.2.1	General classification	No radiation sources present in equipment.	N/A
	Lasers .....		—
	Lamps and lamp systems .....		—
	Image projectors .....		—
	X-Ray .....		—
	Personal music player .....		—
<b>10.3</b>	<b>Safeguards against laser radiation</b>		N/A
	The standard(s) equipment containing laser(s)		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	comply .....		
<b>10.4</b>	<b>Safeguards against optical radiation from lamps and lamp systems (including LED types)</b>		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location .....		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure .....		N/A
10.4.3	Instructional safeguard .....		N/A
<b>10.5</b>	<b>Safeguards against X-radiation</b>		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons .....		—
10.5.3	Maximum radiation (pA/kg).....		—
<b>10.6</b>	<b>Safeguards against acoustic energy sources</b>		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$ , dB(A).....		N/A
	Unweighted RMS output voltage (mV).....		N/A
	Digital output signal (dBFS) .....		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30) .....		N/A
	Warning for MEL $\geq 100$ dB(A) .....		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards .....		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV).....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$ , dB(A) .....		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$ , dB(A) .....		N/A

<b>B</b>	<b>NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS</b>		P
<b>B.1</b>	<b>General</b>		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
<b>B.2</b>	<b>Normal operating conditions</b>		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers .....	No such parts present.	N/A
B.2.3	Supply voltage and tolerances	To be evaluated in end-product.	N/A
B.2.5	Input test..... :	To be evaluated in end-product.	N/A
<b>B.3</b>	<b>Simulated abnormal operating conditions</b>		N/A
B.3.1	General	Such operating conditions to be evaluated in end-product.	N/A
B.3.2	Covering of ventilation openings		N/A
	Instructional safeguard .....		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals		N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions .....		N/A
<b>B.4</b>	<b>Simulated single fault conditions</b>		P
B.4.1	General		P
B.4.2	Temperature controlling device	(See appended table B.4)	P
B.4.3	Blocked motor test	No such parts present.	N/A
B.4.4	Functional insulation	Such insulation to be investigated in end-product.	N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors	No such parts present.	N/A
B.4.6	Short circuit or disconnection of passive components	No such parts present.	N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions .....	Such parts to be evaluated in end-product.	N/A
B.4.9	Battery charging and discharging under single fault conditions	No such parts present.	N/A
<b>C</b>	<b>UV RADIATION</b>		N/A
<b>C.1</b>	<b>Protection of materials in equipment from UV radiation</b>		N/A
C.1.2	Requirements	Equipment does not emit UV radiation; outdoor use to be evaluated in end-product.	N/A
C.1.3	Test method		N/A
<b>C.2</b>	<b>UV light conditioning test</b>		N/A
C.2.1	Test apparatus.....		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
<b>D</b>	<b>TEST GENERATORS</b>		N/A
<b>D.1</b>	<b>Impulse test generators</b>		N/A
<b>D.2</b>	<b>Antenna interface test generator</b>		N/A
<b>D.3</b>	<b>Electronic pulse generator</b>		N/A
<b>E</b>	<b>TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS</b>		N/A
<b>E.1</b>	<b>Electrical energy source classification for audio signals</b>		N/A
	Maximum non-clipped output power (W).....	No such parts present.	—
	Rated load impedance ( $\Omega$ ) .....		—
	Open-circuit output voltage (V).....		—
	Instructional safeguard .....		—
<b>E.2</b>	<b>Audio amplifier normal operating conditions</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Audio signal source type .....		—
	Audio output power (W) .....		—
	Audio output voltage (V) .....		—
	Rated load impedance ( $\Omega$ ) .....		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
<b>F</b>	<b>EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS</b>		P
<b>F.1</b>	<b>General</b>		P
	Language .....	English language evaluated.	—
<b>F.2</b>	<b>Letter symbols and graphical symbols</b>		N/A
F.2.1	Letter symbols according to IEC60027-1	No such symbols present.	N/A
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		N/A
<b>F.3</b>	<b>Equipment markings</b>		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 and Summary of testing.	P
F.3.2.2	Model identification .....	See Copy of marking plate and Summary of testing.	P
F.3.3	Equipment rating markings	See below:	N/A
F.3.3.1	Equipment with direct connection to mains	No such connection present.	N/A
F.3.3.2	Equipment without direct connection to mains	No markings present or required.	N/A
F.3.3.3	Nature of the supply voltage .....	See above.	N/A
F.3.3.4	Rated voltage .....	See above.	N/A
F.3.3.5	Rated frequency .....	See above.	N/A
F.3.3.6	Rated current or rated power .....	See above.	N/A
F.3.3.7	Equipment with multiple supply connections	No such connections present.	N/A
F.3.4	Voltage setting device	No such parts present.	N/A
F.3.5	Terminals and operating devices	See below:	N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings .....	No such parts present.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.2	Switch position identification marking..... :	No such parts present.	N/A
F.3.5.3	Replacement fuse identification and rating markings ..... :	No such parts present.	N/A
	Instructional safeguards for neutral fuse ..... :		N/A
F.3.5.4	Replacement battery identification marking ..... :	No such parts present.	N/A
F.3.5.5	Neutral conductor terminal	No such parts present.	N/A
F.3.5.6	Terminal marking location	No such parts present.	N/A
F.3.6	Equipment markings related to equipment classification	See below:	N/A
F.3.6.1	Class I equipment	Equipment is Class III.	N/A
F.3.6.1.1	Protective earthing conductor terminal..... :		N/A
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking ..... :		N/A
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :	Equipment is not specially protected (IPX0).	N/A
F.3.8	External power supply output marking ..... :	No such output present.	N/A
F.3.9	Durability, legibility and permanence of marking		N/A
F.3.10	Test for permanence of markings		N/A
<b>F.4</b>	<b>Instructions</b>		<b>P</b>
	Information prior to installation and initial use		<b>P</b>
	Equipment for use in locations where children not likely to be present	To be evaluated in end-product.	N/A
	Instructions for installation and interconnection	To be evaluated in end-product.	N/A
	Equipment intended for use only in restricted access area	To be evaluated in end-product.	N/A
	Equipment intended to be fastened in place	Included in datasheet.	<b>P</b>
	Instructions for audio equipment terminals	No such parts present.	N/A
	Protective earthing used as a safeguard	No such parts present.	N/A
	Protective conductor current exceeding ES2 limits	No such parts present.	N/A
	Graphic symbols used on equipment	No such parts present.	N/A
	Permanently connected equipment not provided with all-pole mains switch	To be evaluated in end-product.	N/A
	Replaceable components or modules providing safeguard function	No such parts present.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Equipment containing insulating liquid	No such parts present.	N/A
	Installation instructions for outdoor equipment	To be evaluated in end-product.	N/A
<b>F.5</b>	Instructional safeguards		N/A
<b>G</b>	<b>COMPONENTS</b>		P
<b>G.1</b>	<b>Switches</b>		N/A
G.1.1	General	No such parts present.	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
<b>G.2</b>	<b>Relays</b>		N/A
G.2.1	Requirements	No such parts present.	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
<b>G.3</b>	<b>Protective devices</b>		N/A
G.3.1	Thermal cut-offs	No such parts present.	N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions..... :		N/A
<b>G.4</b>	<b>Connectors</b>		N/A
G.4.1	Spacings	No such parts present.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	Mains connector configuration .....		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
<b>G.5</b>	<b>Wound components</b>		N/A
G.5.1	Wire insulation in wound components	No such parts present.	N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle) .....		—
	Test temperature (°C).....		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		N/A
G.5.3.1	Compliance method.....		N/A
	Position .....		N/A
	Method of protection.....		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings.....		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter.....		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation.....		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
<b>G.6</b>	<b>Wire Insulation</b>		N/A
G.6.1	General	No such parts present.	N/A
G.6.2	Enamelled winding wire insulation		N/A
<b>G.7</b>	<b>Mains supply cords</b>		N/A
G.7.1	General requirements	No such parts present.	N/A
	Type ..... :		—
G.7.2	Cross sectional area (mm <sup>2</sup> or AWG) ..... :		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) ..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, $D$ (mm) .....		—
	Radius of curvature after test (mm) .....		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
<b>G.8</b>	<b>Varistors</b>		N/A
G.8.1	General requirements	No such parts present.	N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
<b>G.9</b>	<b>Integrated circuit (IC) current limiters</b>		P
G.9.1	Requirements	See below:	P
	IC limiter output current (max. 5A) .....	See Model/Type Reference and Ratings.	—
	Manufacturers' defined drift .....	See Model/Type Reference and Ratings.	—
G.9.2	Test Program	Test Program 2; see attachment 3.	P
G.9.3	Compliance		P
<b>G.10</b>	<b>Resistors</b>		N/A
G.10.1	General	No such parts present.	N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>G.11</b>	<b>Capacitors and RC units</b>		N/A
G.11.1	General requirements	No such parts present.	N/A
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>		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics	No such parts present.	N/A
	Type test voltage $V_{ini,a}$ .....		—
	Routine test voltage, $V_{ini,b}$ .....		—
<b>G.13</b>	<b>Printed boards</b>		N/A
G.13.1	General requirements	No such parts present.	N/A
G.13.2	Uncoated printed boards		N/A
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation .....		N/A
	Number of insulation layers (pcs) .....		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
<b>G.14</b>	<b>Coating on components terminals</b>		N/A
G.14.1	Requirements .....	No such parts present.	N/A
<b>G.15</b>	<b>Pressurized liquid filled components</b>		N/A
G.15.1	Requirements	No such parts present.	N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>G.16</b>	<b>IC including capacitor discharge function (ICX)</b>		N/A
G.16.1	Condition for fault tested is not required	No such parts present.	N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on ..... :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test ..... :		—
G.16.3	Capacitor discharge test..... :		N/A
<b>H</b>	<b>CRITERIA FOR TELEPHONE RINGING SIGNALS</b>		N/A
<b>H.1</b>	<b>General</b>		N/A
<b>H.2</b>	<b>Method A</b>		N/A
<b>H.3</b>	<b>Method B</b>		N/A
H.3.1	Ringing signal	No telephone ringing signals present.	N/A
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault current (mA):..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) ..... :		N/A
<b>J</b>	<b>INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION</b>		N/A
<b>J.1</b>	<b>General</b>		N/A
	Winding wire insulation..... :	No such insulation present.	—
	Solid round winding wire, diameter (mm) ..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm <sup>2</sup> )..... :		N/A
<b>J.2/J.3</b>	Tests and Manufacturing		—

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Clause	Requirement + Test	Result - Remark	Verdict
<b>K</b>	<b>SAFETY INTERLOCKS</b>		N/A
<b>K.1</b>	<b>General requirements</b>		N/A
	Instructional safeguard .....	No such parts present.	N/A
<b>K.2</b>	<b>Components of safety interlock safeguard mechanism</b>		N/A
<b>K.3</b>	<b>Inadvertent change of operating mode</b>		N/A
<b>K.4</b>	<b>Interlock safeguard override</b>		N/A
<b>K.5</b>	<b>Fail-safe</b>		N/A
K.5.1	Under single fault condition		N/A
<b>K.6</b>	<b>Mechanically operated safety interlocks</b>		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance .....		N/A
<b>K.7</b>	<b>Interlock circuit isolation</b>		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm).....		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm).....		N/A
	Electric strength test before and after the test of K.7.2 .....		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>		N/A
<b>L.1</b>	<b>General requirements</b>	Components is ES1.	N/A
<b>L.2</b>	<b>Permanently connected equipment</b>		N/A
<b>L.3</b>	<b>Parts that remain energized</b>		N/A
<b>L.4</b>	<b>Single-phase equipment</b>		N/A
<b>L.5</b>	<b>Three-phase equipment</b>		N/A
<b>L.6</b>	<b>Switches as disconnect devices</b>		N/A
<b>L.7</b>	<b>Plugs as disconnect devices</b>		N/A
<b>L.8</b>	<b>Multiple power sources</b>		N/A
	Instructional safeguard .....		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<b>M</b>	<b>EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS</b>		N/A
<b>M.1</b>	<b>General requirements</b>		N/A
<b>M.2</b>	<b>Safety of batteries and their cells</b>		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards .....	No such parts present.	N/A
<b>M.3</b>	<b>Protection circuits for batteries provided within the equipment</b>		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance		N/A
<b>M.4</b>	<b>Additional safeguards for equipment containing a portable secondary lithium battery</b>		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance..... :		N/A
M.4.3	Fire enclosure .....		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
<b>M.5</b>	<b>Risk of burn due to short-circuit during carrying</b>		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
<b>M.6</b>	<b>Safeguards against short-circuits</b>		N/A
M.6.1	External and internal faults		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.6.2	Compliance		N/A
<b>M.7</b>	<b>Risk of explosion from lead acid and NiCd batteries</b>		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate ..... :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m <sup>3</sup> /h)..... :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%)..... :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate..... :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%)..... :		N/A
M.7.4	Marking..... :		N/A
<b>M.8</b>	<b>Protection against internal ignition from external spark sources of batteries with aqueous electrolyte</b>		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume $V_z$ (m <sup>3</sup> /s) ..... :		—
M.8.2.3	Correction factors ..... :		—
M.8.2.4	Calculation of distance $d$ (mm) ..... :		—
<b>M.9</b>	<b>Preventing electrolyte spillage</b>		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
<b>M.10</b>	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard ..... :		N/A
<b>N</b>	<b>ELECTROCHEMICAL POTENTIALS</b>		N/A
	Material(s) used..... :	No such metals present.	—
<b>O</b>	<b>MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES</b>		N/A
	Value of X (mm)..... :	To be evaluated in end-product.	—

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Clause	Requirement + Test	Result - Remark	Verdict
<b>P</b>	<b>SAFEGUARDS AGAINST CONDUCTIVE OBJECTS</b>		N/A
<b>P.1</b>	<b>General</b>	No such parts present.	N/A
<b>P.2</b>	<b>Safeguards against entry or consequences of entry of a foreign object</b>		N/A
P.2.1	General		N/A
P.2.2	Safeguards against entry of a foreign object		N/A
	Location and Dimensions (mm) ..... :		—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts..... :		N/A
P.2.3.2	Consequence of entry test..... :		N/A
<b>P.3</b>	<b>Safeguards against spillage of internal liquids</b>		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
<b>P.4</b>	<b>Metallized coatings and adhesives securing parts</b>		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T <sub>c</sub> (°C) ..... :		—
	Duration (weeks) ..... :		—
<b>Q</b>	<b>CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING</b>		P
<b>Q.1</b>	<b>Limited power sources</b>	See below:	P
Q.1.1	Requirements	See below:	P
	a) Inherently limited output	Method not used.	N/A
	b) Impedance limited output	Method not used.	N/A
	c) Regulating network limited output	Method not used.	N/A
	d) Overcurrent protective device limited output	Method not used.	N/A
	e) IC current limiter complying with G.9	IC current limited complies with G.9.	P
Q.1.2	Test method and compliance ..... :	See Annex B.4 and G.9.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Current rating of overcurrent protective device (A) ..... :	1.7 A.	P
<b>Q.2</b>	<b>Test for external circuits – paired conductor cable</b>	No such parts present.	N/A
	Maximum output current (A) ..... :		N/A
	Current limiting method ..... :		—
<b>R</b>	<b>LIMITED SHORT CIRCUIT TEST</b>		N/A
<b>R.1</b>	<b>General</b>		N/A
<b>R.2</b>	<b>Test setup</b>	Such hazards and safeguards to be evaluated in end-product.	N/A
	Overcurrent protective device for test ..... :		—
<b>R.3</b>	<b>Test method</b>		N/A
	Cord/cable used for test ..... :		—
<b>R.4</b>	<b>Compliance</b>		N/A
<b>S</b>	<b>TESTS FOR RESISTANCE TO HEAT AND FIRE</b>		N/A
<b>S.1</b>	<b>Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W</b>		N/A
	Samples, material ..... :	Such hazards and safeguards to be evaluated in end-product.	—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
<b>S.2</b>	<b>Flammability test for fire enclosure and fire barrier integrity</b>		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
<b>S.3</b>	<b>Flammability test for the bottom of a fire enclosure</b>		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples ..... :		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm) .....		—
<b>S.4</b>	<b>Flammability classification of materials</b>		N/A
<b>S.5</b>	<b>Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W</b>		N/A
	Samples, material .....		—
	Wall thickness (mm) .....		—
	Conditioning (°C) .....		—
<b>T</b>	<b>MECHANICAL STRENGTH TESTS</b>		N/A
<b>T.1</b>	<b>General</b>		N/A
<b>T.2</b>	<b>Steady force test, 10 N .....</b>	Such hazards and safeguards to be evaluated in end-product.	N/A
<b>T.3</b>	<b>Steady force test, 30 N .....</b>		N/A
<b>T.4</b>	<b>Steady force test, 100 N .....</b>		N/A
<b>T.5</b>	<b>Steady force test, 250 N .....</b>		N/A
<b>T.6</b>	<b>Enclosure impact test</b>		N/A
	Fall test		N/A
	Swing test		N/A
<b>T.7</b>	<b>Drop test .....</b>		N/A
<b>T.8</b>	<b>Stress relief test.....</b>		N/A
<b>T.9</b>	<b>Glass Impact Test .....</b>		N/A
<b>T.10</b>	<b>Glass fragmentation test</b>		N/A
	Number of particles counted.....		N/A
<b>T.11</b>	<b>Test for telescoping or rod antennas</b>		N/A
	Torque value (Nm) .....		N/A
<b>U</b>	<b>MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION</b>		N/A
<b>U.1</b>	<b>General</b>		N/A
	Instructional safeguard :	No CRTs present.	N/A
<b>U.2</b>	<b>Test method and compliance for non-intrinsically protected CRTs</b>		N/A
<b>U.3</b>	<b>Protective screen</b>		N/A
<b>V</b>	<b>DETERMINATION OF ACCESSIBLE PARTS</b>		N/A
<b>V.1</b>	<b>Accessible parts of equipment</b>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
V.1.1	General	Such hazards and safeguards to be evaluated in end-product.	N/A
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
<b>V.2</b>	<b>Accessible part criterion</b>		
<b>X</b>	<b>ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)</b>		N/A
	Clearance .....	No such connection present.	N/A
<b>Y</b>	<b>CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES</b>		N/A
<b>Y.1</b>	<b>General</b>	Such hazards and safeguards to be evaluated in end-product.	N/A
<b>Y.2</b>	<b>Resistance to UV radiation</b>		N/A
<b>Y.3</b>	<b>Resistance to corrosion</b>		N/A
<b>Y.3</b>	<b>Resistance to corrosion</b>		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by .....		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure .....		N/A
Y.3.5	Compliance		N/A
<b>Y.4</b>	<b>Gaskets</b>		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods .....		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
<b>Y.5</b>	<b>Protection of equipment within an outdoor enclosure</b>		N/A
Y.5.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 ..... :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
<b>Y.6</b>	<b>Mechanical strength of enclosures</b>		N/A
Y.6.1	General		N/A
Y.6.2	Impact test ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

<b>5.2</b>	<b>TABLE: Classification of electrical energy sources</b>						N/A
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type <sup>1)</sup>	Additional Info <sup>2)</sup>	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:							
Equipment is ES1 with no connection to mains supply.							

5.4.1.8	TABLE: Working voltage measurement				N/A
Location		RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
N/A		N/A	N/A	N/A	N/A
Supplementary information:					
ES1; no safeguards required.					

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics				N/A
Method.....:			N/A		—
Object/ Part No./Material	Manufacturer/trademark		Thickness (mm)	T softening (°C)	
N/A	N/A		N/A	N/A	
Supplementary information:					
ES1; no safeguards required.					

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics				N/A
Allowed impression diameter (mm) .....			≤ 2 mm		—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
N/A	N/A	N/A	N/A	N/A	
Supplementary information:					
ES1; no safeguards required.					

<b>5.4.2, 5.4.3</b>	<b>TABLE: Minimum Clearances/Creepage distance</b>							N/A
Clearance (cl) and creepage distance (cr) at/of/between:	U <sub>p</sub> (V)	U <sub>rms</sub> (V)	Freq <sup>1)</sup> (Hz)	Required cl (mm)	cl (mm)	E.S. <sup>2)</sup> (V)	Required cr (mm)	cr (mm)

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Clause	Requirement + Test	Result - Remark	Verdict

N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:								
ES1; no safeguards required.								

5.4.4.2	TABLE: Minimum distance through insulation					N/A
Distance through insulation (DTI) at/of		Peak voltage (V)	Insulation	Required DTI (mm)	Measured DT (mm)	
N/A		N/A	N/A	N/A	N/A	
Supplementary information:						
ES1; no safeguards required.						

5.4.4.9	TABLE: Solid insulation at frequencies >30 kHz						N/A
Insulation material	$E_P$	Frequency (kHz)	$K_R$	Thickness $d$ (mm)	Insulation	$V_{PW}$ (Vpk)	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Supplementary information:							
ES1; no safeguards required.							

5.4.9	TABLE: Electric strength tests			N/A
Test voltage applied between:		Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No
N/A		N/A	N/A	N/A
Supplementary information:				
ES1; no safeguards required.				

5.5.2.2	TABLE: Stored discharge on capacitors					N/A
Location		Supply voltage (V)	Operating and fault condition <sup>1)</sup>	Switch position	Measured voltage (Vpk)	ES Class
N/A		N/A	N/A	N/A	N/A	N/A
Supplementary information:						
ES1; no safeguards required.						

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Clause	Requirement + Test	Result - Remark	Verdict

<b>5.6.6</b>	<b>TABLE: Resistance of protective conductors and terminations</b>				N/A
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance ( $\Omega$ )	
N/A	N/A	N/A	N/A	N/A	
Supplementary information:					
ES1; no safeguards required.					

<b>5.7.4</b>	<b>TABLE: Unearthed accessible parts</b>					N/A
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage ( $V_{rms}$ or $V_{pk}$ )	Current ( $A_{rms}$ or $A_{pk}$ )	Freq. (Hz)	
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:						
Such hazards and safeguards to be evaluated in end-product.						

5.7.5	TABLE: Earthed accessible conductive part			N/A
Supply voltage (V) .....	N/A			—
Phase(s) .....	[ ] Single Phase; [ ] Three Phase: [ ] Delta [ ] Wye			
Power Distribution System .....	[ ] TN [ ]TT [ ] IT			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
N/A	N/A	N/A	N/A	
Supplementary Information:				
ES1; no safeguards required.				

<b>5.8</b>	<b>TABLE: Backfeed safeguard in battery backed up supplies</b>					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:						
ES1; no safeguards required.						

<b>6.2.2</b>	<b>TABLE: Power source circuit classifications</b>				N/A
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Clause	Requirement + Test	Result - Remark	Verdict

Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power <sup>1)</sup> (W)	Time (S)	PS class
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:						
Equipment is PS2; due to size, no safeguard required. To be evaluated in end-product.						

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

6.2.3.2	TABLE: Determination of resistive PIS			N/A
Location		Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No
N/A		N/A	N/A	N/A
Supplementary information:				
No such parts present.				

<b>8.5.5</b>	<b>TABLE: High pressure lamp</b>				N/A
Lamp manufacturer		Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No
N/A		N/A	N/A	N/A	N/A
Supplementary information:					
No such parts present.					

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Clause	Requirement + Test	Result - Remark	Verdict

<b>9.6</b>	<b>TABLE: Temperature measurements for wireless power transmitters</b>							N/A
Supply voltage (V)..... :				N/A				—
Max. transmit power of transmitter (W)..... :				N/A				—
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:								
No such parts present.								

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements							P
Supply voltage (V)..... :			2.5 VDC	6.5 VDC	-	-	—	
Ambient temperature during test $T_{amb}$ (°C) .... :			See below.	See below.	-	-	—	
Maximum measured temperature $T$ of part/at:			$T$ (°C)				Allowed $T_{max}$ (°C)	
TPS2552DBV – Top of unit, 25°C ambient			29.9	33.0	-	-	130	
TPS2552DBV – Top of unit, 60°C ambient			62.7	63.8	-	-	130	
Temperature $T$ of winding:	$t_1$ (°C)	$R_1$ (Ω)	$t_2$ (°C)	$R_2$ (Ω)	$T$ (°C)	Allowed $T_{max}$ (°C)	Insulation class	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Supplementary information:								
None.								

<b>B.2.5</b>	<b>TABLE: Input test</b>							N/A
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:								
To be evaluated in end-product.								

<b>B.3, B.4</b>	<b>TABLE: Abnormal operating and fault condition tests</b>							P
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Clause	Requirement + Test	Result - Remark	Verdict

Ambient temperature $T_{amb}$ (°C)..... :					25°C	—
Power source for EUT: Manufacturer, model/type, output rating .. :					N/A	—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
TPS2552DBV	Output short	2.5-6.5 VDC	3 Cycles	N/A	N/A	Devices cycled 3 times; there was no fire or shock hazard for all outputs tested.
TPS2552DBV Half Wave, Rectified Signal -Undervoltage -Overvoltage	Power on with output open circuited – short/open output	Half-wave: 6.5 Vpk UV: 2.4 VDC OV: 7 VDC	50 Cycles	N/A	N/A	50 cycles completed; there was no fire or shock hazard for all outputs tested.
TPS2552DBV Half Wave, Rectified Signal -Undervoltage -Overvoltage	Output short circuited, power to circuit off – power on/power off	Half-wave: 6.5 Vpk UV: 2.4 VDC OV: 7 VDC	50 Cycles	N/A	N/A	50 cycles completed; there was no fire or shock hazard for all outputs tested.
TPS2552DBV Half Wave, Rectified Signal -Undervoltage -Overvoltage	Power on, circuit loaded to maximum rated load – short output/remove short	Half-wave: 6.5 Vpk UV: 2.4 VDC OV: 7 VDC	50 Cycles	N/A	N/A	50 cycles completed; there was no fire or shock hazard for all outputs tested.
TPS2552DBV Half Wave, Rectified Signal -Undervoltage -Overvoltage	Power off, output open circuited – power on / short output, power off/power on, remove short/power off	Half-wave: 6.5 Vpk UV: 2.4 VDC OV: 7 VDC	50 Cycles	N/A	N/A	50 cycles completed; there was no fire or shock hazard for all outputs tested.
TPS2552DBV	Output short circuit to ground	6.5 VDC	7 days	N/A	N/A	The current did not display any significant change after 7 days of operation and the device was capable of

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						performing its intended function.
Supplementary information:						
None.						

M.3	TABLE: Protection circuits for batteries provided within the equipment						N/A
Is it possible to install the battery in a reverse polarity position? ..... :					N/A		—
Equipment Specification	Charging						
	Voltage (V)				Current (A)		
	N/A				N/A		
Manufacturer/type	Battery specification						
	Non-rechargeable batteries			Rechargeable batteries			
	Discharging current (A)	Unintentional charging current (A)	Charging		Discharging current (A)	Reverse charging current (A)	
			Voltage (V)	Current (A)			
N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C) .....					N/A		
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:							
No such parts present.							

<b>M.4.2</b>	<b>TABLE: Charging safeguards for equipment containing a secondary lithium battery</b>						N/A
Maximum specified charging voltage (V) .....					N/A		—
Maximum specified charging current (A) .....					N/A		—
Highest specified charging temperature (°C) .....					N/A		
Lowest specified charging temperature (°C) .....					N/A		
Battery manufacturer/type	Operating and fault condition	Measurement			Observation		
		Charging voltage (V)	Charging current (A)	Temp. (°C)			
N/A	N/A	N/A	N/A	N/A	N/A		

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Supplementary information:
No such parts present.

<b>Q.1</b>	<b>TABLE: Circuits intended for interconnection with building wiring (LPS)</b>						N/A
Output Circuit	Condition	U <sub>oc</sub> (V)	Time (s)	I <sub>sc</sub> (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Supplementary Information:							
See Annex B.4 and Annex G.9.							

<b>T.2, T.3, T.4, T.5</b>	<b>TABLE: Steady force test</b>						N/A
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Supplementary information:							
Such hazards and safeguards to be evaluated in end-product.							

<b>T.6, T.9</b>	<b>TABLE: Impact test</b>					N/A
Location/Part	Material	Thickness (mm)	Height (mm)	Observation		
N/A	N/A	N/A	N/A	N/A		
Supplementary information:						
Such hazards and safeguards to be evaluated in end-product.						

<b>T.7</b>	<b>TABLE: Drop test</b>				N/A
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
N/A	N/A	N/A	N/A	N/A	
Supplementary information:					
Such hazards and safeguards to be evaluated in end-product.					

<b>T.8</b>	<b>TABLE: Stress relief test</b>				N/A
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Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
N/A	N/A	N/A	N/A	N/A	N/A
Supplementary information:					
Such hazards and safeguards to be evaluated in end-product.					

X	TABLE: Alternative method for determining minimum clearances distances			N/A
Clearance distanced between:	Peak of working voltage (V)	Required cl (mm)	Measured cl (mm)	
N/A	N/A	N/A	N/A	
Supplementary information:				
Method not used.				

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4.1.2	TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>	
TPS2552, TPS2552-1, TPS2553, TPS2553-1; may be followed by additional characters that do not impact the safety of the device	Sumitomo Bakelite Co., Ltd.	EME-G600	Epoxy Molding Resin, 130°C, V-0	UL 746C	C-RU-US (E41429)	
TPS2552, TPS2552-1, TPS2553, TPS2553-1; may be followed by additional characters that do not impact the safety of the device	Interchangeable	-	Epoxy Molding Resin, 130°C, V-0	UL 746C	-	
- Description:	Interchangeability based on specified rating.					
Supplementary information:						
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.						

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<b>ATTACHMENT TO TEST REPORT</b> IEC 62368-1 (AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment)			
<b>Differences according to</b> ..... : AS/NZS 62368.1:2022			
<b>TRF template used:</b> ..... : IECEE OD-2020-F3, Ed. 1.1			
<b>Attachment Form No.</b> ..... : AU_NZ_ND_IEC62368_1E			
<b>Attachment Originator</b> ..... : JAS-ANZ			
<b>Master Attachment</b> ..... : 2022-07-01			
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	<b>National Differences</b>		P
<b>Appendix ZZ</b>	Variations to IEC 62368-1:2018 (ED. 3.0) for Australia and New Zealand		P
<b>ZZ1 Scope</b>	This Appendix lists the normative variations to IEC 62368-1:2018 (ED. 3.0)		P
<b>ZZ2 Variations</b>	The following modifications are required for Australian/New Zealand conditions:		P
<b>2</b>	After the first paragraph, <i>add</i> the following: The Australian or Australian/New Zealand Standards listed below are modified adoptions of, or not equivalent to, the IEC normative references and are required for the application of this Standard. All references in the source text to those IEC normative references shall be replaced by references to the corresponding Australian or Australian/New Zealand Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably -AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i> -AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i> -AS/NZS 3191, <i>Electric flexible cords</i> -AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i> -IEC 60086-2 <i>Primary batteries — Part 2: Physical and electrical specifications</i> -AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements</i>	Added and considered.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>(IEC 60065:2015 (ED.8.0) MOD)</p> <p>-AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i></p> <p>-AS/NZS 60320.2.2, <i>Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)</i></p> <p>-AS/NZS 60695.2.11, <i>Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i></p> <p>-AS/NZS 60695.11.5, <i>Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i></p> <p>-AS/NZS 60695.11.10, <i>Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i></p> <p>-AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i></p> <p>-AS/NZS 60950.1, <i>Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i></p> <p>IEC 61032:1997, <i>Protection of persons and equipment by enclosures—Probes for verification</i></p> <p>-AS/NZS 61558.1, <i>Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)</i></p> <p>-AS/NZS 61558.2.16, <i>Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.</i></p>		

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4.7.2</b>	<b>Requirements</b> <i>Delete</i> the text of the second paragraph and <i>replace</i> with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet conforming to AS/NZS 3112, shall conform to the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. Conformity is checked by inspection and, if necessary, by the tests in AS/NZS 3112. NOTE: Equipment with plug portions for use in countries other than Australia and New Zealand will need to conform to other countries' requirements Note Additional AS/NZS 3112 Appendix J, TRF is appended to end of this TRF.	Equipment not intended for insertion into MSO.	N/A
<b>4.7.3</b>	<b>Compliance Criteria</b> <i>Delete</i> this clause	Deleted.	N/A
<b>4.8.1</b>	<b>General</b> After second list, <i>add</i> the following: NOTE: Refer to the Consumer Goods (Products Containing Button/Coin Batteries) Safety Standard 2020 and Consumer Goods (Products Containing Button/Coin Batteries) Information Standard 2020 for more information on button cell batteries in Australia..	No such parts present.	N/A
<b>5.4.10.2.1</b>	<b>General</b> <i>Delete</i> the first paragraph and <i>replace</i> with the following: In Australia, the separation is checked by the test given in both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test given in either 5.4.10.2.2 or 5.4.10.2.3..	Such hazards and safeguards to be evaluated in end-product.	N/A
<b>Table 28</b>	<i>Delete</i> Table 28 and <i>replace</i> with the following:		N/A



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Clause	Requirement + Test		Result - Remark	Verdict

Parts	Impulse test		Steady state test		
	New Zealand	Australia	New Zealand	Australia	
Parts indicated in Clause 5.4.10.1 a) <sup>a</sup>	2.5 kV	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.	1.5 kV	3 kV	
Parts indicated in Clause 5.4.10.1 b) and c) <sup>b</sup>	1.5 kV <sup>c</sup>		1.0 kV	1.5 kV	
<sup>a</sup> Surge suppressors shall not be removed.					
<sup>b</sup> Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment.					
<sup>c</sup> During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.					

5.4.10.2.2	Delete "NOTE" and <i>replace</i> with "NOTE 1". After NOTE 1, <i>add</i> the following: NOTE 2: For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 3: For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.	Such hazards and safeguards to be evaluated in end-product.	N/A
5.4.10.2.3	Delete "NOTE" and <i>replace</i> with "NOTE 1". After NOTE 1, <i>add</i> the following: NOTE 2: For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 3: The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.	Such hazards and safeguards to be evaluated in end-product.	N/A
6	Electrically-caused fire		P
6.6	After Clause 6.6, <i>add</i> the new Clauses 6.201 as follows:  <b>6.201 External power supplies, docking stations and other similar devices</b> (see special national conditions)		N/A
8.6	Stability of equipment		N/A
Table 36	Footnote <sup>a</sup> , after first sentence, <i>add</i> the following: Equipment having displays with moving images shall include "television sets and display devices".	Such hazards and safeguards to be evaluated in end-product.	N/A
8.6.1	After Clause 8.6.1 <i>add</i> the following new clauses: <b>8.6.201 Restraining Device fixing point</b> (see special national conditions) <b>8.6.202 Restraining device</b> (see special national conditions)	Such hazards and safeguards to be evaluated in end-product.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Annex F Paragraph F.3.3.4</b>	<b>Rated Voltage</b> <i>Delete "NOTE" and replace with NOTE1"</i> After NOTE 1, <i>add</i> the following Equipment that is intended for connection to the supply mains in Australia and New Zealand shall be marked with: (a) A rated voltage of: <ul style="list-style-type: none"> <li>• 230 V for single phase equipment</li> <li>• 400 V for poly phase equipment</li> </ul> Or (b) A rated voltage range that includes: <ul style="list-style-type: none"> <li>• 230 V for single phase equipment</li> <li>• 400 V for poly phase equipment</li> </ul> NOTE 2: equipment that is not rated as above is not suitable for direct connection to the supply mains in Australia or new Zealand.	Equipment not connected to supply mains.	N/A
<b>Annex F.3.3.5</b>	After the list, <i>add</i> the following Equipment that is intended for connection to supply mains in Australia or New Zealand shall be marked with a rated frequency of 50 Hz or a rated frequency range or nominal value which includes 50Hz	Equipment not connected to supply mains.	N/A
<b>Annex F.3.8</b>	After "The DC output of an external power supply", insert "or docking stations and other similar external devices"	To be evaluated in end-product.	N/A
<b>Annex G Paragraph G.4.2</b>	<b>Mains connectors</b> 1 After "IEC 60320", insert "or AS/NZS 60320 series". 2 After "IEC 60906-1", insert "or AS/NZS 3123" 3 <i>After first paragraph add</i> the following: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.	Equipment not connected to supply mains.	N/A
<b>Paragraph G.5.3.1</b>	<b>Transformers, General</b> 1 Third dashed point <i>replace</i> 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 Fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.	Equipment not connected to supply mains.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>Annex G.7.1</b>	<b>Mains supply cords, General</b> Fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'	Equipment not connected to supply mains.	N/A
<b>Table G.7</b>	<b>Sizes of conductors</b> 1 First column, second row, <i>delete</i> "6" and <i>replace</i> with "7.5" 2 Second column, second row, <i>delete</i> '0,75' and <i>replace</i> with '0.75 <sup>b</sup> 3 <i>Delete</i> NOTE 1. 4 <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5 <i>Delete</i> 'Footnote b' and <i>replace</i> with the following: <sup>b</sup> This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm <sup>2</sup> three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7 Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'	Equipment not connected to supply mains.	N/A
<b>Annex M M 2.1</b>	<i>Add</i> "IEC 60086-2" to the list	No such parts present.	N/A
<b>Annex M Paragraph M.3.2</b>	<b>Test method</b> <i>Delete</i> "NOTE" and <i>replace</i> with "NOTE 1" After NOTE 1 <i>add</i> the following: NOTE 2: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of ES1 may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.	No such parts present.	N/A
	<b>Special national conditions (if any)</b>		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.201	<p><b>External power supplies, docking stations and other similar devices</b></p> <p>For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage—</p> <ul style="list-style-type: none"> <li>(a) at all ES1 outlets or connectors shall not increase by more than 10 % of the output rated voltage under normal operating conditions, measured after 3 s of introducing a single fault condition and after 3 s of introducing abnormal operating conditions; and</li> <li>(b) of a USB outlet or connector shall not increase by more than 3 V or 10 % of the output rated voltage under normal operating conditions, whichever is higher, measured after 3 seconds of introducing a single fault condition and after 3 s of introducing abnormal operating conditions</li> </ul> <p>For equipment with multiple rated voltages at the output, the requirements apply with the equipment configured for each output rated voltage in turn</p> <p>NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. The 3 s measurement delay is based on IEC document 108/742/INF, <i>TC 108, Standards Interpretation Panel Question 15 — Output voltage</i>, in relation to similar requirements in IEC 62368-3:2017.</p> <p>Conformity shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single fault conditions of Annex B.4.</p>	No such parts present.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
<b>8.6.201</b>	<p><b>Restraining device fixing point</b>            Freestanding-capable MS2 and MS3 television sets and display devices shall be provided with a fixing point to facilitate the anchoring of the equipment from toppling</p> <p>The fixing point shall conform to Clause 8.7 where the fixing point uses a wall, ceiling or other structure mount. Alternatively, the fixing point shall be capable of withstanding a pull equal to the mass of the equipment in all directions without damage</p> <p>Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point</p>	Such hazards and safeguards to be evaluated in end-product.	N/A
<b>8.6.202</b>	<p><b>Restraining device</b>            MS2 and MS3 television sets and display devices shall be provided with a restraining device and associated hardware to attach to the television set or display device.</p> <p>The restraining device shall be capable of withstanding a pull equal to the mass of the equipment in all directions.</p> <p>Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point</p>	Such hazards and safeguards to be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>U.S.A. AND CANADA NATIONAL DIFFERENCES</b> (AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT – PART 1: SAFETY REQUIREMENTS)			
<b>Differences according to</b> .....: CSA/UL 62368-1:2019			
<b>TRF template used:</b> .....: IECEE OD-2020-F3, Ed. 1.1			
<b>Attachment Form No.</b> .....: US_CA_ND_IEC62368_1E			
<b>Attachment Originator</b> .....: UL(US)			
<b>Master Attachment</b> .....: Dated 2022-03-04			
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<b>IEC 62368-1 - US and Canadian National Differences</b> <b>Special National Conditions based on Regulations and Other National Differences</b>			
1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.	Considered.	P
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.	Considered.	N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.	Considered.	N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits ( $\leq 200V$ per conductor to earth).	Considered.	P

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.	Considered.	P
1 (DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.	Considered.	P
4.1 (4.1.17)	<i>For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.</i>	No such parts present.	N/A
	<i>For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.</i>	No such parts present.	N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.	To be evaluated in end-product.	N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.	No such parts present.	N/A
5.4.2.3.2 (5.4.2.3.2.1)	<i>Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.</i>	No such parts present.	N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.	No such parts present.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.	No such parts present.	N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.	No such parts present.	N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.	No such parts present.	N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.	Included in manual.	P
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.	To be evaluated in end-product.	N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Equipment is not permanently connected to mains supply.	N/A
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked "W."		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.	No such signals present.	N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V <sub>peak</sub> or 60 V <sub>d.c.</sub> , the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.	No such circuits present.	N/A



IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.	No such parts present.	N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.	To be evaluated in end-product.	N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m <sup>3</sup> (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		N/A
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.	No such equipment.	N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.	No such liquids present.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m <sup>2</sup> (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.	To be evaluated in end-product.	N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	No such parts present.	N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).	Equipment does not product radiation.	N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."	To be evaluated in end-product.	N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.	To be evaluated in end-product.	N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position, where mounted in an enclosure, vertically mounted <b>disconnect switches</b> and <b>circuit breakers</b> with vertical operating means extending outside the enclosure are required to indicate in a location visible when accessing the external operating means whether the switch or circuit breaker is in the open (off) or closed (on) position.	No such parts present.	N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.	To be evaluated in end-product.	N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.	No such parts present.	N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.	To be evaluated in end-product.	N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.	No such parts present.	N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).	No such parts present.	N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix "W" marked on the flexible cord.	No such parts present.	N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.	No such parts present.	N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and rated current output for per conductor for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.	Equipment is not a limited power source.	N/A
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1 are required to be marked with the voltage rating and "Class 2" or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.	To be evaluated in end-product.	N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.	To be evaluated in end-product.	N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centres, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.	To be evaluated in end-product.	N/A
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.	Not for direct connection to mains supply.	N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.2.1)	For safe and reliable connection to a mains, permanently connected equipment is to be provided.		N/A
Annex DVH (DVH.2.2)	Additional considerations for D.C. mains.		N/A
Annex DVH (DVH.3.2.1)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
Annex DVH (DVH.3.2.3)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm <sup>2</sup> ).		N/A
Annex DVH (DVH.3.2.4)	All associated mains supply terminals are located in proximity to each other and to the main protective earthing terminal, if any.		N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.3.2.5)	Terminals are located, guarded or insulated so that, should a strand of a conductor escape when the conductor is fitted, there is no likelihood of accidental contact between such a strand and accessible conductive parts or unearthed conductive parts separated from accessible conductive parts by supplementary insulation only.		N/A
Annex DVH (DVH.3.3)	When field connection to an external circuit is via wires (example, free conductors), the wires are not smaller than 18 AWG (0.82 mm <sup>2</sup> ) and the free length of the wire inside an outlet box or wiring compartment is 150 mm or more.		N/A
Annex DVH (DVH.3.4)	Size of protective earthing conductors and terminals		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH.4.1)	Wire bending space		N/A
Annex DVH (DVH.4.2)	Volume of wiring compartment		N/A
Annex DVH (DVH.4.3)	Separation of circuits		N/A
Annex DVH (DVH.5)	Equipment markings and instructional safeguards		N/A
Annex DVH (DVH.5.1)	Identification of protective earthing terminal		N/A
Annex DVH (DVH.5.2)	Identification of terminal for earthed conductor (neutral)		N/A
Annex DVH (DVH.5.3)	Identification of terminals for aluminium conductors		N/A
Annex DVH (DVH.5.4)	Wire temperature ratings		N/A
Annex DVH (DVH.5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.	To be evaluated in end-product.	N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
IEC62368_1E - ATTACHMENT			
<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> (Audio/video, information and communication technology equipment - Part 1: Safety requirements)			
<b>Differences according to</b> ..... : EN IEC 62368-1:2020+A11:2020			
<b>Attachment Form No.</b> ..... : EU_GD_IEC62368_1E			
<b>Attachment Originator</b> ..... : UL(Demko)			
<b>Master Attachment</b> ..... : 2021-02-04			
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>		P
	<p>Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018.</p> <p>Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed "Z".</p>		P
	<p>Add the following annexes:</p> <p>Annex ZA (normative)      Normative references to international publications with their corresponding European publications</p> <p>Annex ZB (normative)      Special national conditions</p> <p>Annex ZC (informative)      A-deviations</p> <p>Annex ZD (informative)      IEC and CENELEC code designations for flexible cords</p>		P
1	Modification to Clause 3 .		P
3.3.19	Sound exposure  <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		P

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.1	<p>momentary exposure level, <i>MEL</i></p> <p>metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2.</p> <p>Note 1 to entry: <i>MEL</i> is measured as A-weighted levels in dB.</p> <p>Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.</p>	Replaced and considered.	P
3.3.19.3	<p>sound exposure, <i>E</i></p> <p>A-weighted sound pressure (<i>p</i>) squared and integrated over a stated period of time, <i>T</i></p> <p>Note 1 to entry: The SI unit is Pa<sup>2</sup> s.</p> $E = \int_0^T p(t)^2 dt$	Replaced and considered.	P
3.3.19.4	<p>sound exposure level, <i>SEL</i></p> <p>logarithmic measure of sound exposure relative to a reference value, <i>E<sub>0</sub></i>, typically the 1 kHz threshold of hearing in humans.</p> <p>Note 1 to entry: <i>SEL</i> is measured as A-weighted levels in dB.</p> $SEL = 10 \lg \left( \frac{E}{E_0} \right) \text{ dB}$ <p>Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.</p>	Replaced and considered.	P

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.5	<p><b>digital signal level relative to full scale, dBFS</b></p> <p>levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused</p> <p>Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.</p>	Replaced and considered.	P
2	<b>Modification to Clause 10</b>		N/A
10.6	<p><b>Safeguards against acoustic energy sources</b></p> <p>Replace 10.6 of IEC 62368-1 with the following:</p>		N/A
10.6.1.1	<p><b>Introduction</b></p> <p><b>Safeguard</b> requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below.</p> <p>Requirements for earphones and headphones intended for use with personal music players are also covered.</p> <p>A personal music player is a portable equipment intended for use by an <b>ordinary person</b>, that:</p> <p>– is designed to allow the user to listen to audio or audiovisual content / material; and</p>	To be evaluated in end-product.	N/A



IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>– uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and</p> <p>– has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.).</p> <p>EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment.</p> <p>Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3.</p> <p>NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360.</p> <p>NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible.</p> <p>Listening devices sold separately shall comply with the requirements of 10.6.6.</p> <p>These requirements are valid for music or video mode only.</p> <p>The requirements do not apply to:</p> <p>– professional equipment;</p> <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p> <p>– hearing aid equipment and other devices for</p>		


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Clause	Requirement + Test	Result - Remark	Verdict
	<p>assistive listening;</p> <p>– the following type of analogue personal music players:</p> <ul style="list-style-type: none"> <li>· long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and</li> <li>· cassette player/recorder;</li> </ul> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>– a player while connected to an external amplifier that does not allow the user to walk around while in use.</p> <p>For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply.</p> <p>The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.</p>		
10.6.1.2	<p><b>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</p>	To be evaluated in end-product.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>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>		
10.6.2	Classification of devices without the capacity to estimate sound dose		N/A
10.6.2.1	<p><b>General</b></p> <p>This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3.</p> <p>For classifying the acoustic output <math>L_{Aeq,T}</math>, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period.</p> <p>For music where the average sound pressure (long term <math>L_{Aeq,T}</math>) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, <math>T</math> becomes the duration of the song.</p> <p>NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term <math>L_{Aeq,T}</math>) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit.</p>	Not a personal music player.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.		
10.6.2.2	<p><b>RS1 limits (to be superseded, see 10.6.3.2)</b></p> <p>RS1 is a class 1 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> <li>– for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the <math>L_{Aeq,T}</math> acoustic output shall be <math>\leq 85</math> dB when playing the fixed “programme simulation noise” described in EN 50332-1.</li> <li>– for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be <math>\leq 27</math> mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.</li> <li>– The RS1 limits will be updated for all devices as per 10.6.3.2.</li> </ul>	To be evaluated in end-product.	N/A
10.6.2.3	<p><b>RS2 limits (to be superseded, see 10.6.3.3)</b></p> <p>RS2 is a class 2 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> <li>– for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and</li> </ul>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>listening device is known by other means such as setting or automatic <b>130</b> detection, the <math>L_{Aeq,T}</math> acoustic output shall be <math>\leq 100</math> dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1.</p> <p>– for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be <math>\leq 150</math> mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.</p>		
<b>10.6.2.4</b>	<p><b>RS3 limits</b></p> <p>RS3 is a class 3 acoustic energy source that exceeds RS2 limits.</p>	To be evaluated in end-product.	N/A
<b>10.6.3</b>	<b>Classification of devices (new)</b>		N/A
<b>10.6.3.1</b>	<p><b>General</b></p> <p>Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.</p>	To be evaluated in end-product.	N/A
<b>10.6.3.2</b>	<p><b>RS1 limits (new)</b></p> <p>RS1 is a class 1 acoustic energy source that does not exceed the following:</p> <p>– for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the <math>L_{Aeq,T}</math> acoustic output shall be <math>\leq 80</math> dB when playing</p>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>the fixed “programme simulation noise” described in EN 50332-1.</p> <p>– for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be <math>\leq 15</math> mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.</p>		
10.6.3.3	<p><b>RS2 limits (new)</b></p> <p>RS2 is a class 2 acoustic energy source that does not exceed the following:</p> <p>– for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be <math>\leq 80</math> dB when playing the fixed "programme simulation noise" described in EN 50332-1.</p> <p>– for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be <math>\leq 15</math> mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.</p>	To be evaluated in end-product.	N/A
10.6.4	<b>Requirements for maximum sound exposure</b>		N/A
10.6.4.1	<b>Measurement methods</b>	To be evaluated in end-	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>All volume controls shall be turned to maximum during tests.</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.</p>	product.	
10.6.4.2	<p><b>Protection of persons</b></p> <p>Except as given below, protection requirements for parts <b>accessible</b> to <b>ordinary persons</b>, <b>instructed persons</b> and <b>skilled persons</b> are given in 4.3.</p> <p>NOTE 1 Volume control is not considered a <b>safeguard</b>.</p> <p>Between RS2 and an <b>ordinary person</b>, the <b>basic safeguard</b> may be replaced by an <b>instructional safeguard</b> in accordance with Clause F.5, except that the <b>instructional safeguard</b> shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the <b>instructional safeguard</b> may be given through the equipment display during use.</p> <p>The elements of the <b>instructional safeguard</b> shall be as follows:</p> <p>– element 1a: the symbol , IEC 60417-6044 (2011-01)</p> <p>– element 2: “High sound pressure” or equivalent wording</p> <p>– element 3: “Hearing damage risk” or equivalent wording</p> <p>– element 4: “Do not listen at high volume levels for long periods.” or equivalent wording</p>	To be evaluated in end-product.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>An <b>equipment safeguard</b> shall prevent exposure of an <b>ordinary person</b> to an RS2 source without intentional physical action from the <b>ordinary person</b> and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off.</p> <p>The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time.</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off.</p> <p>A <b>skilled person</b> shall not be unintentionally exposed to RS3.</p>		
10.6.5	<b>Requirements for dose-based systems</b>		N/A
10.6.5.1	<p><b>General requirements</b></p> <p>Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause.</p> <p>The manufacturer may offer optional settings</p>	To be evaluated in end-product.	N/A



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

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at.</p> <p>The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3.</p> <p>The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster.</p> <p>Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface.</p> <p>NOTE In case the source is known not to be music (or test signal), the EL may be disabled.</p>		

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Clause	Requirement + Test	Result - Remark	Verdict

10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	<p><b>Corded listening devices with analogue input</b></p> <p>With 94 dB <math>L_{Aeq}</math> acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be <math>\geq 75</math> mV.</p> <p>NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.</p>	To be evaluated in end-product.	N/A
10.6.6.2	<p><b>Corded listening devices with digital input</b></p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the <math>L_{Aeq,T}</math> acoustic output of the listening device shall be <math>\leq 100</math> dB with an input signal of -10 dBFS.</p>	To be evaluated in end-product.	N/A
10.6.6.3	<p><b>Cordless listening devices</b></p> <p>In cordless mode,</p> <ul style="list-style-type: none"> <li>– with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and</li> <li>– respecting the cordless transmission</li> </ul>	To be evaluated in end-product.	N/A

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Clause	Requirement + Test			Result - Remark		Verdict																																																												
	standards, where an air interface standard exists that specifies the equivalent acoustic level; and  – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,r}$ acoustic output of the listening device shall be $\leq 100$ dB with an input signal of -10 dBFS.																																																																	
10. 6. 6. 4	Measurement method  <i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>			To be evaluated in end-product.		N/A																																																												
3	Modification to the whole document					N/A																																																												
	Delete all the “country” notes in the reference document according to the following list: <table><tr><td>0.2.1</td><td>Note 1 and 2</td><td>1</td><td>Note 4 and 5</td><td>3.3.8.1</td><td>Note 2</td></tr><tr><td>3.3.8.3</td><td>Note 1</td><td>4.1.15</td><td>Note</td><td>4.7.3</td><td>Note 1 and 2</td></tr><tr><td>5.2.2.2</td><td>Note</td><td>5.4.2.3.2.2 Table 12</td><td>Note c</td><td>5.4.2.3.2.4</td><td>Note 1 and 3</td></tr><tr><td>5.4.2.3.2.4 Table 13</td><td>Note 2</td><td>5.4.2.5</td><td>Note 2</td><td>5.4.5.1</td><td>Note</td></tr><tr><td>5.4.10.2.1</td><td>Note</td><td>5.4.10.2.2</td><td>Note</td><td>5.4.10.2.3</td><td>Note</td></tr><tr><td>5.5.2.1</td><td>Note</td><td>5.5.6</td><td>Note</td><td>5.6.4.2.1</td><td>Note 2 and 3 and 4</td></tr><tr><td>5.6.8</td><td>Note 2</td><td>5.7.6</td><td>Note</td><td>5.7.7.1</td><td>Note 1 and Note 2</td></tr><tr><td>8.5.4.2.3</td><td>Note</td><td>10.2.1 Table 39</td><td>Note 3 and 4 and 5</td><td>10.5.3</td><td>Note 2</td></tr><tr><td><del>10.6.4</del></td><td>Note 3</td><td>F.3.3.6</td><td>Note 3</td><td>Y.4.1</td><td>Note</td></tr><tr><td>Y.4.5</td><td>Note</td><td></td><td></td><td></td><td></td></tr></table>					0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2	<del>10.6.4</del>	Note 3	F.3.3.6	Note 3	Y.4.1	Note	Y.4.5	Note					
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5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4																																																													
5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2																																																													
8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2																																																													
<del>10.6.4</del>	Note 3	F.3.3.6	Note 3	Y.4.1	Note																																																													
Y.4.5	Note																																																																	

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4	Modification to Clause 1		N/A
1	<p><b>Add the following note:</b></p> <p><i>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</i></p>	To be evaluated in end-product.	N/A
5	Modification to 4.Z1		N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4. Z1	<p><b>Add the following new subclause after 4.9:</b></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>	To be evaluated in end-product.	N/A
6	<b>Modification to 5.4.2.3.2.4</b>		N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.3.2.4	<i>Add the following to the end of this subclause:</i>  The requirement for interconnection with <b>external circuit</b> is in addition given in EN 50491-3:2009.	To be evaluated in end-product.	N/A
<b>7</b>	<b>Modification to 10.2.1</b>		N/A
10.2.1	Add the following to <sup>c)</sup> and <sup>d)</sup> in table 39:  For additional requirements, see 10.5.1.	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

8	Modification to 10.5.1		N/A
10.5.1	<p><i>Add the following after the first paragraph:</i></p> <p>For RS 1 compliance is checked by measurement under the following conditions:</p> <p>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm<sup>2</sup>, at any point 10 cm from the outer surface of the apparatus.</p> <p>Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.</p> <p>For RS1, the dose-rate shall not exceed 1 <math>\mu</math>Sv/h taking account of the background level.</p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>	To be evaluated in end-product.	N/A



IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
9	<b>Modification to G.7.1</b>		N/A
G. 7. 1	<p><b>Add the following note:</b></p> <p>NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>10</b>	<b>Modification to Bibliography</b>	N/A
	<p><b>Add</b> the following notes for the standards indicated:</p> <p>IEC 60130-9      NOTE Harmonized as EN 60130-9.          IEC 60269-2      NOTE Harmonized as HD 60269-2.          IEC 60309-1      NOTE Harmonized as EN 60309-1.          IEC 60364      NOTE some parts harmonized in HD 384/HD 60364 series.          IEC 60601-2-4      NOTE Harmonized as EN 60601-2-4.          IEC 60664-5      NOTE Harmonized as EN 60664-5.          IEC 61032:1997      NOTE Harmonized as EN 61032:1998 (not modified).          IEC 61508-1      NOTE Harmonized as EN 61508-1.          IEC 61558-2-1      NOTE Harmonized as EN 61558-2-1.          IEC 61558-2-4      NOTE Harmonized as EN 61558-2-4.          IEC 61558-2-6      NOTE Harmonized as EN 61558-2-6.          IEC 61643-1      NOTE Harmonized as EN 61643-1.          IEC 61643-21      NOTE Harmonized as EN 61643-21.          IEC 61643-311      NOTE Harmonized as EN 61643-311.          IEC 61643-321      NOTE Harmonized as EN 61643-321.          IEC 61643-331      NOTE Harmonized as EN 61643-331.</p>	N/A
<b>11</b>	<b>ADDITION OF ANNEXES</b>	N/A
<b>ZB</b>	<b>ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)</b>	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4.1.15</b>	<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>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4.7.3</b>	<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>	Equipment not intended for insertion into plug.	N/A
<b>5.2.2.2</b>	<p><b>Denmark</b></p> <p>After the 2nd paragraph add the following:</p> <p>A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>	ES1 requires no safeguard.	N/A
<b>5.4.11.1 and Annex G</b>	<p><b>Finland and Sweden</b></p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> <li>· two layers of thin sheet material, each of which shall pass the electric strength test below, or</li> <li>· one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.</li> </ul>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> <li>· passes the tests and inspection criteria of 5.4.8 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),</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>· is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV.</li> </ul> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, 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</li> </ul>		

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>defined in 5.4.11;</p> <ul style="list-style-type: none"> <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>		
<b>5.5.2.1</b>	<p><b>Norway</b></p> <p>After the 3rd paragraph the following is added:</p> <p>Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>	To be evaluated in end-product.	N/A
<b>5.5.6</b>	<p><b>Finland, Norway, Sweden</b></p> <p>To be evaluated in end-product.</p> <p>To the end of the subclause the following is added:</p> <p>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.</p>		N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>5.6.1</b>	<p><b>Denmark</b></p> <p>Add to the end of the subclause</p> <p>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.</p> <p><i>Justification:</i></p> <p>In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.</p>		
<b>5.6.4.2.1</b>	<p><b>Ireland and United Kingdom</b></p> <p>After the indent for <b>pluggable equipment type A</b>, the following is added:</p> <p>– 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.</p>	To be evaluated in end-product.	N/A
<b>5.6.4.2.1</b>	<p><b>France</b></p> <p>After the indent for <b>pluggable equipment type A</b>, the following is added:</p> <p>– in certain cases, the <b>protective current rating</b> of the circuit supplied from the mains is taken as 20 A instead of 16 A.</p>	To be evaluated in end-product.	N/A
<b>5.6.5.1</b>	<p>To the second paragraph the following is added:</p> <p>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:</p> <p>1,25 mm<sup>2</sup> to 1,5 mm<sup>2</sup> in cross-sectional area.</p>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>5.6.8</b>	<p>Norway</p> <p>To the end of the subclause the following is added:</p> <p>Equipment connected with an earthed mains plug is classified as <b>class I equipment</b>. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.</p>	To be evaluated in end-product.	N/A
<b>5.7.6</b>	<p>Denmark</p> <p>To the end of the subclause the following is added:</p> <p>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.</p>	To be evaluated in end-product.	N/A



IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>5.7.6.2</b>	<p><b>Denmark</b></p> <p>To the end of the subclause the following is added:</p> <p>The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p>	To be evaluated in end-product.	N/A
<b>5.7.7.1</b>	<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.</p> <p>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</p>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>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.</p> <p>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</p>		

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Clause	Requirement + Test	Result - Remark	Verdict
	apparaten och kabel-TV nätet.”.		
<b>8.5.4.2.3</b>	<p><b>United Kingdom</b></p> <p>Add the following after the 2<sup>nd</sup> dash bullet in 3<sup>rd</sup> paragraph:</p> <p>An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.</p>	To be evaluated in end-product.	N/A
<b>B. 3. 1 and B. 4</b>	<p><b>Ireland and United Kingdom</b></p> <p>The following is applicable:</p> <p>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>	To be evaluated in end-product.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

<b>G.4.2</b>	<b>Denmark</b>	To be evaluated in end-product.	N/A
	<p>To the end of the subclause the following is added:</p> <p>Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a polyphase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p>		

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a</p> <p><i>Justification:</i> Heavy Current Regulations, Section 6c</p>		
<b>G.4.2</b>	<p><b>United Kingdom</b></p> <p>To the end of the subclause the following is added:</p> <p>The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>G.7.1</b>	<p><b>United Kingdom</b></p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>	To be evaluated in end-product.	N/A
<b>G.7.1</b>	<p><b>Ireland</b></p> <p>To the first paragraph the following is added:</p> <p>Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p>	To be evaluated in end-product.	N/A
<b>G.7.2</b>	<p><b>Ireland and United Kingdom</b></p> <p>To the first paragraph the following is added:</p> <p>A power supply cord with a conductor of 1,25 mm<sup>2</sup> is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>	To be evaluated in end-product.	N/A

IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<b>ZC</b>	<b>ANNEX ZC, NATIONAL DEVIATIONS (EN)</b>		N/A
<b>10.5.2</b>	<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><b>Justification:</b></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>	Not a CRT.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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ZD	IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)			
	Type of flexible cord		Code designations	
			IEC	CENELEC
	<b>PVC insulated cords</b>			
	Flat twin tinsel cord		60227 IEC 41	H03VH-Y
	Light polyvinyl chloride sheathed flexible cord		60227 IEC 52	H03VV-F H03VVH2-F
	Ordinary polyvinyl chloride sheathed flexible cord		60227 IEC 53	H05VV-F H05VVH2-F
	<b>Rubber insulated cords</b>			
	Braided cord		60245 IEC 51	H03RT-F
	Ordinary tough rubber sheathed flexible cord		60245 IEC 53	H05RR-F
	Ordinary polychloroprene sheathed flexible cord		60245 IEC 57	H05RN-F
	Heavy polychloroprene sheathed flexible cord		60245 IEC 66	H07RN-F
	<b>Cords having high flexibility</b>			
	Rubber insulated and sheathed cord		60245 IEC 86	H03RR-H
	Rubber insulated, crosslinked PVC sheathed cord		60245 IEC 87	H03RV4-H
	Crosslinked PVC insulated and sheathed cord		60245 IEC 88	H03V4V4-H
	<b>Cords insulated and sheathed with halogen-free thermoplastic compounds</b>			
	Light halogen-free thermoplastic insulated and sheathed flexible cords			H03Z1Z1-F H03Z1Z1H2-F
	Ordinary halogen-free thermoplastic insulated and sheathed flexible cords			H05Z1Z1-F H05Z1Z1H2-F

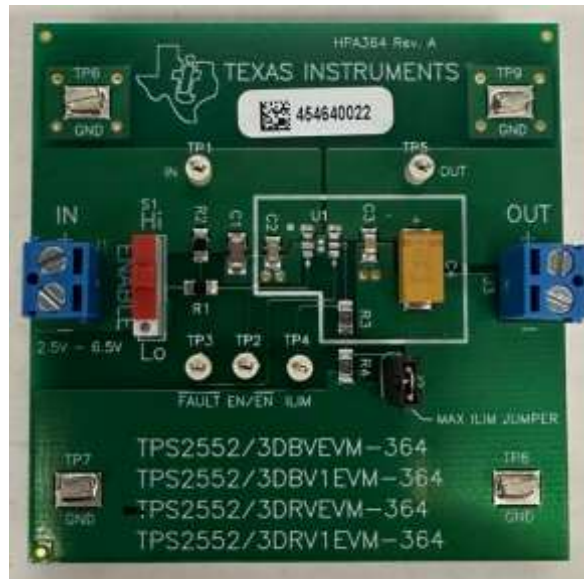


IEC62368_1E- ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

<b>ATTACHMENT TO TEST REPORT</b> <b>IEC 62368-1:2018</b> <b>SAUDI ARABIA NATIONAL DIFFERENCES</b> <b>(Audio/video, information and communication technology equipment Part 1: Safety requirements)</b>			
Differences according to .....: National standard SASO-IEC 62368-1:2020			
TRF template used:.....: IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. ....: SA_ND_IEC62368_1E			
Attachment Originator.....: SASO			
Master Attachment .....: 2022-12-22			
Copyright © 2022 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	<b>National Differences</b>		
	Plugs used for pluggable equipment comply with standard SASO-2203.	Equipment is not directly connected to mains supply.	N/A
--	<b>Frequency (Hz)</b>		N/A
	60 Hz	Equipment is not directly connected to mains supply.	N/A
--	<b>Rated voltage (V)</b>		N/A
	Single phase 230 V Three phase 400 V	Equipment is not directly connected to mains supply.	N/A

Photographs and Illustrations – ATTACHMENT 2

**Figure 1**



**Front Side – Board Used for Testing**

**Figure 2**



**Back Side – Board Used for Testing**