

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

Report Number..... : TSSN2401000013L0

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Name of Testing Laboratory preparing the Report : Compliance Certification Services Inc. Safety Lab. – Tainan

Applicant's name : 7STARLAKE Co., Ltd.

Address : 2F., No.190, Sec 2, Zhongxing Rd., Xindian Dist., New Taipei City, 23146, Taiwan.

Test specification:

Standard : IEC 62368-1:2018

Test procedure..... : LVD of CE

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

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

Test Report Form No...... : IEC62368_1E

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

Master TRF : Dated 2022-04-14

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Test item description	2U Fanless Redundant Storage Server
Trade Mark(s)	7starlake
Manufacturer	Same as applicant.
Model/Type reference	HORUS420-R1
Ratings	100-240 V~, 1.7 A, 50-60 Hz (Per Power Supply Unit)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	Compliance Certification Services Inc. Safety Lab. – Tainan
Testing location/ address		3F.-1, No. 17, Guoji Rd., Xinshi Dist., Tainan City 744, Taiwan
Tested by (name, function, signature)		Kane Wang Project handler 
Approved by (name, function, signature) ..		Eason Chiang Reviewer 

<p>List of Attachments (including a total number of pages in each attachment):</p> <p>Attachment 1: 21 pages of EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES; Attachment 2: 10 pages of Photograph</p>	
<p>Summary of testing:</p> <p>The sample(s) tested complies with the requirements of IEC 62368-1:2018.</p> <p>The investigation of the product did not cover the functional characteristics of the equipment, only the safety aspects as laid out in IEC 62368-1 were subjected to the investigation.</p> <p>Tma = 60 degree C Tamb = 25 degree C</p> <p>Test voltage =100-240 V~ (EUT provided with build-in approved switching power supply (SPS)).</p> <p>Maximum normal load:</p> <p>The EUT operated under all connectors connected and transmit data continuously, USB 2.0 port load 2.5 W, USB 3.0 port load 4.5 W.</p>	
<p>Tests performed (name of test and test clause):</p> <p>4.4.3.2, T.5 Steady force test 4.4.3.4, T.6 Impact test 5.4.1.4, 6.3.2, 9.2, B.2.6 Temperature measurements 5.4.2, 5.4.3, T.2 Clearance and creepage distance measurement 5.4.8 Humidity conditioning 5.4.9 Electric strength test 5.6.6 Resistance of the protective bonding system 5.7 Prospective touch voltage and touch current measurement 8.6.2.2 Static stability test 8.6.4 Glass slide test B.2.5 Input test B.3 Simulated abnormal operating conditions B.4 Simulated single fault conditions F.3.10 Permanence of markings Annex M Batteries test Annex Q.1 Limited power source</p>	<p>Testing location:</p> <p>Compliance Certification Services Inc. Safety Lab. – Tainan 3F.-1, No. 17, Guoji Rd., Xinshi Dist., Tainan City 744, Taiwan</p>

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

EU Group Differences, EU Special National Conditions

List of countries addressed

CENELEC member countries (EU Group Differences, EU Special National Conditions):

Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

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

For National Differences see corresponding Attachment.

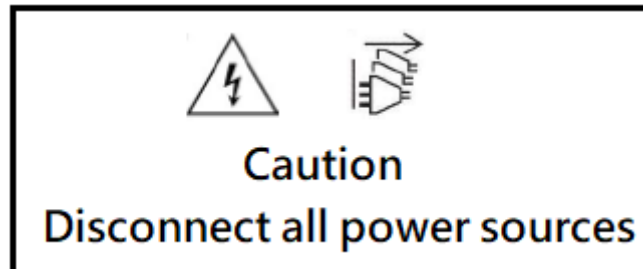
Use of uncertainty of measurement for decisions on conformity (decision rule) :

If there are no special requirements of the certification scheme and its standard specifications, according to IEC GUIDE 115 (without considering the influence of measurement uncertainty), the test report issued by the test lab. do not include measurement uncertainty.

When the test report issued by the test Lab. is required to provide a declaration of conformity, its conformity determination rule will not take into account the measurement uncertainty.

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.



Multiple power sources
 (Located near power module)

Test item particulars:	
Product group	<input checked="" type="checkbox"/> end product <input type="checkbox"/> built-in component
Classification of use by	<input checked="" type="checkbox"/> Ordinary person <input type="checkbox"/> Children likely present <input type="checkbox"/> Instructed person <input type="checkbox"/> Skilled person
Supply connection	<input checked="" type="checkbox"/> AC mains <input type="checkbox"/> DC mains <input type="checkbox"/> not mains connected: <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply tolerance	<input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> + %/ - % <input type="checkbox"/> None
Supply connection – type	<input checked="" type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input checked="" type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input type="checkbox"/> other: not Mains connected.
Considered current rating of protective device	<input checked="" type="checkbox"/> 16 A; Location: <input checked="" type="checkbox"/> building <input type="checkbox"/> equipment <input type="checkbox"/> N/A
Equipment mobility	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> direct plug-in <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> wall/ceiling-mounted <input type="checkbox"/> SRME/rack-mounted <input type="checkbox"/> other:
Overvoltage category (OVC)	<input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: not mains connected.
Class of equipment	<input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified <input type="checkbox"/>
Special installation location	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> restricted access area <input type="checkbox"/> outdoor location <input type="checkbox"/>
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer's specified T_{ma}	60 °C <input type="checkbox"/> Outdoor: minimum °C
IP protection class	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP ____
Power systems	<input checked="" type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT - V _{L-L} <input type="checkbox"/> not AC mains
Altitude during operation (m)	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> m
Altitude of test laboratory (m)	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> m
Mass of equipment (kg)	11.6 Kg

<p>Possible test case verdicts:</p> <ul style="list-style-type: none"> - 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) 			
<p>Testing:</p> <p>Date of receipt of test item: 2024-03-11</p> <p>Date (s) of performance of tests: 2024-02-22 to 2024-05-27</p>			
<p>General remarks:</p> <p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at https://www.sgs.com.tw/terms-of-service and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx</p> <p>Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law."</p> <p>Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.</p> <p>All evaluation, test results and judgement in this report are based on information, documents and samples provided by applicant.</p>			
<p>Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%; padding: 5px;"> 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: </td> <td style="width: 30%; padding: 5px; vertical-align: top;"> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable </td> </tr> </table>		The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable		
<p>When differences exist; they shall be identified in the General product information section.</p>			
<p>Name and address of factory (ies): 7STARLAKE Co., Ltd.</p> <p style="text-align: right;">2F., No.190, Sec 2, Zhongxing Rd., Xindian Dist., New Taipei City, 23146, Taiwan.</p>			

Product Description

1. The equipment under test (EUT), model shown as page 2 is 2U Fanless Redundant Storage Server for use as audio/video, information and communication technology equipment in the scope of this standard.
1. The equipment is incorporated with following critical parts:
 - 1) Metal enclosure and plastic enclosure (for SSD).
 - 2) Provided two build-in certified power supply unit (PSU).
 - 3) Redundant power module.
 - 4) Main board.
 - 5) Fiber module card.
 - 6) Provided four SSD.
2. The output data port has been evaluated complying with Annex Q.1 as a Limited Power Source.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: Input and internal circuit of certified SPS	Ordinary	--	--	Metal enclosure, See 5.4.2, 5.4.3, 5.5.3, 5.5.4
ES1: Output of PSU	Ordinary	--	--	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3 circuit	Enclosure	See sub-clause 6.3	Metal	--
PS3 circuit	PCB	See sub-clause 6.3	V-1 or better	--
PS3 circuit	The other components/ combustible materials	See sub-clause 6.3	See sub-clause 6.4.6 and 6.4.8	--
PS3 circuit	Internal wiring	--	--	See sub-clauses 6.5
PS2 circuit	Output connectors	See sub-clause 6.3	See sub-clauses 6.4.5 and 6.4.6	--
PS1: Power switch	Internal connector for power switch (JFP1)	See sub-clause 6.3	--	--
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
Lithium coin battery	Ordinary	Complies with 4.8	--	--
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edge and corners (Rounded edge and corners)	Ordinary	--	--	--
MS2: Equipment mass (mass < 25 kg)	Ordinary	--	--	--
9	Thermal burn			

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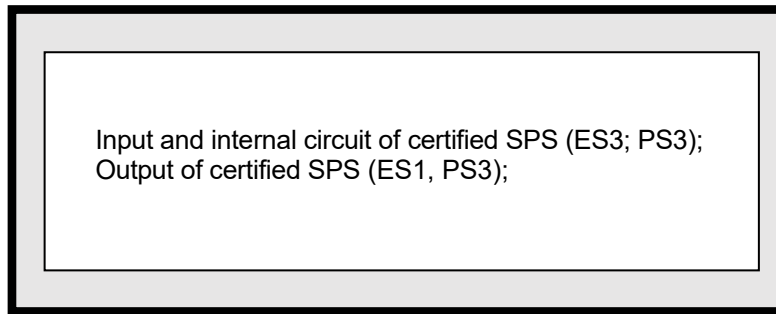
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: All user's accessible part / enclosure surface	Ordinary	--	--	--
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
RS1: Indicator LED	Ordinary	--	--	--
RS1: Optic transceiver	Ordinary	--	--	--
Supplementary Information: "B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM

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

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

Metal enclosure and plastic enclosure (For SSD) (MS1; TS1); Output connectors (ES1; PS2); LED (RS1); Mass (MS1); Optic transceiver (RS1)



ES PS MS TS RS

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		—
4.1.1	Acceptance of materials, components and subassemblies	See appended Table 4.1.2	P
4.1.2	Use of components	See list of critical components	P
4.1.3	Equipment design and construction	Equipment is adequately designed and constructed	P
4.1.4	Specified ambient temperature for outdoor use (°C):		N/A
4.1.5	Constructions and components not specifically covered	No such cases existed of the equipment's design.	N/A
4.1.8	Liquids and liquid filled components (LFC)		N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness	All safeguards comply with the relevant robustness tests and requirement.	P
4.4.3.1	General	See below.	P
4.4.3.2	Steady force tests	(See Annex T.5)	P
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests	(See Annex T.6)	P
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests		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	No such parts.	N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness	During and after the tests, all safeguards of the equipment remained effective and complied with the relevant requirements of this standard.	P
4.4.4	Displacement of a safeguard by an insulating liquid	No such parts.	N/A
4.4.5	Safety interlocks	No such parts.	N/A
4.5	Explosion		N/A
4.5.1	General	No such parts.	N/A
4.5.2	No explosion during normal/abnormal operating		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	condition		
	No harm by explosion during single fault conditions		N/A
4.6	Fixing of conductors		N/A
	Fix conductors not to defeat a safeguard		N/A
	Compliance is checked by test..... :		N/A
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard .. :		N/A
4.7.3	Torque (Nm) :		N/A
4.8	Equipment containing coin/button cell batteries		N/A
4.8.1	General	The children are unlikely present in the equipment location.	N/A
4.8.2	Instructional safeguard :		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		P
4.10	Component requirements		P
4.10.1	Disconnect Device	(See Annex L)	P
4.10.2	Switches and relays	(See Annex G)	P

5	ELECTRICALLY-CAUSED INJURY		—
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits	Evaluated in certified power supply unit.	P
5.2.2.2	Steady-state voltage and current limits :	Evaluated in certified power supply unit.	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.3	Capacitance limits		N/A
5.2.2.4	Single pulse limits		N/A
5.2.2.5	Limits for repetitive pulses		N/A
5.2.2.6	Ringing signals		N/A
5.2.2.7	Audio signals		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	Compliance.	P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		P
5.3.2.1	Accessibility to electrical energy sources and safeguards	Compliance.	P
	Accessibility to outdoor equipment bare parts	Not outdoor equipment.	N/A
5.3.2.2	Contact requirements	See below.	P
	Test with test probe from Annex V	The test probe of Figure V.1 and V.2 cannot access the hazardous live part.	—
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
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	See below.	P
5.4.1.3	Material is non-hygroscopic	(See sub-clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials	(See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6)	P
5.4.1.5	Pollution degrees	PD2	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	Evaluated in certified power supply unit.	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	Evaluated in certified power supply unit.	P
5.4.1.10.2	Vicat test.....:		N/A
5.4.1.10.3	Ball pressure test		N/A
5.4.2	Clearances	See appended table 5.4.2.2, 5.4.2.4 and 5.4.3	P
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	Evaluated in certified power supply unit.	P
5.4.2.6	Clearance measurement	Evaluated in certified power supply unit.	P
5.4.3	Creepage distances	Evaluated in certified power supply unit.	P
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	Evaluated in certified power supply unit.	P
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

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Clause	Requirement + Test	Result - Remark	Verdict
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
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	No such parts.	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 Ω)		N/A
	Electric strength test		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard	No such wire used.	N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning	See below.	P
	Relative humidity (%), temperature (°C), duration (h)	93 %, 30 °C, 48 h	—
5.4.9	Electric strength test	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for type test of solid insulation	Compliance was checked immediately following temperature test in subclause 5.4.1.4	P
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits	No 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

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Clause	Requirement + Test	Result - Remark	Verdict
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	No external circuits.	N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V).....		—
	Nominal voltage U_{peak} (V).....		—
	Max increase due to variation ΔU_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
5.4.11.3	Test method and compliance		N/A
5.4.12	Insulating liquid	No such parts.	N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid		N/A
5.4.12.3	Compatibility of an insulating liquid		N/A
5.4.12.4	Container for insulating liquid		N/A
5.5	Components as safeguards		P
5.5.1	General	See below.	P
5.5.2	Capacitors and RC units	Evaluated in certified power supply unit.	P
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	Evaluated in certified power supply unit.	P
5.5.4	Optocouplers	Evaluated in certified power supply unit.	P
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPDs		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA).....		—
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements	No switch or overcurrent protective device provided in earthing conductors and protective bonding conductors.	P
5.6.2.2	Colour of insulation	One green/yellow wire is hook-in soldering in the PE pin of appliance inlet and fixed to PE pin of SPS by Star washer and screw.	P
5.6.3	Requirement for protective earthing conductors	An appliance inlet provided that is connected by an approved appliance coupler serves as main protective earthing conductor terminal.	P
	Protective earthing conductor size (mm ²)		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors	The green/yellow wire was considered as protective bonding conductor.	P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm ²).	0.8 mm ²	—
5.6.4.2	Protective current rating (A).....	16A	P
5.6.5	Terminals for protective conductors	The earthing terminal of appliance inlet is considered as the main protective earthing terminal. No protective bonding terminals are provided.	P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm).....		N/A
	Terminal size for connecting protective bonding conductors (mm)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.5.2	Corrosion	No risk of corrosion	P
5.6.6	Resistance of the protective bonding system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method..... :	(See appended table 5.6.6)	P
5.6.6.3	Resistance (Ω) or voltage drop..... :	(See appended table 5.6.6)	P
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm^2)..... :		N/A
	Class II with functional earthing marking :		N/A
	Appliance inlet cl & cr (mm)..... :		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current		P
5.7.2.2	Measurement of voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P
5.7.4	Unearthed accessible parts :	(See appended table 5.7.4)	P
5.7.5	Earthed accessible conductive parts :	(See appended table 5.7.5)	P
5.7.6	Requirements when touch current exceeds ES2 limits	Not applicable, the touch current does not exceed ES2 limit.	N/A
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits	The equipment does not contain the 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	The equipment does not contain the external circuits.	N/A
	a) Equipment connected to earthed external circuits, current (mA) :		N/A
	b) Equipment connected to unearthed external circuits, current (mA) :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES.....:	No such parts.	N/A
	Air gap (mm).....:		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6	ELECTRICALLY- CAUSED FIRE		—
6.2	Classification of PS and PIS		P
6.2.2	Power source circuit classifications.....:	Considered as PS3 and no further test considered necessary.	P
6.2.3	Classification of potential ignition sources	See below.	P
6.2.3.1	Arcing PIS	Primary circuits are considered as arcing PIS.	P
6.2.3.2	Resistive PIS	All components located within the equipment are considered as resistive PIS. No further test considered necessary	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials	During the test, no ignition occurred, or component's temperature reach to 300 °C of spontaneous ignition point.	P
	Combustible materials outside fire enclosure	No such parts.	N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method	Method of "control of fire spread" is used.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	Supplementary safeguards		N/A
6.4.3.2	Single Fault Conditions		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits		P
6.4.5.2	Supplementary safeguards	Components other than PCB and wires are: - mounted on PCB min, V-1 or - made of V-2/VTM-2 or better. (See appended Table 4.1.2 and Annex G)	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.6	Control of fire spread in PS3 circuits	All components and combustible materials other than small parts are either rated at least V-2 class material or mounted on PCB material with rated minimum V-1 class material. In addition to compliance of subclause 6.4.5, a fire enclosure of subclause 6.4.8 is provided with the equipment.	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		P
6.4.8.2	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure	Metal enclosure used.	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		P
	Openings dimensions (mm)..... :	Provided numerous diameter 2.9 mm circular openings on top enclosure.	P
6.4.8.3.4	Bottom openings and properties		P
	Openings dimensions (mm)..... :	Provided numerous diameter 2.9 mm circular openings on bottom enclosure.	P
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties		P
	Openings dimensions (mm)..... :	Provided 3.8 x 3.8 mm hexagon shape openings on rear metal enclosure near Fiber module card.	P
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :	No such door or cover can be opened by ordinary persons.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating	The fire enclosure is made metal material.	P
6.4.9	Flammability of insulating liquid.....		N/A
6.5	Internal and external wiring		P
6.5.1	General requirements	The material of VW-1 on internal wiring were considered compliance equivalent to IEC/TS 60695-11-21 relevant standards.	P
6.5.2	Requirements for interconnection to building wiring		N/A
6.5.3	Internal wiring size (mm ²) for socket-outlets.....		N/A
6.6	Safeguards against fire due to the connection to additional equipment		P

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		—
7.2	Reduction of exposure to hazardous substances		P
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards or personal protective equipment (PPE)		N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010)		—
7.6	Batteries and their protection circuits		P

8	MECHANICALLY-CAUSED INJURY		—
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners		P
8.4.1	Safeguards		P
	Instructional Safeguard.....		N/A
8.4.2	Sharp edges or corners	Accessible edges and corners of the equipment are rounded and are classified as MS1.	P
8.5	Safeguards against moving parts		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
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
8.6	Stability of equipment		P
8.6.1	General		P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructional safeguard		N/A
8.6.2	Static stability		P
8.6.2.2	Static stability test	The equipment does not fall over at angle of 10°.	P
8.6.2.3	Downward force test	Not MS3 equipment.	N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)		—
	Tilt test		N/A
8.6.4	Glass slide test	The equipment does not fall over at angle of 10°.	P
8.6.5	Horizontal force test		N/A
8.7	Equipment mounted to wall, ceiling or other structure		N/A
8.7.1	Mount means type	Wall mount and Din-rail mount.	N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N).....		N/A
	Test 2, number of attachment points and test force (N).....		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm).....		N/A
8.8	Handles strength		N/A
8.8.1	General	No handle in the equipment.	N/A
8.8.2	Handle strength test		N/A
	Number of handles.....		—
	Force applied (N)		—
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test	No wheels or casters in the equipment.	N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General	No cats, stands and similar carriers in the equipment.	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.10.5	Mechanical stability		N/A
	Force applied (N)		—
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General	Not for slide-rail mounted.	N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm)		—

9	THERMAL BURN INJURY		—
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts	All accessible surfaces are classified as TS1. (See appended table 5.4.1.4, 9.3, B.1.5, B.2.6, B.3, B.4)	P
9.3.2	Test method and compliance	See above.	P
9.4	Safeguards against thermal energy sources		N/A
9.5	Requirements for safeguards		N/A
9.5.1	Equipment safeguard		N/A
9.5.2	Instructional safeguard		N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance		N/A

10	RADIATION		—
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Clause	Requirement + Test	Result - Remark	Verdict
10.2	Radiation energy source classification		P
10.2.1	General classification	LED indicator and Optic transceiver laser is considered as RS1.	P
	Lasers		—
	Lamps and lamp systems		—
	Image projectors		—
	X-Ray		—
	Personal music player		—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply	See 10.2.1	N/A
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		N/A
10.4.1	General requirements	See 10.2.1	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
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons		—
10.5.3	Maximum radiation (pA/kg).....		—
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....		N/A
	Unweighted RMS output voltage (mV).....		N/A
	Digital output signal (dBFS).....		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A

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

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		—
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	Normal operating conditions		P
B.2.1	General requirements	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers		N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General		P
B.3.2	Covering of ventilation openings	(See appended table B.3, B.4)	P
	Instructional safeguard		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals	(See appended table B.3, B.4)	P


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Clause	Requirement + Test	Result - Remark	Verdict
B.3.6	Reverse battery polarity		N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions..... :		P
B.4	Simulated single fault conditions		P
B.4.1	General		P
B.4.2	Temperature controlling device		N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation	See below.	P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.3, B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.3, B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards within the equipment.	N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors	(See appended table B.3, B.4)	P
B.4.6	Short circuit or disconnection of passive components	(See appended table B.3, B.4)	P
B.4.7	Continuous operation of components	The equipment is continuous operating type and no such components intended for short time operation or intermittent operation.	N/A
B.4.8	Compliance during and after single fault conditions :	(See appended table B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions		N/A
C	UV RADIATION		—
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
D	TEST GENERATORS		—
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		—
E.1	Electrical energy source classification for audio signals		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω)		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard		—
E.2	Audio amplifier normal operating conditions		N/A
	Audio signal source type..... :		—
	Audio output power (W)..... :		—
	Audio output voltage (V)		—
	Rated load impedance (Ω)		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		—
F.1	General		P
	Language	English. The other languages will be provided during the national approval.	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010.	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	The equipment marking is located on the exterior surface and it is easily visible.	P
F.3.2	Equipment identification markings		P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.2.1	Manufacturer identification	See copy of marking plate.	P
F.3.2.2	Model identification	See copy of marking plate.	P
F.3.3	Equipment rating markings	See copy of marking plate.	P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of the supply voltage	See copy of marking plate.	P
F.3.3.4	Rated voltage.....	See copy of marking plate.	P
F.3.3.5	Rated frequency	See copy of marking plate.	P
F.3.3.6	Rated current or rated power.....	See copy of marking plate.	P
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings		N/A
F.3.5.2	Switch position identification marking		N/A
F.3.5.3	Replacement fuse identification and rating markings		N/A
	Instructional safeguards for neutral fuse		N/A
F.3.5.4	Replacement battery identification marking.....		N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification	See below.	P
F.3.6.1	Class I equipment		P
F.3.6.1.1	Protective earthing conductor terminal	The symbol  complied with IEC 60417-5019 is marked beside protective earthing conductor terminal of appliance inlet and screw fix conductor.	P
F.3.6.1.2	Protective bonding conductor terminals		N/A
F.3.6.2	Equipment class marking.....	Class I equipment.	N/A
F.3.6.3	Functional earthing terminal marking		N/A
F.3.7	Equipment IP rating marking	IPX0	N/A
F.3.8	External power supply output marking	No such parts.	N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
F.3.9	Durability, legibility and permanence of marking	The marking on equipment is durability, legibility and easy to be identified by ordinary person.	P
F.3.10	Test for permanence of markings	The marking plate was subjected to the permanence of marking test. The marking plate was rubbed with cloth soaked with water for 15 s and then again for 15 s with the cloth soaked with petroleum spirit. After each test, there was no damage to the marking plate. The marking on the label did not fade. There was no curling of the marking plate and removed by hand.	P
F.4	Instructions		P
	a) Information prior to installation and initial use		P
	b) Equipment for use in locations where children not likely to be present		N/A
	c) Instructions for installation and interconnection		P
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		N/A
	f) Instructions for audio equipment terminals		N/A
	g) Protective earthing used as a safeguard		P
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		N/A
	j) Permanently connected equipment not provided with all-pole mains switch		N/A
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		N/A
G	COMPONENTS		—
G.1	Switches		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.1.1	General	Not located in PS3 circuit.	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	Relays		P
G.2.1	Requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors	Approved component used, see appended table 4.1.2.	P
G.3.4	Overcurrent protection devices	Evaluated in certified power supply unit.	P
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
G.4	Connectors		P
G.4.1	Spacings	The appliance inlet complied with IEC 60320-1.	P
G.4.2	Mains connector configuration..... :	See above.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No misconnection likely.	P

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.5	Wound components		P
G.5.1	Wire insulation in wound components	Evaluated in certified power supply unit.	P
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	Evaluated in certified power supply unit.	P
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
G.5.3.4.7	Routine test		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		—
G.6	Wire Insulation		N/A
G.6.1	General		N/A
G.6.2	Enamelled winding wire insulation		N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements		N/A
	Type		—
G.7.2	Cross sectional area (mm ² 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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IEC 62368-1			
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, <i>D</i> (mm)..... :		—
	Radius of curvature after test (mm) :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		P
G.9.1	Requirements	Approved component used, see appended table 4.1.2.	P
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	Resistors		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
G.12	Optocouplers		N/A
	Optocouplers comply with IEC 60747-5-5 with specifics		N/A
	Type test voltage $V_{ini,a}$:		—
	Routine test voltage, $V_{ini,b}$:		—
G.13	Printed boards		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards	The insulation between conductors on the outer surfaces of an uncoated printed board complied with the minimum clearance and creepage requirements.	P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation :		N/A
	Number of insulation layers (pcs) :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements :		N/A
G.15	Pressurized liquid filled components		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test..... :		—
G.16.3	Capacitor discharge test..... :		N/A
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		—
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz) :		—
H.3.1.2	Voltage (V) :		—
H.3.1.3	Cadence; time (s) and voltage (V) :		—
H.3.1.4	Single fault current (mA): :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		—
J.1	General		P
	Winding wire insulation..... :	Evaluated in certified power supply unit.	—
	Solid round winding wire, diameter (mm) :		N/A

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²)..... :		N/A
J.2/J.3	Tests and Manufacturing		—
K	SAFETY INTERLOCKS		—
K.1	General requirements		N/A
	Instructional safeguard		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance..... :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2..... :		N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		—
L.1	General requirements	The appliance coupler is considered as disconnect device.	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized	When the equipment is disconnected from mains, no remaining parts at hazardous voltage in the equipment.	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
L.4	Single-phase equipment	The disconnect device disconnects both poles simultaneously.	P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		P
	Instructional safeguard		P
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		—
M.1	General requirements		P
M.2	Safety of batteries and their cells		P
M.2.1	Batteries and their cells comply with relevant IEC standards	See appended table 4.1.2 for RTC battery.	P
M.3	Protection circuits for batteries provided within the equipment		P
M.3.1	Requirements		P
M.3.2	Test method		P
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery		P
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance		(See appended table annex M) P
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		N/A
M.4.1	General		See M.2.2 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

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h) :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%) :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) :		N/A
M.7.4	Marking :		N/A
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V _z (m ³ /s)..... :		—
M.8.2.3	Correction factors :		—
M.8.2.4	Calculation of distance d (mm) :		—

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard		N/A
N	ELECTROCHEMICAL POTENTIALS		—
	Material(s) used		—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		—
	Value of X (mm).....		—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		—
P.1	General		P
P.2	Safeguards against entry or consequences of entry of a foreign object		P
P.2.1	General		P
P.2.2	Safeguards against entry of a foreign object		P
	Location and Dimensions (mm)	Provided numerous diameter 2.9 mm circular openings on top enclosure. Provided 3.8 x 3.8 mm hexagon shape openings on rear metal enclosure near Fiber module card.	—
P.2.3	Safeguards against the consequences of entry of a foreign object		P
P.2.3.1	Safeguard requirements	Within the projected volume as depicted in Figure P.3, there were no PIS, nor bare conductive parts at ES3 or PS3.	P
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts		N/A
P.2.3.2	Consequence of entry test.....		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T _c (°C)..... :		—
	Duration (weeks)..... :		—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		—
Q.1	Limited power sources		P
Q.1.1	Requirements		P
	a) Inherently limited output	(See appended table Q.1)	P
	b) Impedance limited output	(See appended table Q.1)	P
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9	(See appended table Q.1)	P
Q.1.2	Test method and compliance..... :	(See appended table Q.1)	P
	Current rating of overcurrent protective device (A) :		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) :		N/A
	Current limiting method..... :		—
R	LIMITED SHORT CIRCUIT TEST		—
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test..... :		—
R.3	Test method		N/A
	Cord/cable used for test..... :		—
R.4	Compliance		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		—
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material :		—

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples		—
	Wall thickness (mm)		—
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
T	MECHANICAL STRENGTH TESTS		—
T.1	General		P
T.2	Steady force test, 10 N		N/A
T.3	Steady force test, 30 N		N/A
T.4	Steady force test, 100 N		N/A
T.5	Steady force test, 250 N	(See appended table T.2, T.3, T.4, T.5)	P
T.6	Enclosure impact test		P
	Fall test	(See appended table T.6, T.9)	P
	Swing test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
T.7	Drop test		N/A
T.8	Stress relief test		N/A
T.9	Glass Impact Test		N/A
T.10	Glass fragmentation test		N/A
	Number of particles counted.....		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)		N/A
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		—
U.1	General		N/A
	Instructional safeguard :		N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS		—
V.1	Accessible parts of equipment		P
V.1.1	General	The surfaces and openings are evaluated by the test probe of Figure V.1 and V.2	P
V.1.2	Surfaces and openings tested with jointed test probes	No live parts can be accessible.	P
V.1.3	Openings tested with straight unjointed test probes	No live parts can be accessible.	P
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
V.2	Accessible part criterion		P
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)		—
	Clearance		N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		—
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure :		N/A
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		N/A
Y.6.1	General		N/A
Y.6.2	Impact test :		N/A

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
5.2	TABLE: Classification of electrical energy sources						N/A
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

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

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

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

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IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
5.4.2, 5.4.3	TABLE: Minimum Clearances/Creepage distance						N/A
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (Hz) ¹	Required cl (mm)	cl (mm) ²	Required ³ cr (mm)	cr (mm)
Supplementary information:							

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 DTI (mm)	
Supplementary information:					

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

5.4.9 TABLE: Electric strength tests				P
Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No	
Basic insulation or supplementary insulation:				
Primary circuit to metal enclosure (earthed)	DC	2500	No	
Reinforced insulation:				
Primary circuit to plastic enclosure	DC	4000	No	
Primary circuit to secondary circuit	DC	4000	No	
Supplementary information:				

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IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
5.5.2.2	TABLE: Stored discharge on capacitors				N/A
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification
Supplementary information: X-capacitors installed for testing are: <input type="checkbox"/> bleeding resistor rating: <input type="checkbox"/> ICX: Notes: A. Test Location: Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth B. Operating condition abbreviations: N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition					

5.6.6	TABLE: Resistance of protective conductors and terminations				P
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Earth pin of AC inlet to metal enclosure	32	2	0.256	0.008	
Supplementary information:					

5.7.4	TABLE: Unearthed accessible parts					P
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)	
Plastic enclosure	Normal	264 V a.c.	--	0.001mA _{pk}	--	ES1
Plastic enclosure	Abnormal, single fault which didn't cause fuse opened (e.g.: ventilation opening block)	264 V a.c.	--	0.001mA _{pk}	--	ES1
Secondary terminal (without earth)	Normal	264 V a.c.	--	0.060mA _{pk}	--	ES1

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IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Secondary terminal (without earth)	Abnormal, single fault which didn't cause fuse opened (e.g.: ventilation opening block)	264 V a.c.	--	0.060mApk	--	ES1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part				P
Supply voltage (V)	264				—
Phase(s)	[X] Single Phase; [] Three Phase: [] Delta [] Wye				
Power Distribution System	[X] TN [] TT [] IT				
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment		
Line and Neutral to earth	1 (e open, normal and reverse polarity)	Max. 0.739mApk	--		
Supplementary Information:					

5.8	TABLE: Backfeed safeguard in battery backed up supplies					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
Supplementary information:						
Abbreviation: SC= short circuit, OC= open circuit						

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (Vd.c.)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
Power switch (JFP1)	Normal	3.32	0	0	3	PS1
	R667 short	3.32	0	0	3	PS1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

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Clause	Requirement + Test	Result - Remark	Verdict
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3. 2) Maximum voltage and current at load or no-load recorded.			

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
Supplementary information:				
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (Vp) and normal operating condition rms current (Irms) is greater than 15.				

6.2.3.2	TABLE: Determination of resistive PIS			N/A
Location	Operating and fault condition	Dissipate power (W)	Arcing PIS? Yes / No	
Supplementary information:				
A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.				
If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.				
A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, <u>or</u> (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.				

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

IEC 62368-1									
Clause	Requirement + Test							Result - Remark	Verdict
9.6	TABLE: Temperature measurements for wireless power transmitters								N/A
Supply voltage (V)..... :									—
Max. transmit power of transmitter (W)..... :									—
Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm		
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	
Supplementary information:									

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements							P
Supply voltage (V) .. :		See below					—	
Ambient T _{min} (°C) :		--					—	
Ambient T _{max} (°C) :		--					—	
T _{ma} (°C) :		See below					—	
Maximum measured temperature T of part/at:		T (°C)					Allowed T _{max} (°C)	
Normal condition:								
Input voltage		90 V~		264 V~		--		
AC inlet		73.7		74.3		120		
Internal wire		74.9		75.1		85		
SPS : TB1		77.1		77.3		--		
SPS : L1 coil		81.5		81.1		105		
SPS : L1 core		82.6		82.0		105		
SPS : C5		80.0		80.4		105		
SPS : T1 coil		81.4		82.0		110		
SPS : T1 core		83.0		83.9		110		
SPS : PCB near T1		78.0		78.9		105		
Redundant power module : PCB near Q2		77.8		78.9		105		

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Clause	Requirement + Test	Result - Remark	Verdict
Main board : PCB near CPU	82.8	83.7	105
Main board : PCB near U2	83.1	83.9	105
Main board : BAT1	81.7	82.6	100
Connect board : PCB near G1	71.8	72.7	105
Fiber module card : PCB near U382	85.6	86.5	105
SSD	70.6	71.6	--
Plastic enclosure inside	68.6	69.5	--
Tma	60.0	60.0	--
Tamb	23.8	23.8	--
Touch temperature for accessible parts: (re-calculated to 25 degree C from actual ambient respectively)			
Plastic enclosure outside	30.1	30.7	⁵⁾ 77 (TS1)
Metal enclosure outside	40.2	41.1	⁵⁾ 60 (TS1)
Control button	30.1	30.4	⁵⁾ 77 (TS1)
Abnormal operating and fault condition tests:			
Test condition:	Ventilation openings block	USB 2.0 overload	--
AC inlet	81.7	75.0	300
Internal wire	82.0	75.8	300
SPS : TB1	84.6	78.1	300
SPS : L1 coil	88.3	81.7	300
SPS : L1 core	89.5	82.7	300
SPS : C5	87.7	81.1	300
SPS : T1 coil	89.4	82.8	175
SPS : T1 core	91.4	84.6	175
SPS : PCB near T1	86.4	79.6	300
Redundant power module : PCB near Q2	85.9	79.6	300
Main board : PCB near CPU	92.5	83.9	300
Main board : PCB near U2	91.5	85.6	300
Main board : BAT1	90.1	83.8	300
Connect board : PCB near G1	79.5	74.0	300

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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Fiber module card : PCB near U382	93.9	87.6	300
SSD	77.5	72.8	--
Plastic enclosure inside	75.9	70.7	--
Tma	60.0	60.0	--
Tamb	23.6	22.8	--
Touch temperature for accessible parts: (re-calculated to 25 degree C from actual ambient respectively)			
Plastic enclosure outside	36.6	32.0	⁵⁾ 87 (TS1)
Metal enclosure outside	51.2	41.1	⁵⁾ 70 (TS1)
Control button	37.3	31.7	⁵⁾ 87 (TS1)
Abnormal operating and fault condition tests:			
Test condition:	USB 3.0 overload	--	--
AC inlet	76.2	--	300
Internal wire	76.3	--	300
SPS : TB1	78.6	--	300
SPS : L1 coil	82.1	--	300
SPS : L1 core	83.1	--	300
SPS : C5	81.4	--	300
SPS : T1 coil	83.2	--	175
SPS : T1 core	85.0	--	175
SPS : PCB near T1	80.0	--	300
Redundant power module : PCB near Q2	79.7	--	300
Main board : PCB near CPU	87.7	--	300
Main board : PCB near U2	85.4	--	300
Main board : BAT1	83.6	--	300
Connect board : PCB near G1	73.6	--	300
Fiber module card : PCB near U382	87.1	--	300
SSD	72.5	--	--
Plastic enclosure inside	70.6	--	--
Tma	60.0	--	--
Tamb	22.6	--	--

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IEC 62368-1							
Clause	Requirement + Test				Result - Remark		Verdict
Touch temperature for accessible parts: (re-calculated to 25 degree C from actual ambient respectively)							
Plastic enclosure outside	32.0				--		⁵⁾ 87 (TS1)
Metal enclosure outside	42.1				--		⁵⁾ 70 (TS1)
Control button	31.5				--		⁵⁾ 87 (TS1)
Supplementary information:							
1) The temperatures were measured under worst case normal mode and at voltages as described above.							
2) With a maximum ambient temperature of +60 °C as declared by the manufacturer.							
3) All values for T (°C) are re-calculated from actual ambient.							
4) Considered as < 1 s.							
5) Considered as > 1 s and < 10 s.							
Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
Supplementary information:							
Note 1: T _{ma} should be considered as directed by applicable requirement							
Note 2: T _{ma} is not included in assessment of Touch Temperatures (Clause 9)							

B.2.5		TABLE: Input test							P
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	
Test with single PSU									
90	50	0.652	--	56.9	--	In PSU	0.652	Maximum normal load	
90	60	0.652	--	56.9	--	In PSU	0.652	Maximum normal load	
100	50	0.582	2.6	56.7	--	In PSU	0.582	Maximum normal load	
100	60	0.582	2.6	56.7	--	In PSU	0.582	Maximum normal load	
240	50	0.277	2.6	55.9	--	In PSU	0.277	Maximum normal load	
240	60	0.286	2.6	55.9	--	In PSU	0.286	Maximum normal load	
264	50	0.263	--	56.0	--	In PSU	0.263	Maximum normal load	

IEC 62368-1								
Clause		Requirement + Test				Result - Remark		Verdict
264	60	0.271	--	56.0	--	In PSU	0.271	Maximum normal load
Test with dual PSU								
90	50	0.342+0.319	--	29.3+27.7	--	In PSU	0.342+0.319	Maximum normal load
90	60	0.344+0.322	--	29.4+27.7	--	In PSU	0.344+0.322	Maximum normal load
100	50	0.308+0.290	2.6 + 2.6	29.3+27.6	--	In PSU	0.308+0.290	Maximum normal load
100	60	0.310+0.292	2.6 + 2.6	29.4+27.7	--	In PSU	0.310+0.292	Maximum normal load
240	50	0.168+0.163	2.6 + 2.6	29.2+27.6	--	In PSU	0.168+0.163	Maximum normal load
240	60	0.178+0.173	2.6 + 2.6	29.2+27.6	--	In PSU	0.178+0.173	Maximum normal load
264	50	0.159+0.154	--	29.2+27.7	--	In PSU	0.159+0.154	Maximum normal load
264	60	0.168+0.161	--	29.3+27.6	--	In PSU	0.168+0.161	Maximum normal load
Supplementary information:								
The measured input watt at rated voltage shall be less than or equal to 110 % of rated watt.								

B.3, B.4	TABLE: Abnormal operating and fault condition tests						P
Ambient temperature T _{amb} (°C):						See below	—
Power source for EUT: Manufacturer, model/type, output rating:						--	—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
Ventilation opening	block	264Vac	7hrs 33mins	In SPS	0.271	Normal operation, no fire or flame hazards occurred during and after the test. Temperature measurement, See appended table 5.4.1.4, 9.3, B.1.5, B.2.6.	

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Clause	Requirement + Test				Result - Remark	Verdict
USB 2.0 port	overload	264Vac	6hrs 8mins	In SPS	0.252	Output 0.5A normal operation. Output 0.6A USB 2.0 port shut down, other function normal operation, no damage, no hazards. Temperature measurement, See appended table 5.4.1.4, 9.3, B.1.5, B.2.6.
USB 3.0 port	overload	264Vac	6hrs 8mins	In SPS	0.252	Output 0.9A normal operation. Output 1.0A USB 3.0 port shut down, other function normal operation, no damage, no hazards. Temperature measurement, See appended table 5.4.1.4, 9.3, B.1.5, B.2.6.
EC31 (on main board)	short	264Vac	10mins	In SPS	0.01	EUT shut down, no damage, no hazards.

Supplementary information:

1. SC=Short circuit, OC=Open circuit
2. The test result shown all safeguards remained effective and didn't lead to a single fault condition during abnormal operating condition; besides, all safeguards complied with applicable requirements in this standard after restoration of normal operating conditions.
3. The test result shown no Class 1 or 2 energy source become Class 3 level during and after single fault condition.

M.3	TABLE: Protection circuits for batteries provided within the equipment					P
Is it possible to install the battery in a reverse polarity position?					Impossible	—
Equipment Specification	Charging					
	Voltage (V)			Current (A)		
	See appended Table 4.1.2			See appended Table 4.1.2		
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)		
Max. current during normal condition	--	0 mA	--	--	--	--

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
Max. current during fault condition R158 short circuit	--	0 mA	--	--	--	--	--
Max. current during fault condition D19 (1 – 3) short circuit	--	3mA	--	--	--	--	--
Note: The tests of M.3.2 are applicable only when above appropriate data is not available.							
Specified battery temperature (°C).....:				--	--	--	--
Component No.	Fault condition	Charge/ discharge mode	Test time	Temp. (°C)	Current (A)	Voltage (V)	Observation
--	--	--	--	--	--	--	--
Supplementary information:							
Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal.							

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

Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)						P
Output Circuit	Condition	U _{oc} (V)	Time (s)	I _{sc} (A)		S (VA)	
				Meas.	Limit	Meas.	Limit
For main board:							

IEC 62368-1							
Clause	Requirement + Test	Result - Remark					Verdict
USB port (JUSB3), Pin 1 to GND (Protection by U37)	Normal condition	5.19	5	0.50	8	2.48	100
USB port (JUSB3), Pin 2 to GND (Protection by U37)	Normal condition	5.19	5	0.50	8	2.49	100
USB port (JUSB3), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
USB port (USB1), Pin 1 to GND (Protection by U27)	Normal condition	5.19	5	1.00	8	4.78	≤100
USB port (USB1), Pin 5 to GND (Protection by U27)	Normal condition	5.19	5	0.90	8	4.33	≤100
USB port (USB1), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
USB port (USB2), Pin 1 to GND (Protection by U28)	Normal condition	5.19	5	1.00	8	4.78	≤100
USB port (USB2), Pin 5 to GND (Protection by U28)	Normal condition	5.19	5	0.90	8	4.33	≤100
USB port (USB2), Other pins to GND	Normal condition	0	0	0	≤8	0	≤100

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Clause	Requirement + Test	Result - Remark					Verdict
RJ45 port (LAN1), All pins to GND	Normal condition	0	0	0	≤8	0	≤100
RJ45 port (LAN2), All pins to GND	Normal condition	0	0	0	≤8	0	≤100
RJ45 port (LAN3), All pins to GND	Normal condition	0	0	0	≤8	0	≤100
RJ45 port (LAN4), All pins to GND	Normal condition	0	0	0	≤8	0	≤100
HDMI port (HDMI+DP1), Pin 13 to GND	Normal condition	3.34	0	0	≤8	0	≤100
HDMI port (HDMI+DP1), Pin 15 to GND	Normal condition	5.08	0	0	≤8	0	≤100
HDMI port (HDMI+DP1), Pin 16 to GND	Normal condition	5.08	0	0	≤8	0	≤100
HDMI port (HDMI+DP1), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
DP port (HDMI+DP1), Pin 16 to GND	Normal condition	2.62	0	0	≤8	0	≤100
DP port (HDMI+DP1), Pin 20 to GND (Protection by FS14)	Normal condition	3.35	0	1.40	≤8	1.68	≤100

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IEC 62368-1							
Clause	Requirement + Test	Result - Remark					Verdict
DP port (HDMI+DP1), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
DP1 port (DP_B), Pin 16 to GND	Normal condition	2.33	0	0	≤8	0	≤100
DP1 port (DP_B), Pin 20 to GND (Protection by FS9)	Normal condition	3.33	0	1.00	≤8	1.48	≤100
DP1 port (DP_B), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
DP1 port (DP_C), Pin 16 to GND	Normal condition	2.33	0	0	≤8	0	≤100
DP1 port (DP_C), Pin 20 to GND (Protection by FS10)	Normal condition	3.33	0	1.70	≤8	1.97	≤100
DP1 port (DP_C), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
DP1 port (DP_D), Pin 16 to GND	Normal condition	2.33	0	0	≤8	0	≤100
DP1 port (DP_D), Pin 20 to GND (Protection by FS11)	Normal condition	3.33	0	1.60	≤8	1.81	≤100
DP1 port (DP_D), Other Pins to GND	Normal condition	0	0	0	≤8	0	≤100
For Fiber module card:							
Fiber port (CON1), All pins to GND	Normal condition	0	0	0	≤8	0	≤100

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Clause	Requirement + Test				Result - Remark		Verdict
Fiber port (CON2), All pins to GND	Normal condition	0	0	0	≤8	0	≤100
Supplementary Information:							
SC=Short circuit, OC=Open circuit.							

T.2, T.3, T.4, T.5	TABLE: Steady force test						P
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
All internal components / wirings	--	--	30N	5	5	1)	
Enclosure/ Top	See appended table 4.1.2	See appended table 4.1.2	--	250	5	1)	
Enclosure/ Side	See appended table 4.1.2	See appended table 4.1.2	--	250	5	1)	
Enclosure/ Bottom	See appended table 4.1.2	See appended table 4.1.2	--	250	5	1)	
Supplementary information:							
1) No cracking, all safeguards remain effective.							

T.6, T.9	TABLE: Impact test				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure/ Top	See appended table 4.1.2	See appended table 4.1.2	1300	1)	
Enclosure/ Side	See appended table 4.1.2	See appended table 4.1.2	1300	1)	
Enclosure/ Bottom	See appended table 4.1.2	See appended table 4.1.2	1300	1)	
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict
1) No cracking, all safeguards remain effective.			

T.7	TABLE: Drop test				N/A
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Supplementary information:					
1) No cracking, all safeguards remain effective.					

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

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

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
4.1.2	TABLE: List of critical components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹
Front plastic enclosure (For HDD)	Interchangeable	Interchangeable	HB min., 60 °C min., thickness 1.6 mm min.	UL 94	UL*
Enclosure material	Interchangeable	Interchangeable	Zn on steel; minimum 1.0 mm thickness.	--	--
Appliance Inlet (Two provided) (Secured on rear enclosure by screw)	INALWAYS CORP	0716-1	10A, 250V~; C16 type	EN 60320-1:2015	ENEC (ENEC-02233)
Power supply unit (PSU) (Two provided)	MEAN WELL Enterprises Co., Ltd.	UHP-200R-12	I/P: 100-240 V~, 2.6 A, 50/60 Hz; O/P: 12 V d.c., 16.7 A; 50 °C; 5000 m	IEC 62368-1:2018	CB (JPTUV-154303)
Enclosure material	Interchangeable	Interchangeable	Metal, thickness min. 1.0 mm.	--	--
All PCBs material	Interchangeable	Interchangeable	V-1 or better, 105°C min.	UL 796	UL*
Primary wiring	Interchangeable	1015	VW-1, 18 AWG min., 105 °C, 600 Vac	UL 758	UL*
Earthing wiring	Interchangeable	1015	VW-1, 18 AWG min., 105 °C	UL 758	UL*
Secondary wiring	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1 or FT-1; min. 60 V, 80 °C min.	UL 758	UL*
Solid State Drive (SSD) (Four provided) (Optional)	Interchangeable	Interchangeable	2.5" type; Rated 5 Vdc; maximum 1.5 A	--	--
Poly-switch (FS1, FS14) (Rear HDMI+DP port protector)	Littelfuse Inc.	0603L175SL	PTC type; Vmax=6Vdc; Ih=1.75A; It:3.5A	IEC/EN 60730-1:2011	TÜV (R50119118)

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Clause	Requirement + Test			Result - Remark	Verdict
Poly-switch (FS9, FS10, FS11) (Rear DP port protector)	Littelfuse Inc.	0603L175SL	PTC type; Vmax=6Vdc; Ih=1.75A; It:3.5A	IEC/EN 60730-1: 2011	TÜV (R50119118)
Power Distribution Switch (U37) (Front USB 2.0 port protector)	TEXAS INSTRUMENTS INC	TPS2561	Input Voltage: 2.5 to 6.5 Vdc Output Continuous Rating: 2.6A Output Current Limit: 3.2A	IEC 62368-1:2014	CB (US-37138-UL)
Power Distribution Switch (U27, U28) (Rear USB 3.0 port protector)	TEXAS INSTRUMENTS INC	TPS2561	Input Voltage: 2.5 to 6.5 Vdc Output Continuous Rating: 2.6A Output Current Limit: 3.2A	IEC 62368-1:2014	CB (US-37138-UL)
Lithium coin battery (BAT1)	Panasonic Energy Co., Ltd.	BR2032	Max abnormal charging current 5 mA	UL 1642	UL* (MH12210)
(Alternate)	Interchangeable	BR2032 series	Max abnormal charging current 5 mA	UL 1642	UL*
Optic transceiver (Optional)	Interchangeable	Interchangeable	Laser class 1	IEC/ EN 62368-1:2014; EN 60825-1:2007; IEC 60825-1; EN 60825-2:2004+A1+A2; IEC 60825-2	TÜV or VDE or ENEC or NORDIC
Supplementary information:					
<p>1) Provided evidence ensures the agreed level of compliance. See OD-2039.</p> <p>2)*: License available upon request.</p> <p>3) Additionally tested for EN 60730-1: 2011 & IEC 60730-1: 2010 clause 15, clause 17 and Annex J.</p>					

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Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used:

	ID	Manufacture	Description	Model No.	Serial No.	Specification / Range
x	CR11	YOKOGAWA	Mobile Recorder	MV230-1-2-1-1D	S5F910245	K Type, -40 to 1000°C
x	CR15	Lascar	Temperature & Humidity Data Logger	EL-GFX-2	000002690	a) 10 - 40°C ; b) 50 - 80% RH
x	EL13	PRODIGIT	DC Electronic Load	3305F	60405FT0022	0-60Vdc, 0-60A, 0-300W
x	EL15	PRODIGIT	DC Electronic Load	3302F	60302FV0068	0-80Vdc, 0-24A, 0-120W
x	HV02	EXTECH	Electrical Safety Compliance Analyzer	7451	1990884	Ω ; d) 1000sec
x	LC06	Exttech	Touch Current Tester	7630	1332150	a) 90 to 277 Vac; b) 100µA to 19mA
x	MF03	ALGOL	Handy Force Gauge	HF-100	HF-112762	Push Pull 0-1000N
x	MI02	TESTING	Steel Ball	N/A	MI02	IEC 61032 Figure 5 by a) 500g ; b) 50mm
x	ML02	NIGATA SEIKI	Protractor	LM-90	ML02	0-90°
x	MT03	ARCH	Steel Rule	1000mm	A01150	0-1000mm
x	PM08	YOKOGAWA	Digital Power Meter	WT210	27E244101	a) 0-600V, 0-20A ; b) 0-4.8kW ; c) 5Hz-100kHz
x	PM09	YOKOGAWA	Digital Power Meter	WT210	27D623026	a) 0-600V, 0-20A ; b) 0-4.8kW ; c) 5Hz-100kHz
x	RT02	EXTECH	AC Ground Bond Tester	7314	1361286	a) 1-40A (8V) ; b) 0-600mΩ ; c) 999.9sec
x	TC07	CTF	Temperature & Humidity Chamber	LY-4S-TH	2013012302	a) -40°C-100°C ; b) 95% RH
x	TM05	CASIO	STOPWATCH	HS-3	605Q13R	9:59'59.99"
x	TP10	N/A	Test Pin (Test probe D)	N/A	TP10	IEC 61032 Figure 4 ; 1.0Φ×100mm
x	TP12	TESTING	Test Finger (Test probe B)	N/A	TP12	IEC 61032 Figure 2 ; 12Φ×80mm
x	VM03	FLUKE	Digital Multimeter	15B	11390159	a) 0-1000V, 0-10A ; b) 40MΩ

-- End of report --

IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 1 European Group Differences And National Differences

ATTACHMENT TO TEST REPORT IEC 62368-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment - Part 1: Safety requirements)			
Differences according to.....: EN IEC 62368-1:2020+A11:2020			
Attachment Form No.....: EU_GD_IEC62368_1E			
Attachment Originator.....: UL(Demko)			
Master Attachment.....: 2021-02-04			
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	CENELEC COMMON MODIFICATIONS (EN)		—
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed “Z”.		P
	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		P
1	Modification to Clause 3 .		—
3.3.19	Sound exposure <i>Replace 3.3.19 of IEC 62368-1 with the following definitions:</i>		N/A
3.3.19.1	momentary exposure level, MEL metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.3.19.3	<p>sound exposure, E</p> <p>A-weighted sound pressure (p) squared and integrated over a stated period of time, T</p> <p>Note 1 to entry: The SI unit is Pa² s.</p> $E = \int_0^T p(t)^2 dt$		N/A
3.3.19.4	<p>sound exposure level, SEL</p> <p>logarithmic measure of sound exposure relative to a reference value, E_0, typically the 1 kHz threshold of hearing in humans.</p> <p>Note 1 to entry: SEL is measured as A-weighted levels in dB.</p> $SEL = 10 \lg \left(\frac{E}{E_0} \right) \text{ dB}$ <p>Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.</p>		N/A
3.3.19.5	<p>digital signal level relative to full scale, dBFS</p> <p>levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused</p> <p>Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.</p>		N/A
2	Modification to Clause 10		—
10.6	<p>Safeguards against acoustic energy sources</p> <p>Replace 10.6 of IEC 62368-1 with the following:</p>		—
10.6.1.1	<p>Introduction</p> <p>Safeguard requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an ordinary person, that:</p> <ul style="list-style-type: none"> – is designed to allow the user to listen to audio or audiovisual content / material; and 		N/A

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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. These requirements are valid for music or video mode only. The requirements do not apply to:</p> <ul style="list-style-type: none"> – professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p> <ul style="list-style-type: none"> – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: <ul style="list-style-type: none"> • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <ul style="list-style-type: none"> – a player while connected to an external amplifier that does not allow the user to walk around while in use. <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</p>		

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Clause	Requirement + Test	Result - Remark	Verdict
	EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	<p>Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</p> <p>The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body mounted devices, attention is drawn to EN 50360 and EN 50566.</p>		N/A
10.6.2	Classification of devices without the capacity to estimate sound dose		N/A
10.6.2.1	<p>General</p> <p>This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3.</p> <p>For classifying the acoustic output $L_{Aeq,T}$, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period.</p> <p>For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song.</p> <p>NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit. For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.</p>		N/A
10.6.2.2	<p>RS1 limits (to be superseded, see 10.6.3.2)</p> <p>RS1 is a class 1 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening 		N/A


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Clause	Requirement + Test	Result - Remark	Verdict
	<p>device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1.</p> <ul style="list-style-type: none"> – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2. 		
<p>10.6.2.3</p>	<p>RS2 limits (to be superseded, see 10.6.3.3)</p> <p>RS2 is a class 2 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1. 		<p>N/A</p>
<p>10.6.2.4</p>	<p>RS3 limits</p> <p>RS3 is a class 3 acoustic energy source that exceeds RS2 limits.</p>		<p>N/A</p>
<p>10.6.3</p>	<p>Classification of devices (new)</p>		<p>N/A</p>
<p>10.6.3.1</p>	<p>General</p> <p>Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.</p>		<p>N/A</p>
<p>10.6.3.2</p>	<p>RS1 limits (new)</p> <p>RS1 is a class 1 acoustic energy source that does not exceed the following:</p> <ul style="list-style-type: none"> – for equipment provided as a package (player 		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the $L_{Aeq,T}$ acoustic output shall be ≤ 80 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 voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1.</p>		
<p>10.6.3.3</p>	<p>RS2 limits (new)</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 ≤ 80 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 ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed "programme simulation noise" described in EN 50332-1.</p>		<p>N/A</p>
<p>10.6.4</p>	<p>Requirements for maximum sound exposure</p>		<p>N/A</p>
<p>10.6.4.1</p>	<p>Measurement methods</p> <p>All volume controls shall be turned to maximum during tests.</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.</p>		<p>N/A</p>
<p>10.6.4.2</p>	<p>Protection of persons</p> <p>Except as given below, protection requirements for parts accessible to ordinary persons, instructed persons and skilled persons are given in 4.3.</p> <p>NOTE 1 Volume control is not considered a safeguard.</p> <p>Between RS2 and an ordinary person, the basic</p>		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>safeguard may be replaced by an instructional safeguard in accordance with Clause F.5, except that the instructional safeguard shall be placed on the equipment, or on the packaging, or in the instruction manual.</p> <p>Alternatively, the instructional safeguard may be given through the equipment display during use.</p> <p>The elements of the instructional safeguard shall be as follows:</p> <ul style="list-style-type: none"> – element 1a: the symbol , IEC 60417-6044 (2011-01) – element 2: “High sound pressure” or equivalent wording – element 3: “Hearing damage risk” or equivalent wording – element 4: “Do not listen at high volume levels for long periods.” or equivalent wording <p>An equipment safeguard shall prevent exposure of an ordinary person to an RS2 source without intentional physical action from the ordinary person and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off.</p> <p>The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time.</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off.</p> <p>A skilled person shall not be unintentionally exposed to RS3.</p>		
10.6.5	Requirements for dose-based systems		N/A
10.6.5.1	<p>General requirements</p> <p>Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause.</p> <p>The manufacturer may offer optional settings to</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>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>		
<p>10.6.5.2</p>	<p>Dose-based warning and requirements</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>		<p>N/A</p>
<p>10.6.5.3</p>	<p>Exposure-based requirements</p> <p>With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at.</p> <p>The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3. 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</p>		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>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>		
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	<p>Corded listening devices with analogue input</p> <p>With 94 dB L_{Aeq} acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV.</p> <p>NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.</p>		N/A
10.6.6.2	<p>Corded listening devices with digital input</p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.</p>		N/A
10.6.6.3	<p>Cordless listening devices</p> <p>In cordless mode,</p> <ul style="list-style-type: none"> – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the $L_{Aeq,T}$ acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS. 		N/A
10.6.6.4	Measurement method		N/A

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Clause	Requirement + Test	Result - Remark	Verdict																																																												
	<i>Measurements shall be made in accordance with EN 50332-2 as applicable.</i>																																																														
3	Modification to the whole document		—																																																												
	<p>Delete all the “country” notes in the reference document according to the following list:</p> <table border="1" data-bbox="432 562 1366 1335"> <tbody> <tr> <td>0.2.1</td> <td>Note 1 and 2</td> <td>1</td> <td>Note 4 and 5</td> <td>3.3.8.1</td> <td>Note 2</td> </tr> <tr> <td>3.3.8.3</td> <td>Note 1</td> <td>4.1.15</td> <td>Note</td> <td>4.7.3</td> <td>Note 1 and 2</td> </tr> <tr> <td>5.2.2.2</td> <td>Note</td> <td>5.4.2.3.2.2 Table 12</td> <td>Note c</td> <td>5.4.2.3.2.4</td> <td>Note 1 and 3</td> </tr> <tr> <td>5.4.2.3.2.4 Table 13</td> <td>Note 2</td> <td>5.4.2.5</td> <td>Note 2</td> <td>5.4.5.1</td> <td>Note</td> </tr> <tr> <td>5.4.10.2.1</td> <td>Note</td> <td>5.4.10.2.2</td> <td>Note</td> <td>5.4.10.2.3</td> <td>Note</td> </tr> <tr> <td>5.5.2.1</td> <td>Note</td> <td>5.5.6</td> <td>Note</td> <td>5.6.4.2.1</td> <td>Note 2 and 3 and 4</td> </tr> <tr> <td>5.6.8</td> <td>Note 2</td> <td>5.7.6</td> <td>Note</td> <td>5.7.7.1</td> <td>Note 1 and Note 2</td> </tr> <tr> <td>8.5.4.2.3</td> <td>Note</td> <td>10.2.1 Table 39</td> <td>Note 3 and 4 and 5</td> <td>10.5.3</td> <td>Note 2</td> </tr> <tr> <td>10.6.1</td> <td>Note 3</td> <td>F.3.3.6</td> <td>Note 3</td> <td>Y.4.1</td> <td>Note</td> </tr> <tr> <td>Y.4.5</td> <td>Note</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2	3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3	5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note	5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4	5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2	8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2	10.6.1	Note 3	F.3.3.6	Note 3	Y.4.1	Note	Y.4.5	Note					N/A
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Y.4.5	Note																																																														
4	Modification to Clause 1		—																																																												
1	<p>Add the following note:</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>		N/A																																																												
5	Modification to 4.Z1		—																																																												

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Clause	Requirement + Test	Result - Remark	Verdict
<p>4.Z1</p>	<p>Add the following new subclause after 4.9:</p> <p>To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		<p>N/A</p>
<p>6</p>	<p>Modification to 5.4.2.3.2.4</p>		<p>—</p>
<p>5.4.2.3.2.4</p>	<p>Add the following to the end of this subclause:</p> <p>The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.</p>		<p>N/A</p>
<p>7</p>	<p>Modification to 10.2.1</p>		<p>—</p>
<p>10.2.1</p>	<p>Add the following to ^{o)} and ^{d)} in table 39:</p> <p>For additional requirements, see 10.5.1.</p>		<p>N/A</p>
<p>8</p>	<p>Modification to 10.5.1</p>		<p>—</p>

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Clause	Requirement + Test	Result - Remark	Verdict
<p>10.5.1</p>	<p>Add the following after the first paragraph:</p> <p>For RS 1 compliance is checked by measurement under the following conditions:</p> <p>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus.</p> <p>Moreover, the measurement shall be made under fault conditions causing an increase of the high voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.</p> <p>For RS1, the dose-rate shall not exceed 1 μSv/h taking account of the background level.</p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>		<p>N/A</p>
<p>9</p>	<p>Modification to G.7.1</p>		<p>—</p>
<p>G.7.1</p>	<p>Add the following note:</p> <p>NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>		<p>N/A</p>
<p>10</p>	<p>Modification to Bibliography</p>		<p>—</p>

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>Add 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>		P
11	ADDITION OF ANNEXES		—
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		—
4.1.15	<p>Denmark, Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord." In Finland: "Laitte on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: "Apparatet må tilkoples jordet stikkontakt" In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
<p>4.7.3</p>	<p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex</p>		<p>N/A</p>
<p>5.2.2.2</p>	<p>Denmark</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>		<p>N/A</p>
<p>5.4.11.1 and Annex G</p>	<p>Finland and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), <p>and</p> <ul style="list-style-type: none"> • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. <p>It is permitted to bridge this insulation with a</p>		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; <p>the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</p>		
<p>5.5.2.1</p>	<p>Norway</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>		<p>N/A</p>
<p>5.5.6</p>	<p>Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.</p>		<p>N/A</p>
<p>5.6.1</p>	<p>Denmark</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>		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.4.2.1	<p>Ireland and United Kingdom</p> <p>After the indent for pluggable equipment type A, the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.</p>		N/A
5.6.4.2.1	<p>France</p> <p>After the indent for pluggable equipment type A, the following is added: – in certain cases, the protective current rating of the circuit supplied from the mains is taken as 20 A instead of 16 A.</p>		N/A
5.6.5.1	<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: 1,25 mm² to 1,5 mm² in cross-sectional area.</p>		N/A
5.6.8	<p>Norway</p> <p>To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as class I equipment. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.</p>		N/A
5.7.6	<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 protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>		N/A
5.7.6.2	<p>Denmark</p> <p>To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p>		N/A
5.7.7.1	<p>Norway and Sweden</p> <p>To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<p>external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkøplet utstyr – og er tilkøplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.”</p> <p>Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”</p>		
<p>8.5.4.2.3</p>	<p>United Kingdom</p> <p>Add the following after the 2nd dash bullet in 3rd paragraph:</p> <p>An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.</p>		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
<p>B.3.1 and B.4</p>	<p>Ireland and United Kingdom</p> <p>The following is applicable:</p> <p>To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met</p>		<p>N/A</p>
<p>G.4.2</p>	<p>Denmark</p> <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> <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>		<p>N/A</p>

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Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	<p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N/A
G.7.1	<p>United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
G.7.1	<p>Ireland</p> <p>To the first paragraph the following is added:</p> <p>Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p>		N/A
G.7.2	<p>Ireland and United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		—
10.5.2	<p>Germany</p> <p>The following requirement applies:</p> <p>For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.</p> <p><i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p>NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de</p>		N/A

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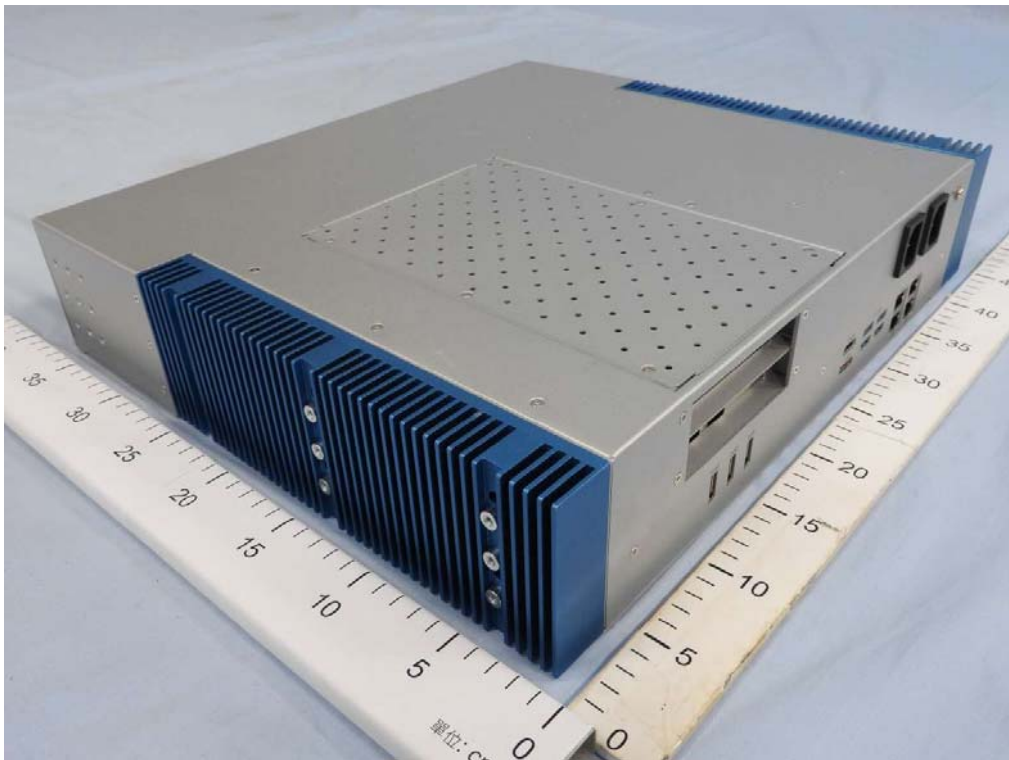
ZD	IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)		—	
	Type of flexible cord	Code designations		N/A
		IEC	CENELEC	
	PVC insulated cords			
	Flat twin tinsel cord	60227 IEC 41	H03VH-Y	
	Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F	
	Ordinary polyvinyl chloride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

-- End of Attachment 2 --

Attachment 2 Photographs



Overall view



Overall view

Attachment 2 Photographs

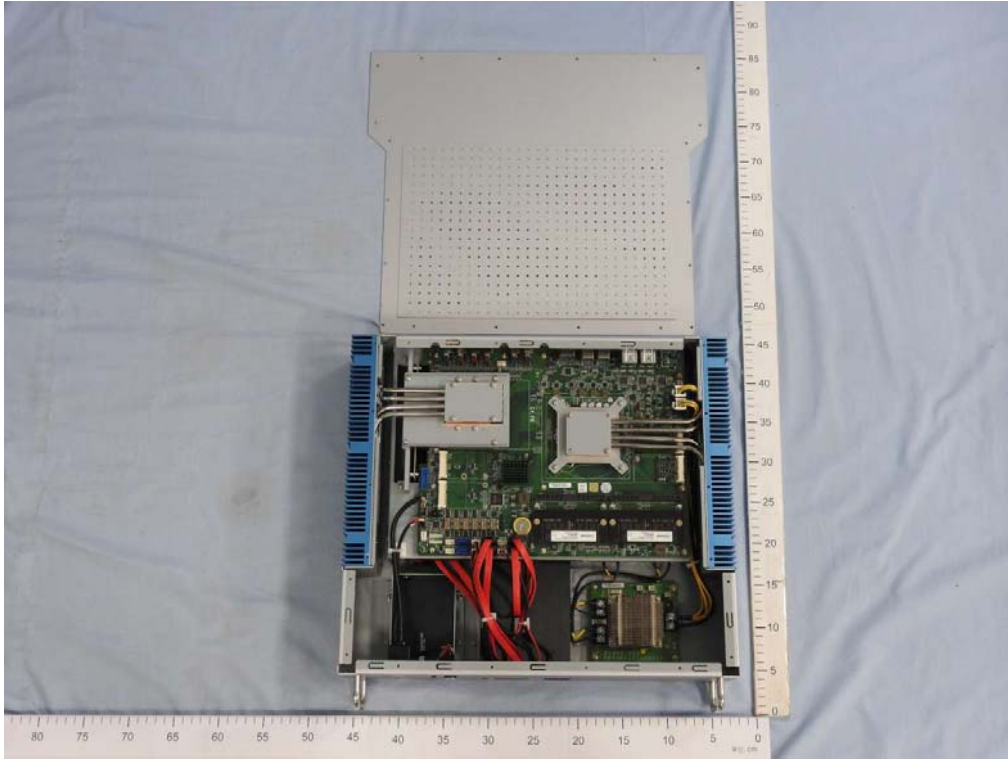


Overall view

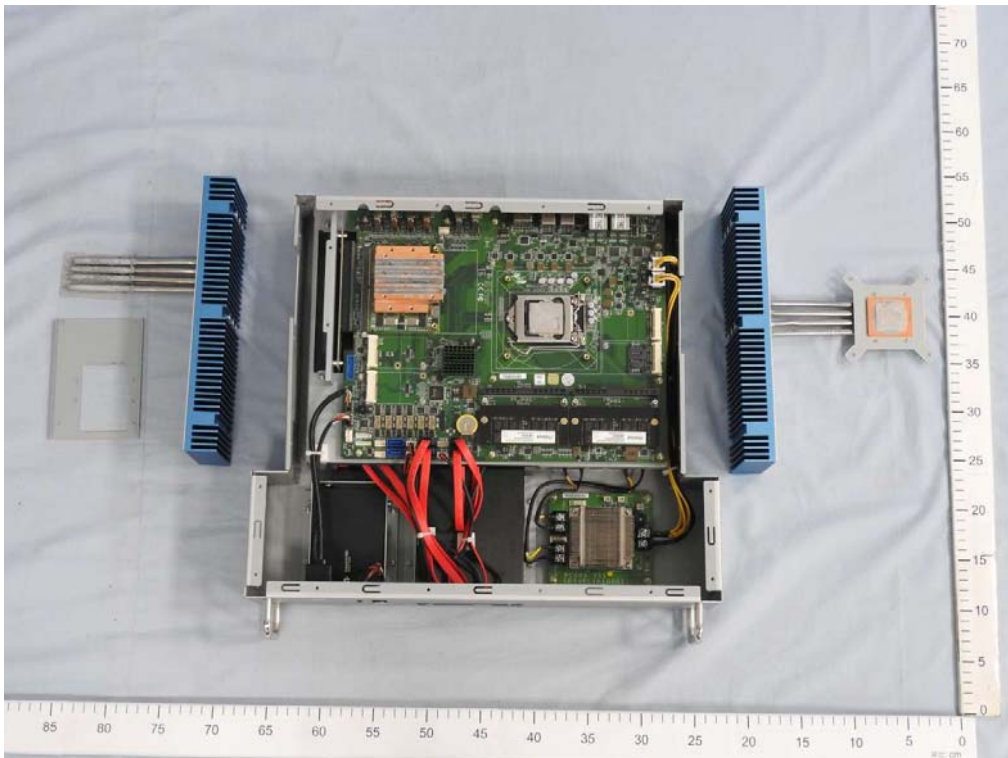


Overall view

Attachment 2 Photographs

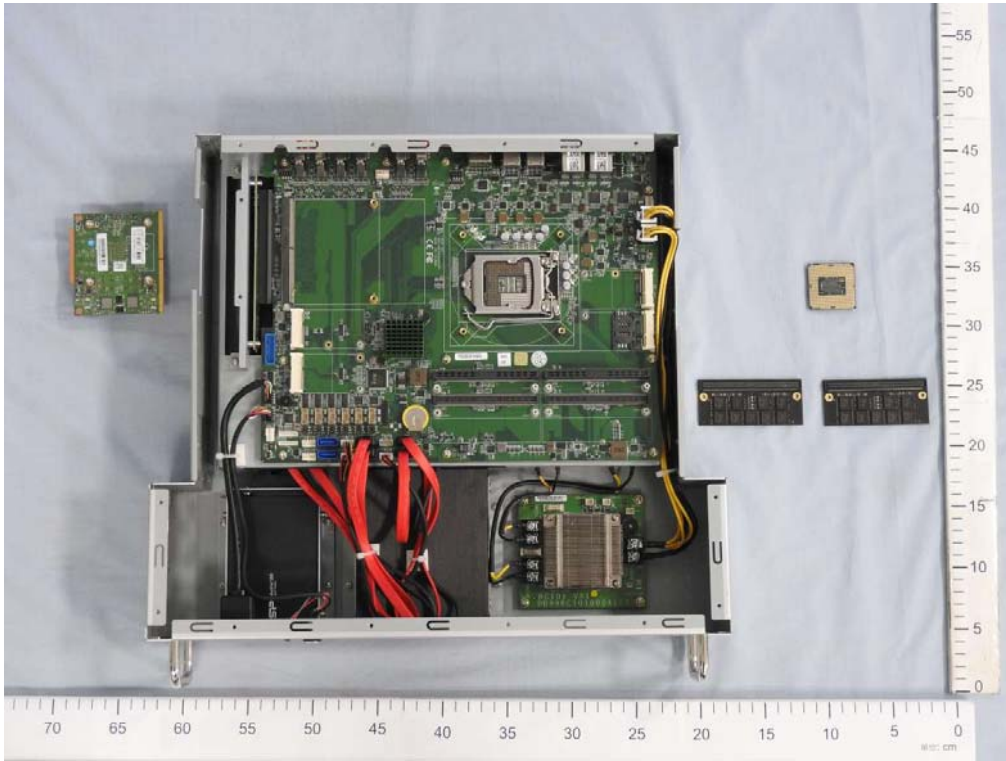


Internal view

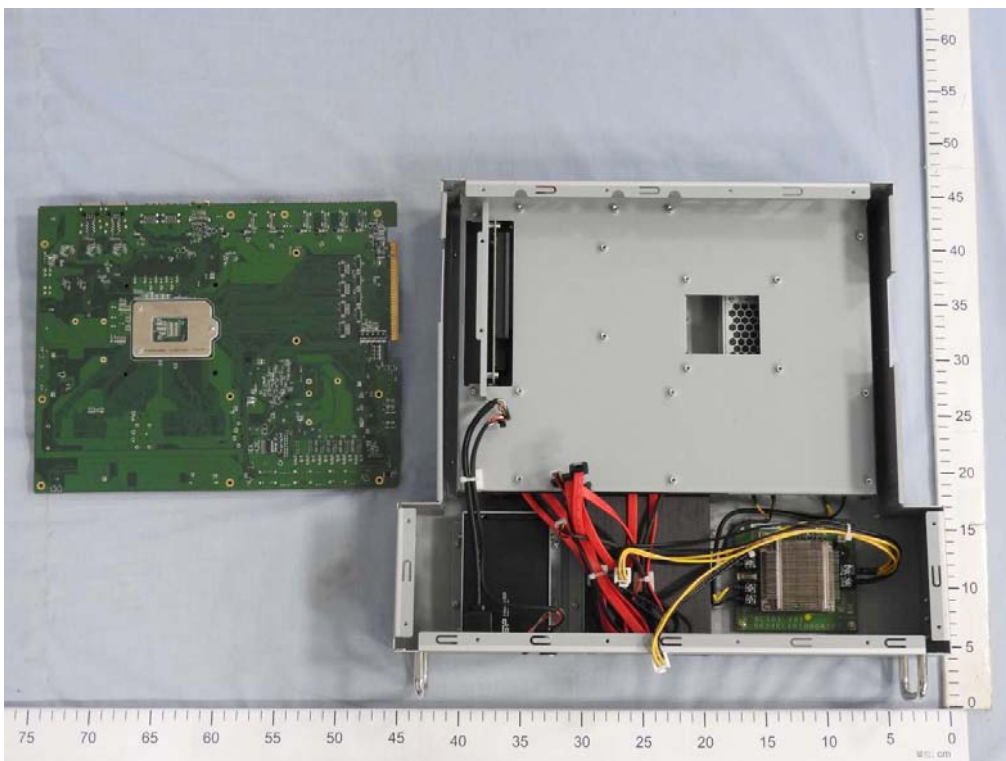


Internal view

Attachment 2 Photographs

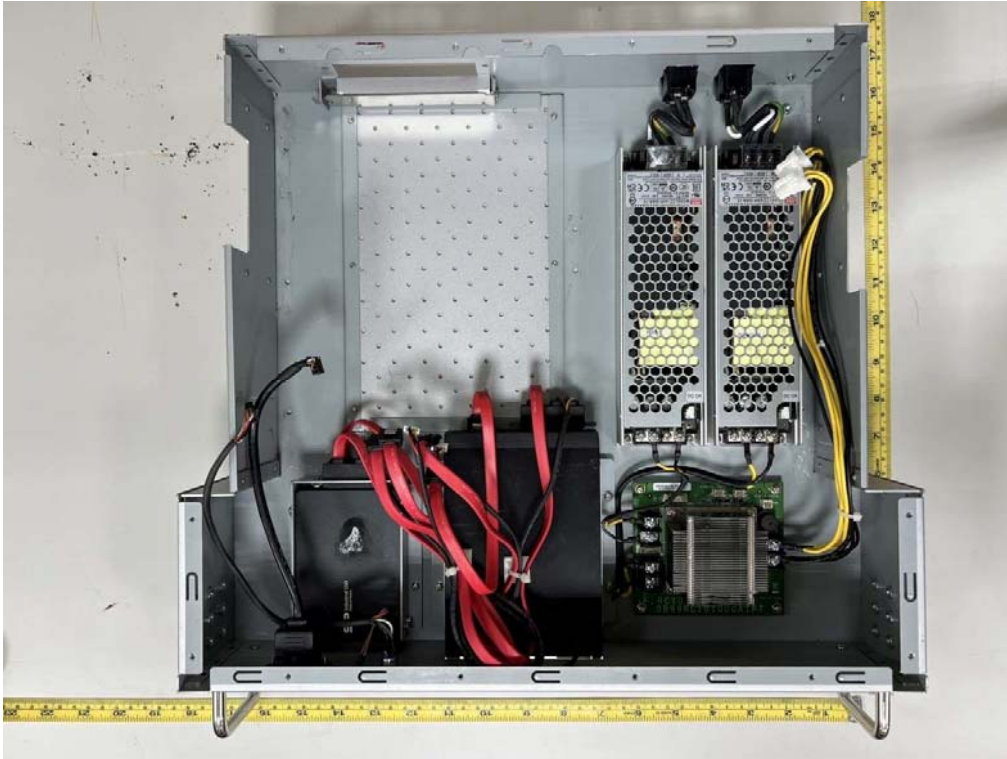


Internal view

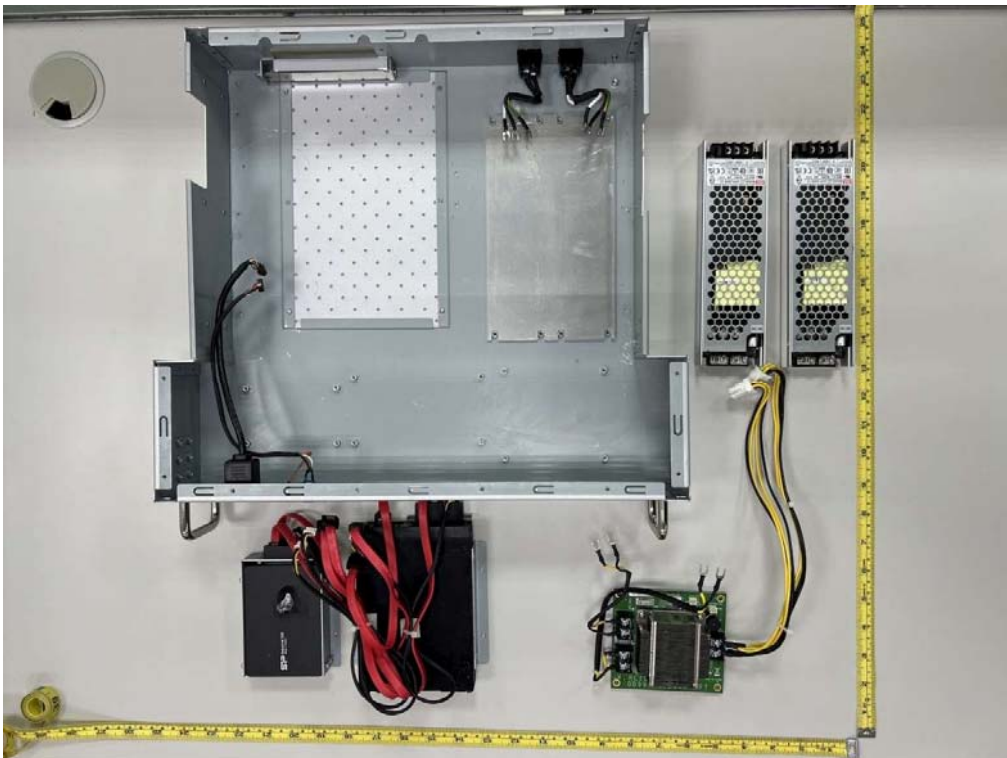


Internal view

Attachment 2 Photographs

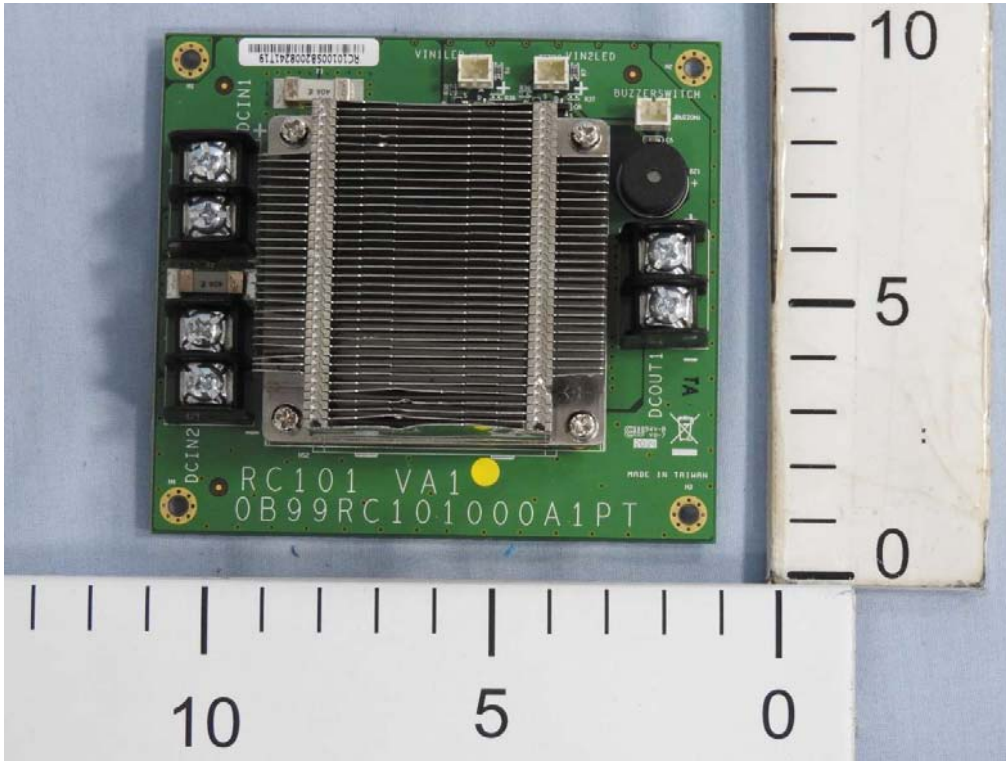


Internal view

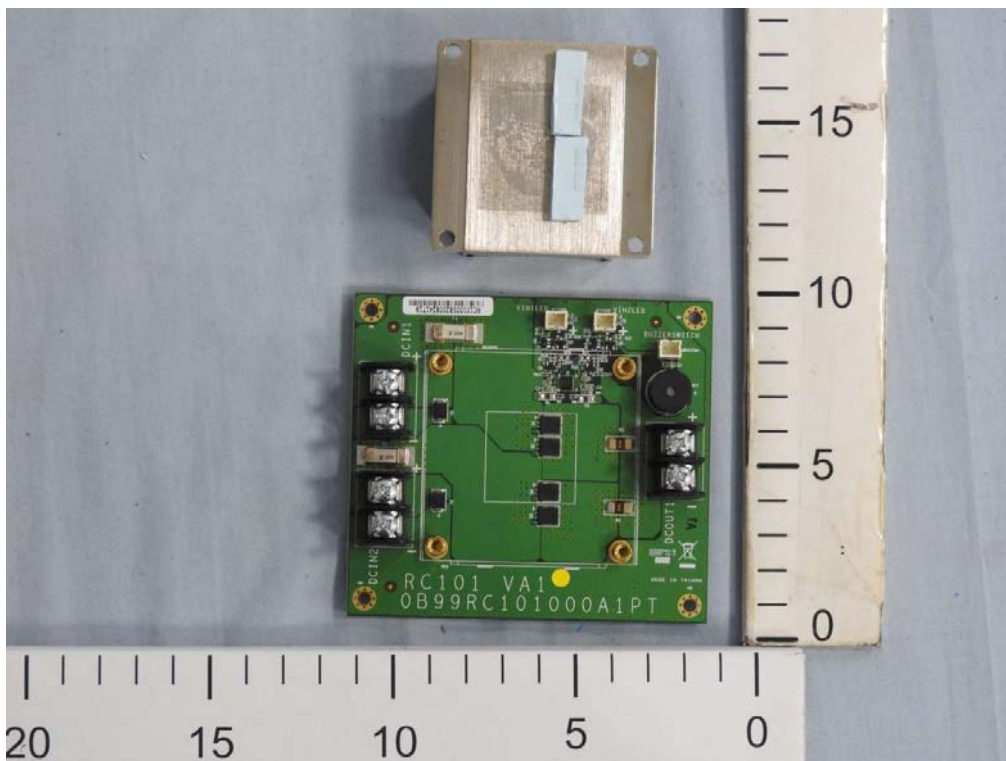


Internal view

Attachment 2 Photographs

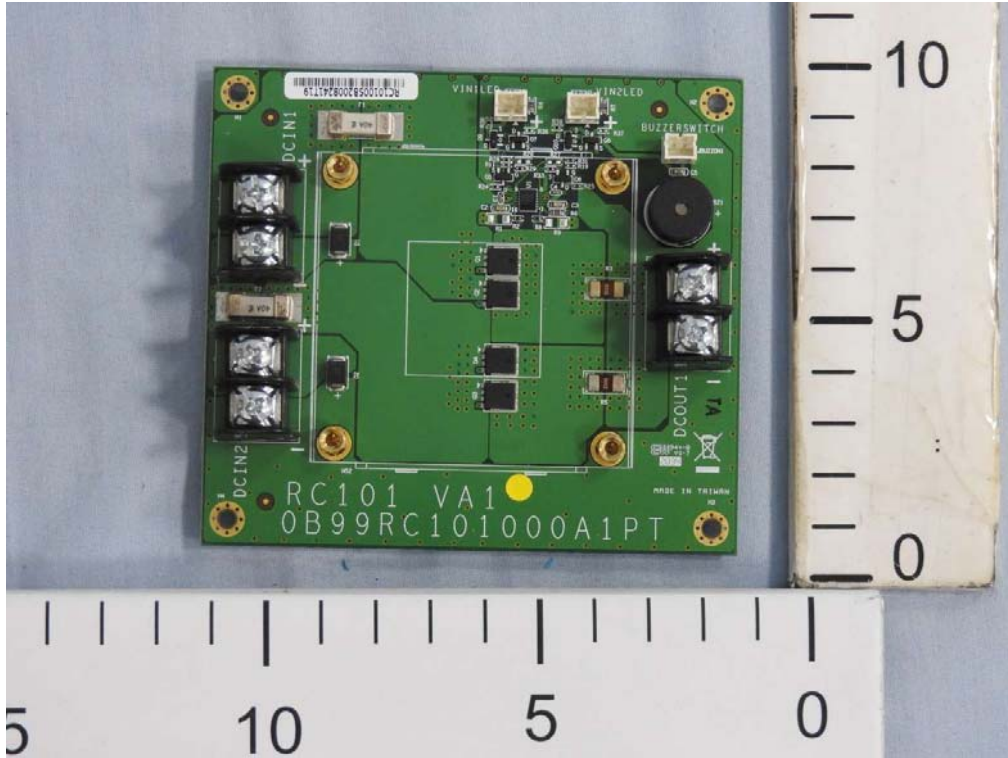


Redundant power module

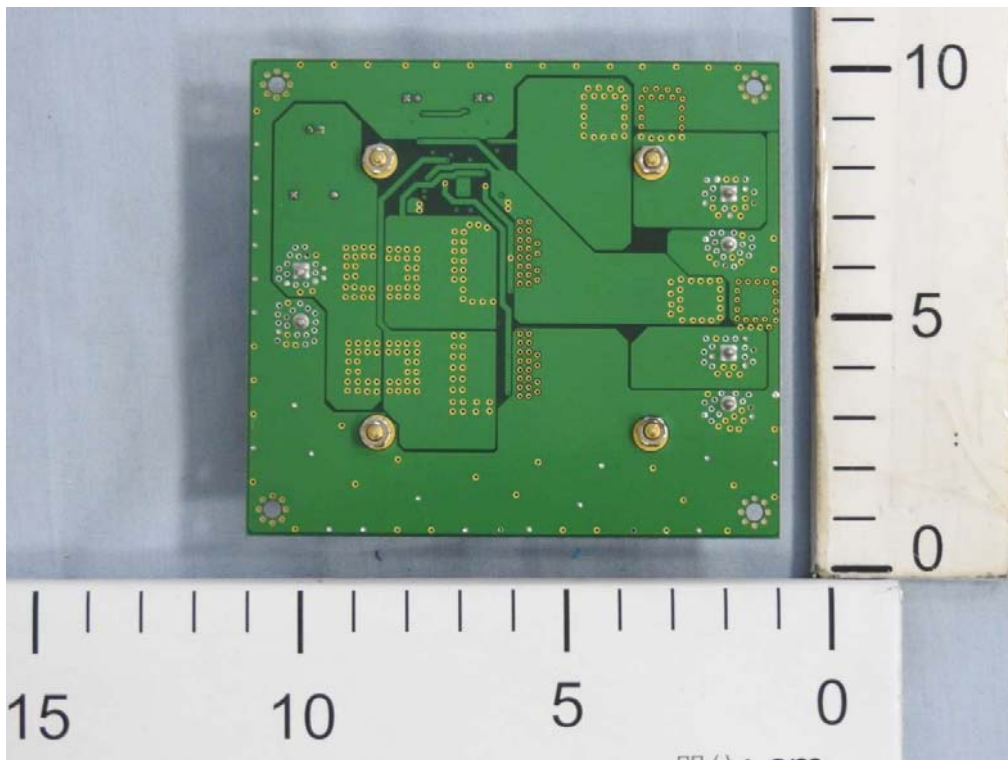


Redundant power module

Attachment 2 Photographs

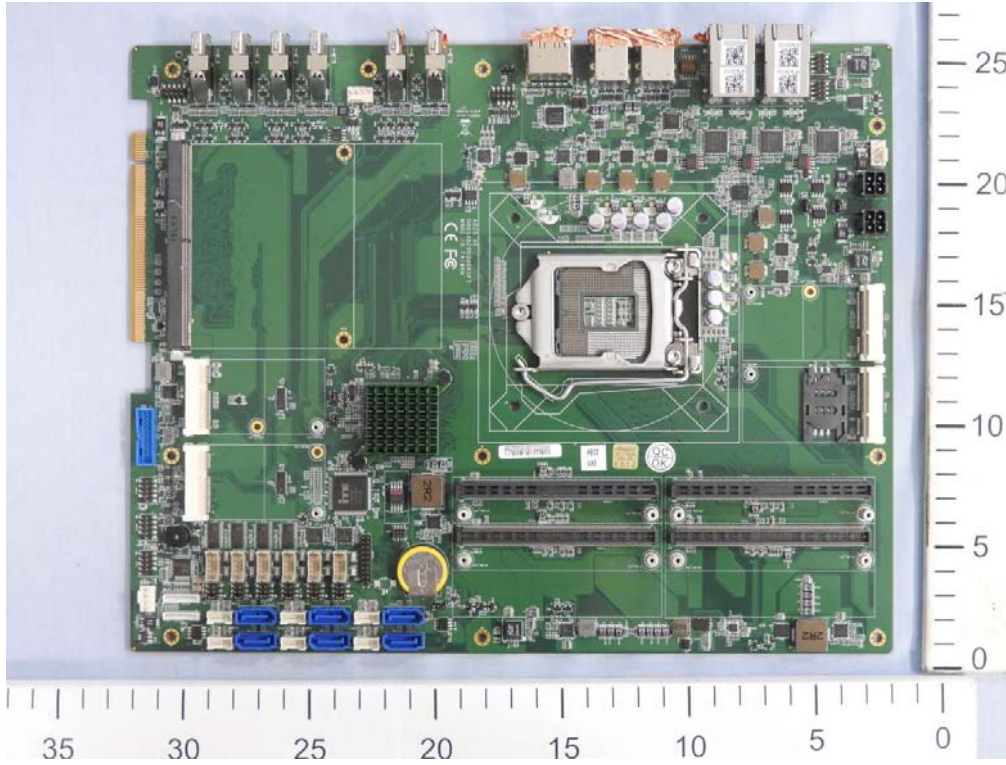


Redundant power module

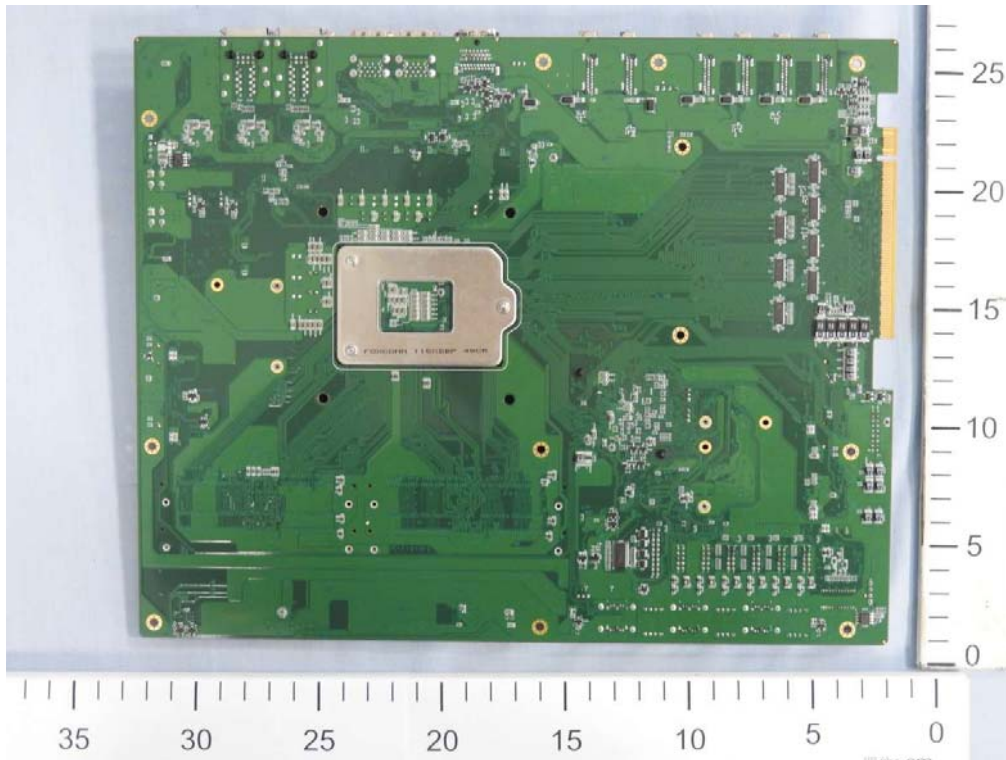


Redundant power module

Attachment 2 Photographs

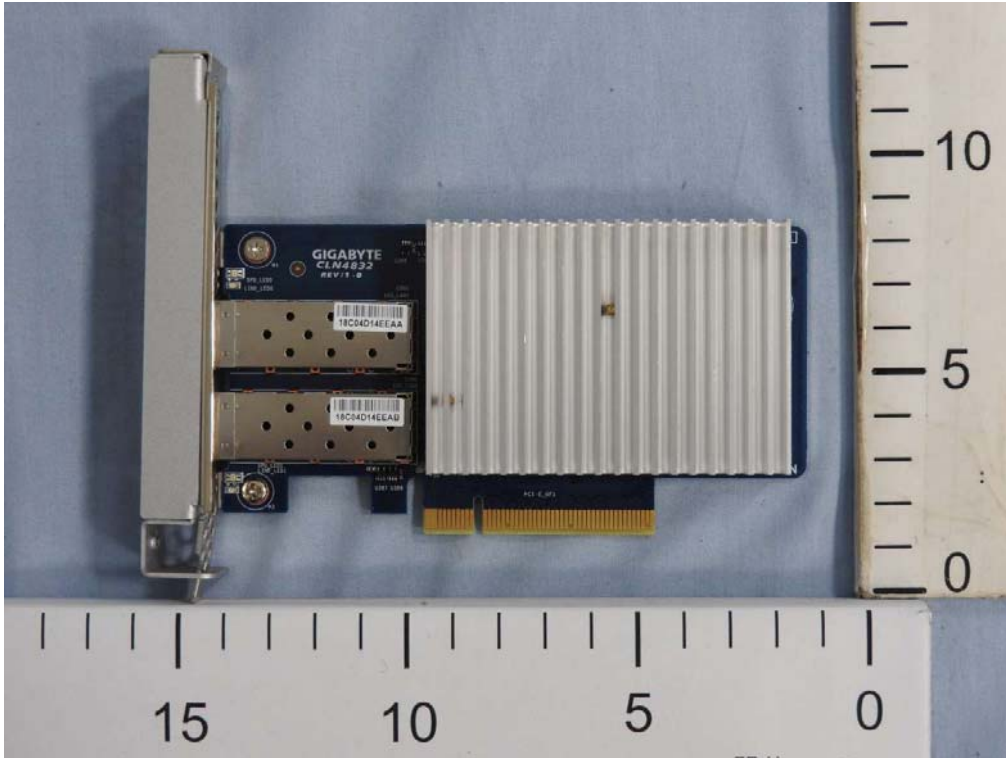


Main board

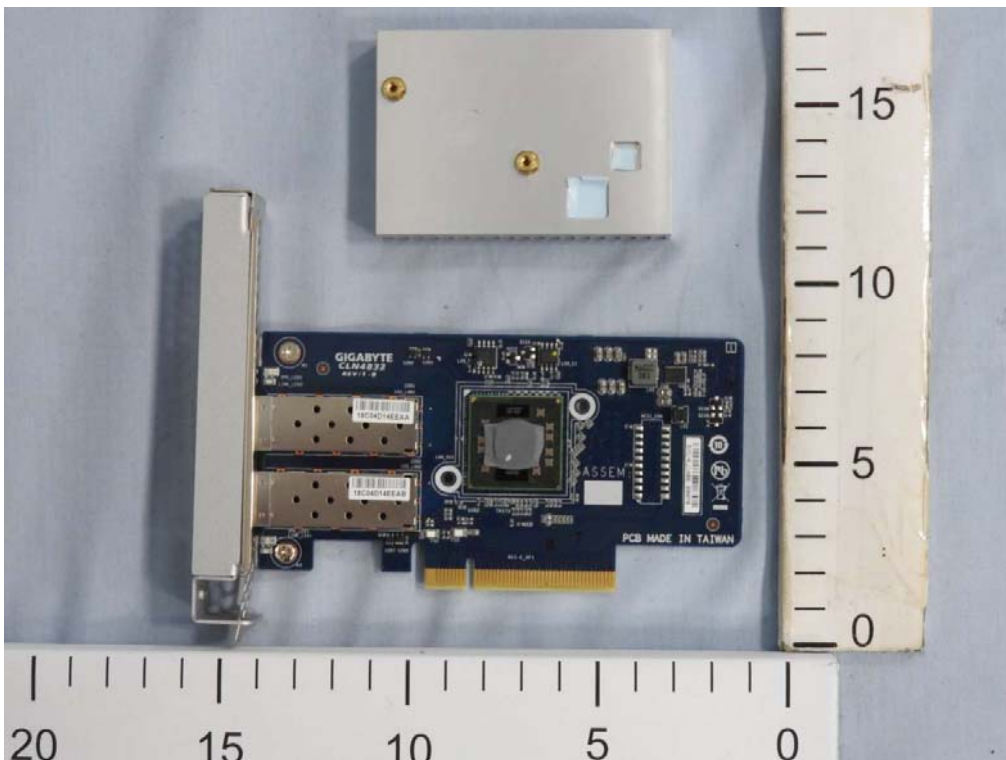


Main board

Attachment 2 Photographs

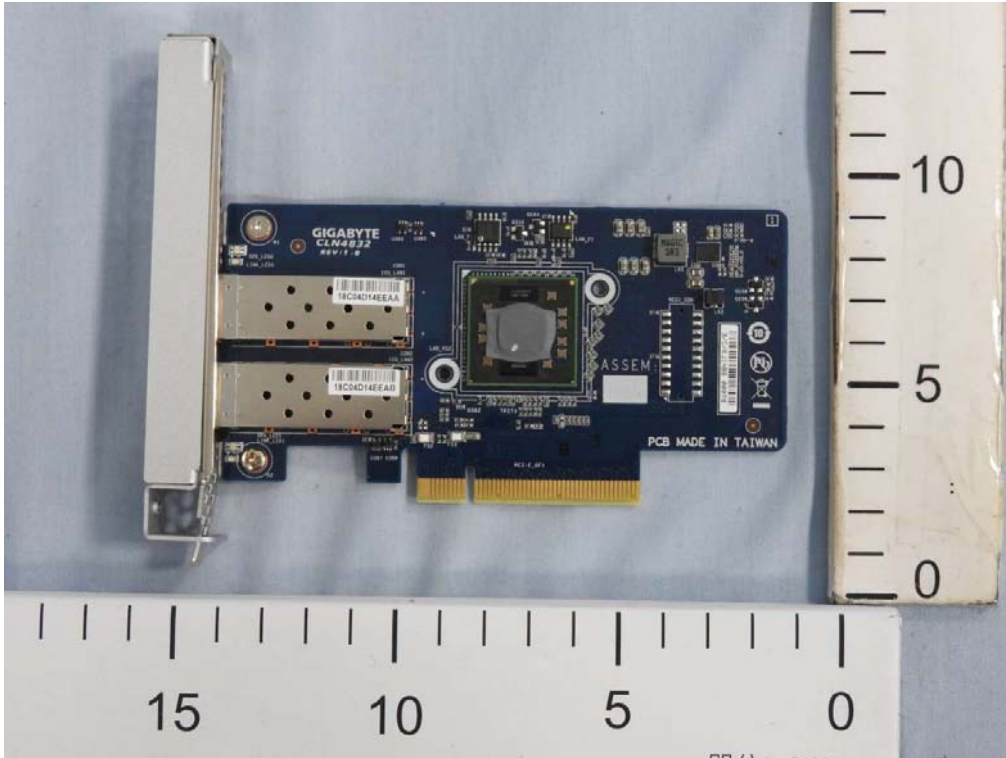


Fiber module card

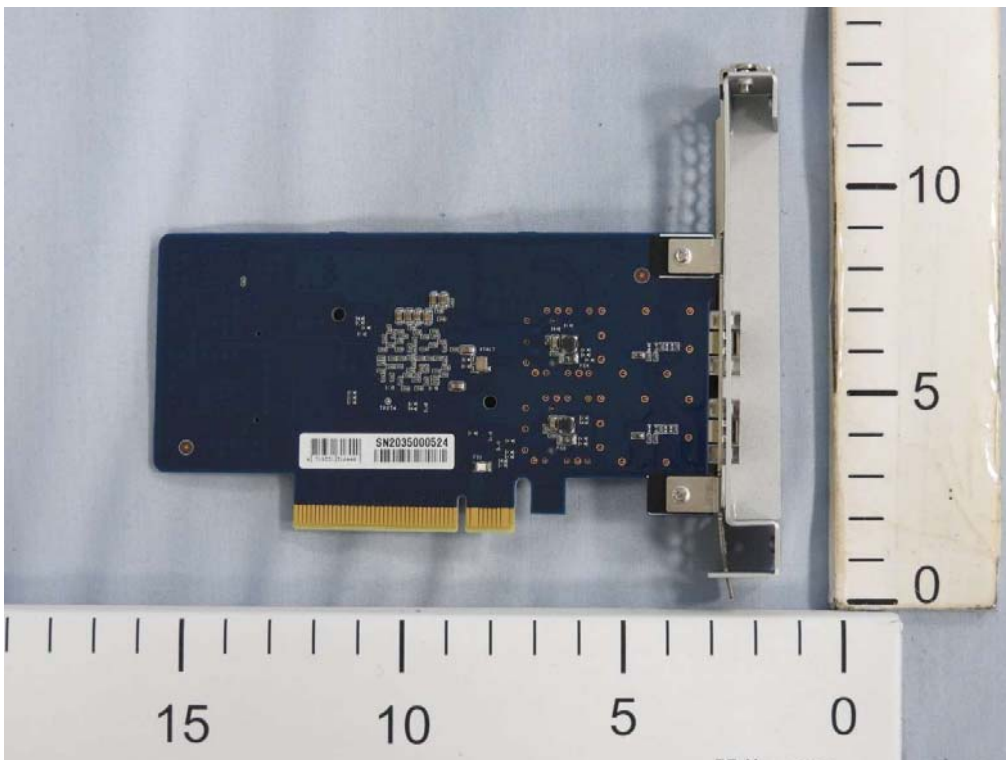


Fiber module card

Attachment 2 Photographs



Fiber module card



Fiber module card

-- End of Attachment 2 --