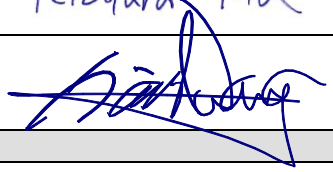
TEST REPORT
EN IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number..... :	2504012
Date of issue ..... :	2025-04-18
Total number of pages ..... :	77
Name of Testing Laboratory preparing the Report ..... :	Universal Certification Technology Co., Ltd. 13F-5, No. 93, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan.
Applicant's name ..... :	Vecow Co., Ltd.
Address..... :	3F., No. 10, Jiankang Rd., Zhonghe Dist., New Taipei City 23586, Taiwan
Test specification:	
Standard ..... :	EN IEC 62368-1:2024 + AMD11:2024
Test procedure..... :	Type test
Non-standard test method..... :	N/A
TRF template used..... :	IECEE OD-2020-F1:2023, Ed.1.6
Test Report Form No. ..... :	IEC62368_1F
Test Report Form(s) Originator..... :	UL Solutions (US)
Master TRF ..... :	Dated 2023-08-18

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory.

Test item description ..... :	Ultra-compact Fanless Embedded System
Trademark(s) ..... :	Vecow
Manufacturer ..... :	Vecow Co., Ltd.
Model/Type reference ..... :	SPC-9100, SPC-9XXXXXXXXXXXXXX (“X” can be 0-9, A-Z or blank for marketing purpose)
Ratings ..... :	DC 9-55V, 15A

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**Testing Laboratory:**	Universal Certification Technology Co., Ltd.	
Testing location/ address ..... :		13F-5, No. 93, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan	
Tested by (name, function, signature) ..... :		Richard Ma / Project engineer	
Approved by (name, function, signature) ..... :		David Wang / Reviewer	

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

1. EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (total 20 pages).
2. PHOTOGRAPTHS (total 5 pages).

The full test report shall be including above attached documents.

Summary of testing:

Tests performed (name of test, test clause and date test performed):

All applicable tests as described in Test Case and Measurement Sections were performed.

- The maximum load conditions used during testing as below:
  - The EUT (Equipment under test) continuously operating according to the functions defined in installation guide and was running the software to operate 100% usage.
  - The DisplayPort/HDMI port was connected to the monitor.
  - USB3.2 Type A port 1 and 2 were connect mouse and keyboard.
  - USB3.2 Type C port was loaded at 0.9A.
  - All LAN ports and COM ports was simulated transmitting loopback.
  - All functions were operating at the same time continuously.
- The test samples are pre-production without serial numbers.

Testing location: (including subcontractor)

Unless otherwise indicated, all tests were performed at the location stated in “Testing procedure and testing location”.

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

Summary of compliance with National Differences to IEC 62368-1:2023 and EN IEC 62368-1:2024 + AMD11:2024 European Group Differences.

☒ **The product fulfils the requirements of EN IEC 62368-1:2024 + AMD11:2024**

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

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

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

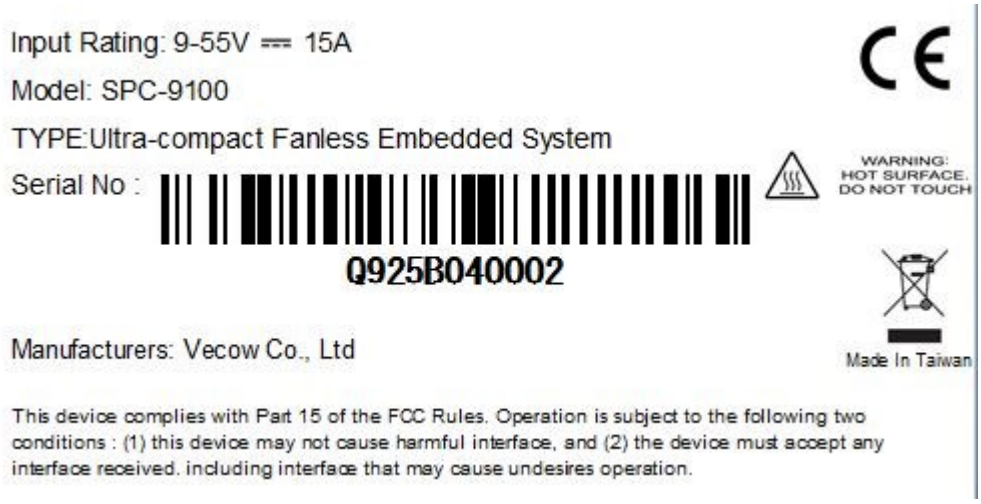
Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

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

Copy of marking plate:

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



Note:

1. The above markings are the minimum requirements required by the safety. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.
2. When the equipment is vended to EUROPE, manufacturers and importers shall indicate on the electrical equipment their name, registered trade name or registered trade mark and the postal address at which they can be contacted or, where that is not possible, on its packaging or in a document accompanying the electrical equipment.

Test item particulars:	
Product group ..... :	☒ end product ☐ built-in component
Classification of use by ..... :	☐ Ordinary person ☐ Children likely present ☒ Instructed person ☒ Skilled person
Supply connection ..... :	☐ AC mains ☐ DC mains ☒ not mains connected: ☒ ES1 ☐ ES2 ☐ ES3
Supply tolerance ..... :	☐ +10%/-10% ☐ +20%/-15% ☐ + %/ - % ☒ None
Supply connection – type ..... :	☐ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☒ mating connector ☒ other: Not direct connected to the mains
Considered current rating of protective device ..... :	☐ __ A; Location: ☐ building ☐ equipment ☒ N/A
Equipment mobility ..... :	☒ movable ☐ hand-held ☐ transportable ☐ direct plug-in ☐ stationary ☐ for building-in ☒ wall/ceiling-mounted ☐ SRME/rack-mounted ☐ other: ___
Overvoltage category (OVC) ..... :	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV ☒ other: Not direct connected to the mains
Class of equipment ..... :	☐ Class I ☐ Class II ☒ Class III ☐ Not classified ☐ ___
Special installation location ..... :	☒ N/A ☐ restricted access area ☐ outdoor location ☐ ___
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified T_{ma} ..... :	45 °C ☐ Outdoor: minimum ___ °C
IP protection class ..... :	☒ IPX0 ☐ IP__.
Power systems ..... :	☐ TN ☐ TT ☐ IT - ___ V_{L-L} ☒ not AC mains
Altitude during operation (m) ..... :	☒ 2000 m or less ☐ ___ m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ ___ m
Mass of equipment (kg) ..... :	Approx. 1.31 kg

Possible test case verdicts:	
- test case does not apply to the test object ... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ... :	F (Fail)
Testing:	
Date of receipt of test item ..... :	2025-03-18
Date (s) of performance of tests ..... :	2025-03-26 to 2025-04-16

General remarks:

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

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

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

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 ..... :	☐ **Yes** ☒ **Not applicable**

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

Name and address of factory (ies) ..... : N/A

General product information and other remarks:

- The equipment is an Ultra-compact Fanless Embedded System which intended to be used as Audio/Video, information and communication technology equipment. It consists of electronic components were mounted on PWB, and then housed with a metal chassis and fixed together by screws. It can also be mounted on wall by using mounting bracket.
- The equipment is power supplied by ES1 circuit.
- No ES2 or ES3 generated inside the EUT, only function insulation required.

Model Differences –

All models are identical to each other except for model designation and different marketing.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	**Possible Hazard**			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: Supplied by external power source	Instructed/Skilled	N/A	N/A	N/A
ES1: All internal circuits	Instructed/Skilled	N/A	N/A	N/A
ES1: All output ports	Instructed/Skilled	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1st S	2nd S
PS3: Supplied by external power source's output	Enclosure	See clause 6.3	See clause 6.4.5, 6.4.6	N/A
PS3: Supplied by external power source's output	PWB	See clause 6.3	V-1 or better	N/A
PS3: Supplied by external power source's output	The other components/materials	See clause 6.3	See clause 6.4.5, 6.4.6	N/A
PS3: Supplied by external power source's output	Internal wiring	N/A	N/A	N/A
PS2: Under 100W	All USB ports	N/A	See appended table 6.2.2	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
RTC battery	Instructed/Skilled	N/A	N/A	See Annex M
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Sharp edges and corners	Instructed/Skilled	N/A	N/A	N/A
MS1: Equipment mass (≦ 7 kg)	Instructed/Skilled	N/A	N/A	N/A
MS3: Wall mount	Instructed/Skilled	See 8.7	Instructional safeguard	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: All user's accessible parts	Instructed/Skilled	N/A	N/A	N/A
TS3: Internal parts	TS3: Internal parts	N/A	N/A	Enclosure
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R

RS1: LED indicator	Instructed/Skilled	N/A	N/A	N/A
Supplementary Information: “B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM
Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems. Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings
☒ **ES** ☒ **PS** ☒ **MS** ☒ **TS** ☒ **RS** **See OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS table for details.**

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Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies	Components which were found to affect safety aspects comply with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (See appended table 4.1.2)	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
4.1.3	Equipment design and construction	No accessible parts can cause an injury.	P
4.1.4	Specified ambient temperature for outdoor use (°C) .:	Indoor used only.	N/A
4.1.5	Constructions and components not specifically covered	Considered.	P
4.1.8	Liquids and liquid filled components (LFC)	No such component.	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 Clause T.5)	P
4.4.3.3	Drop tests	Not such equipment	N/A
4.4.3.4	Impact tests	(See Clause T.6)	P
4.4.3.5	Internal accessible safeguard tests	No such parts	N/A
4.4.3.6	Glass impact tests	No such parts	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	Metal enclosure	N/A
4.4.3.9	Air comprising a safeguard	(See Annex T)	P
4.4.3.10	Accessibility, glass, safeguard effectiveness	After test, class 3 energy sources cannot become accessible to an ordinary person or to an instructed person, and all safeguard remains effective, no damaged.	P
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks	No such component.	N/A
4.5	**Explosion**		P

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Clause	Requirement + Test	Result - Remark	Verdict
4.5.1	General	No explosion during the test.	P
4.5.2	No explosion during normal/abnormal operating condition	See above.	P
	No harm by explosion during single fault conditions	See above.	P
4.6	**Fixing of conductors**		P
	Fix conductors not to defeat a safeguard	All conductors are reliable secured.	P
	Compliance is checked by test..... :	10N force test performed for all relevant conductors. No hazards caused hereby.	P
4.7	**Equipment for direct insertion into mains socket–outlets**		N/A
4.7.2	Mains plug part complies with relevant standard ..... :	Not such equipment.	N/A
4.7.3	Torque (Nm) ..... :		N/A
4.8	**Equipment containing coin/button cell batteries**		N/A
4.8.1	General	No such component.	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**		N/A
4.10	**Component requirements**		N/A
4.10.1	Disconnect Device		N/A
4.10.2	Switches and relays		N/A
4.10.3	Mains power supply cords		N/A
4.10.4	Batteries and their protection circuits		N/A

5	**ELECTRICALLY-CAUSED INJURY**		P
5.2	**Classification and limits of electrical energy sources**		P
5.2.2	ES1, ES2 and ES3 limits	Considered.	P
5.2.2.2	Steady-state voltage and current limits ..... :	The EUT is Class III equipment and supplied by ES1 circuit.	N/A
5.2.2.3	Capacitance limits ..... :	No such capacitance within the EUT.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.4	Single pulse limits..... :	No such single pulse within in the EUT.	N/A
5.2.2.5	Limits for repetitive pulses..... :	No such repetitive pulses within in the EUT.	N/A
5.2.2.6	Ringing signals	No such ringing signal within in the EUT.	N/A
5.2.2.7	Audio signals	No audio signals within the EUT.	N/A
5.3	**Protection against electrical energy sources**		N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	Only ES1 circuit within the EUT.	N/A
5.3.1 a)	ES1/ES2 circuits that are not ES2/ES3 mains		N/A
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors	No ES3 bare conductors.	N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards	Only ES1 circuit within the EUT.	N/A
	Accessibility to outdoor equipment bare parts		N/A
5.3.2.2	Contact requirements	Only ES1 circuit within the EUT.	N/A
	Test with test probe from Annex V	The test probe from Annex V cannot contact a bare internal conductive 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	No such terminals intended to be used by ordinary person.	N/A
5.4	**Insulation materials and requirements**		N/A
5.4.1.2	Properties of insulating material	No such hygroscopic materials used on insulation.	N/A
5.4.1.3	Compliance		N/A
	Non-hygroscopic material		N/A
5.4.1.4	Maximum operating temperature for insulating materials..... :	The EUT is a Class III equipment and no insulating material is used. (See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	N/A
5.4.1.5	Pollution degrees..... :	Pollution degree 2	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	No such transformer within the EUT.	N/A
5.4.1.7	Insulation in circuits generating starting pulses	No such device within the EUT.	N/A
5.4.1.8	Determination of working voltage .....:	The EUT is a Class III equipment.	N/A
5.4.1.9	Insulating surfaces		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat test.....:		N/A
5.4.1.10.3	Ball pressure test .....:		N/A
5.4.2	Clearances	The EUT is a Class III equipment.	N/A
5.4.2.1	General requirements		N/A
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance		N/A
	Temporary overvoltage .....:		—
5.4.2.3	Procedure 2 for determining clearance		N/A
5.4.2.3.2.2	AC mains transient voltage.....:	Not connected to AC mains supply.	—
5.4.2.3.2.3	DC mains transient voltage .....:	Not connected to DC mains supply.	—
5.4.2.3.2.4	External circuit transient voltage .....:		—
5.4.2.3.2.5	Transient voltage determined by measurement .....:		—
5.4.2.3.3	Exceptions of determining required withstand voltage :		N/A
5.4.2.3.4	Determining clearances using required withstand voltage.....:		N/A
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 :		—
5.4.2.6	Clearance measurement .....:		N/A
5.4.3	Creepage distances	The EUT is a Class III equipment.	N/A
5.4.3.1	General		N/A
5.4.3.3	Material group and CTI .....:		—
5.4.3.4	Creepage distances measurement .....:	The EUT is a Class III equipment.	N/A
5.4.4	Solid insulation	No such device within the EUT.	N/A
5.4.4.1	General requirements		N/A
5.4.4.2	Minimum distance through insulation .....:		N/A
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Insulating compound forming cemented joints	No such device within the EUT.	N/A
5.4.4.6	Thin sheet material	No such device within the EUT.	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	No such material within the EUT.	N/A
	Number of layers (pcs) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.4	Standard test procedure for non-separable thin sheet material..... :	No such device within the EUT.	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 antenna terminal within in the EUT.	N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (MΩ) ..... :		N/A
	Electric strength test..... :	The EUT is a Class III equipment.	N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard	No such insulation of internal wire as part of supplementary insulation.	N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning	The EUT is a Class III equipment.	N/A
	Relative humidity (%), temperature (°C), duration (h) ..... :		—
5.4.9	Electric strength test	The EUT is a Class III equipment.	N/A
5.4.9.1	Test procedure for type test of solid insulation .....:		N/A
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits	The EUT is not connected to such external circuits.	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General	The EUT is not connected to such external circuits.	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 ..... :		N/A
5.4.11	Separation between external circuits and earth	The EUT is not intended to be connected to 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
	Surge suppressors bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	Test voltage (V) of additional test..... :		—
	Measured current (mA) of additional test ..... :		N/A
5.4.12	Insulating liquid	No insulating liquid within in the EUT.	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
	Thermal classification of IEC 60085..... :		—
5.4.12.4	Container for insulating liquid..... :		N/A
5.5	**Components as safeguards**		N/A
5.5.1	General	No such component used for bridge safeguard.	N/A
5.5.2	Capacitors and RC units	No such component within the EUT.	N/A
5.5.2.1	General requirement		N/A
5.5.2.2	Capacitor discharge after disconnection of a connector..... :		N/A
5.5.3	Transformers	No such component within the EUT.	N/A
5.5.4	Optocouplers	No such component within the EUT.	N/A
5.5.5	Relays	No such component within the EUT.	N/A
5.5.6	Resistors	No such resistor used as safeguard or bridge basic / supplementary / reinforced insulation.	N/A
	Application type of resistors ..... :		—
5.5.7	Surge suppressors		N/A
	GDT ..... :	No such component within the EUT.	N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable ..... :	No antenna terminal within the EUT.	N/A
	Insulation resistance (MΩ) ..... :		N/A
	Electric strength test ..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment	The EUT is not outdoor equipment.	N/A
	RCD rated residual operating current (mA) ..... :		—
5.6	**Protective conductor**		N/A
5.6.2	Requirement for protective conductors	The EUT is a Class III equipment.	N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm^2)..... :		—
5.6.4.2	Protective current rating (A) ..... :		—
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm) .....:		N/A
	Terminal size for connecting protective bonding conductors (mm) .....:		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method .....:		N/A
5.6.6.3	Resistance (Ω) or voltage drop .....:		N/A
5.6.7	Reliable connection of a protective earthing conductor		N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm^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**		N/A
5.7.2	Measuring devices and networks		N/A
5.7.2.1	Measurement of touch current	The EUT is a Class III equipment, only ES1 circuit within equipment.	N/A
5.7.2.2	Measurement of voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections	The EUT is not such type equipment.	N/A
5.7.4	Unearthed accessible parts..... :		N/A
5.7.5	Earthed accessible conductive parts..... :		N/A
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA) ..... :		N/A
	Instructional Safeguard ..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits	The EUT is not intended to be connected to external circuits.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 EUT is not intended to be connected to 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
5.8	**Backfeed safeguard in battery backed up supplies**		N/A
	Mains terminal ES..... :	No such device.	N/A
	Air gap (mm) ..... :		N/A
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2	**Classification of power sources and potential ignition sources**		P
6.2.2	Power source circuit classifications..... :	See overview of energy sources and safeguards. (See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources	See below	P
6.2.3.1	Arcing PIS ..... :	(See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS ..... :	(See appended table 6.2.3.2)	P
6.3	**Safeguards against fire under normal operating and abnormal operating conditions**		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials ..... :	No ignition and such temperature attained within the metal fire enclosure. (See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
	Combustible materials outside fire enclosure ..... :	No such components or parts on outside fire enclosure.	N/A
6.4	**Safeguards against fire under single fault conditions**		P
6.4.1	Safeguard method	Method by control fire spread. (see sub-clause 6.4.4, 6.4.5 and 6.4.6)	—
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	See below.	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.5.2	Supplementary safeguards	Compliance detailed as follows: - Printed board: rated min. V-1 class material; - All components and combustible materials other than small parts are either rated at least V-2 or mounted on material with rating min. V-1. (See appended tables 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuits	In additional of the compliance of sub-clause 6.4.5, a metal fire enclosure according to 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	Fire enclosure is provided.	P
6.4.8.2	Fire enclosure and fire barrier material properties	Metal fire enclosure covered all components.	N/A
6.4.8.2.1	Requirements for a fire barrier	No fire barrier.	N/A
6.4.8.2.2	Requirements for a fire enclosure	Metal fire enclosure provided.	N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	No openings.	N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties	No openings.	N/A
	Openings dimensions (mm)..... :		N/A
	Flammability tests for the top of a fire enclosure		N/A
6.4.8.3.4	Bottom openings and properties	No openings.	N/A
	Openings dimensions (mm)..... :		N/A
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard.....:		N/A
6.4.8.3.5	Side openings and properties	No openings.	N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :	No removable door or cover on the equipment.	N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating ..... :	Metal fire enclosure provided.	N/A
6.4.9	Flammability of insulating liquid.....:		N/A
	Auto ignition temperature (°C)..... :		N/A
	Flashpoint temperature (°C)..... :		N/A
6.5	**Internal and external wiring**		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.1	General requirements	Suitable UL recognized wiring which is PVC insulted and rated VW-1 used.	P
6.5.2	Requirements for interconnection to building wiring . :	No 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**		P
7.2	**Reduction of exposure to hazardous substances**		N/A
7.3	**Ozone exposure**		N/A
7.4	**Use of personal safeguards or personal protective equipment (PPE)**		N/A
	Personal safeguards and instructions ..... :		—
7.5	**Use of instructional safeguards and instructions**		N/A
	Instructional safeguard (ISO 7010) ..... :		—
8	**MECHANICALLY-CAUSED INJURY**		P
8.2	**Mechanical energy source classifications**		P
8.3	**Safeguards against mechanical energy sources**		P
8.4	**Safeguards against parts with sharp edges and corners**		P
8.4.1	Requirements	Accessible edges and corners of the equipment are rounded and are classified as MS1.	N/A
	Instructional Safeguard .....:	No safeguard required.	N/A
8.4.2	Compliance criteria	MS1	P
8.5	**Safeguards against moving parts**		N/A
8.5.1	Requirements	No moving parts.	N/A
	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	A manually activated stopping device for moving MS3		
	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	No such device within the EUT.	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

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Clause	Requirement + Test	Result - Remark	Verdict
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	The EUT is not such type equipment.	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	The EUT is not such type equipment.	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	No such device within the EUT.	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	No such device within the EUT.	N/A
	Explosion test .....:		N/A
8.5.5.3	Glass particles dimensions (mm).....:		N/A
8.6	**Stability of equipment**		N/A
8.6.1	General	Equipment mass classified MS1 (<7kg), no stability requirements	NA
	Instructional safeguard for MS2 and MS3 television sets .....:		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test.....:		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm).....:		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test.....:		N/A
8.7	**Equipment mounted to wall, ceiling or other structure**		P
8.7.1	Requirements		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Mount means type .....:	Manufacturer provides mounting bracket and specific screw type for wall mounting.	P
8.7.2	Test methods		P
	Test 1, additional downwards force (N) .....:	13N was applied to equipment for downward direction.	P
	Horizontal force to a wall or another structure	Afterward, 50N of horizontal force was applied to the equipment that mounted to a wall.	P
	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 such device within the EUT.	N/A
8.8.2	Handle strength test		N/A
	Number of handles ..... :		—
	Force applied (kg) ..... :		—
8.9	**Wheels or casters attachment requirements**		N/A
8.9.2	Pull test		N/A
8.10	**Carts, stands and similar carriers**		N/A
8.10.1	General	No such device within the EUT.	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
	Loading force applied (N) on each supporting surface:		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N) .....:		N/A
8.10.6	Thermoplastic temperature stability		N/A
8.11	**Mounting means for slide-rail mounted equipment (SRME)**		N/A
8.11.1	General	No such device within in the EUT	N/A
8.11.2	Requirements		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force applied (N) .....:		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.12	**Telescoping or rod antennas**		N/A
	No sharp edges or points		N/A
	Button/ball diameter (mm) .....:		N/A
9	**THERMAL BURN INJURY**		P
9.2	**Thermal energy source classifications**		P
9.3	**Touch temperature limits**		P
9.3.1	Touch temperatures of accessible parts .....:	All user's accessible parts are classified TS1.	P
9.3.2	Test method and compliance	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6 for details)	P
9.4	**Safeguards against thermal energy sources**		N/A
9.5	**Requirements for safeguards**		P
9.5.1	Equipment safeguard	All accessible parts are TS1.	P
9.5.2	Instructional safeguard .....:		N/A
9.6	**Requirements for wireless power transmitters**		N/A
9.6.1	General	No such function.	N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance .....:	(See appended table 9.6)	N/A
10	**RADIATION**		P
10.2	**Radiation energy source classification**		P
10.2.1	General classification	Indicating lights-LEDs are classified RS1	P
	Lasers.....:	No laser diode used.	—
	Lamps and lamp systems.....:	Only low power LED indicator used.	—
	Image projectors .....:	Not such equipment.	—
	X-Ray.....:	No x-ray.	—
	Personal music player .....:	Not such equipment.	—
10.3	**Safeguards against laser radiation**		N/A
	The standard(s) equipment containing laser(s) comply .....:		N/A
10.4	**Safeguards against optical radiation from lamps and lamp systems (including LED types)**		N/A
10.4.1	General requirements	classified as RS1	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

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Clause	Requirement + Test	Result - Remark	Verdict
10.4.2	Requirements for equipment safeguards		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 ..... :		N/A
10.5.3	Maximum radiation (pA/kg) ..... :		N/A
10.6	**Safeguards against acoustic energy sources**		N/A
10.6.1	General	No acoustic energy sources	N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....:		N/A
	Unweighted RMS output voltage (mV).....:		N/A
	Digital output signal (dBFS).....:		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30) .....:		N/A
	Warning for MEL ≥ 100 dB(A) .....:		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards..... :		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV) ..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A).....:		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A).....:		N/A

B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.1	**General**		P
B.1.5	Temperature measurement conditions	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6 for details)	P
B.1.6	Specific output conditions	Considered	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.2	**Normal operating conditions**		P
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment containing an audio amplifiers ..... :	No audio amplifier within the EUT.	N/A
B.2.3	Supply voltage and tolerances	The EUT is Class III equipment which is not directly connected to mains.	N/A
B.2.5	Input test ..... :	(See appended table B.2.5)	P
B.2.6.4	Equipment intended for building-in or rack-mounting		N/A
B.3	**Simulated abnormal operating conditions**		P
B.3.1	General	See below	P
B.3.2	Covering of ventilation openings	No ventilation openings.	N/A
	Instructional safeguard ..... :		N/A
B.3.3	DC mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals	(See appended table B.3)	N/A
B.3.6	Reverse battery polarity	No such device within the EUT.	N/A
B.3.7	Audio amplifier abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions ..... :	All safeguards remain effective. (See appended table B.3)	P
B.4	**Simulated single fault conditions**		P
B.4.1	General	See below	P
B.4.2	Temperature controlling device	No such device.	N/A
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation	The EUT is Class III equipment.	N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnection of passive components		N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance criteria during and after single fault conditions ..... :	(See appended table B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	(See Clause Annex M)	P

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Clause	Requirement + Test	Result - Remark	Verdict
C	**UV RADIATION**		N/A
C.1	**Protection of materials in equipment from UV radiation**		N/A
C.1.2	Requirements	The EUT does not produce UV radiation.	N/A
C.1.3	Test method and compliance criteria		N/A
C.2	**UV light conditioning test**		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	**TEST GENERATORS**		N/A
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 INTENDED TO AMPLIFY AUDIO SIGNALS**		N/A
E.1	**Electrical energy source classification for audio signals**		N/A
	Maximum non-clipped output power (W) ..... :	No audio amplifier.	—
	Rated load impedance (Ω) ..... :		—
	Open-circuit output voltage (V) ..... :		—
	Instructional safeguard ..... :		—
E.2	**Audio signals used during test**		N/A
E.2.1	Pink noise test signal		N/A
E.2.2	Sine-wave signal		N/A
E.3	**Audio amplifier abnormal operating conditions**		N/A
E.3.1	Normal operating conditions		N/A
E.3.2	Abnormal operating conditions		N/A
E.3.3	Audio equipment temperature measurement conditions ..... :		N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	**General**		P
	Language ..... :	English. However, the local language for each country that would be marketed shall be provided.	—
F.2	**Letter symbols and graphical symbols**		P
F.2.1	Letter symbols according to IEC60027-1	Considered.	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

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Clause	Requirement + Test	Result - Remark	Verdict
F.3	**Equipment markings**		P
F.3.1	Equipment marking locations	Equipment marking is located on the surface of bottom enclosure and is easily visible.	P
F.3.2	Equipment identification markings	See below.	P
F.3.2.1	Manufacturer identification ..... :	See copy of marking plate.	P
F.3.2.2	Model identification ..... :	See copy of marking plate.	P
F.3.3	Equipment rating markings	See copy of marking plate.	P
F.3.3.1	Equipment with direct connection to mains	Not direct connection to mains.	N/A
F.3.3.2	Equipment without direct connection to mains	Not direct connection to mains	P
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 ..... :		N/A
F.3.3.6	Rated current or rated power ..... :	See copy of marking plate	P
F.3.3.7	Equipment with multiple supply connections	Not such type equipment.	N/A
F.3.4	Voltage setting device	No voltage setting within the EUT.	N/A
F.3.5	Markings on terminals and operating devices	Not such type equipment.	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.	N/A
F.3.6.1	Class I equipment	The EUT is a Class III equipment.	N/A
F.3.6.1.1	Protective earthing conductor terminal ..... :		N/A
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking ..... :		N/A
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :	IPX0	N/A
F.3.8	External power supply output marking ..... :		N/A
F.3.9	Durability, legibility and permanence of marking	The marking on the EUT is durable and legible	P
F.3.10	Test for permanence of markings	After rubbing test by water and petroleum spirit, the marking is still legible; it is not easily removed and show no sign of curling	P
F.4	**Instructions**		P

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Information prior to installation and initial use	Considered.	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	The equipment is not intended for use 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	The EUT is a Class III equipment and no protective earthing within the EUT.	N/A
	h) Protective conductor current exceeding ES2 limits	No protective earthing conductor within the EUT.	N/A
	i) Graphic symbols used on equipment	No such symbols used.	N/A
	j) Permanently connected equipment not provided with all-pole mains switch	The EUT is not a permanently connected equipment.	N/A
	k) Replaceable components or modules providing safeguard function	No replaceable components.	N/A
	l) Equipment containing insulating liquid	No such insulating liquid within the EUT.	N/A
	m) Installation instructions for outdoor equipment	The EUT is not such type equipment.	N/A
F.5	Instructional safeguards		N/A
G	**COMPONENTS**		N/A
G.1	**Switches**		N/A
G.1.1	General	No such devices within the EUT.	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	**Relays**		N/A
G.2.1	Requirements and compliance criteria	No such devices within the EUT.	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance criteria		N/A
G.3	**Protective devices**		N/A
G.3.1	Thermal cut-offs	No such devices within the EUT.	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 criteria		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.2	Thermal links	No such devices within the EUT.	N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance criteria		N/A
G.3.3	PTC thermistors	No such devices within the EUT.	N/A
G.3.4	Overcurrent protection devices	No such devices within the EUT.	N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions ..... :		N/A
G.4	**Connectors**		N/A
G.4.1	Spacings	No such devices within the EUT.	N/A
G.4.2	Mains connector configuration ..... :		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound components**		N/A
G.5.1	Wire insulation in wound components	No such devices within the EUT.	N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle) ..... :		—
	Test temperature (°C) ..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	Compliance criteria		N/A
G.5.3	Transformers	No such devices within the EUT.	N/A
G.5.3.1	General..... :		N/A
	Compliance method ..... :		N/A
G.5.3.2	Insulation		N/A
	Protection from displacement of windings ..... :		—
G.5.3.3	Transformer overload tests		N/A
G.5.3.3.1	Test conditions		N/A
	Position.....:		P
	Method of protection .....:		P
G.5.3.3.2	Winding temperatures		N/A
G.5.3.3.3	Winding temperatures - alternative test method		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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
G.5.4	Motors	No such devices within the EUT.	N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) .....:		—
	Electric strength test .....:		N/A
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test .....:		N/A
G.5.4.5.3	Alternative method		N/A
	Electric strength test .....:		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature (°C)..... :		N/A
	Electric strength test .....:		N/A
G.5.4.6.3	Alternative method		N/A
	Electric strength test .....:		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage (V) ..... :		—
G.6	**Wire Insulation**		N/A
G.6.1	General	No such devices within the EUT.	N/A
G.6.2	Enamelled winding wire insulation		N/A
G.7	**Mains power supply cords and interconnection cables**		N/A
G.7.1	General requirements	The EUT is a Class III equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Type ..... :		—
G.7.2	Cross sectional area (mm^2 or AWG)..... :		N/A
G.7.3	Cord anchorages and strain relief		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) ..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance criteria		N/A
	Overall diameter or minor overall dimension, *D*(mm):		—
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	**Varistors**		N/A
G.8.1	General requirements	No such devices within the EUT.	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**		N/A
G.9.1	Requirements	No such devices within the EUT.	N/A
	IC limiter output current (max. 5A) ..... :		—
	Manufacturers' defined drift ..... :		—
G.9.2	Test Program		N/A
G.9.3	Compliance criteria		N/A
G.10	**Resistors**		N/A
G.10.1	General	No such devices within the EUT.	N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
	Changes of resistance (%)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured current with the lowest resistance value .. :		N/A
G.10.4	Voltage surge test		N/A
	Changes of resistance (%) ..... :		N/A
G.10.5	Impulse test		N/A
	Changes of resistance (%) ..... :		N/A
G.10.6	Overload test		N/A
	Changes of resistance (%) ..... :		N/A
G.11	**Capacitors and RC units**		N/A
G.11.1	General requirements	No such devices within the EUT.	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	No such devices within the EUT.	N/A
	Type test voltage $V_{ini,a}$ ..... :		—
	Routine test voltage, $V_{ini,b}$ ..... :		—
G.13	**Printed boards**		N/A
G.13.1	General requirements		N/A
G.13.2	Uncoated printed boards		N/A
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation ..... :		N/A
	Number of insulation layers (pcs) ..... :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance criteria		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements ..... :	No coating on components terminals.	N/A
G.15	**Pressurized liquid filled components or LFC assemblies**		N/A
G.15.1	Requirements	No such devices within the EUT.	N/A
G.15.2	Test methods and compliance criteria for self-contained LFC		N/A
G.15.2.1	Hydrostatic pressure test, applied test pressure ..... :		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test, the change of tensile strength (%) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test, test temperature (°C) ..... :		N/A
G.15.2.6	Force test		N/A
G.15.2.7	Compliance criteria		N/A
G.15.3	Test methods and compliance for a modular LFC		N/A
G.15.3.2	Hydrostatic pressure test, applied test pressure....:		N/A
G.15.3.3	Creep resistance test		N/A
G.15.3.4	Tubing and fittings compatibility test, the change of tensile strength (%) .....:		N/A
G.15.3.5	Thermal cycle test, test temperature (°C) .....:		N/A
G.15.3.6	Force test		N/A
G.15.3.7	Compliance criteria		N/A
G.16	**IC including capacitor discharge function (ICX)**		N/A
G.16.1	Condition for fault tested is not required	No such devices within the EUT.	N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test ..... :		—
	Mains voltage that impulses to be superimposed on :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test ..... :		—
G.16.3	Capacitor discharge test ..... :		N/A
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N/A
H.1	**General**		N/A
H.2	**Method A**		N/A
H.3	**Method B**		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault condition current (mA): ..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N/A
J.1	**General**		N/A
	Winding wire insulation ..... :		—
	Solid round winding wire, diameter (mm)..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm^2) ..... :		N/A
J.2/J.3	Tests and Manufacturing		—
K	**SAFETY INTERLOCKS**		N/A
K.1	**General requirements**		N/A
	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**		N/A
L.1	**General requirements**	No such device within the EUT.	N/A
L.2	**Permanently connected equipment**	Not such equipment.	N/A
	Instructions for permanently connected equipment		N/A
L.3	**Parts that remain energized**		N/A
L.4	**Single-phase equipment**		N/A
	Instructions for single pole disconnect device		N/A
L.5	**Three-phase equipment**		N/A
L.6	**Switches as disconnect devices**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
L.7	**Plugs as disconnect devices**		N/A
	Instructions for pluggable equipment		—
L.8	**Multiple power sources**	Single power source used.	N/A
	Instructional safeguard ..... :		N/A
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		P
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)	P
M.3	**Protection circuits for batteries provided within the equipment**		P
M.3.1	Requirements	Protection Circuits for RTC battery provided within the equipment.	P
M.3.2	Test method	See below.	P
	Overcharging of a rechargeable battery	The used RTC battery is not a rechargeable battery.	P
	Excessive discharging	The RTC battery is recognized component, the short-circuit test was conducted during the component recognizing.	P
	Unintentional charging of a non-rechargeable battery	(See appended table M.3)	P
	Reverse charging of a rechargeable battery	The reverse polarity installation is prevented by construction.	N/A
M.3.3	Compliance criteria	(See appended table M.3)	P
M.4	**Additional safeguards for equipment containing a secondary lithium battery**		N/A
M.4.1	General		N/A
	IEC 62133-2 batteries used for sub-system power powering application ..... :		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Test		N/A
M.4.2.2.1	General		N/A
M.4.2.2.2	Abnormal operating conditions		N/A
M.4.2.2.3	Single fault conditions		N/A
M.4.2.3	Compliance criteria..... :		N/A
M.4.3	Fire enclosure..... :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance criteria		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 criteria		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	No such type batteries within the EUT.	N/A
	Calculated hydrogen generation rate ..... :		N/A
M.7.2	Test method and compliance criteria		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 rechargeable batteries with aqueous electrolyte**		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_Z (m^3/s) ..... :		—
M.8.2.3	Correction factors ..... :		—
M.8.2.4	Calculation of distance d (mm) ..... :		—
M.9	**Preventing electrolyte spillage**		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		P
	Instructional safeguard ..... :	Provided in user's manual.	P

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Clause	Requirement + Test	Result - Remark	Verdict
N	**ELECTROCHEMICAL POTENTIALS**		N/A
	Material(s) used..... :	Pollution degree considered.	—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		N/A
	Value of *X* (mm) ..... :		—
P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		N/A
P.1	**General**	No openings.	N/A
P.2	**Safeguards against entry or consequences of entry of a foreign object**		N/A
P.2.1	General	See below.	N/A
	Location and Dimensions (mm) .....:	No openings.	—
P.2.2	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.4 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts ..... :		N/A
P.2.3	Consequence of entry test .....:		N/A
P.3	**Safeguards against spillage of internal liquids**		N/A
P.3.1	General	No such liquids within in the EUT.	N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance criteria		N/A
P.4	**Metallized coatings and adhesives securing parts**		N/A
P.4.1	General	No metallized coatings and adhesive parts within the EUT.	N/A
P.4.2	Tests		N/A
	Conditioning, T_C (°C)..... :		—
	Duration (weeks)..... :		—
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		P
Q.1	**Limited power sources**	See sub-clause 6.2.2	P
Q.1.1	Requirements	(See appended table Q.1)	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	(See appended table Q.1)	P
	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 criteria ..... :	(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

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum output current (A) ..... :		N/A
	Current limiting method ..... :		—
R	**LIMITED SHORT CIRCUIT TEST**		N/A
R.1	**General**	The EUT is a Class III equipment.	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 criteria**		N/A
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
S.1	**Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W**		N/A
	Samples, material..... :	Metal enclosure.	—
	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)..... :		—
	- Material did not show any additional holes for combustible materials		N/A
	- Cheesecloth did not ignite for top openings		N/A
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 criteria		N/A
	Mounting of samples ..... :		—
	Wall thickness (mm)..... :		—
	Cheesecloth did not ignite		N/A
S.4	**Flammability classification of materials**		N/A
S.5	**Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W**		N/A
	Samples, material..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
S.6	**Grille covering material, cloth, and reticulated foam**		N/A
	Samples, material ..... :		—
	Measured distance from the centre of the fuel tablet (mm) ..... :		N/A
T	**MECHANICAL STRENGTH TESTS**		P
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.5)	P
T.6	**Enclosure impact test**	(See appended table T.6)	P
	Fall test		P
	Swing test		P
T.7	**Drop test ..... :**		N/A
T.8	**Stress relief test ..... :**		N/A
T.9	**Glass Impact Test ..... :**		N/A
T.10	**Glass fragmentation test**		N/A
	Number of particles counted ..... :		N/A
T.11	**Test for telescoping or rod antennas**		N/A
	Torque value (Nm) ..... :		N/A
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		N/A
U.1	**General**		N/A
	Instructional safeguard **:**		N/A
U.2	**Test method and compliance for non-intrinsically protected CRTs**		N/A
U.3	**Protective screen**		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS**		N/A
V.1	**Accessible parts of equipment**		N/A
V.1.1	General		N/A
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
V.2	**Accessible part criterion**		N/A
X	**ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)**		N/A
	Clearance ..... :		N/A
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		N/A
Y.1	**General**		N/A
Y.2	**Resistance to UV radiation**		N/A
Y.3	**Resistance to corrosion**		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by ..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure..... :		N/A
Y.3.5	Compliance criteria		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, changes of tensile strength and elongation .....:		N/A
	Alternative test methods ..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance, change of swell / shrink (%) .....:		N/A
Y.4.6	Securing means		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
	Relevant tests of IEC 60529 or Y.5.5.2 or Y.5.5.3 .... :		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	**Mechanical strength of enclosures**		N/A
Y.6.1	General		N/A
Y.6.2	Impact test..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

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 62368-1:2024+A11:2024
TRF template used ..... :	IECEE OD-2020-F2:2022, Ed. 1.2
Attachment Form No. ..... :	EU_GD_IEC62368_1F
Attachment Originator ..... :	UL Solutions (Demko)
Master Attachment ..... :	2024-05-16

	CENELEC COMMON MODIFICATIONS (EN)	—
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2024+A11:2024. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2023. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed “Z”.	—
	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	—

EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**MODIFICATION to the whole document**		—
	Delete all the "country" notes in the reference document according to the following list:		P

0.2.1	Note 1 and Note 2		1	Note 4 and Note 5		3.3.8.1	Note 2
3.3.8.3	Note 1		4.1.15	Note		4.7.3	Note 1 and Note 2
5.4.2.3.2.2 Table 12	Note c		5.4.2.3.2.4	Note 1 and Note 3		5.4.2.3.2.4 Table 13	Note 2
5.4.2.5	Note 2		5.4.5.1	Note		5.4.10.2.1	Note
5.4.10.2.2	Note		5.4.10.2.3	Note			
5.5.2.1	Note		5.5.6	Note		5.6.4.2.1	Note 2 and Note 3 and Note 4
5.6.8	Note 2		5.7.7.1	Note 1 and Note 2		8.5.4.2.3	Note
10.2.1 Table 39	Note 3 and Note 4 and Note 5		10.5.3	Note 2		10.6.1	Note 3
F.3.3.4	Note 2		F.3.3.6	Note 3		Y.4.1	Note
Y.4.5	Note						

2	**Modification to Clause 1**		—
1	**Add** the following note at the end of Clause 1: "NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU." **Add** the following paragraph and note after Note 5: "This document is a type test standard. NOTE Z2 **Routine tests** of complete equipment, sub-assemblies or components are covered by EN 62911."	It shall be evaluated in separate report before entering EU market.	N/A
3	**Modification to Clause 2**		—

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Clause	Requirement + Test	Result - Remark	Verdict
2	***Add*** *the following references:* *EN 71-1:2014+A1:2018, Safety of toys - Part 1: Mechanical and physical properties* *EN 50332-1:2013, Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 1: General method for "one package equipment"* *EN 50332-2:2013, Sound system equipment: Headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 2: Matching of sets with headphones if either or both are offered separately, or are offered as one package equipment but with standardised connectors between the two allowing to combine components of different manufacturers or different design* *EN 50332-3:2017, Sound system equipment: headphones and earphones associated with personal music players - Maximum sound pressure level measurement methodology - Part 3: Measurement method for sound dose management* *IEC/TR 62471-2, Photobiological safety of lamps and lamp systems - Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety*		N/A
4	**Modification to Clause 4**		N/A
4	**Add** the following new subclause 4.Z1 after subclause 4.9: "For compliance with B.3 and B.4 in circuits connected to an AC **mains**, protective **devices** shall be provided, subject to the following: - for **pluggable equipment type A**, the protective **devices** shall be included as parts of the equipment, with the exception of components in series with the **mains** input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, for which the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet;	Class III equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- for **pluggable equipment type B** or **permanently connected equipment**, the protection may be the dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, for example a fuse or circuit breaker, is fully specified in the installation instructions. Where protective **devices** are required within the equipment, the protective **devices** within the equipment shall operate before or at the same time the expected building installation protection will operate. For earth faults in single-phase equipment, it is not necessary to provide 2 protective **devices**. It is expected that the building installation will protect against earth faults. This applies also in countries where an IT power distribution system is used."		
5	**Modification to subclause 4.1.9**		P
4.1.9	Add the following paragraph at the end of this subclause: "Products need to comply with the requirements of this document with appropriate measurement uncertainty. NOTE Z1 See also the RED ADCO position on 'Measurement uncertainty in published harmonized standards'."	Considered.	P
6	**Modification to subclause 5.4.9.1**		P
5.4.9.1	**Add** the following note after the 5th paragraph: "NOTE Z1 For guidance on the use of high voltage source, see IEC 60060-1, Clause 8 of IEC 60243-1 and IEC 61180."	Considered.	P
7	**Modification to subclause 5.4.2.3.2.4**		N
5.4.2.3.2.4	**Add** the following at the end of this subclause: "The requirement for interconnection with **external circuit** in a HBES/BACS network is in addition given in EN IEC 63044-3:2018."	No external circuit.	N
8	**Modification to subclause 5.6.6.2**		N
5.6.6.2	**Replace** item d) with the following: "d) For equipment powered from a DC mains, if the protective current rating of the circuit under test exceeds 25 A, the test current shall be minimum as required in item a), unless the manufacturer specifies a higher value."	Not such equipment.	N
9	**Modification to subclause 9.3.1**		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.3.1	**Replace** the second paragraph with the following: "An **accessible** part that, while in contact with the body, is likely to drop in temperature upon touch can be evaluated under the limits of Annex A of IEC Guide 117:2010 using the test method of 4.5 of IEC Guide 117."	Considered.	P
10	**Modification to subclause 10.2.1**		N/A
10.2.1	**Add** the following to c) and d) in Table 38: "For additional requirements, see 10.5.1."		N/A
11	**Modification to subclause 10.4.1**		N/A
10.4.1	**Replace** the second paragraph of 10.4.1 with: "Electronic light effect equipment does not have to comply with the requirements of 10.4. However, 114 IEC/TR 62471-2 shall be considered and proper installation instructions shall be provided. **Replace** the ninth paragraph of 10.4.1 with: The following information shall be provided in the user manual for safe operation and installation. This information shall also be provided for safe operation by a skilled person who may be exposed to Risk Group 3 energy levels. Adequate instructions for proper assembly, installation, maintenance and safe use, including clear warnings concerning precautions to avoid possible exposure to hazardous optical radiation; and Advice on safe operating procedures and warnings concerning **reasonably foreseeable misuse,** malfunctions and hazardous failure modes. Where servicing and maintenance procedures are detailed, they shall include explicit instructions on safe procedures to be followed; and The marking on the equipment shall be reproduced in the user manual. A yellow background is not required in the user manual.		N/A
12	**Modification to subclause 10.4.4**		N/A
10.4.4	**Replace** the last paragraph of 10.4.4 with: "Compliance against material degradation from UV radiation is checked by the applicable tests of Annex C."		N/A
13	**Modification to subclause 10.5.1**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	**Add** the following after the first paragraph: "For RS1 compliance is checked by measurement under the following conditions: In addition to the **normal operating conditions**, all controls adjustable from the outside of the equipment by hand, by any object such as a **tool** or a coin, and those internal adjustments or pre-sets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm2, at any point at a distance of 10 cm from the outer surface of the equipment. 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. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 2013/59/Euratom of 5 December 2013."		N/A
14	**Modification to subclause 10.5.3**		N/A
10.5.3	**Replace** the second paragraph of 10.5.3 with: "The amount of radiation is determined by means of a radiation monitor of the ionizing chamber type with an effective area of 1 000 mm2 ± 10 mm2 or by measuring equipment of other types giving equivalent results."		N/A
15	**Modification to Clause 10**		N/A
	Replace 10.6 with the following:		N/A
10.6	**Safeguards against acoustic energy sources**		N/A
10.6.1	**General**		N/A
10.6.1.1	**Introduction** **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: - is designed to allow the user to listen to audio or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	audiovisual content / material; and - uses a listening **device**, such as headphones or earphones that can be worn in or on or around the ears; and - has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. 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.		
	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: - **professional equipment**; NOTE 3 **Professional equipment** is equipment sold through special sales channels. All products sold through normal electronics stores or general public sales channels are considered not to be **professional equipment**. - hearing aid equipment and other devices for assistive listening; - the following type of analogue personal music players: - long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and - cassette player/recorder; 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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- a player while connected to an external amplifier that does not allow the user to walk around while in use; - hearing protection devices (HPD) that comply with EN 352-8 For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2014+A1:2018, 4.20 and the related tests methods and measurement distances apply.		
10.6.2	**Classification of devices without the capacity to estimate sound dose**		N/A
10.6.2.1	**General** This standard is transitioning from short-term based (30 s) requirements to long-term based (40 h) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3:2017. For classifying the acoustic output *L*Aeq,*T*, measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. 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. 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.		N/A
10.6.2.2	**RS1 limits (to be superseded, see 10.6.3.2)** RS1 is a class 1 acoustic energy source that does not exceed the following: for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the *L*Aeq,*T* acoustic output shall be ≤ 85		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	dB when playing the fixed “programme simulation noise” described in EN 50332-1:2013. for equipment provided with a standardized connector (for example, a 3,5 mm headphone/earphone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or −25 dBFS (digital interface) when playing the fixed 214 “programme simulation noise” described in EN 50332-1:2013. The RS1 limits will be updated for all devices as per 10.6.3.2.		
10.6.2.3	**RS2 limits (to be superseded, see 10.6.3.3)** RS2 is a class 2 acoustic energy source that does not exceed the following: for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic detection, the LAeq,T acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1:2013. 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 226 EN 50332-1:2013.		N/A
10.6.2.4	**RS3 limits** RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	**Classification of devices (new)**		N/A
10.6.3.1	**General** Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision 2009/490/EC of 23 June 2009, are given below.		N/A
10.6.3.2	**RS1 limits (new)** RS1 is a class 1 acoustic energy source that does not exceed the following: 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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	detection, the LAeq,T acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1:2013. 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 50332-1:2013.		
10.6.3.3	**RS2 limits (new)** RS2 is a class 2 acoustic energy source that does not exceed the following: for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly **sound exposure level**, as described in EN 50332-3:2017, shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in 249 EN 50332-1:2013. for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN 50332-3:2017, shall be ≤ 15 mV (analogue interface) or −30 dBFS		N/A
10.6.4	**Requirements for maximum sound exposure**		N/A
10.6.4.1	**Measurement methods** All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1:2013 or EN 50332-2:2013 as applicable.		N/A
10.6.4.2	**Protection of persons** Except as given below, protection requirements for parts **accessible** to **ordinary persons**, **instructed persons** and **skilled persons** are given in 4.3. NOTE 1 Volume control is not considered a **safeguard.** Between RS2 and an **ordinary person**, the **basic safeguard** may be replaced by an **instructional safeguard** in accordance with Clause F.5, except that the **instructional safeguard** shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the **instructional safeguard** may be given through the equipment display during use. The elements of the **instructional safeguard** shall		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	be as follows: – element 1a: the symbol  , IEC 60417-6044 (2011-01) – element 2: “High sound pressure” or equivalent text – element 3: “Hearing damage risk” or equivalent text – element 4: “Do not listen at high volume levels for long periods.” or equivalent text 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. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output level exceeding RS1 limits. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output level exceeding RS1 limits. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed. 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. A **skilled person** shall not be unintentionally exposed to RS3.		
10.6.5	**Requirements for dose-based systems**		N/A
10.6.5.1	**General requirements** Personal music players shall give the warnings as provided below when tested according to 281 EN 50332-3:2917, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the **safeguards**. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		
10.6.5.2	**Dose-based warning and requirements** When a dose of 100 % *CSD* is reached, and at least at every 100 % further increase of *CSD*, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to a level in compliance with class RS1 limits. The warning shall at least clearly indicate that listening above 100 % *CSD* leads to the risk of hearing damage or loss.		N/A
10.6.5.3	**Exposure-based requirements** 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. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3:2017. The EL settling time (time from starting level reduction to reaching target output level) shall be 10 s or less. Test of EL functionality is conducted according to EN 50332-3:2017, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the un-weighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than −10 dBFS for a digital interface. In case the source is known not to be music (or test signal), the EL may be disabled.		N/A
10.6.6	**Requirements for listening devices (headphones, earphones, etc.)**		N/A
10.6.6.1	**Corded listening devices with analogue input** With 94 dB *LAeq* acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	that maximizes the measured acoustic output level, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1:2013 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV in 10.6.2.2. or 100 dB and 150 mV in 10.6.2.3.		
10.6.6.2	**Corded listening devices with digital input** With any playing device playing the fixed “programme simulation noise” described in EN 50332-1:2013, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the *L*Aeq,*T* acoustic output of the listening device shall be ≤ 100 dB with an input signal of −10 dBFS.		N/A
10.6.6.3	**Cordless listening devices** In cordless mode, with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1:2013; 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** Measurements shall be made in accordance with EN 50332-2:2013 as applicable.		N/A
16	**Modification to subclause G.3.1.2**		N/A
	Add the following note after the first paragraph: “NOTE Z1 An IEC 60730 series standard is considered relevant if the component in question falls within its scope.”		N/A
17	**Modification to subclause G.7.1**		N/A
	Add the following note at the end of the subclause: “NOTE Z1 The harmonized code designations corresponding to the IEC cable types are given in Annex ZD.”		N/A
18	**Modification to subclause M.2**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Add the following paragraph after the first paragraph: "The size of the battery compartment shall be designed taking into account the battery compartment recommendations of the relevant battery standard. NOTE For general guidance on the design of the battery compartment, see Clause 8 of IEC 62485-4."		N/A
19	**Modification to Bibliography**		N/A
	Add the following notes for the standards indicated:		N/A

IEC 60060-1	NOTE	Harmonized as EN 60060-1.
IEC 60130-9	NOTE	Harmonized as EN 60130-9.
IEC 60204-1	NOTE	Harmonized as EN IEC 60204-1.
IEC 60204-11	NOTE	Harmonized as EN IEC 60204-11.
IEC 60243-1	NOTE	Harmonized as EN 60243-1.
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 60664-5:2005	NOTE	Harmonized as EN 60664-5:2007.
IEC 60721-3-4	NOTE	Harmonized as EN IEC 60721-3-4.
IEC 61032:1997	NOTE	Harmonized as EN 61032:1998 (not modified).
IEC 61180	NOTE	Harmonized as EN 61180.
IEC 61508-1	NOTE	Harmonized as EN 61508-1.
IEC 61558-2-1	NOTE	Harmonized as EN 61558-2-1.
IEC 61558-2-4	NOTE	Harmonized as EN 61558-2-4.
IEC 61558-2-6	NOTE	Harmonized as EN 61558-2-6.
IEC 61643-21	NOTE	Harmonized as EN 61643-21.
IEC 61643-311	NOTE	Harmonized as EN 61643-311.
IEC 61643-321	NOTE	Harmonized as EN 61643-321.
IEC 61643-331	NOTE	Harmonized as EN IEC 61643-331.
IEC 61140:2016	NOTE	Harmonized as EN 61140:2016.
IEC 61439-5:2014	NOTE	Harmonized as EN 61439-5:2015.
IEC 61969-3	NOTE	Harmonized as EN 61969-3.
IEC 62040:2017	NOTE	Harmonized as EN IEC 62040:2019.
IEC 62305-1	NOTE	Harmonized as EN 62305-1.
IEC 62368-3	NOTE	Harmonized as EN 62368-3.
IEC 62485-4	NOTE	Harmonized as EN IEC 62485-4.
ISO 10218-1	NOTE	Harmonized as EN ISO 10218-1.
ISO 10218-2	NOTE	Harmonized as EN ISO 10218-2.
ISO 13482	NOTE	Harmonized as EN ISO 13482.
ISO 13850	NOTE	Harmonized as EN ISO 13850.

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Clause	Requirement + Test	Result - Remark	Verdict
20	**Additions of annexes**		N/A
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		—
4.1.15	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: **Class I pluggable equipment type A** intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and **accessible** parts, have a marking stating that the equipment shall be connected to an earthed **mains** socket-outlet. The marking text in the applicable countries shall be as follows: In **Finland**: “Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan” In **Norway**: “Apparatet må tilkoples jordet stikkontakt” In **Sweden**: “Apparaten skall anslutas till jordat uttag”	The warning shall be provided when entries the countries.	N/A
4.7.3	**United Kingdom** To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex	Not direct plug-in equipment.	N/A

EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.1 and Annex G	**Finland and Sweden** To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either - 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. 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 - passes the tests and inspection criteria of 5.4.7 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and - is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5 kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14, subclass Y2. A capacitor classified Y3 according to EN 60384-14, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.10; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; - 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.	Equipment not for connection to telecommunication network.	N/A

EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.2.1	**Norway** After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).	Class III equipment.	N/A
5.5.6	**Finland, Norway** and **Sweden** To the end of the subclause the following is added: Resistors used as **basic safeguard** or bridging **basic insulation** in **class I pluggable equipment type A** shall comply with G.10.1 and the test of G.10.3.	No such resistors.	N/A
5.6.4.2.1	**Ireland and United Kingdom** After the indent for **pluggable equipment type A**, the following is added: - the **protective current rating** is taken to be 13 A, this being the largest rating of fuse used in the **mains** plug.	Class III equipment.	N/A
5.6.4.2.1	**France** After the indent for **pluggable equipment type A**, the following is added: - in **certain** cases, the **protective current rating** of the circuit supplied from the **mains** is taken as 20 A instead of 16 A.	Ditto.	N/A
5.6.5.1	**Ireland and United Kingdom** To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm^2 to 1,5 mm^2 in cross-sectional area.	Ditto.	N/A
5.6.8	**Norway** To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as **class I equipment**. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.	Ditto.	N/A

EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.7.1	**Norway and Sweden** To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kVRMS, 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan 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.”.		N/A

EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.3	**United Kingdom** Add the following after the 2nd dash bullet in 3rd paragraph: An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		N/A
B.3.1 and B.4	**Ireland and United Kingdom** The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of **direct plug-in equipment**, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the **direct plug-in equipment**, until the requirements of Annexes B.3.1 and B.4 are met	Not direct plug-in equipment.	N/A
G.4.2	**United Kingdom** To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.	No such device.	N/A
G.7.1	**United Kingdom** To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc. (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.	No power supply cord provided.	N/A
G.7.1	**Ireland** To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard	No power supply cord provided.	N/A

EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.2	**Ireland and United Kingdom** To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm^2 is allowed for equipment which is rated over 10 A and up to and including 13 A.	No power supply cord provided.	N/A
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		N/A
10.5.2	**Germany** The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. *Justification*: German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. **NOTE** Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int+49-531-592-6320, Internet: http://www.ptb.de	No CRT within the equipment.	N/A
ZD	**IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)**		N/A
			N/A

Type of flexible cord	Code designations	
	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

EN 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.....:				—
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:					

EN 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:	U_p (V)	U_{rms} (V)	Freq [1] (Hz)	Required cl (mm)	cl (mm)	E.S. [2] (V)	Required cr (mm)	cr (mm)
Functional insulation:								
Basic/supplementary insulation:								
Reinforced insulation:								
Supplementary information:								
1) Only for frequency above 30 kHz 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								

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 (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)
Supplementary information:						

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

5.5.2.2	TABLE: Stored discharge on capacitors				N/A
Location	Supply voltage (V)	Operating and fault condition [1]	Switch position	Measured voltage (Vpk)	ES Class

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

Supplementary information:					
X-capacitors installed for testing: [X] bleeding resistor rating: [ ] ICX: 1) Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit					

5.6.6	**TABLE: Resistance of protective conductors and terminations**			N/A
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
Supplementary information:				

5.7.4	**TABLE: Unearthed accessible parts**					N/A
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V_{rms} or V_{pk})	Current (A_{rms} or A_{pk})	Freq. (Hz)	
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit 1) Combination with normal and reverse polarity (switch p).						

5.7.5	**TABLE: Earthed accessible conductive part**			N/A
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	
	1 1)			
	1 1)			
	2 2)			
	2 2)			
Supplementary Information:				
[1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] 1) IEC 60990 clause 6.2.2.2 Fault condition No. 1: tested with loss of protective earth connection (switch e) in combination with normal and reverse polarity (switch p). 2) IEC 60990 clause 6.2.2.3 Fault condition No. 1: tested with neutral open (switch n), with earth intact and in				

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Clause	Requirement + Test	Result - Remark	Verdict

normal polarity, and again in reverse polarity (switch p).

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 (V)	Current (A)	Max. Power 1) (W)	Time (S)	PS Class
USB3.2 Type A port 1*	Nornal	4.466	2.1	9.3786	3	1
USB3.2 Type A port 2*	Nornal	4.459	2.1	9.3639	3	1
USB3.2 Type C*	Nornal	4.073	6.6	26.8818	5	2
HDMI Pin 18-17	Nornal	3.87	2.5	9.650	3	1
DP Pin. 20-16	Nornal	2.75	2.1	5.775	3	1
LAN port 1	Nornal	0.0	0	--	3	1
LAN port 2	Nornal	0.0	0	--	3	1
COM 1 port	Nornal	0.0	0	--	3	1
COM 2 port	Nornal	0.0	0	--	3	1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit 1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3. * USB ports、HDMI and DP port used protection device.						

6.2.3.1	TABLE: Determination of Arcing PIS			P
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
*)	--	--	--	Yes (Declare)
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. *) All primary components are considered as Arcing PIS。				

6.2.3.2	TABLE: Determination of resistive PIS	P

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

Location	Operating and fault condition	Dissipate power (W)	Resistive PIS? Yes / No
*)	Normal	--	Yes (Declare)
Supplementary information:			
Abbreviation: SC= short circuit; OC= open circuit 1) All internal components are considered as Resistive PIS。			

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

EN 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) .....:		—

Part A [1)]

Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
Steel disc								
Aluminium ring								
Aluminium foil								

Measurement temperature T of part/at:	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)

Part B [2)]

Foreign objects	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)
Steel disc								
Aluminium ring								
Aluminium foil								

Measurement temperature T of part/at:	w/o receiver and direct contact		with receiver and direct contact		with receiver and at distance of 2 mm		with receiver and at distance of 5 mm	
	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)	Object (°C)	Ambient (°C)

Supplementary information:

1) The test is performed by powering up the transmitter and then placing each of the foreign objects specified in 9.6.2 in direct contact with the transmitter.

2) The test is performed by first placing each of the foreign objects specified in 9.6.2 in direct contact with the transmitter and then powering up transmitter.

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**	P

Supply voltage (V) .....:	See below	See below	—
Ambient temperature during test T_{amb} (°C) .....:	See below	See below	—
Maximum measured temperature *T* of part/at:	*T* (°C)		Allowed T_{max} (°C)
Supply voltage (V)	**9Vdc**	**55Vdc**	--
Test direction	**Horizontal**	**Horizontal**	--
Maximum operating temp. for components	--	--	--
PWB near main chip	80.0	86.0	130
PWB near chip	80.6	87.0	130
PWB near L15	79.7	87.0	130
Capacitor (EC1)	71.7	78.8	105
PWB near RAM	75.7	81.1	130
RTC body	76.9	82.4	100
Calculated value for T_{ma}:	45.0	45.0	--
Actual ambient during test (T_{amb})	22.8	21.7	--
Following parts located surface of enclosure (accessible parts)	--	--	--
Metal enclosure outside near top	48.0	52.7	60
Power switch	41.4	44.1	77
Calculated value for T_{ma}:	25.0	25.0	--
Actual ambient during test (T_{amb})	22.8	21.7	--
Supply voltage (V)	**9Vdc**	**55Vdc**	--
Test direction	**Vertical**	**Vertical**	--
Maximum operating temp. for components	--	--	--
PWB near main chip	72.1	76.3	130
PWB near chip	73.6	77.8	130
PWB near L15	73.0	77.7	130
Capacitor (EC1)	66.8	72.1	105
PWB near RAM	63.4	66.1	130
RTC body	67.8	71.1	100
Calculated value for T_{ma}:	45.0	45.0	--
Actual ambient during test (T_{amb})	21.8	22.5	--
Following parts located surface of enclosure (accessible parts)	--	--	--

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

Metal enclosure outside near top	43.3	45.6	60
Power switch	37.5	39.6	77
Calculated value for T_{ma}:	25	25	--
Actual ambient during test (T_{amb})	21.8	22.5	--
B.3 Abnormal operating condition tests			
Maximum operating temp. for components	**USB3.2 Type C port Overload**	**USB3.2 Type A port 1 Overload**	--
PWB near main chip	92.5	87.1	300
PWB near chip	96.1	86.1	300
PWB near L15	96.3	85.6	300
Capacitor (EC1)	87.9	78.1	300
PWB near RAM	87.0	81.4	300
RTC body	93.0	83.3	300
Calculated value for T_{ma}:	45.0	45.0	--
Actual ambient during test (T_{amb})	23.3	23.6	--
Following parts located surface of enclosure (accessible parts)	--	--	--
Metal enclosure outside near top	58.3	51.2	70
Power switch	37.5	43.7	87
Calculated value for T_{ma}:	25.0	25.0	--
Actual ambient during test (T_{amb})	23.3	23.6	--

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:

* Surfaces that do not have to be touched to operate the equipment.

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
9Vdc	--	3.072	15	27.648	--	--	--	Maximum Normal Load
55Vdc	--	0.572	15	31.460	--	--	--	Maximum Normal Load

Supplementary information:

The maximum load conditions used during testing as below: see **Summary of testing.**

B.2.5, E.3.1	**TABLE: Input test for equipment containing audio amplifiers**			N/A
Operation Condition:	Signal type	Frequency (Hz)	Output loads (Ω)	Load setup

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Clause	Requirement + Test	Result - Remark	Verdict

Input									Amplifier Output			
Cond.	U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Ch.	U (V)	P (W)	Load (Ω)
Supplementary information:												

B.3, B.4	TABLE: Abnormal operating and fault condition tests					P
Ambient temperature T_{amb} (°C)..... :			See below			—
Power source for EUT: Manufacturer, model/type, outputrating ..... :			--			—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
USB3.2 Type A port 1	Overload*	55Vdc	6.5hrs	--	0.57 → 0.61 → 0.53	EUT shutdown when overload available current at 2.0A, no hazards, no damage. NC, NT, ASRE. Refer to appended table 5.4.1.4, 9.3, B.1.5, B.2.6 for temperature measurement results.
USB3.2 Type C port	Overload	55Vdc	9hrs 29mins	--	0.57 → 0.77 → 1.04 → 0.52	EUT shutdown when overload available current at 6.2A, no hazards, no damage. NC, NT, ASRE. Refer to appended table 5.4.1.4, 9.3, B.1.5, B.2.6 for temperature measurement results.
RTC	Overcharged	55Vdc	7hrs 35mins	--	0.57	Unit normal operation, no damage, no hazard. NC, NT, ASRE. RTC:55.7 °C Ambient:23.0Refer to appended table M.3.2
+V5A (supplied power to all USB ports)	Shorted	55Vdc	10mins	--	0.50	Unit normal operation, no damage, no hazard. NC, NT, ASRE.
USB3.2 Type A port 1	Shorted	55Vdc	10mins	--	0.53	Unit normal operation, no damage, no hazard. NC, NT, ASRE.
USB3.2 Type A port 2	Shorted	55Vdc	10mins	--	0.53	Unit normal operation, no damage, no hazard. NC, NT, ASRE.
USB3.2 Type C port	Shorted	55Vdc	10mins	--	052	Unit normal operation, no damage, no hazard. NC, NT, ASRE.v
HDMI port	Shorted	55Vdc	10mins	--	0.57	Unit normal operation, no damage, no hazard. NC, NT, ASRE.
DP port	Shorted	55Vdc	10mins	--	0.57	Unit normal operation, no damage, no hazard. NC, NT, ASRE.
COM 1 port	Shorted	55Vdc	10mins	--	0.57	Unit normal operation, no damage, no hazard. NC, NT, ASRE.
LAN port	Shorted	55Vdc	10mins	--	0.57	Unit normal operation, no damage,

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

						no hazard. NC, NT, ASRE.

Supplementary information:

Observation: NC (cheesecloth remained intact); NT (wrapping tissue remained intact); ASRE (all safeguards remained effectively).

* USB3.2 Type A port 1 and USB3.2 Type A port 2 was same circuit and supplied by +V5A, the overload test is conducted on USB3.2 Type A Port 1 as representative.

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

Equipment Specification	Charging	
	Voltage (V)	Current (A)
	9-55Vdc	15A

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)		
TOHOKU MURATA MANUFACTURING CO., LTD./CR2032W	--	10mA	--	--	--	--

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
RTC	Normal	Charge	--	--	0	--	NL, NS, NE, NF
D25 pin 1 -2	SC	Charge	7hr 35min.	RTC: 55.7	2.2mA	--	NL, NS, NE, NF

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)	

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

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)**							N/A
Output Circuit	Condition	U_{oc} (V)	Time (s)	I_{sc} (A)		S (VA)		
				Meas.	Limit	Meas.	Limit	
Supplementary Information:								
Abbreviation: 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	
Enclosure, Top/Bottom/Side	Metal	1.0	-	250	5	Intact 1)	
Supplementary information:							
1) No cracking, class 3 energy sources did not become accessible and all safeguards remain effective.							

T.6, T.9	**TABLE: Impact test**				P
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	
Enclosure, Top/Bottom/Side	Metal	1.0	1300	Intact 1)	
Supplementary information:					
1) No cracking, class 3 energy sources did not become accessible and all safeguards remain effective.					

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

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

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

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:			

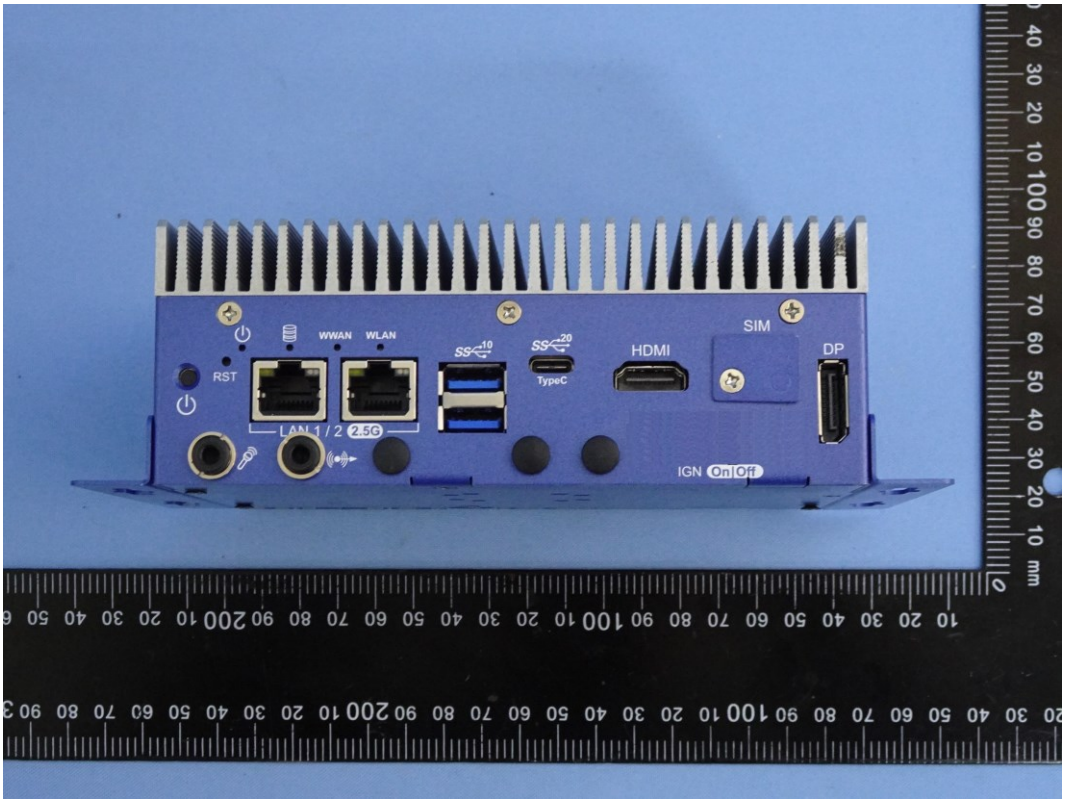
EN IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Enclosure	Interchangeable	Interchangeable	Metal, thickness 1.0mm min.	--	--
- Description	Interchangeability based on standardized dimensions and specified rating				
Fuse (FUSE1)	Polytronics Technology Corp	SMFF2410P1500	65Vdc, 15A	UL 248-1, UL248-14	UL (E331807)
Current Limit Power Switch (U24, U65, U66) (for USB2.0, USB3.2)	Joulwatt Technology Co., Ltd.	JW7115S-1SOTA#TRPBF	5.5Vdc, 1A	IEC 62368-1	CB (DK-133580-UL)
PTC Current Limiter (F2, F4, F5, F6, F7) (for HDMI, DP1, EDP1, HDD)	Polytronics Technology Corp.	SMD1206P200TF	6Vdc, 2A	IEC/EN 62319-1	TUV (R50099121)
PTC current limiter (F3, F8) (for HDD, EDP)	Polytronics Technology Corp.	SMD1812P260TF/16	16V, 2.6A	IEC/EN 62319-1 IEC/EN 60730-1	TUV (R50099121)
RTC battery (BAT1)	Tohoku Murata Manufacturing Co., Ltd.	CR2032W	3.3Vdc, maximum charging current 10mA	UL 1642	UL (MH12566)
- Alternate use	Interchangeable	CR2032	3.3Vdc, maximum abnormal charging current 10mA	EN 60086-4, UL 1642	UL, Notify Body of CB Scheme or CENELEC or equivalent
Printed Wiring Board (PWB)	EISO ENTERPRISE CO LTD	6	V-0 min, 130°C min.	UL 796	UL (E162061)
- Alternate use	Interchangeable	Interchangeable	V-0 min, 130°C min.	UL 796	UL
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					
2) Interchangeability based on standardized dimensions and specified rating					

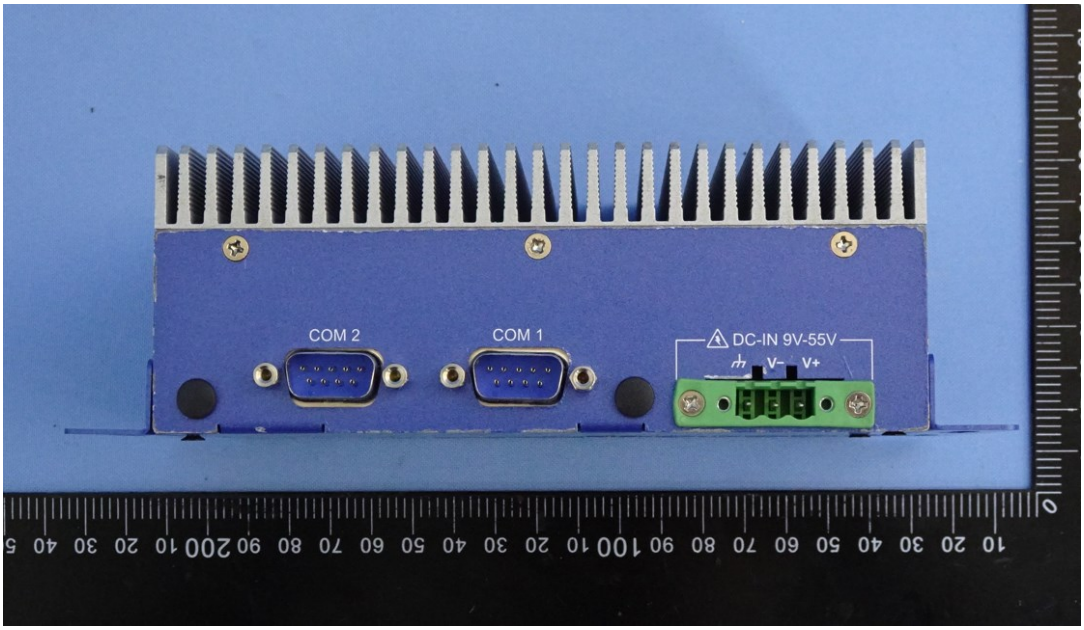
Photograph 1 – External view

Photograph 2 – External view

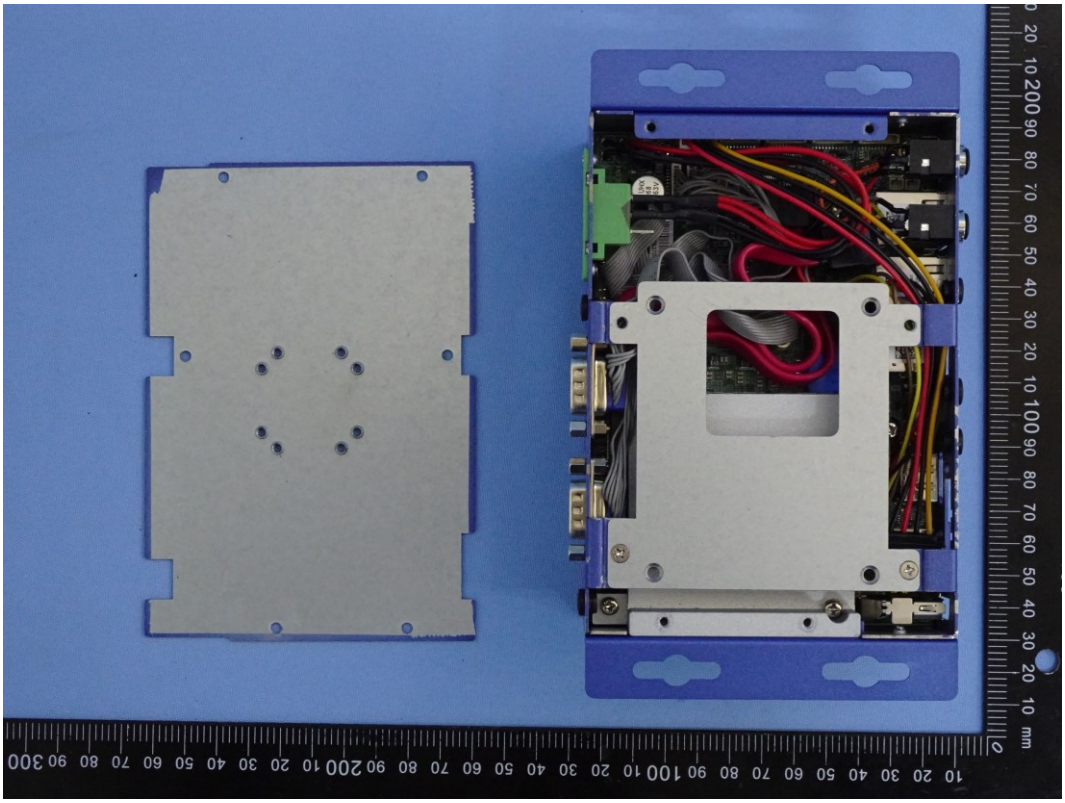
Photograph 3 – External view



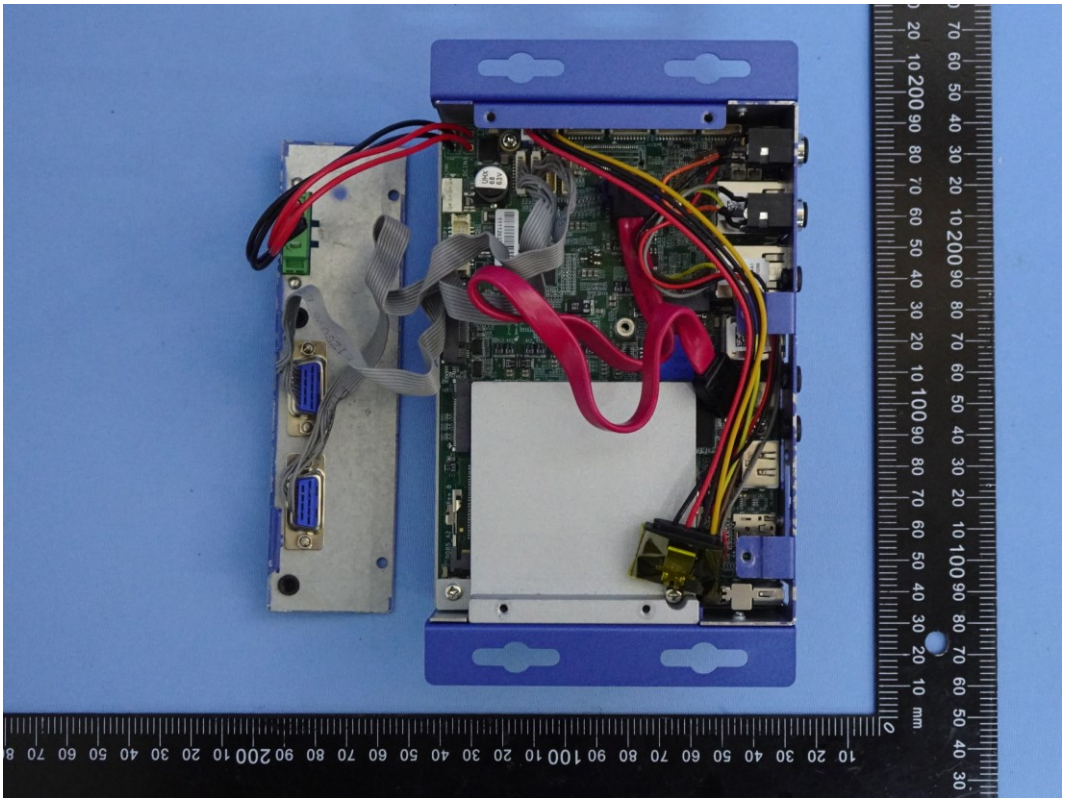
Photograph 4 – External view



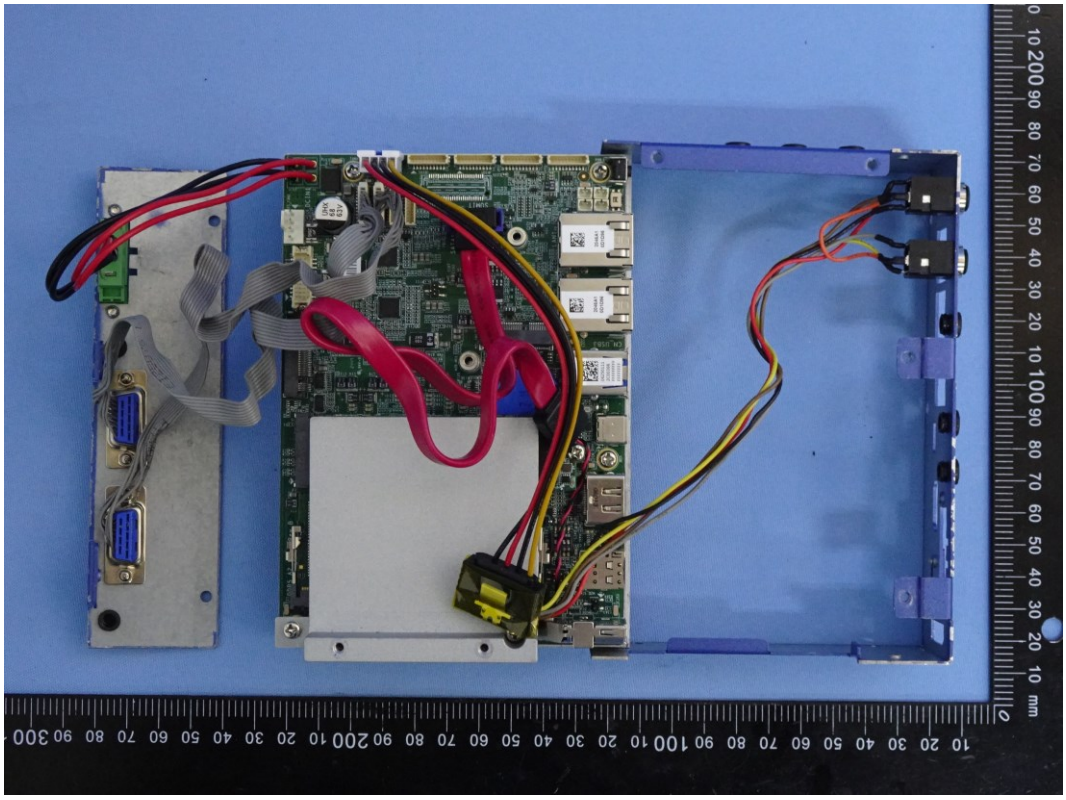
Photograph 5 – Internal view



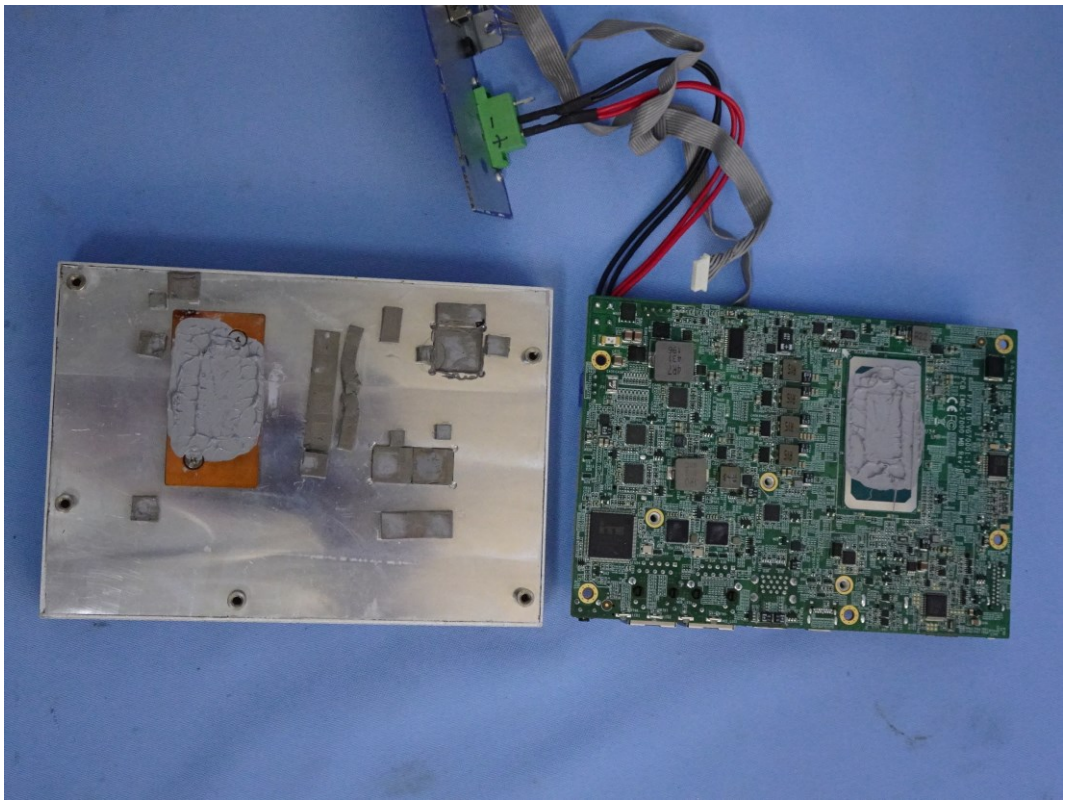
Photograph 6 – Internal view



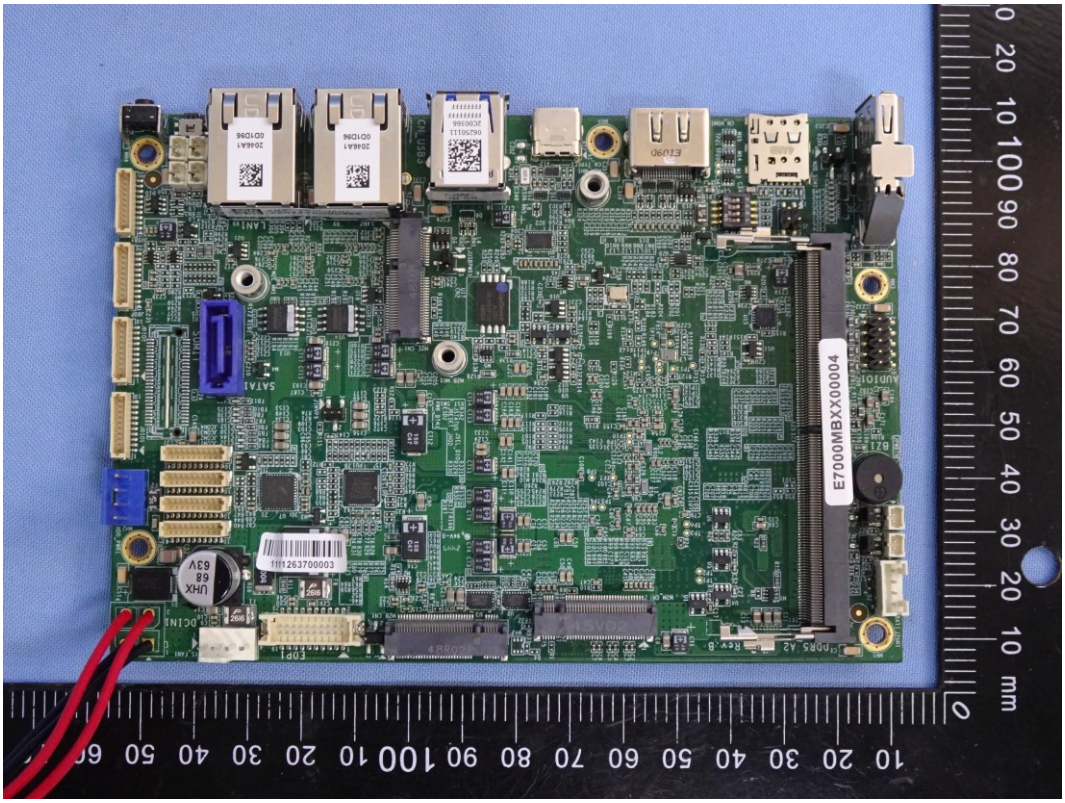
Photograph 7 – Internal view



Photograph 8 – Internal view



Photograph 9 – Mainboard view



Photograph 10 – Mainboard view