

**TEST REPORT
IEC 62368-1**

**Audio/video, information and communication technology equipment
Part 1: Safety requirements**

Report Number : SN2112015

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Manufacturer's name : Vecow Co., Ltd.

Address : 3F., No.10, Jiankang Rd., Zhonghe Dist., New Taipei City 23586, Taiwan

Factory's name : SATEM Technology Co.Ltd.

Address : No. 12, Zhongshan Rd., Tucheng Dist., New Taipei City 23680 , Taiwan (R.O.C.)

Test specification:

Standard : EN 62368-1:2014+A11:2017

Test procedure : CE marking service

Non-standard test method : N/A

Test Item description :	Expandable Embedded Box PC
Trade Mark :	Vecow
Model/Type reference :	ECX-2200; Series Model No : ECX-2XXXXXXXXXXXXXXXXX ("X" can be 0-9, A-Z or blank for marketing purpose)
Ratings :	9-50 Vdc, 20 A, (without PoE) Class III 12-50 Vdc, 20 A, (with PoE) Class III

<p>List of Attachments (including a total number of pages in each attachment): Appendix 1 – National Differences (11 pages) Photos (5 pages) Total number of pages in each attachment is indicated in each individual attachment.</p>	
<p>Summary of testing:</p>	
<p>Tests performed (name of test and test clause): 5.4.1.4, 6.3.2, 9.0, B.2.6 - Temperature measurements 8.7.2 – Mounting means test Annex B.2.5 - Input Test Annex B.3 - Simulated abnormal operating conditions test Annex B.4 - Simulated single fault conditions test Annex F.3.10 - Marking durability test Annex M.3.2 - Batteries charging circuit test Annex Q.1- Limited power source test Annex T.5 - Steady force test – 250 N Annex T.6 - Enclosure impact test Annex V.1 – Determination of accessible parts test</p>	<p>Testing location: DEKRA TESTING AND CERTIFICATION CO., LTD. Safety Laboratory No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan</p>
<p>Summary of compliance with National Differences (List of countries addressed): For EN 62368-1:2014+A11:2017: Group differences, special national deviations of CENELEC countries.</p> <p>Explanation of CENELEC countries: Austria (AT), Belgium (BE), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Hungary (HU), Iceland (IS), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), The Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Spain (ES), Slovakia (SK), Slovenia (SI), Sweden (SE), Switzerland (CH) and United Kingdom (GB).</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN 62368-1:2014+A11:2017.</p>	
<p>Statement concerning the uncertainty of the measurement systems used for the tests</p> <p><input type="checkbox"/> Internal procedure used for type testing through which traceability of the measuring uncertainty has been established: Procedure number, issue date and title: Calculations leading to the reported values are on file with testing laboratory that conducted the testing.</p> <p><input checked="" type="checkbox"/> Statement not required by the standard used for type testing</p>	

Copy of marking plate:

The artwork below may be only a draft.

(Representative)

Input Rating: 9 - 50V == 20A (without POE)

12-50V == 20A (with POE)

Model: ECX-2200

TYPE: Expandable Embedded Box PC

Serial No :

WARNING:
HOT SURFACE.
DO NOT TOUCH

EX21H000001



Manufacturers: Vecow Co., Ltd.

Made In Taiwan

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interface, and (2) the device must accept any interface received. including interface that may cause undesires operation.

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:	
Classification of use by..... :	<input type="checkbox"/> Ordinary person <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person <input type="checkbox"/> Children likely to be present
Supply Connection	<input type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input checked="" type="checkbox"/> External Circuit - not Mains connected - <input checked="" type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply % Tolerance	<input type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> + ___ %/ - ___ % <input checked="" type="checkbox"/> None
Supply Connection – Type	<input type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: <u>Not direct connected to the mains</u>
Considered current rating of protective device as part of building or equipment installation	_-- ___ A; Installation location: <input type="checkbox"/> building; <input type="checkbox"/> equipment
Equipment mobility	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input checked="" type="checkbox"/> wall-mounted
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input checked="" type="checkbox"/> other: Not direct connected to the mains
Class of equipment	<input type="checkbox"/> Class I <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III
Access location	<input type="checkbox"/> restricted access location <input checked="" type="checkbox"/> N/A
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
Manufacturer’s specified maxium operating ambient..... :	60 °C
IP protection class	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP___
Power Systems	<input type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT - ___ V _{L-L} ; <input type="checkbox"/> dc mains <input checked="" type="checkbox"/> N/A
Altitude during operation (m)	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> ___ m
Altitude of test laboratory (m)	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> ___ m
Mass of equipment (kg)	<input checked="" type="checkbox"/> 3.98 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 : 2021-12-07

Date (s) of performance of tests : 2021-01-06 – 2022-03-01

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.

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The decision rules: The measurement result is considered in conformance with the requirement if it is within the prescribed limit of the relevant standard according to IEC guide 115 - accuracy method. Not need to calculate uncertainty.

GENERAL PRODUCT INFORMATION:

Product Description –

The equipment is a Expandable Embedded Box PC for use with audio/video, information and communication technology equipment.

The equipment is considered as movable /Wall mount Class III equipment.

The equipment is supplied by DC power source and accompanied with four COM ports, two Display ports, six USB3.2 ports, two LAN ports, four PoE ports, one DVI-I port, one VGA port, two DIO ports, one mic port and one Audio port.

The enclosures are fixed together by screws and mechanical fixing.

Overall dimension 239.1 mm x 240.0 mm x 82 mm.

Model Differences –

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Technical Considerations –

The equipment was submitted and evaluated for maximum manufacturer’s recommended ambient (Tmra) of 60 °C.

Normal operation condition in this report is considered as following loads: Each USB3.2 port loaded with 0.9 A and each PoE port load:25.5 W which in PoE . Used the CPU software reaches the effect 100%.

Engineering Conditions of Acceptability –

N/A

Report Summary –

N/A

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

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	FI	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
<p>(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.)</p>	
<p>Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1</p>	
Source of electrical energy	Corresponding classification (ES)
9-50 Vdc input	ES1
All I/O connectors	ES1
All internal circuit	ES1
<p>Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2</p>	
Source of power or PIS	Corresponding classification (PS)
9-50 Vdc input	PS3
All internal circuits	PS3
All I/O connectors	PS2
<p>Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol</p>	
Source of hazardous substances	Corresponding chemical
RTC battery	LiMnO ₂
<p>Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2</p>	
Source of kinetic/mechanical energy	Corresponding classification (MS)
Shape edges and corners	MS1
Equipment mass (≤ 7 kg)	MS1
Wall mount	MS3
<p>Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1</p>	
Source of thermal energy	Corresponding classification (TS)
All user's accessible parts	TS1

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:**Radiation (Clause 10)**

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

Example: DVD – Class 1 Laser Product

RS1

Type of radiation	Corresponding classification (RS)
Indicating lights-LEDs	RS1

ENERGY SOURCE DIAGRAM

Indicate which energy sources are included in the energy source diagram. Insert diagram below

ES PS MS TS RS

See ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE for details.

OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Instructed person & Skilled person	ES1: 9-50 Vdc input	N/A	N/A	N/A
Instructed person & Skilled person	ES1: All I/O connectors	N/A	N/A	N/A
Instructed person & Skilled person	ES1: All internal circuit	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Metal enclosure	PS3: > 100 W circuit	Comply with Clause 6.3	Comply with Clause 6.4.5, 6.4.6 (control fire spread)	N/A
PCB	PS3: > 100 W circuit	Comply with Clause 6.3	Made of V-1 class material	N/A
Internal/external wiring	PS3: > 100 W circuit	N/A	N/A	Comply with Clause 6.5
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
Instructed person & Skilled person	RTC battery	Approved component	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Instructed person & Skilled person	MS1: Sharp edges and corners	N/A	N/A	N/A
Instructed person & Skilled person	MS1: Equipment mass (≤ 7 kg)	N/A	N/A	N/A
Instructed person & Skilled person	Wall mount (≥ 2 m)	N/A	N/A	Comply with Clause 8.7
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Instructed person & Skilled person	TS1: All user's accessible parts	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced

Instructed person & Skilled person	RS1: Indicating lights-LEDs	N/A	N/A	N/A
Supplementary Information: (1) See attached energy source diagram for additional details. (2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault				

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Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(see appended tables 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	Considered	P
4.1.15	Markings and instructions	(See Annex F)	P
4.4.4	Safeguard robustness	See below	P
4.4.4.2	Steady force tests	(See Annex T.5)	P
4.4.4.3	Drop tests	The EUT is not such type equipment	N/A
4.4.4.4	Impact tests	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests	No such type safeguard provided	N/A
4.4.4.6	Glass Impact tests.....	No glass within the equipment	N/A
4.4.4.7	Thermoplastic material tests		N/A
4.4.4.8	Air comprising a safeguard	After the mechanical strength tests, the EUT is still complying with relevant requirements of this standard (See Annex T)	P
4.4.4.9	Accessibility and safeguard effectiveness	During and after the tests, the EUT still complies with the relevant requirement of this standard	P
4.5	Explosion	No explosion occurs	P
4.6	Fixing of conductors	No such conductors defeat safeguard	N/A
4.6.1	Fix conductors not to defeat a safeguard		N/A
4.6.2	10 N force test applied to		N/A
4.7	Equipment for direct insertion into mains socket - outlets	The EUT is not such type equipment	N/A
4.7.2	Mains plug part complies with the relevant standard		N/A
4.7.3	Torque (Nm).....		N/A
4.8	Products containing coin/button cell batteries	Considered for RTC battery	P
4.8.2	Instructional safeguard	The RTC battery within the EUT is not intended to be replaced by ordinary person and unlikely to be	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
		accessible to children so instructional safeguard is not required	
4.8.3	Battery Compartment Construction	No such construction	N/A
	Means to reduce the possibility of children removing the battery		—
4.8.4	Battery Compartment Mechanical Tests		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		N/A

5	ELECTRICALLY-CAUSED INJURY		P
5.2.1	Electrical energy source classifications	See ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE for details	P
5.2.2	ES1, ES2 and ES3 limits	Considered.	P
5.2.2.2	Steady-state voltage and current	The EUT is Class III equipment and supplied by an ES1 circuit	P
5.2.2.3	Capacitance limits.....	No such capacitance within the EUT	N/A
5.2.2.4	Single pulse limits	No such single pulses within the EUT	N/A
5.2.2.5	Limits for repetitive pulses	No such repetitive pulses within the EUT	N/A
5.2.2.6	Ringling signals	No such ringing signal within the EUT	N/A
5.2.2.7	Audio signals	No audio amplifier within the EUT	N/A
5.3	Protection against electrical energy sources	See below	N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	Only ES1 circuit within the EUT	N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards	Only ES1 circuit within the EUT	N/A
5.3.2.2	Contact requirements	Only ES1 circuit within the EUT	N/A
	a) Test with test probe from Annex V.....		N/A
	b) Electric strength test potential (V).....		N/A
	c) Air gap (mm)		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		P
5.4.1.2	Properties of insulating material	No hygroscopic materials used as insulation	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.3	Humidity conditioning	The EUT is a Class III equipment.	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, 6.3.2, 9.0, B.2.6.)	P
5.4.1.5	Pollution degree	Pollution degree 2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling	No such component within the EUT	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
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted	Not used	N/A
5.4.1.10.2	Vicat softening temperature		N/A
5.4.1.10.3	Ball pressure		N/A
5.4.2	Clearances	The EUT is a Class III equipment and only ES1 circuit within the EUT	N/A
5.4.2.2	Determining clearance using peak working voltage		N/A
5.4.2.3	Determining clearance using required withstand voltage		N/A
	a) a.c. mains transient voltage		—
	b) d.c. mains transient voltage		—
	c) external circuit transient voltage		—
	d) transient voltage determined by measurement ...		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages		N/A
5.4.3	Creepage distances	The EUT is a Class III equipment and only ES1 circuit within the EUT	N/A
5.4.3.1	General		N/A
5.4.3.3	Material Group		—
5.4.4	Solid insulation	No such device within the EUT	N/A
5.4.4.2	Minimum distance through insulation		N/A
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Cemented joints	No such device within the EUT	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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 device within the EUT	N/A
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 :		N/A
5.4.5	Antenna terminal insulation	No antenna terminal within the EUT	N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ) :		—
5.4.6	Insulation of internal wire as part of supplementary safeguard..... :	No such insulation of internal wire as part of supplementary insulation	N/A
5.4.7	Tests for semiconductor components and for cemented joints	No such device within the EUT	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 a solid insulation type test		N/A
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit	Not connected to such external circuit	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test..... :		N/A
5.4.10.2.3	Steady-state test :		N/A
5.4.11	Insulation between external circuits and earthed circuitry :	The EUT is not intended to be connected to such kind of 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

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Clause	Requirement + Test	Result - Remark	Verdict
	Rated operating voltage U_{op} (V)		—
	Nominal voltage U_{peak} (V)		—
	Max increase due to variation U_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$		—
5.5	Components as safeguards		
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	Safeguards against 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
5.5.7	SPD's	No such component within the EUT	N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable	No antenna terminal within the EUT	N/A
5.6	Protective conductor		
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	The EUT is a Class III equipment	N/A
	Protective earthing conductor size (mm ²)		—
5.6.4	Requirement for protective bonding conductors	The EUT is a Class III equipment	N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm ²).....		—
	Protective current rating (A)		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors	The EUT is a Class III equipment	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.5.1	Requirement		N/A
	Conductor size (mm ²), nominal thread diameter (mm)		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system	The EUT is a Class III equipment	N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω)		N/A
5.6.7	Reliable earthing	The EUT is a Class III equipment	N/A
5.7	Prospective touch voltage, touch current and protective conductor current		N/A
5.7.2	Measuring devices and networks	The EUT is a Class III equipment and only ES1 circuit within the EUT	N/A
5.7.2.1	Measurement of touch current		N/A
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections	The EUT is not such type equipment	N/A
	System of interconnected equipment (separate connections/single connection)		—
	Multiple connections to mains (one connection at a time/simultaneous connections)		—
5.7.4	Earthed conductive accessible parts	The EUT is a Class III equipment	N/A
5.7.5	Protective conductor current	The EUT is a Class III equipment	N/A
	Supply Voltage (V)		—
	Measured current (mA)		—
	Instructional Safeguard		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits	The EUT is not intended to be connected to external circuits	N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current to external circuits		N/A
5.7.7	Summation of touch currents from external circuits	The EUT is not intended to be connected to external circuits	N/A
	a) Equipment with earthed external circuits Measured current (mA)		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA)		N/A
6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.2.2	Power source circuit classifications	See ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE for details	P
6.2.2.1	General	See below	P
6.2.2.2	Power measurement for worst-case load fault ... :		N/A
6.2.2.3	Power measurement for worst-case power source fault :		N/A
6.2.2.4	PS1 :		N/A
6.2.2.5	PS2 :	All output circuits are considered as PS2	P
6.2.2.6	PS3 :	All circuits are considered as PS3	P
6.2.3	Classification of potential ignition sources	See below	P
6.2.3.1	Arcing PIS :	The open circuit voltage within the EUT are not exceed 50 V	N/A
6.2.3.2	Resistive PIS :	All components located within the EUT were considered as resistive PIS	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials :	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure	Rated min. HB or better	P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	Control fire spread used (see sub-clause 6.4.5, 6.4.6)	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits	See below	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.5.2	Supplementary safeguards	Components other than PCB and wires are: - Mounted on PCB rated V-1 or better, or - Made of V-2/VTM-2/HF-2 or better (See appended tables 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuit	- Fire enclosure is provided - Parts within PS3 circuit meet 6.4.5 (See appended tables 4.1.2 and Annex G)	P
6.4.7	Separation of combustible materials from a PIS	See below	P
6.4.7.1	General.....	Fire enclosure is provided and PCB rated min. V-1 class material	P
6.4.7.2	Separation by distance	Fire enclosure is provided	N/A
6.4.7.3	Separation by a fire barrier	No fire barrier within the EUT	N/A
6.4.8	Fire enclosures and fire barriers	See below	P
6.4.8.1	Fire enclosure and fire barrier material properties	Fire enclosure is provided	P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure	Metal enclosure is considered as fire enclosure	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	See below	P
6.4.8.3.1	Fire enclosure and fire barrier openings	Considered	P
6.4.8.3.2	Fire barrier dimensions	No fire barrier within the EUT	N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)	No openings at top side	N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)	No openings	N/A
	Flammability tests for the bottom of a fire enclosure		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c)	No door or cover provided	N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating	Metal enclosure is considered as fire enclosure	P
6.5	Internal and external wiring		P
6.5.1	Requirements	The internal wiring rated VW-1 which is considered to meet IEC/TS 60695-11-21	P

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.2	Cross-sectional area (mm ²)		—
6.5.3	Requirements for interconnection to building wiring	No interconnection to building wiring	N/A
6.6	Safeguards against fire due to connection to additional equipment	See below	P
	External port limited to PS2 or complies with Clause Q.1	All I/O connectors complied with LPS, also see appended table Annex Q.1	P

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		P
7.2	Reduction of exposure to hazardous substances	The RTC battery within the EUT, it can't be exposure	P
7.3	Ozone exposure	The EUT does not produce such Ozone	N/A
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010)		—
7.6	Batteries	(See Annex M)	P

8	MECHANICALLY-CAUSED INJURY		P
8.1	General	See below	P
8.2	Mechanical energy source classifications	See ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE for details	P
8.3	Safeguards against mechanical energy sources	Considered	P
8.4	Safeguards against parts with sharp edges and corners	The outer surface of the EUT is smooth. No sharp edges and corners	P
8.4.1	Safeguards	Not required	N/A
8.5	Safeguards against moving parts	No moving parts within the EUT	N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard	Not required	—
8.5.4	Special categories of equipment comprising moving parts	No such device within the EUT	N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.1	Safeguards and Safety Interlocks..... :	No safety interlocks.	N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard :		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N)..... :		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test :		N/A
8.6	Stability	See below	P
8.6.1	Product classification	The equipment mass \leq 7kg which is considered as MS1	P
	Instructional Safeguard :	No stability requirement	—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force..... :		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt..... :		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force) :		N/A
	Position of feet or movable parts :		—
8.7	Equipment mounted to wall or ceiling	The EUT is intended to be mounted to wall-mounted > 2 m, which is considered as MS3, see below	P
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) :	Provided four wall-mounted holes on metal enclosure for wall-mounted used.	P
8.7.2	Direction and applied force :	Test 1: applied 117 N (3 times the weight of equipment). A force in addition to the weight of the equipment is applied downwards through the centre of gravity of the equipment, for 1 min. In addition, a horizontal force of 50 N is applied laterally for 60s. Test 3: The EUT can be wall-mounted by four screws, Use screw size: diameter= M3, length= 4 mm. The torque applied 0.5 Nm for each screw	P

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Clause	Requirement + Test	Result - Remark	Verdict
8.8	Handles strength	No such device within the EUT	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements	No such device within the EUT	N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers	No such device within the EUT	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N)		—
8.10.6	Thermoplastic temperature stability (°C)		N/A
8.11	Mounting means for rack mounted equipment	The EUT is not such equipment	N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i>		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas		N/A
	Button/Ball diameter (mm)		—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications	All user's accessible parts are classified TS1 (see appended table 5.4.1.4, 6.3.2, 9.0, B.2.6 for details)	P
9.3	Safeguard against thermal energy sources	All user's accessible parts are classified TS1 (see appended table 5.4.1.4, 6.3.2, 9.0, B.2.6 for details)	P
9.4	Requirements for safeguards		P
9.4.1	Equipment safeguard		N/A
9.4.2	Instructional safeguard	Not required due to all accessible parts are classified TS1	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

10	RADIATION		P
10.2	Radiation energy source classification	See below	P
10.2.1	General classification	Indicating LEDs are classified RS1	P
10.3	Protection against laser radiation	The EUT does not produce laser radiation	N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :		N/A
	Instructional safeguard :		—
	Tool..... :		—
10.4	Protection against visible, infrared, and UV radiation	The EUT does not produce significant visible, infrared and UV radiation	N/A
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons :		N/A
10.4.1.b)	RS3 accessible to a skilled person..... :		N/A
	Personal safeguard (PPE) instructional safeguard..... :		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 . :		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions :		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque..... :		N/A
10.4.1.f)	UV attenuation :		N/A
10.4.1.g)	Materials resistant to degradation UV :		N/A
10.4.1.h)	Enclosure containment of optical radiation..... :		N/A
10.4.1.i)	Exempt Group under normal operating conditions..... :		N/A
10.4.2	Instructional safeguard :		N/A
10.5	Protection against x-radiation	The EUT does not produce X-radiation	N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards..... :		N/A
	Instructional safeguard for skilled person :		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation :		—
	Abnormal and single-fault condition :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum radiation (pA/kg)..... :		N/A
10.6	Protection against acoustic energy sources	The EUT is not considered as personal music player	N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A)..... :		N/A
	Output voltage, unweighted r.m.s..... :		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards :		N/A
	Equipment safeguard prevent ordinary person to RS2..... :		—
	Means to actively inform user of increase sound pressure..... :		—
	Equipment safeguard prevent ordinary person to RS2..... :		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input	No such device within the EUT	N/A
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output..... :		—
10.6.5.2	Corded listening devices with digital input	No such device within the EUT	N/A
	Maximum dB(A)..... :		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A)..... :		—

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.2	Normal Operating Conditions	See below	P
B.2.1	General requirements :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :	No such component 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	P
B.2.5	Input test..... :	(See appended table Annex B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements :	See below	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.2	Covering of ventilation openings		N/A
B.3.3	D.C. mains polarity test	Not connected to DC mains	N/A
B.3.4	Setting of voltage selector	No setting of voltage selector within the EUT	N/A
B.3.5	Maximum load at output terminals	(See appended table Annex B.3)	P
B.3.6	Reverse battery polarity	The reverse polarity installation is prevented by construction	P
B.3.7	Abnormal operating conditions as specified in Clause E.2.	No audio amplifier within the EUT	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions	All safeguards remain effective	P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited	No such controlling device	N/A
B.4.3	Motor tests	No motor within the EUT	N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature		N/A
B.4.4	Short circuit of functional insulation		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	No coated printed boards within the EUT	N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	(See appended table Annex B.4)	P
B.4.6	Short circuit or disconnect of passive components	(See appended table Annex B.4)	P
B.4.7	Continuous operation of components	No such component intended for short time operation or intermittent operation	N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions	The EUT is still complying with relevant requirements of this standard	P
B.4.9	Battery charging under single fault conditions ... :	(See appended table B.4 and Annex M)	P
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation	The EUT does not produce UV radiation	N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators	No such device within the EUT	N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Audio amplifier normal operating conditions	No audio amplifier within the EUT	N/A
	Audio signal voltage (V)		—
	Rated load impedance (Ω)		—
E.2	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General requirements	See below	P
	Instructions – Language	English. However, the local language for each country that would be marketed shall be provided	—
F.2	Letter symbols and graphical symbols	See below	P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols are used according to IEC 60027-1	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Graphic symbols are used according to IEC 60417-1 or ISO 3864-2 or ISO 7000	P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Equipment marking is located on its exterior surface and is readily visible	P
F.3.2	Equipment identification markings	See below	P
F.3.2.1	Manufacturer identification	See copy of marking plate	—
F.3.2.2	Model identification	See copy of marking plate	—
F.3.3	Equipment rating markings	See copy of marking plate	P
F.3.3.1	Equipment with direct connection to mains	The EUT is a Class III equipment,	N/A
F.3.3.2	Equipment without direct connection to mains	The EUT is a Class III equipment, which is not directly connected to mains	P
F.3.3.3	Nature of supply voltage	See copy of marking plate	—

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.4	Rated voltage	See copy of marking plate	—
F.3.3.4	Rated frequency	Supplied from DC only	—
F.3.3.6	Rated current or rated power	See copy of marking plate	—
F.3.3.7	Equipment with multiple supply connections	The EUT is not such type equipment	N/A
F.3.4	Voltage setting device	No voltage setting within the EUT	N/A
F.3.5	Terminals and operating devices	No terminals markings within the EUT	N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :	No such component within the EUT	N/A
F.3.5.2	Switch position identification marking	The marking for switch is located on stand-by switch	P
F.3.5.3	Replacement fuse identification and rating markings..... :	No such component within the EUT	N/A
F.3.5.4	Replacement battery identification marking	No replacement battery within the EUT	N/A
F.3.5.5	Terminal marking location	No such component within the EUT	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	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A
F.3.6.2	Class II equipment (IEC60417-5172)	The EUT is a Class III equipment	N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking	IPX0	—
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
	a) Equipment for use in locations where children not likely to be present - marking		P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Instructions given for installation or initial use	Relevant safety caution texts and installation instruction are available to the user in user's manual	P
	c) Equipment intended to be fastened in place		P
	d) Equipment intended for use only in restricted access area	The EUT is not such type equipment	N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1	No such terminals	N/A
	f) Protective earthing employed as safeguard	The EUT is a Class III equipment and no protective earthing within the EUT	N/A
	g) Protective earthing conductor current exceeding ES 2 limits	No protective earthing conductor within the EUT	N/A
	h) Symbols used on equipment	No such symbols used	N/A
	i) Permanently connected equipment not provided with all-pole mains switch	The EUT is not a permanently connected equipment	N/A
	j) Replaceable components or modules providing safeguard function	No replaceable components or modules within EUT	N/A
F.5	Instructional safeguards		N/A
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General requirements	No such devices within the EUT	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A
G.2.1	General requirements	No such devices within the EUT	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	Protection Devices		P
G.3.1	Thermal cut-offs	No such devices within the EUT	N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.2.1a)	Thermal links separately tested with IEC 60691	No such devices within the EUT	N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H)		—
	Single Fault Condition		—
	Test Voltage (V) and Insulation Resistance (Ω) ..		—
G.3.3	PTC Thermistors		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.3.5		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 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s)		—
	Temperature (°C)		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	Transformers		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)	No such devices within the EUT	N/A
	Position.....		—
	Method of protection		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings		—
G.5.3.3	Overload test.....		N/A
G.5.3.3.1	Test conditions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements	No such devices within the EUT	N/A
	Position		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days)		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V)		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature		N/A
	Electric strength test (V)		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage		—
G.6	Wire Insulation		N/A
G.6.1	General	No such wire within the EUT	N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	Mains supply cords		N/A
G.7.1	General requirements	The EUT is a Class III equipment	N/A
	Type		—
	Rated current (A)		—
	Cross-sectional area (mm ²), (AWG)		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) :		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).... :		—
G.7.3.2.4	Strain relief comprised of polymeric 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	Mass (g) :		—
	Diameter (m) :		—
	Temperature (°C) :		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	Varistors		N/A
G.8.1	General requirements	No such devices within the EUT	N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test :		N/A
G.8.3.3	Temporary overvoltage :		N/A
G.9	Integrated Circuit (IC) Current Limiters		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset	No manual operator or reset	N/A
G.9.1 c)	Supply source does not exceed 250 VA :		—
G.9.1 d)	IC limiter output current (max. 5A) :		—
G.9.1 e)	Manufacturers' defined drift :		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	Resistors		N/A
G.10.1	General requirements	No such resistors within the EUT	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	Capacitor 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 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....:	No such devices within the EUT	N/A
	Type test voltage Vini		—
	Routine test voltage, Vini,b		—
G.13	Printed boards		N/A
G.13.1	General requirements	No requirement of insulation on printed boards within the EUT	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
	Compliance with cemented joint requirements (Specify construction).....:		—
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.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements		N/A
G.15	Liquid filled components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.1	General requirements	No such devices within the EUT	N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours	No such devices within the EUT	N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance		—
D3)	Resistance		—
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General	No such devices within the EUT	N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—
H.3.1.4	Single fault current (mA):		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)		—

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Clause	Requirement + Test	Result - Remark	Verdict
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
	General requirements		N/A
K	SAFETY INTERLOCKS		N/A
K.1	General requirements	No such devices within the EUT	N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location)		N/A
K.7.2	Overload test, Current (A)		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		N/A
L.1	General requirements	The EUT is not directly supplied by mains	N/A
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		N/A
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements	The RTC battery within the EUT, which is complied with relevant requirements of this standard. The battery is not replaced by an ordinary person. The "Battery Maintenance Guidance" has been stated in user's manual	P
M.2	Safety of batteries and their cells	See below	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.2.1	Requirements	Approved RTC battery provided	P
M.2.2	Compliance and test method (identify method) .. :	Checked by inspection and evaluation based on the relevant documents of batteries	P
M.3	Protection circuits	See below	P
M.3.1	Requirements	Considered	P
M.3.2	Tests	Appropriate battery data are available for RTC battery	P
	- Overcharging of a rechargeable battery	No rechargeable battery within the EUT	N/A
	- Unintentional charging of a non-rechargeable battery	Considered for real time clock battery. However, the RTC battery is protected by a resistor and a diode (See appended tables Annex B.4 and Annex M)	P
	- Reverse charging of a rechargeable battery	No rechargeable battery within the EUT	N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance	Considered	P
M.4	Additional safeguards for equipment containing secondary lithium battery	No secondary lithium batteries within the EUT	N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature		—
M.4.2.2 b)	Single faults in charging circuitry		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method)		N/A
M.6.2	Leakage current (mA)		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m 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 (Determination of compliance: inspection, data review; or abnormal testing)	Complied by inspection and data review	P
N	ELECTROCHEMICAL POTENTIALS		N/A
	Metal(s) used		—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		N/A
	Figures O.1 to O.20 of this Annex applied.....		—
P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS		N/A
P.1	General requirements		N/A
P.2.2	Safeguards against entry of foreign object		N/A
	Location and Dimensions (mm)		—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment	The EUT is not a transportable equipment	N/A
	Transportable equipment with metalized plastic parts		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard)		N/A
P.3	Safeguards against spillage of internal liquids	No such liquids within the EUT	N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C).....		—
	Tr (°C)		—
	Ta (°C).....		—
P.4.2 b)	Abrasion testing		N/A
P.4.2 c)	Mechanical strength testing		N/A
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		P
Q.1	Limited power sources	See below	P
Q.1.1 a)	Inherently limited output	(See appended table Annex Q.1)	P
Q.1.1 b)	Impedance limited output		N/A
Q.1.1 c)	Regulating network limited output under normal operating and simulated single fault condition	(See appended table Annex Q.1)	P
Q.1.1 d)	Overcurrent protective device limited output		N/A
Q.1.1 e)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method	(See appended table Annex Q.1)	P
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		—
	Current limiting method.....		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General requirements	The EUT is a Class III equipment	N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)).		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		—
	Wall thickness (mm).....		—
	Conditioning (°C).....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material		—
	Wall thickness (mm).....		—
	Conditioning (°C).....		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material		—
	Wall thickness (mm).....		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm).....		—
	Conditioning (test condition), (°C).....		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T	MECHANICAL STRENGTH TESTS		P
T.1	General requirements	See below	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 Annex T.5)	P
T.6	Enclosure impact test	(See appended table Annex T.6)	P
	Fall test		P
	Swing test		N/A
T.7	Drop test		N/A
T.8	Stress relief test		N/A
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J).....		—
	Height (m)		—
T.10	Glass fragmentation test		N/A
T.11	Test for telescoping or rod antennas	No such devices within the EUT	N/A
	Torque value (Nm)		—
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		P
V.1	Accessible parts of equipment		P
V.2	Accessible part criterion		P

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

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹	
Metal enclosure	Interchangeable	—	Metallic, min. 1.0 mm thick	—	—	
RTC battery	TOHOKU MURATA MANUFACTURING CO., LTD.	CR2032W	Max. abnormal charging current 10 mA	UL 1642	UL recognized	
2.5' SATA SSD	Interchangeable	Interchangeable	5Vdc, 160mA	IEC/EN 62368-1	CB or other National Certification Bodies registered in IECEE	

Plastic Material List:					
Plastic (Decoration Part)	Interchangeable	—	Min. HB, min. 1.0 mm thick	UL 94	UL recognized
DC connector	LANXESS AG	TP800-020+(r2)(f2), A30SFN31+(r2)(f2), DPA30SFN30+D US025(r2)(f2)	Flame Rating: V-0	UL 94	UL recognized
PCB	EISO ENTERPRISE CO LTD	6	V-0, 130 °C	UL 94, UL 796	UL recognized
Alt.	Interchangeable	—	Min. V-1, min. 130 °C	UL 94, UL 796	UL recognized

Supplementary information:
 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests		N/A
(The following mechanical tests are conducted in the sequence noted.)			
4.8.4.2	TABLE: Stress Relief test		—
	Part	Material	Oven Temperature (°C)
4.8.4.3	TABLE: Battery replacement test		—
	Battery part no.:		—
	Battery Installation/withdrawal	Battery Installation/Removal Cycle	Comments
		1	
		2	
		3	
		4	
		5	
		6	
		8	
		9	
		10	
4.8.4.4	TABLE: Drop test		—
	Impact Area	Drop Distance	Drop No.
			1
			2
			3
4.8.4.5	TABLE: Impact		—
	Impacts per surface	Surface tested	Impact energy (Nm)
4.8.4.6	TABLE: Crush test		—
	Test position	Surface tested	Crushing Force (N)
			Duration force applied (s)
Supplementary information:			

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

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

Supplementary information:

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

5.2	TABLE : Classification of electrical energy sources	N/A	
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5.2.2.2 – Steady State Voltage and Current conditions

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (A _{pk} or A _{rms})	Hz	
			Normal				
			Abnormal				
			Single fault – SC/OC				

5.2.2.3 - Capacitance Limits

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

5.2.2.4 - Single Pulses

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

5.2.2.5 - Repetitive Pulses

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

Test Conditions:
 Normal –
 Abnormal -
 Supplementary information: SC=Short Circuit, OC=Short Circuit

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

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements			P
	Supply voltage (V)	12 Vdc	50 Vdc	—
	Ambient T _{min} (°C)	—	—	—
	Ambient T _{max} (°C)	—	—	—
	T _{ma} (°C)	See below	See below	—
Maximum measured temperature T of part/at:	T (°C)			Allowed T _{max} (°C)

Below values for T (°C) are re-calculated to 60 degree C from actual ambient respectively:

Normal condition	With PoE	With PoE	—
DC connector (CN29)	127.6	99.4	—
PCB near CPU	112.7	112.0	130, PCB
PCB near RAM	109.7	109.5	130, PCB
PCB near L6	116.0	116.7	130, PCB
RTC battery body	96.3	96.0	--

Below values for T (°C) are re-calculated to 25 degree C from actual ambient respectively:

Metal enclosure outside (top side)	58.6	65.5	70, metal
Metal enclosure outside near (bottom side)	52.1	52.1	70, metal
Ambient	24.4	23.4	—

Supplementary information:

Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

Supplementary information:

Note 1: T_{ma} should be considered as directed by applicable requirement

Note 2: T_{ma} is not included in assessment of Touch Temperatures (Clause 9)

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

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements			P
	Supply voltage (V)	9 Vdc	12 Vdc	—
	Ambient T _{min} (°C)	—	—	—
	Ambient T _{max} (°C)	—	—	—
	T _{ma} (°C)	See below	See below	—
Maximum measured temperature T of part/at:		T (°C)		Allowed T _{max} (°C)

Below values for T (°C) are re-calculated to 60 degree C from actual ambient respectively:

Normal condition	Without PoE	The EUT position: Vertical (COM ports Downward)	—
DC connector (CN29)	104.4	99.5	—
PCB near CPU	105.7	103.2	130, PCB
PCB near RAM	102.5	98.6	130, PCB
PCB near L6	108.2	103.2	130, PCB
RTC battery body	91.5	94.8	--

Below values for T (°C) are re-calculated to 25 degree C from actual ambient respectively:

Metal enclosure outside (top side)	51.2	53.7	70, metal
Metal enclosure outside near (bottom side)	47.6	48.1	70, metal
Ambient	24.3	23.3	—

Supplementary information:

Temperature T of winding:	t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

Supplementary information:

Note 1: T_{ma} should be considered as directed by applicable requirement

Note 2: T_{ma} is not included in assessment of Touch Temperatures (Clause 9)

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

5.4.1.10.2	TABLE: Vicat softening temperature of thermoplastics			N/A
Penetration (mm)..... :				—
Object/ Part No./Material		Manufacturer/t rademark	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	Test temperature (°C)	Impression diameter (mm)
Supplementary information:				

5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance						N/A	
Clearance (cl) and creepage distance (cr) at/of/between:		Up (V)	U r.m.s. (V)	Frequenc y (kHz) ¹	Required cl (mm)	cl (mm) ²	Required ³ cr (mm)	cr (mm)
Supplementary information:								
Note 1: Only for frequency above 30 kHz								
Note 2: See table 5.4.2.4 if this is based on electric strength test								
Note 3: Provide Material Group								

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

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			N/A
	Overvoltage Category (OV):			
	Pollution Degree:			
Clearance distanced between:	Required withstand voltage	Required cl (mm)	Measured cl (mm)	
Supplementary information:				

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

5.4.4.2, 5.4.4.5 c) 5.4.4.9	TABLE: Distance through insulation measurements					N/A
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)	
Supplementary information:						

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Clause	Requirement + Test	Result - Remark	Verdict

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

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

5.6.6.2	TABLE: Resistance of protective conductors and terminations				N/A
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		N/A
Supply voltage			—
Location	Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7		Touch current (mA)
	1		
	2*		
	3		
	4		
	5		
	6		
	8		
Supplementary Information:			
Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable. [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.			

6.2.2	Table: Electrical power sources (PS) measurements for classification				N/A
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s ^{*)}	PS Classification
		Power (W) :			
		V _A (V) :			
		I _A (A) :			
Supplementary Information:					
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits					

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Clause	Requirement + Test	Result - Remark	Verdict

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)				N/A
Location	Open circuit voltage After 3 s (V _p)	Measured r.m.s current (I _{rms})	Calculated value (V _p x I _{rms})	Arcing PIS? Yes / No	

Supplementary information:

An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)				N/A
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No

Supplementary Information:

A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.
 If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.
 A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

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Clause	Requirement + Test	Result - Remark	Verdict

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

B.2.5	TABLE: Input test						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
Without PoE							
9 Vdc	10.5	20 A	94.5	—	—	—	Maximum Normal Load ²⁾
50 Vdc	1.97	20 A	98.5	—	—	—	Maximum Normal Load ²⁾
With PoE							
12 Vdc	18.6	20 A	223.2	—	—	—	Maximum Normal Load ³⁾
50 Vdc	4.21	20 A	210.5	—	—	—	Maximum Normal Load ³⁾
Supplementary information:							
1) Equipment may be have rated current or rated power or both. Both should be measured							
2) Each USB ports load 0.9 A							
3) Each USB ports load 0.9 A, each PoE port load:25.5 W							

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

B.3	TABLE: Abnormal operating condition tests		P
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Ambient temperature (°C)	25, if not stated below	—
Power source for EUT: Manufacturer, model/type, output rating ..:	See appended table 4.1.2	—

Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
USB3.2 port (CN57)(Upper), Pin 1 to GND	Overload	50 Vdc	4 hrs and 6 mins	—	—	_K_type	- Metal enclosure outside near USB3.2 port= _49.2_°C, - Ambient = _23.0_°C	Observation: Temperature stabilized. USB3.2 port pin 1 to GND loaded to _2.3_ A steady, then USB3.2 port shut down at _2.4_ A. Damaged: No damage, No hazards.
USB3.2 port (CN57) (Lower), Pin 1 to GND	Overload	50 Vdc	2 hrs and 8 mins	—	—	_K_type	- Metal enclosure outside near USB3.2 port= _48.0_°C, - Ambient = _22.1_°C	Observation: Temperature stabilized. USB3.2 port pin 1 to GND loaded to _2.2_ A steady, then USB3.2 port shut down at _2.3_ A. Damaged: No damage, No hazards.
USB3.2 port (CN55) (Upper), Pin 1 to GND	Overload	50 Vdc	1 hr and 33 mins	—	—	_K_type	- Metal enclosure outside near USB3.2 port= _53.4_°C, - Ambient = _23.5_°C	Observation: Temperature stabilized. USB3.2 port pin 1 to GND loaded to _2.2_ A steady, then USB3.2 port shut down at _2.3_ A. Damaged: No damage, No hazards.

Supplementary information:

- 1) Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4.
- 2) S: Short-circuited; O: Open-circuited; O/L: Overloaded; B: Blocked; L: Locked.

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

B.3	TABLE: Abnormal operating condition tests		P
------------	--	--	----------

Ambient temperature (°C)	25, if not stated below	—
Power source for EUT: Manufacturer, model/type, output rating ..:	See appended table 4.1.2	—

Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
USB3.2 port (CN55) (Lower), Pin 1 to GND	Overload	50 Vdc	4 hrs and 48mins	—	—	_K_type	- Metal enclosure outside near USB3.2 port= _53.4_°C, - Ambient = _23.8_°C	Observation: Temperature stabilized. USB3.2 port pin 1 to GND loaded to _2.2_ A steady, then USB3.1 port shut down at _2.3_ A. Damaged: No damage, No hazards.
USB3.2 port (CN56) (Upper), Pin 1 to GND	Overload	50 Vdc	2 hrs and 15 mins	—	—	_K_type	- Metal enclosure outside near USB3.2 port= _51.7_°C, - Ambient = _24.3_°C	Observation: Temperature stabilized. USB3.2 port pin 1 to GND loaded to _2.2_ A steady, then USB3.1 port shut down at _2.3_ A. Damaged: No damage, No hazards.
USB3.2 port (CN56) (Lower), Pin 1 to GND	Overload	50 Vdc	1 hr and 22 mins	—	—	_K_type	- Metal enclosure outside near USB3.2 port= _52.8_°C, - Ambient = _24.3_°C	Observation: Temperature stabilized. USB3.2 port pin 1 to GND loaded to _2.1_ A steady, then USB3.1 port shut down at _2.2_ A. Damaged: No damage, No hazards.

Supplementary information:

- 1) Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4.
- 2) S: Short-circuited; O: Open-circuited; O/L: Overloaded; B: Blocked; L: Locked.

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

B.4	TABLE: Fault condition tests		P
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Ambient temperature (°C)	:	25, if not stated below	—
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Power source for EUT: Manufacturer, model/type, output rating . :	:	See appended table 4.1.2	—
---	---	--------------------------	---

Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
C1089	Short-circuited	50 Vdc	10 mins	—	—	—	—	Unit shut down. No hazards, No damage

Test on RTC circuits

D73 pin 1-2	Short-circuited	50 Vdc	10 mins	—	—	—	—	Abnormal charging current flowing to RTC was 0 mA. No hazards, No damage.
-------------	-----------------	--------	---------	---	---	---	---	---

D73 pin 1-3	Short-circuited	50 Vdc	10 mins	—	—	—	—	Abnormal charging current flowing to RTC was 0 mA. No hazards, No damage.
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D73 pin 2-3	Short-circuited	50 Vdc	10 mins	—	—	—	—	Abnormal charging current flowing to RTC was 0 mA. No hazards, No damage.
-------------	-----------------	--------	---------	---	---	---	---	---

R933	Short-circuited	50 Vdc	10 mins	—	—	—	—	Abnormal charging current flowing to RTC was 0 mA. No hazards, No damage.
------	-----------------	--------	---------	---	---	---	---	---

Supplementary information:

1) S: Short-circuited; O: Open-circuited; O/L: Overloaded; B: Blocked; L: Locked.

IEC 62368-1										
Clause	Requirement + Test			Result - Remark				Verdict		
Annex M	TABLE: Batteries								P	
The tests of Annex M are applicable only when appropriate battery data is not available									—	
Is it possible to install the battery in a reverse polarity position?...				No. The reverse polarity installation is prevented by construction				—		
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition	—	—	—	—	—	—	—	—	—	
Max. current during fault condition	—	—	1)	—	—	—	—	—	—	
Test results:										
- Chemical leaks				There was no chemical leaks				P		
- Explosion of the battery				The battery did not explode resulting in injury to a user				P		
- Emission of flame or expulsion of molten metal				There was no emission of flame or expulsion of molten metal outside the battery operated product				P		
- Electric strength tests of equipment after completion of tests								N/A		
Supplementary information:										
1. Considered for real time clock battery. Also see appended table B4. 2. Tested on EUT with RTC, Max. current during fault condition. See appended table 4.1.2 for RTC information.										

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

Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries	N/A
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Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
	Normal				
	Abnormal				
	Single fault – SC/OC				
	Normal				
	Abnormal				
	Single fault – SC/OC				

Supplementary Information:

Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation

Supplementary Information:

IEC 62368-1							
Clause	Requirement + Test	Result - Remark			Verdict		
Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P	
Note: Measured UOC (V) with all load circuits disconnected:							
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)		
			Meas.	Limit	Meas.	Limit	
PoE port (CN7)(LAN6), All pins to GND	Normal	52.9	0.7	≤ 8.0	35.1	≤ 100	
PoE port (CN8)(LAN7), All pins to GND	Normal	52.9	0.7	≤ 8.0	35.1	≤ 100	
PoE port (CN9)(LAN8), All pins to GND	Normal	52.9	0.7	≤ 8.0	35.1	≤ 100	
PoE port (CN10)(LAN9), All pins to GND	Normal	52.9	0.7	≤ 8.0	35.1	≤ 100	
USB3.2 port (CN57)(Upper), Pin 1 to GND, protected by U98	Normal	4.98	2.3	≤ 8.0	7.4	≤ 100	
USB3.2 port (CN57) (Upper), Pin 1 to GND	Single Fault U98 pin 1-5 short circuits	4.98	6.9	≤ 8.0	10.4	≤ 100	
USB3.2 port (CN57) (Lower), Pin 1 to GND, protected by U43	Normal	4.98	2.2	≤ 8.0	7.3	≤ 100	
USB3.2 port (CN57) (Lower), Pin 1 to GND	Single Fault U43 pin 1-5 short circuits	4.98	6.9	≤ 8.0	10.4	≤ 100	
ISOLATED DIO (CN12), All pins to GND	Normal	0	0	≤ 8.0	0	≤ 100	
ISOLATED DIO (CN23), All pins to GND	Normal	0	0	≤ 8.0	0	≤ 100	
COM1 (CN61), All pin to GND	Normal	0	0	≤ 8.0	0	≤ 100	
COM2 (CN62), All pin to GND	Normal	0	0	≤ 8.0	0	≤ 100	

IEC 62368-1						
Clause	Requirement + Test	Result - Remark			Verdict	
Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
COM3 (CN63), All pin to GND	Normal	0	0	≤ 8.0	0	≤ 100
COM4 (CN64), All pin to GND	Normal	0	0	≤ 8.0	0	≤ 100
Nano SIM card socket , All pins to GND	Normal	0	0	≤ 8.0	0	≤ 100
Micro SD card socket (CN51), All pin to GND	Normal	3.16	0	≤ 8.0	0	≤ 100
DVI-D port(CN65A), Pin 14 to GND, protect by F4	Normal	4.97	2.4	≤ 8.0	8.4	≤ 100
DVI-D port(CN65A), Pin 14 to GND	Single Fault F4 short circuits	4.98	6.0	≤ 8.0	11.4	≤ 100
VGA port(CN65B), Pin D9 to GND, protect by F3	Normal	4.98	2.6	≤ 8.0	9.3	≤ 100
VGA port(CN65B), Pin D9 to GND	Single Fault F3 short circuits	4.98	6.2	≤ 8.0	11.3	≤ 100
DP port(upper) (CN4A), pin 20 to GND, protected by F1	Normal	3.33	3.7	≤ 8.0	3.5	≤ 100
DP port(upper) (CN4A), pin 20 to GND,	Single Fault F1 short circuits	3.33	4.1	≤ 8.0	3.6	≤ 100
DP port(lower) (CN4B), pin 20 to GND, protected by F2	Normal	3.33	3.7	≤ 8.0	3.6	≤ 100
DP port(lower) (CN4B), pin 20 to GND,	Single Fault F2 short circuits	3.33	4.0	≤ 8.0	3.7	≤ 100

IEC 62368-1						
Clause	Requirement + Test	Result - Remark			Verdict	
Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
USB3.2 port (CN55) (Upper), Pin 1 to GND, protected by U50	Normal	4.98	2.2	≤ 8.0	7.2	≤ 100
USB3.2 port (CN55) (Upper), Pin 1 to GND	Single Fault U50 pin 1-5 short circuits	4.98	6.9	≤ 8.0	10.4	≤ 100
USB3.2 port (CN55) (Lower), Pin 1 to GND, protected by U4	Normal	4.98	2.2	≤ 8.0	7.1	≤ 100
USB3.2 port (CN55) (Lower), Pin 1 to GND	Single Fault U4 pin 1-5 short circuits	4.98	6.9	≤ 8.0	10.4	≤ 100
USB3.2 port (CN56) (Upper), Pin 1 to GND, protected by U49	Normal	4.98	2.2	≤ 8.0	7.2	≤ 100
USB3.2 port (CN56) (Upper), Pin 1 to GND	Single Fault U49 pin 1-5 short circuits	4.98	6.9	≤ 8.0	10.4	≤ 100
USB3.2 port (CN56) (Lower), Pin 1 to GND, protected by U5	Normal	4.98	2.1	≤ 8.0	7.0	≤ 100
USB3.2 port (CN56) (Lower), Pin 1 to GND	Single Fault U5 pin 1-5 short circuits	4.98	6.9	≤ 8.0	10.4	≤ 100
LAN 1 port (CN25- 1)(Upper), All pin to GND	Normal	0	0	≤ 8.0	0	≤ 100
LAN 1 port (CN25- 2)(Lower), All pin to GND	Normal	0	0	≤ 8.0	0	≤ 100
Audio Jack, all pin to GND	Normal	0	0	≤ 8.0	0	≤ 100

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

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)	P
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Note: Measured UOC (V) with all load circuits disconnected:

Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Mic Jack, all pin to GND	Normal	0	0	≤ 8.0	0	≤ 100

Supplementary Information:

1) SC=Short circuit, OC=Open circuit

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

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation	
Enclosure / Top	Metal	1.2 mm	250 N	5 sec	Intact	
Enclosure / Side	Metal	1.2 mm	250 N	5 sec	Intact	
Enclosure / Bottom	Metal	1.2 mm	250 N	5 sec	Intact	
Supplementary information:						

T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Enclosure / Top	Metal	1.2 mm	1300 mm	Intact	
Enclosure / Side	Metal	1.2 mm	1300 mm	Intact	
Enclosure / Bottom	Metal	1.2 mm	1300 mm	Intact	
Supplementary information:					

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

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

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

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.Z1	<p>Add the following new subclause after 4.9:</p> <p>To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		N/A
5.4.2.3.2.4	<p>Add the following to the end of this subclause:</p> <p>The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.</p>		N/A
10.2.1	<p>Add the following to ^{c)} and ^{d)} in table 39:</p> <p>For additional requirements, see 10.5.1.</p>		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	<p>Add the following after the first paragraph: <i>For RS 1 compliance is checked by measurement under the following conditions:</i></p> <p><i>In addition to the normal operating conditions, all controls adjustable from the outside by hand, by any object such as a tool or a coin, and those internal adjustments or presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made.</i></p> <p>NOTE Z1 Soldered joints and paint lockings are examples of adequate locking.</p> <p><i>The dose-rate is determined by means of a radiation monitor with an effective area of 10 cm², at any point 10 cm from the outer surface of the apparatus.</i></p> <p><i>Moreover, the measurement shall be made under fault conditions causing an increase of the high-voltage, provided an intelligible picture is maintained for 1 h, at the end of which the measurement is made.</i></p> <p><i>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</i></p> <p>NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.</p>		N/A
10.6.1	<p>Add the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.</p>		N/A
10.Z1	<p>Add the following new subclause after 10.6.5. 10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz</p> <p>The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz).</p> <p>For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body-mounted devices, attention is drawn to EN 50360 and EN 50566</p>		N/A
G.7.1	<p>Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p>		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Bibliography	<p>Add the following standards:</p> <p>Add the following notes for the standards indicated:</p> <p>IEC 60130-9 NOTE Harmonized as EN 60130-9.</p> <p>IEC 60269-2 NOTE Harmonized as HD 60269-2.</p> <p>IEC 60309-1 NOTE Harmonized as EN 60309-1.</p> <p>IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series.</p> <p>IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4.</p> <p>IEC 60664-5 NOTE Harmonized as EN 60664-5.</p> <p>IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified).</p> <p>IEC 61508-1 NOTE Harmonized as EN 61508-1.</p> <p>IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1.</p> <p>IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4.</p> <p>IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6.</p> <p>IEC 61643-1 NOTE Harmonized as EN 61643-1.</p> <p>IEC 61643-21 NOTE Harmonized as EN 61643-21.</p> <p>IEC 61643-311 NOTE Harmonized as EN 61643-311.</p> <p>IEC 61643-321 NOTE Harmonized as EN 61643-321.</p> <p>IEC 61643-331 NOTE Harmonized as EN 61643-331.</p>		N/A
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N/A
4.1.15	<p>Denmark, Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.11.1 and Annex G	<p>Finland and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>For separation of the telecommunication network from earth the following is applicable:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV. <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; 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. 		N/A
5.5.2.1	<p>Norway</p> <p>After the 3rd paragraph the following is added:</p> <p>Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.5.6	<p>Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2.</p>		N/A
5.6.1	<p>Denmark</p> <p>Add to the end of the subclause</p> <p>Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment.</p> <p><i>Justification:</i></p> <p>In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.</p>		N/A
5.6.4.2.1	<p>Ireland and United Kingdom</p> <p>After the indent for pluggable equipment type A, the following is added:</p> <p>– the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.</p>		N/A
5.6.5.1	<p>To the second paragraph the following is added:</p> <p>The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is:</p> <p>1,25 mm² to 1,5 mm² in cross-sectional area.</p>		N/A
5.7.5	<p>Denmark</p> <p>To the end of the subclause the following is added:</p> <p>The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p>		N/A

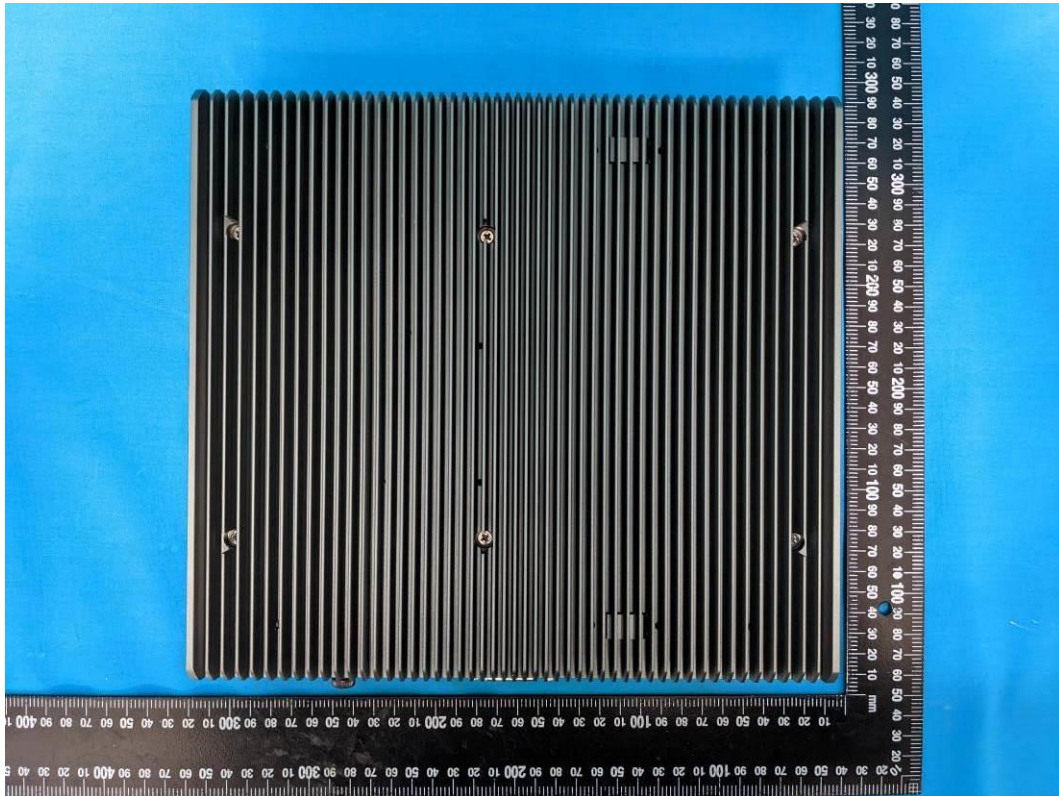
IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.1	<p>Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in:</p> <p>“Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>“Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.”</p> <p>Translation to Swedish:</p> <p>”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.</p>		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.7.6.2	<p>Denmark</p> <p>To the end of the subclause the following is added:</p> <p>The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p>		N/A
B.3.1 and B.4	<p>Ireland and United Kingdom</p> <p>The following is applicable:</p> <p>To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met</p>		N/A
G.4.2	<p>Denmark</p> <p>To the end of the subclause the following is added:</p> <p>Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a</p> <p><i>Justification:</i> Heavy Current Regulations, Section 6c</p>		N/A

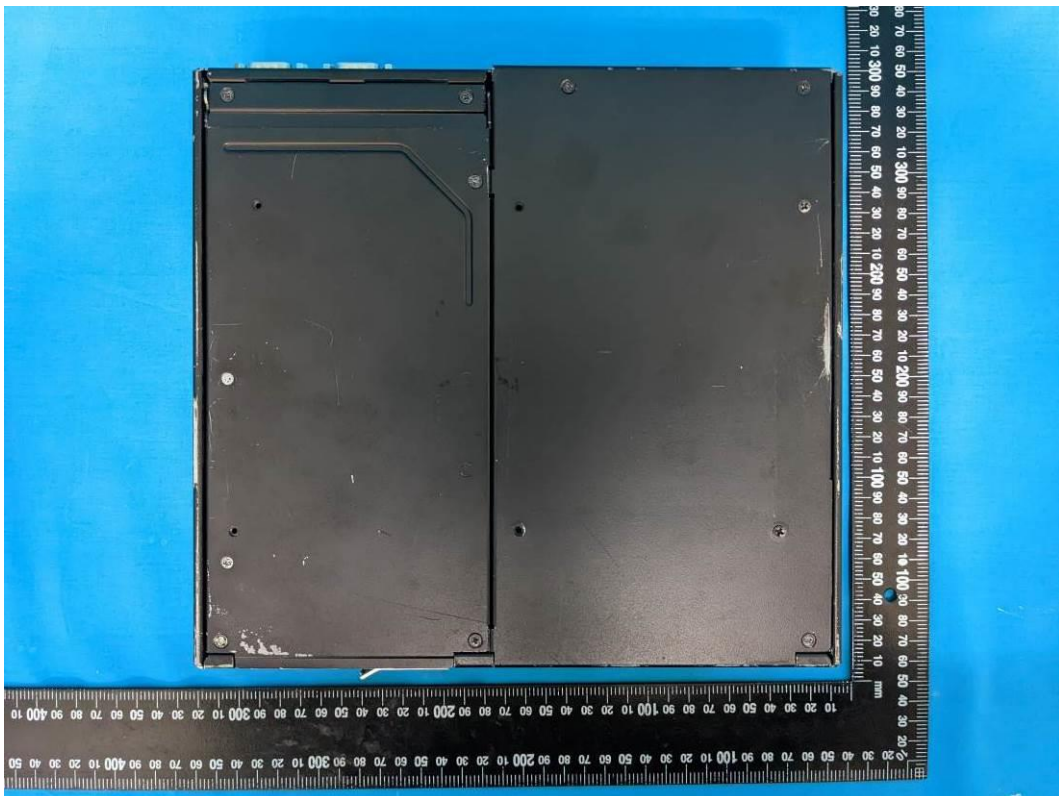
IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	<p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N/A
G.7.1	<p>United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
G.7.1	<p>Ireland</p> <p>To the first paragraph the following is added:</p> <p>Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p>		N/A
G.7.2	<p>Ireland and United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	<p>Germany</p> <p>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.</p> <p><i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p>NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de</p>		N/A

External view of EUT



External view of EUT



External view of EUT



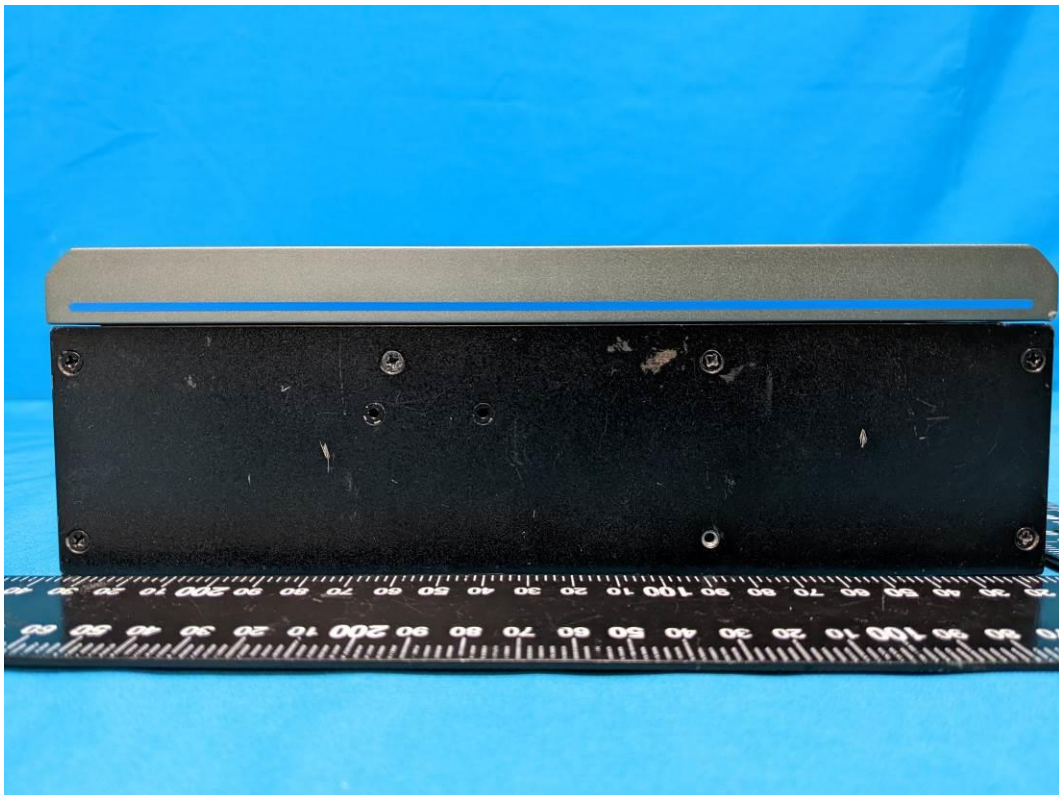
External view of EUT



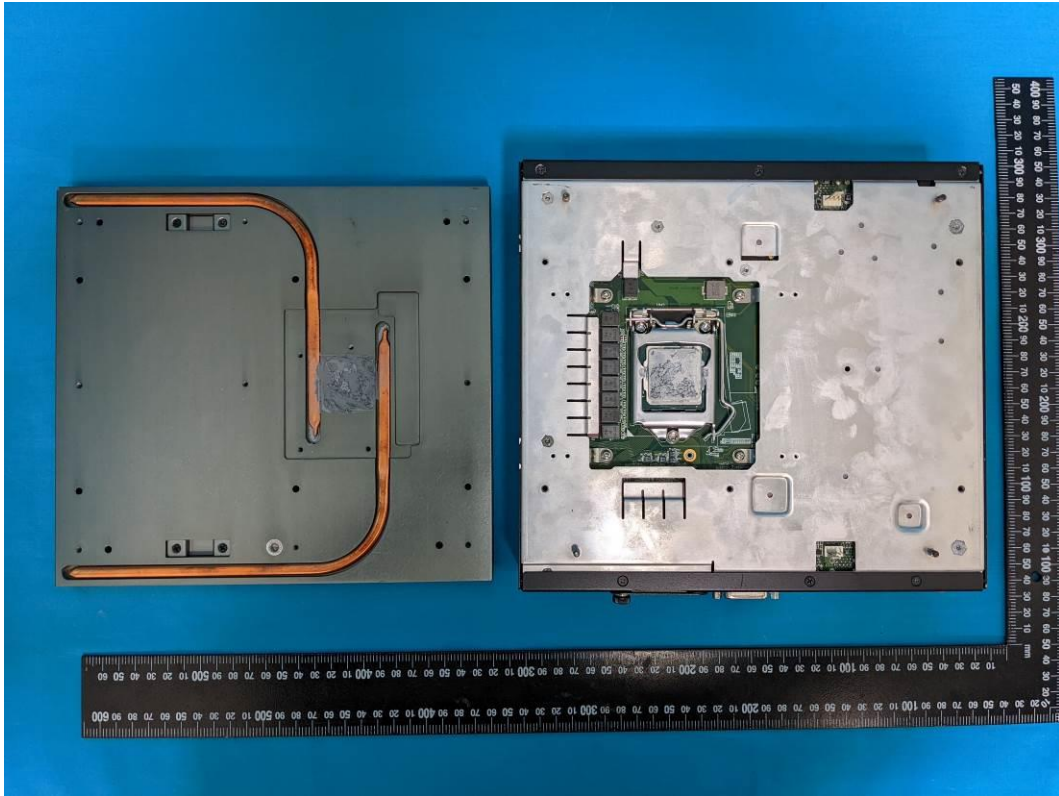
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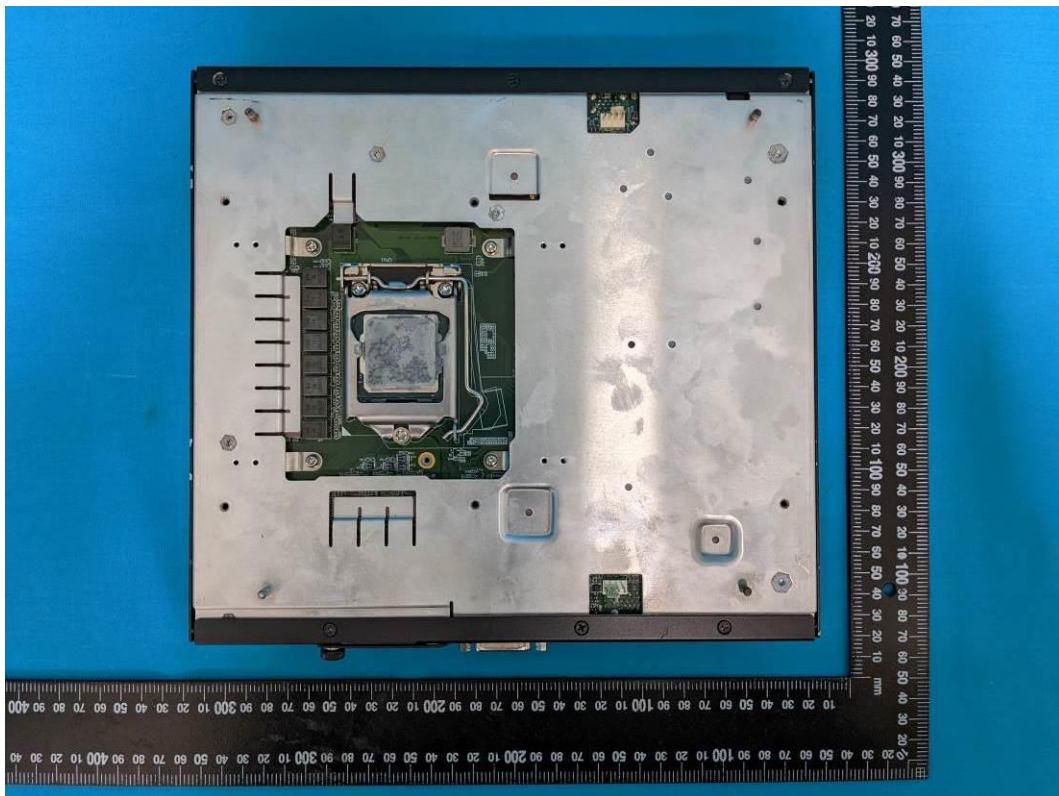
External view of EUT



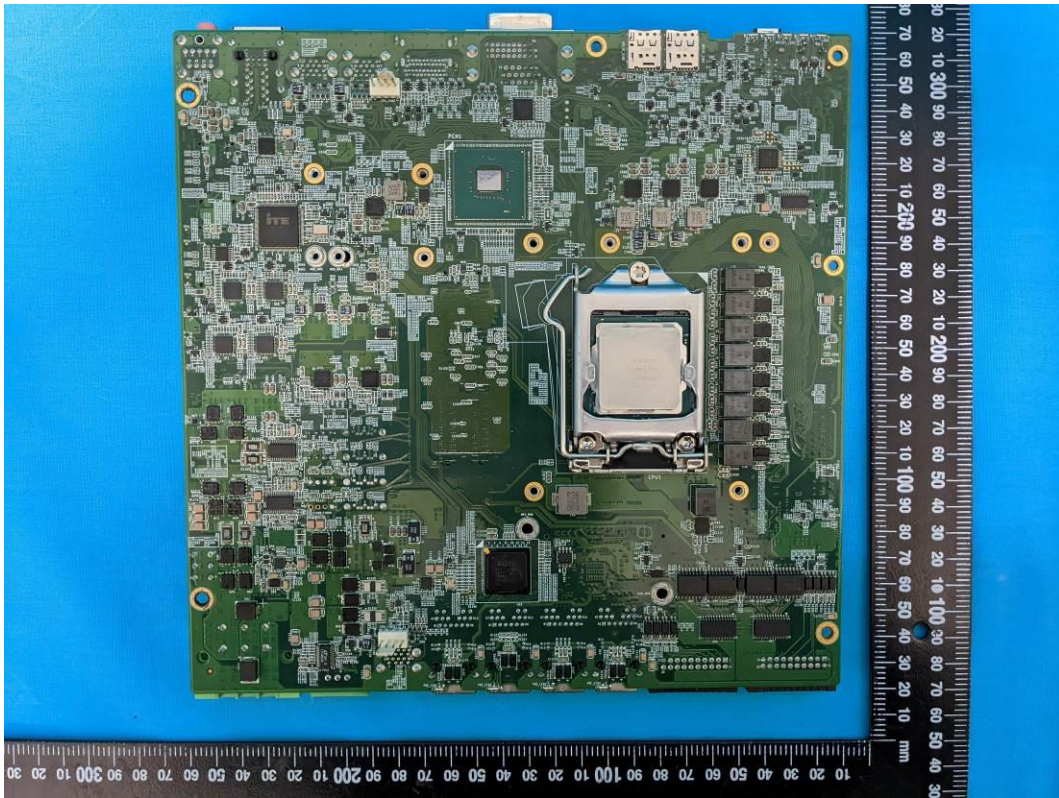
Internal view of EUT



Internal view of EUT



Top view of main board



Bottom view of main board

