



SAFETY TEST REPORT

MEASUREMENT AND TEST REPORT

For

LEXON

125 avenue des Champs Elysées, 75008 Paris France

Models: LD146

June 24, 2021

| | |
|---|---|
| This Report Concerns: <input checked="" type="checkbox"/> Original Report | Equipment Type: UNO MINI CHARGER |
| Test Standard: | EN 62368-1:2014+A11:2017 |
| Report Number: | CTB210525038RSX |
| Test Date: | May 19 - 25, 2021 |
| Test category: | Consignment test |
| Prepared By: | Shenzhen CTB Testing Technology Co., Ltd. Floor 1&2, Building A, No. 26 of Xinh Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China Tel: 4008-707-283 E-mail: ctb@ctb-lab.net Web: http://www.ctb-lab.net |

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen CTB Testing Technology Co., Ltd.

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

Report reference No..... : CTB210525038RSX

Date of issue..... : June 24, 2021

Testing laboratory

Name..... : Shenzhen CTB Testing Technology Co., Ltd.

Address..... : Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China

Client

Name..... : LEXON

Address..... : 125 avenue des Champs Elysées, 75008 Paris France

Test specification

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

Test procedure..... : Safety report

Procedure deviation..... : N.A.

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

Test Report Form No..... : IEC62368_1C

TRF originator : UL(US)

Master TRF : Dated 2019-01-17

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Test item

Description..... : UNO MINI CHARGER

Model No. : LD146

Brand name..... : LEXON

Manufacturer..... : LEXON

Address..... : 125 avenue des Champs Elysées, 75008 Paris France

Rating(s)..... : Input: 9  2A

Output: 10W

Test item particulars:

| | | |
|---|---|---|
| Product group | <input checked="" type="checkbox"/> end product | <input type="checkbox"/> built-in component |
| Classification of use by | <input checked="" type="checkbox"/> Ordinary person | <input type="checkbox"/> Instructed person |
| | <input type="checkbox"/> Skilled person | <input type="checkbox"/> Children likely to be present |
| Supply Connection..... | <input type="checkbox"/> AC Mains | <input checked="" type="checkbox"/> DC Mains |
| | <input type="checkbox"/> 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"/> 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: _____ |
| Considered current rating of protective device as part of building or equipment installation..... | A; | |
| | Location: <input type="checkbox"/> building; <input type="checkbox"/> equipment | |
| | <input type="checkbox"/> N/A | |
| Equipment mobility | <input checked="" type="checkbox"/> movable | <input type="checkbox"/> hand-held <input type="checkbox"/> transportable |
| | <input type="checkbox"/> direct plug-in | <input type="checkbox"/> stationary <input type="checkbox"/> for building-in |
| | <input type="checkbox"/> wall/ceiling-mounted | <input type="checkbox"/> SRME/rack-mounted |
| | <input type="checkbox"/> other: | |
| 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: _____ |
| Class of equipment | <input type="checkbox"/> Class I | <input type="checkbox"/> Class II <input checked="" type="checkbox"/> Class III |
| | <input type="checkbox"/> Not classified | <input type="checkbox"/> |
| Access location | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> restricted access area |
| | <input type="checkbox"/> outdoor location | <input type="checkbox"/> |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 | <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| Manufacturer's specified maximum operating ambient: | 35°C | <input type="checkbox"/> Outdoor: minimum °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"/> not AC mains | |
| Altitude during operation (m) | <input checked="" type="checkbox"/> 2000 m or less | <input type="checkbox"/> ___ m |
| Altitude of test laboratory (m) | <input checked="" type="checkbox"/> 2000 m or less | <input type="checkbox"/> ___ m |
| Mass of equipment (kg) | <input checked="" type="checkbox"/> 0.077kg | |

Possible test case verdicts:

- test case does not apply to the test object: N/A(Not applicable)
- test object does meet the requirement: P(Pass)
- test object does not meet the requirement.....: F(Fail)

Testing:

- Date of receipt of test items: May 19, 2021
- Date(s) of performance of tests.....: May 19 - 25, 2021
- Laboratory sample number.....: 210519010-1X
- Sample appearance and function are in normal condition, yes or no.....: Yes
- Ambient temperature.....: 24-26°C
- Ambient humidity.....: 60-65%

General remarks:

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

Laboratory CTB. The authenticity of this Test Report and its contents can be verified by contacting CTB, responsible for this Test Report.

"(see Enclosure #)" refers to additional information appended to the report.

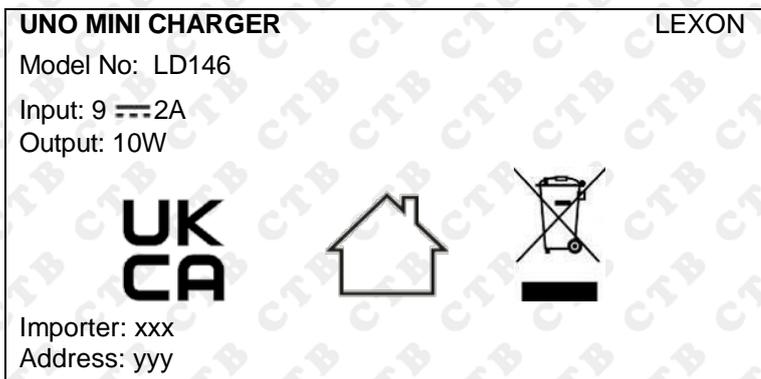
"(see appended table)" refers to a table appended to the report.

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

General product information:

- The appliance is a UNO MINI CHARGER is used for information technology equipment and for indoor use only.
- Max. operated temperature is considered as 35°C for declared from manufacture.
- Instructions and equipment marking related to safety is applied in the language that is acceptable in the country in which the equipment is to be sold.

Copy of marking plate:



Remark for above marking:

1. The height of graphical symbols shall not be less than 5 mm;
2. The height of letters and numerals shall not be less than 2 mm;
3. The height dimension of UKCA mark should not less than 5mm, the height dimension of WEEE symbol should not less than 7mm.
4. The main rating label was attached in enclosure.
5. Note: xxx means importer company mane; yyy means importer company address information.

Summary of testing:

The submitted sample were tested and found to compliance with requirements of the standards EN 62368-1:2014+A11:2017

Testing procedure and testing location

Laboratory name..... : Shenzhen CTB Testing Technology Co., Ltd.
 Testing location/address: : Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China.
 Testing procedure : TL RMT SMT WMT TMP

Tested By (Test Engineer) : Alan Yang

Alan Yang

Reviewed By (Supervisor) : Kubo Lee

Kubo Lee

Approved By (Chief Engineer) : Peter Chen

Peter Chen



| OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS | | | | |
|---|---------------------------------------|-------------------|-------------------|-------------------|
| Clause | Possible Hazard | | | |
| 5 | Electrically-caused injury | | | |
| Class and Energy Source (e.g. ES3: Primary circuit) | Body Part (e.g. Ordinary) | Safeguards | | |
| | | B | S | R |
| ES1: All the circuit | Ordinary | N/A | N/A | N/A |
| -- | -- | -- | -- | -- |
| 6 | Electrically-caused fire | | | |
| Class and Energy Source (e.g. PS2: 100 Watt circuit) | Material part (e.g. Printed board) | Safeguards | | |
| | | B | 1 st S | 2 nd S |
| PS1 | Printed board | Suitable material | N/A | N/A |
| -- | -- | -- | -- | -- |
| 7 | Injury caused by hazardous substances | | | |
| Class and Energy Source (e.g. Ozone) | Body Part (e.g., Skilled) | Safeguards | | |
| | | B | S | R |
| -- | -- | -- | -- | -- |
| 8 | Mechanically-caused injury | | | |
| Class and Energy Source (e.g. MS3: Plastic fan blades) | Body Part (e.g. Ordinary) | Safeguards | | |
| | | B | S | R |
| MS1: Equipment Mass | Ordinary | N/A | N/A | N/A |
| MS1: Sharp edges and corner of product | Ordinary | N/A | N/A | N/A |
| 9 | Thermal burn | | | |
| Class and Energy Source (e.g. TS1: Keyboard caps) | Body Part (e.g., Ordinary) | Safeguards | | |
| | | B | S | R |
| TS1: All accessible parts | Ordinary | N/A | N/A | N/A |
| 10 | Radiation | | | |
| Class and Energy Source (e.g. RS1: PMP sound output) | Body Part (e.g., Ordinary) | Safeguards | | |
| | | B | S | R |
| RS1:LEDs | Ordinary | N/A | N/A | N/A |
| Supplementary Information: "B" – Basic Safeguard; "S" – Supplementary Safeguard; "R" – Reinforced Safeguard "N" – Normal operating condition; "A" – Abnormal operating condition; "F" – Single Fault condition. | | | | |

ENERGY SOURCE DIAGRAM

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

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

Whole equipment was ES1,PS1,MS1,TS1,RS1

ES PS MS TS RS

| EN 62368-1 | | | |
|------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4 | GENERAL REQUIREMENTS | | P |
| 4.1.1 | Acceptance of materials, components and subassemblies | | P |
| 4.1.2 | Use of components | Safeguard components are certified to IEC and/or national standards and are used correctly within their ratings. | P |
| 4.1.3 | Equipment design and construction | | P |
| 4.1.4 | Specified ambient temperature for outdoor use (°C): | | N/A |
| 4.1.5 | Constructions and components not specifically covered | | N/A |
| 4.1.8 | Liquids and liquid filled components (LFC) | (See G.15) | N/A |
| 4.1.15 | Markings and instructions | (See Annex F) | P |
| 4.4.3 | Safeguard robustness | | P |
| 4.4.3.1 | General | | P |
| 4.4.3.2 | Steady force tests | (See Clause T.3, T.4, T.5) | P |
| 4.4.3.3 | Drop tests | | P |
| 4.4.3.4 | Impact tests | | N/A |
| 4.4.3.5 | Internal accessible safeguard tests | | N/A |
| 4.4.3.6 | Glass impact tests | (See Clause T.9, Annex U) | N/A |
| 4.4.3.7 | Glass fixation tests | | N/A |
| | Glass impact test (1J) | | N/A |
| | Push/pull test (10 N) | | N/A |
| 4.4.3.8 | Thermoplastic material tests | | N/A |
| 4.4.3.9 | Air comprising a safeguard | | N/A |
| 4.4.3.10 | Accessibility, glass, safeguard effectiveness | | N/A |
| 4.4.4 | Displacement of a safeguard by an insulating liquid | | N/A |
| 4.4.5 | Safety interlocks | (See Annex K) | N/A |
| 4.5 | Explosion | | P |
| 4.5.1 | General | | P |
| 4.5.2 | No explosion during normal/abnormal operating condition | (See Clause B.2, B.3) | P |
| | No harm by explosion during single fault conditions | (See Clause B.4) | P |
| 4.6 | Fixing of conductors | | N/A |
| | Fix conductors not to defeat a safeguard | | N/A |
| | Compliance is checked by test | (See Clause T.2) | N/A |

| EN 62368-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.7 | Equipment for direct insertion into mains socket-outlets | | N/A |
| 4.7.2 | Mains plug part complies with relevant standard: | | N/A |
| 4.7.3 | Torque (Nm) | | N/A |
| 4.8 | Equipment containing coin/button cell batteries | | N/A |
| 4.8.1 | General | | N/A |
| 4.8.2 | Instructional safeguard | | N/A |
| 4.8.3 | Battery compartment door/cover construction | | N/A |
| | Open torque test | | N/A |
| 4.8.4.2 | Stress relief test | | N/A |
| 4.8.4.3 | Battery replacement test | | N/A |
| 4.8.4.4 | Drop test | | N/A |
| 4.8.4.5 | Impact test | | N/A |
| 4.8.4.6 | Crush test | | N/A |
| 4.8.5 | Compliance | | N/A |
| | 30N force test with test probe | | N/A |
| | 20N force test with test hook | | N/A |
| 4.9 | Likelihood of fire or shock due to entry of conductive object | | N/A |
| 4.10 | Component requirements | | P |
| 4.10.1 | Disconnect Device | (See Annex L) | N/A |
| 4.10.2 | Switches and relays | (See Annex G) | N/A |

| | | | |
|------------|---|--------------------------|-----|
| 5 | ELECTRICALLY-CAUSED INJURY | | P |
| 5.2 | Classification and limits of electrical energy sources | | P |
| 5.2.2 | ES1, ES2 and ES3 limits | ES1 | P |
| 5.2.2.2 | Steady-state voltage and current limits | (See appended table 5.2) | P |
| 5.2.2.3 | Capacitance limits | (See appended table 5.2) | N/A |
| 5.2.2.4 | Single pulse limits | (See appended table 5.2) | N/A |
| 5.2.2.5 | Limits for repetitive pulses | (See appended table 5.2) | N/A |
| 5.2.2.6 | Ringing signals | (See Annex H) | N/A |
| 5.2.2.7 | Audio signals | (See Clause E.1) | N/A |
| 5.3 | Protection against electrical energy sources | | P |
| 5.3.1 | General Requirements for accessible parts to ordinary, instructed and skilled persons | | P |
| 5.3.1 a) | Accessible ES1/ES2 derived from ES2/ES3 circuits | | N/A |
| 5.3.1 b) | Skilled persons not unintentional contact ES3 bare conductors | | N/A |

| EN 62368-1 | | | |
|-------------|---|---------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.3.2.1 | Accessibility to electrical energy sources and safeguards | | N/A |
| | Accessibility to outdoor equipment bare parts | | N/A |
| 5.3.2.2 | Contact requirements | | N/A |
| | Test with test probe from Annex V | | - |
| 5.3.2.2 a) | Air gap – electric strength test potential (V) | (See appended table 5.4.9) | N/A |
| 5.3.2.2 b) | Air gap – distance (mm) | | N/A |
| 5.3.2.3 | Compliance | | N/A |
| 5.3.2.4 | Terminals for connecting stripped wire | | N/A |
| 5.4 | Insulation materials and requirements | | N/A |
| | Properties of insulating material | | N/A |
| 5.4.1.3 | Material is non-hygroscopic | | N/A |
| 5.4.1.4 | Maximum operating temperature for insulating materials | (See appended table) | N/A |
| 5.4.1.5 | Pollution degrees | | N/A |
| 5.4.1.5.2 | Test for pollution degree 1 environment and for an insulating compound | | N/A |
| 5.4.1.5.3 | Thermal cycling test | | N/A |
| 5.4.1.6 | Insulation in transformers with varying dimensions | | N/A |
| 5.4.1.7 | Insulation in circuits generating starting pulses | | N/A |
| 5.4.1.8 | Determination of working voltage..... | (See appended table 5.4.1.8) | N/A |
| 5.4.1.9 | Insulating surfaces | | N/A |
| 5.4.1.10 | Thermoplastic parts on which conductive metallic parts are directly mounted | | N/A |
| 5.4.1.10.2 | Vicat test..... | (See appended table 5.4.1.10.2) | N/A |
| 5.4.1.10.3 | Ball pressure test | (See appended table 5.4.1.10.3) | N/A |
| 5.4.2 | Clearances | | N/A |
| 5.4.2.1 | General requirements | | N/A |
| | Clearances in circuits connected to AC Mains, Alternative method | (See Annex X) | N/A |
| 5.4.2.2 | Procedure 1 for determining clearance | | N/A |
| | Temporary overvoltage | | — |
| 5.4.2.3 | Procedure 2 for determining clearance | | N/A |
| 5.4.2.3.2.2 | a.c. mains transient voltage..... | | — |
| 5.4.2.3.2.3 | d.c. mains transient voltage | | — |
| 5.4.2.3.2.4 | External circuit transient voltage | | — |

| EN 62368-1 | | | |
|-------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.2.3.2.5 | Transient voltage determined by measurement | | — |
| 5.4.2.4 | Determining the adequacy of a clearance using an electric strength test..... | (See appended table 5.4.2) | N/A |
| 5.4.2.5 | Multiplication factors for clearances and test voltages | | N/A |
| 5.4.2.6 | Clearance measurement | (See appended table 5.4.2) | N/A |
| 5.4.3 | Creepage distances | | N/A |
| 5.4.3.1 | General | | N/A |
| 5.4.3.3 | Material group | | — |
| 5.4.3.4 | Creepage distances measurement..... | (See appended table 5.4.3) | N/A |
| 5.4.4 | Solid insulation | | N/A |
| 5.4.4.1 | General requirements | | N/A |
| 5.4.4.2 | Minimum distance through insulation | (See appended table 5.4.4.2) | N/A |
| 5.4.4.3 | Insulating compound forming solid insulation | | N/A |
| 5.4.4.4 | Solid insulation in semiconductor devices | | N/A |
| 5.4.4.5 | Insulating compound forming cemented joints | | N/A |
| 5.4.4.6 | Thin sheet material | | N/A |
| 5.4.4.6.1 | General requirements | | N/A |
| 5.4.4.6.2 | Separable thin sheet material | | N/A |
| | Number of layers (pcs) | | N/A |
| 5.4.4.6.3 | Non-separable thin sheet material | | N/A |
| | Number of layers (pcs) | | N/A |
| 5.4.4.6.4 | Standard test procedure for non-separable thin sheet material | (See appended table 5.4.9) | N/A |
| 5.4.4.6.5 | Mandrel test | | N/A |
| 5.4.4.7 | Solid insulation in wound components | | N/A |
| 5.4.4.9 | Solid insulation at frequencies >30 kHz, E_P , K_R , d , V_{PW} (V)..... | (See appended Table 5.4.4.9) | N/A |
| | Alternative by electric strength test, tested voltage (V), K_R | (See appended Tables 5.4.4.9 and 5.4.9) | N/A |
| 5.4.5 | Antenna terminal insulation | | N/A |
| 5.4.5.1 | General | | N/A |
| 5.4.5.2 | Voltage surge test | | N/A |
| 5.4.5.3 | Insulation resistance (M Ω) | | N/A |
| | Electric strength test | (See appended table 5.4.9) | N/A |
| 5.4.6 | Insulation of internal wire as part of supplementary safeguard | | N/A |

| EN 62368-1 | | | |
|------------|--|----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.7 | Tests for semiconductor components and for cemented joints | | N/A |
| 5.4.8 | Humidity conditioning | | N/A |
| | Relative humidity (%), temperature (°C), duration (h) | | — |
| 5.4.9 | Electric strength test | | N/A |
| 5.4.9.1 | Test procedure for type test of solid insulation.....: | (See appended table 5.4.9) | N/A |
| 5.4.9.2 | Test procedure for routine test | | N/A |
| 5.4.10 | Safeguards against transient voltages from external circuits | | N/A |
| 5.4.10.1 | Parts and circuits separated from external circuits | | N/A |
| 5.4.10.2 | Test methods | | N/A |
| 5.4.10.2.1 | General | | N/A |
| 5.4.10.2.2 | Impulse test | (See appended table 5.4.9) | N/A |
| 5.4.10.2.3 | Steady-state test.....: | (See appended table 5.4.9) | N/A |
| 5.4.10.3 | Verification for insulation breakdown for impulse test.....: | | N/A |
| 5.4.11 | Separation between external circuits and earth | | N/A |
| 5.4.11.1 | Exceptions to separation between external circuits and earth | | N/A |
| 5.4.11.2 | Requirements | | N/A |
| | SPDs bridge separation between external circuit and earth | | N/A |
| | Rated operating voltage U_{op} (V) | | — |
| | Nominal voltage U_{peak} (V) | | — |
| | Max increase due to variation ΔU_{sp} | | — |
| | Max increase due to ageing ΔU_{sa} | | — |
| 5.4.11.3 | Test method and compliance.....: | (See appended table 5.4.9) | N/A |
| 5.4.12 | Insulating liquid | | N/A |
| 5.4.12.1 | General requirements | | N/A |
| 5.4.12.2 | Electric strength of an insulating liquid.....: | (See appended table 5.4.9) | N/A |
| 5.4.12.3 | Compatibility of an insulating liquid.....: | (See appended table 5.4.9) | N/A |
| 5.4.12.4 | Container for insulating liquid | | N/A |
| 5.5 | Components as safeguards | | N/A |
| 5.5.1 | General | | N/A |
| 5.5.2 | Capacitors and RC units | | N/A |
| 5.5.2.1 | General requirement | | N/A |

| EN 62368-1 | | | |
|------------|---|-------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.5.2.2 | Safeguards against capacitor discharge after disconnection of a connector | (See appended table 5.5.2.2) | N/A |
| 5.5.3 | Transformers | | N/A |
| 5.5.4 | Optocouplers | (See sub-clause 5.4 or Clause G.12) | N/A |
| 5.5.5 | Relays | (See sub-clause 5.4) | N/A |
| 5.5.6 | Resistors | (See Clause G.10) | N/A |
| 5.5.7 | SPDs | (See Clause G.8) | N/A |
| 5.5.8 | Insulation between the mains and an external circuit consisting of a coaxial cable..... | | N/A |
| 5.5.9 | Safeguards for socket-outlets in outdoor equipment | | N/A |
| | RCD rated residual operating current (mA) | | — |
| 5.6 | Protective conductor | | N/A |
| 5.6.2 | Requirement for protective conductors | | N/A |
| 5.6 | Protective conductor | | N/A |
| 5.6.2 | Requirement for protective conductors | | N/A |
| 5.6.2.1 | General requirements | | N/A |
| 5.6.2.2 | Colour of insulation | | N/A |
| 5.6.3 | Requirement for protective earthing conductors | | N/A |
| | Protective earthing conductor size (mm ²) | | — |
| | Protective earthing conductor serving as a reinforced safeguard | | N/A |
| | Protective earthing conductor serving as a double safeguard | | N/A |
| 5.6.4 | Requirements for protective bonding conductors | | N/A |
| 5.6.4.1 | Protective bonding conductors | | N/A |
| | Protective bonding conductor size (mm ²)..... | | — |
| 5.6.4.2 | Protective current rating (A) | | N/A |
| 5.6.5 | Terminals for protective conductors | | N/A |
| 5.6.5.1 | Terminal size for connecting protective earthing conductors (mm)..... | | N/A |
| | Terminal size for connecting protective bonding conductors (mm) | | N/A |
| 5.6.5.2 | Corrosion | | N/A |
| 5.6.6 | Resistance of the protective bonding system | | N/A |
| 5.6.6.1 | Requirements | | N/A |
| 5.6.6.2 | Test Method..... | (See appended table 5.6.6) | N/A |
| 5.6.6.3 | Resistance (Ω) or voltage drop | (See appended table 5.6.6) | N/A |

| EN 62368-1 | | | |
|------------|---|----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.6.7 | Reliable connection of a protective earthing conductor | | N/A |
| 5.6.8 | Functional earthing | | N/A |
| | Conductor size (mm ²) | | N/A |
| | Class II with functional earthing marking | | N/A |
| | Appliance inlet cl & cr (mm) | | N/A |
| 5.7 | Prospective touch voltage, touch current and protective conductor current | | N/A |
| 5.7.2 | Measuring devices and networks | | N/A |
| 5.7.2.1 | Measurement of touch current | | N/A |
| 5.7.2.2 | Measurement of voltage | | N/A |
| 5.7.3 | Equipment set-up, supply connections and earth connections | | N/A |
| 5.7.4 | Unearthed accessible parts | (See appended table 5.7.4) | N/A |
| 5.7.5 | Earthed accessible conductive parts | (See appended table 5.7.5) | N/A |
| 5.7.6 | Requirements when touch current exceeds ES2 limits | | N/A |
| | Protective conductor current (mA) | | N/A |
| | Instructional Safeguard..... | | N/A |
| 5.7.7 | Prospective touch voltage and touch current associated with external circuits | | N/A |
| 5.7.7.1 | Touch current from coaxial cables | | N/A |
| 5.7.7.2 | Prospective touch voltage and touch current associated with paired conductor cables | | N/A |
| 5.7.8 | Summation of touch currents from external circuits | | N/A |
| | a) Equipment connected to earthed external circuits, current (mA)..... | | N/A |
| | b) Equipment connected to unearthed external circuits, current (mA)..... | | N/A |
| 5.8 | Backfeed safeguard in battery backed up supplies | | N/A |
| | Mains terminal ES..... | (See appended table 5.8) | N/A |
| | Air gap (mm)..... | | N/A |

| EN 62368-1 | | | |
|------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6 | ELECTRICALLY- CAUSED FIRE | | P |
| 6.2 | Classification of PS and PIS | | P |
| 6.2.2 | Power source circuit classifications | (See appended table 6.2.2) | P |
| 6.2.3 | Classification of potential ignition sources | See the following details. | N/A |
| 6.2.3.1 | Arcing PIS | (See appended table 6.2.3.1) | N/A |
| 6.2.3.2 | Resistive PIS | (See appended table 6.2.3.2) | N/A |
| 6.3 | Safeguards against fire under normal operating and abnormal operating conditions | | P |
| 6.3.1 | No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials..... | (See appended table B.1.5 and B.3) | P |
| | Combustible materials outside fire enclosure | | N/A |
| 6.4 | Safeguards against fire under single fault conditions | | P |
| 6.4.1 | Safeguard method | Method by control of fire spread applied. Fire enclosure provided. | P |
| 6.4.2 | Reduction of the likelihood of ignition under single fault conditions in PS1 circuits | | P |
| 6.4.3 | Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits | | N/A |
| 6.4.3.1 | Supplementary safeguards | | N/A |
| 6.4.3.2 | Single Fault Conditions..... | (See appended table B.4) | P |
| | Special conditions for temperature limited by fuse | | N/A |
| 6.4.4 | Control of fire spread in PS1 circuits | | P |
| 6.4.5 | Control of fire spread in PS2 circuits | | N/A |
| 6.4.5.2 | Supplementary safeguards | | N/A |
| 6.4.6 | Control of fire spread in PS3 circuits | | N/A |
| 6.4.7 | Separation of combustible materials from a PIS | | N/A |
| 6.4.7.2 | Separation by distance | | N/A |
| 6.4.7.3 | Separation by a fire barrier | | N/A |
| 6.4.8 | Fire enclosures and fire barriers | | N/A |
| 6.4.8.2 | Fire enclosure and fire barrier material properties | | N/A |
| 6.4.8.2.1 | Requirements for a fire barrier | | N/A |
| 6.4.8.2.2 | Requirements for a fire enclosure | | N/A |
| 6.4.8.3 | Constructional requirements for a fire enclosure and a fire barrier | | N/A |
| 6.4.8.3.1 | Fire enclosure and fire barrier openings | | N/A |
| 6.4.8.3.2 | Fire barrier dimensions | | N/A |

| EN 62368-1 | | | |
|------------|--|------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.4.8.3.3 | Top openings and properties | | N/A |
| | Openings dimensions (mm) | | N/A |
| 6.4.8.3.4 | Bottom openings and properties | | N/A |
| | Openings dimensions (mm) | | N/A |
| | Flammability tests for the bottom of a fire enclosure | (See Clause S.3) | N/A |
| | Instructional Safeguard..... | | N/A |
| 6.4.8.3.5 | Side openings and properties | | N/A |
| | Openings dimensions (mm) | | N/A |
| 6.4.8.3.6 | Integrity of a fire enclosure, condition met: a), b) or c)..... | | N/A |
| 6.4.8.4 | Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... | | N/A |
| 6.4.9 | Flammability of insulating liquid | | N/A |
| 6.5 | Internal and external wiring | | N/A |
| 6.5.1 | General requirements | | N/A |
| 6.5.2 | Requirements for interconnection to building wiring | | N/A |
| 6.5.3 | Internal wiring size (mm ²) for socket-outlets | | N/A |
| 6.6 | Safeguards against fire due to the connection to additional equipment | | N/A |

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

| | | | |
|------------|--|--|-----|
| 8 | MECHANICALLY-CAUSED INJURY | | P |
| 8.2 | Mechanical energy source classifications | | P |
| 8.3 | Safeguards against mechanical energy sources | | N/A |
| 8.4 | Safeguards against parts with sharp edges and corners | | N/A |
| 8.4.1 | Safeguards | | N/A |
| | Instructional Safeguard..... | | N/A |
| 8.4.2 | Sharp edges or corners | | N/A |

| EN 62368-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.5 | Safeguards against moving parts | | N/A |
| 8.5.1 | Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts | | N/A |
| | MS2 or MS3 part required to be accessible for the function of the equipment | | N/A |
| | Moving MS3 parts only accessible to skilled person | | N/A |
| 8.5.2 | Instructional safeguard | | N/A |
| 8.5.4 | Special categories of equipment containing moving parts | | N/A |
| 8.5.4.1 | General | | N/A |
| 8.5.4.2 | Equipment containing work cells with MS3 parts | | N/A |
| 8.5.4.2.1 | Protection of persons in the work cell | | N/A |
| 8.5.4.2.2 | Access protection override | | N/A |
| 8.5.4.2.2.1 | Override system | | N/A |
| 8.5.4.2.2.2 | Visual indicator | | N/A |
| 8.5.4.2.3 | Emergency stop system | | N/A |
| | Maximum stopping distance from the point of activation (m).....: | | N/A |
| | Space between end point and nearest fixed mechanical part (mm).....: | | N/A |
| 8.5.4.2.4 | Endurance requirements | | N/A |
| | Mechanical system subjected to 100 000 cycles of operation | | N/A |
| | - Mechanical function check and visual inspection | | N/A |
| | - Cable assembly | | N/A |
| 8.5.4.3 | Equipment having electromechanical device for destruction of media | | N/A |
| 8.5.4.3.1 | Equipment safeguards | | N/A |
| 8.5.4.3.2 | Instructional safeguards against moving parts.....: | | N/A |
| 8.5.4.3.3 | Disconnection from the supply | | N/A |
| 8.5.4.3.4 | Cut type and test force (N) | | N/A |
| 8.5.4.3.5 | Compliance | | N/A |
| 8.5.5 | High pressure lamps | | N/A |
| | Explosion test.....: | | N/A |
| 8.5.5.3 | Glass particles dimensions (mm).....: | | N/A |
| 8.6 | Stability of equipment | | P |
| 8.6.1 | General | MS1 appliance | P |

| EN 62368-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Instructional safeguard | | P |
| 8.6.2 | Static stability | | N/A |
| 8.6.2.2 | Static stability test | | N/A |
| 8.6.2.3 | Downward force test | | N/A |
| 8.6.3 | Relocation stability | | N/A |
| | Wheels diameter (mm) | | — |
| | Tilt test | | N/A |
| 8.6.4 | Glass slide test | | N/A |
| 8.6.5 | Horizontal force test | | N/A |
| 8.7 | Equipment mounted to wall, ceiling or other structure | | |
| 8.7.1 | Mount means type | | N/A |
| 8.7.2 | Test methods | | N/A |
| | Test 1, additional downwards force (N) | | N/A |
| | Test 2, number of attachment points and test force (N) | | N/A |
| | Test 3 Nominal diameter (mm) and applied torque (Nm) | | N/A |
| 8.8 | Handles strength | | |
| 8.8.1 | General | | N/A |
| 8.8.2 | Handle strength test | | N/A |
| | Number of handles | | — |
| | Force applied (N) | | — |
| 8.9 | Wheels or casters attachment requirements | | N/A |
| 8.9.2 | Pull test | | N/A |
| 8.10 | Carts, stands and similar carriers | | N/A |
| 8.10.1 | General | | N/A |
| 8.10.2 | Marking and instructions | | N/A |
| 8.10.3 | Cart, stand or carrier loading test | | N/A |
| | Loading force applied (N) | | N/A |
| 8.10.4 | Cart, stand or carrier impact test | | N/A |
| 8.10.5 | Mechanical stability | | N/A |
| | Force applied (N) | | — |
| 8.10.6 | Thermoplastic temperature stability | | N/A |
| 8.11 | Mounting means for slide-rail mounted equipment (SRME) | | N/A |
| 8.11.1 | General | | N/A |
| 8.11.2 | Requirements for slide rails | | N/A |

| EN 62368-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Instructional Safeguard.....: | | N/A |
| 8.11.3 | Mechanical strength test | | N/A |
| 8.11.3.1 | Downward force test, force (N) applied | | N/A |
| 8.11.3.2 | Lateral push force test | | N/A |
| 8.11.3.3 | Integrity of slide rail end stops | | N/A |
| 8.11.4 | Compliance | | N/A |
| 8.12 | Telescoping or rod antennas | | N/A |
| | Button/ball diameter (mm) | | — |

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|------------|---|--------------------------|-----|
| 9 | THERMAL BURN INJURY | | P |
| 9.2 | Thermal energy source classifications | | P |
| 9.3 | Touch temperature limits | | P |
| 9.3.1 | Touch temperatures of accessible parts | (See appended table) | P |
| 9.3.2 | Test method and compliance | | P |
| 9.4 | Safeguards against thermal energy sources | | N/A |
| 9.5 | Requirements for safeguards | | N/A |
| 9.5.1 | Equipment safeguard | | N/A |
| 9.5.2 | Instructional safeguard | | N/A |
| 9.6 | Requirements for wireless power transmitters | | N/A |
| 9.6.1 | General | | N/A |
| 9.6.2 | Specification of the foreign objects | | N/A |
| 9.6.3 | Test method and compliance | (See appended table 9.6) | N/A |

| | | | |
|-------------|---|------|-----|
| 10 | RADIATION | | P |
| 10.2 | Radiation energy source classification | | P |
| 10.2.1 | General classification | | P |
| | Lasers.....: | | — |
| | Lamps and lamp systems | LEDs | — |
| | Image projectors.....: | | — |
| | X-Ray.....: | | — |
| | Personal music player | | — |
| 10.3 | Safeguards against laser radiation | | N/A |
| | The standard(s) equipment containing laser(s) comply | | N/A |
| 10.4 | Safeguards against optical radiation from lamps and lamp systems (including LED types) | | P |

| EN 62368-1 | | | |
|-------------|---|---------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 10.4.1 | General requirements | | P |
| | Instructional safeguard provided for accessible radiation level needs to exceed | | P |
| | Risk group marking and location.....: | | P |
| | Information for safe operation and installation | | P |
| 10.4.2 | Requirements for enclosures | | N/A |
| | UV radiation exposure | (See Annex C) | N/A |
| 10.4.3 | Instructional safeguard | | N/A |
| 10.5 | Safeguards against X-radiation | | N/A |
| 10.5.1 | Requirements | | N/A |
| | Instructional safeguard for skilled persons.....: | | — |
| 10.5.3 | Maximum radiation (pA/kg).....: | (See appended tables B.3 & B.4) | — |
| 10.6 | Safeguards against acoustic energy sources | | N/A |
| 10.6.1 | General | | N/A |
| 10.6.2 | Classification | | N/A |
| | Acoustic output $L_{Aeq,T}$, dB(A) | | N/A |
| | Unweighted RMS output voltage (mV) | | N/A |
| | Digital output signal (dBFS).....: | | N/A |
| 10.6.3 | Requirements for dose-based systems | | N/A |
| 10.6.3.1 | General requirements | | N/A |
| 10.6.3.2 | Dose-based warning and automatic decrease | | N/A |
| 10.6.3.3 | Exposure-based warning and requirements | | N/A |
| | 30 s integrated exposure level (MEL30).....: | | N/A |
| | Warning for MEL ≥ 100 dB(A).....: | | N/A |
| 10.6.4 | Measurement methods | | N/A |
| 10.6.5 | Protection of persons | | N/A |
| | Instructional safeguards.....: | | N/A |
| 10.6.6 | Requirements for listening devices (headphones, earphones, etc.) | | N/A |
| 10.6.6.1 | Corded listening devices with analogue input | | N/A |
| | Listening device input voltage (mV) | | N/A |
| 10.6.6.2 | Corded listening devices with digital input | | N/A |
| | Max. acoustic output $L_{Aeq,T}$, dB(A) | | N/A |
| 10.6.6.3 | Cordless listening devices | | N/A |
| | Max. acoustic output $L_{Aeq,T}$, dB(A) | | N/A |

| EN 62368-1 | | | |
|------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| B | NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS | | P |
| B.1 | General | | P |
| B.1.5 | Temperature measurement conditions | (See appended table B.1.5) | P |
| B.2 | Normal operating conditions | | P |
| B.2.1 | General requirements | (See Test Item Particulars and appended test tables) | P |
| | Audio Amplifiers and equipment with audio amplifiers | (See Annex E) | N/A |
| B.2.3 | Supply voltage and tolerances | | N/A |
| B.2.5 | Input test..... | (See appended table B.2.5) | P |
| B.3 | Simulated abnormal operating conditions | | P |
| B.3.1 | General | | P |
| B.3.2 | Covering of ventilation openings | | P |
| | Instructional safeguard | | P |
| B.3.3 | DC mains polarity test | | N/A |
| B.3.4 | Setting of voltage selector | | N/A |
| B.3.5 | Maximum load at output terminals | (See appended tables B.3, B.4) | P |
| B.3.6 | Reverse battery polarity | | N/A |
| B.3.7 | Audio amplifier abnormal operating conditions | | N/A |
| B.3.8 | Safeguards functional during and after abnormal operating conditions..... | (See appended table B.3) | P |
| B.4 | Simulated single fault conditions | | P |
| B.4.1 | General | | P |
| B.4.2 | Temperature controlling device | | N/A |
| B.4.3 | Blocked motor test | | N/A |
| B.4.4 | Functional insulation | | P |
| 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 | | P |
| B.4.4.3 | Short circuit of functional insulation on coated printed boards | | P |
| B.4.5 | Short-circuit and interruption of electrodes in tubes and semiconductors | | N/A |
| B.4.6 | Short circuit or disconnection of passive components | | N/A |
| B.4.7 | Continuous operation of components | | P |

| EN 62368-1 | | | |
|------------|---|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| B.4.8 | Compliance during and after single fault conditions | (See appended table B.4) | P |
| B.4.9 | Battery charging and discharging under single fault conditions | (See Annex M) | N/A |
| C | UV RADIATION | | N/A |
| C.1 | Protection of materials in equipment from UV radiation | | N/A |
| C.1.2 | Requirements | | N/A |
| C.1.3 | Test method | | N/A |
| C.2 | UV light conditioning test | | N/A |
| C.2.1 | Test apparatus..... | | N/A |
| C.2.2 | Mounting of test samples | | N/A |
| C.2.3 | Carbon-arc light-exposure test | | N/A |
| C.2.4 | Xenon-arc light-exposure test | | N/A |
| D | TEST GENERATORS | | N/A |
| D.1 | Impulse test generators | | N/A |
| D.2 | Antenna interface test generator | | N/A |
| D.3 | Electronic pulse generator | | N/A |
| E | TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS | | N/A |
| E.1 | Electrical energy source classification for audio signals | | N/A |
| | Maximum non-clipped output power (W) | | — |
| | Rated load impedance (Ω) | | — |
| | Open-circuit output voltage (V) | | — |
| | Instructional safeguard | See Clause F.5 | — |
| E.2 | Audio amplifier normal operating conditions | | |
| | Audio signal source type..... | | — |
| | Audio output power (W)..... | | — |
| | Audio output voltage (V) | | — |
| | Rated load impedance (Ω) | | — |
| | Requirements for temperature measurement | (See Table B.1.5) | N/A |
| E.3 | Audio amplifier abnormal operating conditions | (See Table B.3, B.4) | N/A |
| F | EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS | | P |
| F.1 | General | | P |
| | Language | English | — |
| F.2 | Letter symbols and graphical symbols | | P |
| F.2.1 | Letter symbols according to IEC60027-1 | | N/A |

| EN 62368-1 | | | |
|------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| F.2.2 | Graphic symbols according to IEC, ISO or manufacturer specific | Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010. | P |
| F.3 | Equipment markings | | P |
| F.3.1 | Equipment marking locations | Equipment marking is located on the enclosure surface and is easily visible. | P |
| F.3.2 | Equipment identification markings | See marking plate | P |
| F.3.2.1 | Manufacturer identification | See marking plate | P |
| F.3.2.2 | Model identification | See marking plate | P |
| F.3.3 | Equipment rating markings | See marking plate | P |
| F.3.3.1 | Equipment with direct connection to mains | | N/A |
| F.3.3.2 | Equipment without direct connection to mains | | P |
| F.3.3.3 | Nature of the supply voltage | See marking plate | P |
| F.3.3.4 | Rated voltage | See marking plate | P |
| F.3.3.5 | Rated frequency | | N/A |
| F.3.3.6 | Rated current or rated power | See marking plate | P |
| F.3.3.7 | Equipment with multiple supply connections | | N/A |
| F.3.4 | Voltage setting device | | N/A |
| F.3.5 | Terminals and operating devices | | N/A |
| F.3.5.1 | Mains appliance outlet and socket-outlet markings | | N/A |
| F.3.5.2 | Switch position identification marking | | N/A |
| F.3.5.3 | Replacement fuse identification and rating markings | | N/A |
| | Instructional safeguards for neutral fuse | | N/A |
| F.3.5.4 | Replacement battery identification marking | | N/A |
| F.3.5.5 | Neutral conductor terminal | | N/A |
| F.3.5.6 | Terminal marking location | | N/A |
| F.3.6 | Equipment markings related to equipment classification | | N/A |
| F.3.6.1 | Class I equipment | | N/A |
| F.3.6.1.1 | Protective earthing conductor terminal | | N/A |
| F.3.6.1.2 | Protective bonding conductor terminals | | N/A |
| F.3.6.2 | Equipment class marking | | N/A |
| F.3.6.3 | Functional earthing terminal marking | | N/A |
| F.3.7 | Equipment IP rating marking | | N/A |

| EN 62368-1 | | | |
|------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| F.3.8 | External power supply output marking.....: | | N/A |
| F.3.9 | Durability, legibility and permanence of marking | All markings required are easily discernible under normal lighting conditions. | P |
| F.3.10 | Test for permanence of markings | After rubbing test by water and petroleum spirit, the marking still legible; it is not easily possible to remove the marking plate and show no curling. | P |
| F.4 | Instructions | | P |
| | a) Information prior to installation and initial use | | N/A |
| | b) Equipment for use in locations where children not likely to be present | | P |
| | c) Instructions for installation and interconnection | | N/A |
| | d) Equipment intended for use only in restricted access area | | N/A |
| | e) Equipment intended to be fastened in place | | N/A |
| | f) Instructions for audio equipment terminals | | N/A |
| | g) Protective earthing used as a safeguard | | N/A |
| | h) Protective conductor current exceeding ES2 limits | | N/A |
| | i) Graphic symbols used on equipment | | N/A |
| | j) Permanently connected equipment not provided with all-pole mains switch | | N/A |
| | k) Replaceable components or modules providing safeguard function | | N/A |
| | l) Equipment containing insulating liquid | | N/A |
| | m) Installation instructions for outdoor equipment | | N/A |
| F.5 | Instructional safeguards | | P |
| G | COMPONENTS | | P |
| G.1 | Switches | | N/A |
| G.1.1 | General | | N/A |
| G.1.2 | Ratings, endurance, spacing, maximum load | | N/A |
| G.1.3 | Test method and compliance | | N/A |
| G.2 | Relays | | N/A |
| G.2.1 | Requirements | | N/A |
| G.2.2 | Overload test | | N/A |
| G.2.3 | Relay controlling connectors supplying power to other equipment | | N/A |

| EN 62368-1 | | | |
|------------|--|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.2.4 | Test method and compliance | | N/A |
| G.3 | Protective devices | | N/A |
| G.3.1 | Thermal cut-offs | | N/A |
| | Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b) | | N/A |
| | Thermal cut-outs tested as part of the equipment as indicated in c) | | N/A |
| G.3.1.2 | Test method and compliance | | N/A |
| G.3.2 | Thermal links | | N/A |
| G.3.2.1 | a) Thermal links tested separately according to IEC 60691 with specifics | | N/A |
| | b) Thermal links tested as part of the equipment | | N/A |
| G.3.2.2 | Test method and compliance | | N/A |
| G.3.3 | PTC thermistors | | N/A |
| G.3.4 | Overcurrent protection devices | | N/A |
| G.3.5 | Safeguards components not mentioned in G.3.1 to G.3.4 | | N/A |
| G.3.5.1 | Non-resettable devices suitably rated and marking provided | | N/A |
| G.3.5.2 | Single faults conditions | (See appended table B.4) | N/A |
| G.4 | Connectors | | N/A |
| G.4.1 | Spacings | | 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 | | N/A |
| G.5.1.2 | Protection against mechanical stress | | N/A |
| G.5.2 | Endurance test | | N/A |
| G.5.2.1 | General test requirements | | N/A |
| G.5.2.2 | Heat run test | | N/A |
| | Test time (days per cycle)..... | | — |
| | Test temperature (°C) | | — |
| G.5.2.3 | Wound components supplied from the mains | | N/A |
| G.5.2.4 | No insulation breakdown | | N/A |
| G.5.3 | Transformers | | N/A |
| G.5.3.1 | Compliance method..... | | N/A |
| | Position..... | | N/A |

| EN 62368-1 | | | |
|------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Method of protection | | N/A |
| G.5.3.2 | Insulation | | N/A |
| | Protection from displacement of windings | | — |
| G.5.3.3 | Transformer overload tests | | N/A |
| G.5.3.3.1 | Test conditions | | N/A |
| G.5.3.3.2 | Winding temperatures | | N/A |
| G.5.3.3.3 | Winding temperatures - alternative test method | | N/A |
| G.5.3.4 | Transformers using FIW | | N/A |
| G.5.3.4.1 | General | | N/A |
| | FIW wire nominal diameter | | — |
| G.5.3.4.2 | Transformers with basic insulation only | | N/A |
| G.5.3.4.3 | Transformers with double insulation or reinforced insulation | | N/A |
| G.5.3.4.4 | Transformers with FIW wound on metal or ferrite core | | N/A |
| G.5.3.4.5 | Thermal cycling test and compliance | | N/A |
| G.5.3.4.6 | Partial discharge test | | N/A |
| G.5.3.4.7 | Routine test | | N/A |
| G.5.4 | Motors | | N/A |
| G.5.4.1 | General requirements | | N/A |
| G.5.4.2 | Motor overload test conditions | | N/A |
| G.5.4.3 | Running overload test | | N/A |
| G.5.4.4.2 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | — |
| G.5.4.5 | Running overload test for DC motors | | N/A |
| G.5.4.5.2 | Tested in the unit | | N/A |
| G.5.4.5.3 | Alternative method | | N/A |
| G.5.4.6 | Locked-rotor overload test for DC motors | | N/A |
| G.5.4.6.2 | Tested in the unit | | N/A |
| | Maximum Temperature | | N/A |
| G.5.4.6.3 | Alternative method | | N/A |
| G.5.4.7 | Motors with capacitors | | N/A |
| G.5.4.8 | Three-phase motors | | N/A |
| G.5.4.9 | Series motors | | N/A |
| | Operating voltage | | — |
| G.6 | Wire Insulation | | N/A |

| EN 62368-1 | | | |
|------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.6.1 | General | | N/A |
| G.6.2 | Enamelled winding wire insulation | | N/A |
| G.7 | Mains supply cords | | N/A |
| G.7.1 | General requirements | | N/A |
| | Type.....: | | — |
| G.7.2 | Cross sectional area (mm ² or AWG).....: | | N/A |
| G.7.3 | Cord anchorages and strain relief for non-detachable power supply cords | | N/A |
| G.7.3.2 | Cord strain relief | | N/A |
| G.7.3.2.1 | Requirements | | N/A |
| | Strain relief test force (N).....: | | N/A |
| G.7.3.2.2 | Strain relief mechanism failure | | N/A |
| G.7.3.2.3 | Cord sheath or jacket position, distance (mm).....: | | N/A |
| G.7.3.2.4 | Strain relief and cord anchorage material | | N/A |
| G.7.4 | Cord Entry | | N/A |
| G.7.5 | Non-detachable cord bend protection | | N/A |
| G.7.5.1 | Requirements | | N/A |
| G.7.5.2 | Test method and compliance | | N/A |
| | Overall diameter or minor overall dimension, <i>D</i> (mm).....: | | — |
| | Radius of curvature after test (mm).....: | | — |
| G.7.6 | Supply wiring space | | N/A |
| G.7.6.1 | General requirements | | N/A |
| G.7.6.2 | Stranded wire | | N/A |
| G.7.6.2.1 | Requirements | | N/A |
| G.7.6.2.2 | Test with 8 mm strand | | N/A |
| G.8 | Varistors | | N/A |
| G.8.1 | General requirements | | N/A |
| G.8.2 | Safeguards against fire | | N/A |
| G.8.2.1 | General | | N/A |
| G.8.2.2 | Varistor overload test | | N/A |
| G.8.2.3 | Temporary overvoltage test | | N/A |
| G.9 | Integrated circuit (IC) current limiters | | N/A |
| G.9.1 | Requirements | | N/A |
| | IC limiter output current (max. 5A).....: | | — |
| | Manufacturers' defined drift.....: | | — |

| EN 62368-1 | | | |
|-------------|---|------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.9.2 | Test Program | | N/A |
| G.9.3 | Compliance | | N/A |
| G.10 | Resistors | | N/A |
| G.10.1 | General | | N/A |
| G.10.2 | Conditioning | | N/A |
| G.10.3 | Resistor test | | N/A |
| G.10.4 | Voltage surge test | | N/A |
| G.10.5 | Impulse test | | N/A |
| G.10.6 | Overload test | | N/A |
| G.11 | Capacitors and RC units | | N/A |
| G.11.1 | General requirements | | N/A |
| G.11.2 | Conditioning of capacitors and RC units | | N/A |
| G.11.3 | Rules for selecting capacitors | | N/A |
| G.12 | Optocouplers | | N/A |
| | Optocouplers comply with IEC 60747-5-5 with specifics | | N/A |
| | Type test voltage $V_{ini,a}$: | | — |
| | Routine test voltage, $V_{ini,b}$: | | — |
| G.13 | Printed boards | | P |
| G.13.1 | General requirements | | P |
| G.13.2 | Uncoated printed boards | | P |
| G.13.3 | Coated printed boards | | N/A |
| G.13.4 | Insulation between conductors on the same inner surface | | N/A |
| G.13.5 | Insulation between conductors on different surfaces | | N/A |
| | Distance through insulation | | N/A |
| | Number of insulation layers (pcs) | | — |
| G.13.6 | Tests on coated printed boards | | N/A |
| G.13.6.1 | Sample preparation and preliminary inspection | | N/A |
| G.13.6.2 | Test method and compliance | | N/A |
| G.14 | Coating on components terminals | | N/A |
| G.14.1 | Requirements | (See ClauseG.13) | N/A |
| G.15 | Pressurized liquid filled components | | N/A |
| G.15.1 | Requirements | | N/A |
| G.15.2 | Test methods and compliance | | N/A |
| G.15.2.1 | Hydrostatic pressure test | | N/A |

| EN 62368-1 | | | |
|-------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.15.2.2 | Creep resistance test | | N/A |
| G.15.2.3 | Tubing and fittings compatibility test | | N/A |
| G.15.2.4 | Vibration test | | N/A |
| G.15.2.5 | Thermal cycling test | | N/A |
| G.15.2.6 | Force test | | N/A |
| G.15.3 | Compliance | | N/A |
| G.16 | IC including capacitor discharge function (ICX) | | N/A |
| G.16.1 | Condition for fault tested is not required | | N/A |
| | ICX with associated circuitry tested in equipment | | N/A |
| | ICX tested separately | | N/A |
| G.16.2 | Tests | | N/A |
| | Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test | | — |
| | Mains voltage that impulses to be superimposed on | | — |
| | Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test | | — |
| G.16.3 | Capacitor discharge test | | N/A |
| H | CRITERIA FOR TELEPHONE RINGING SIGNALS | | N/A |
| H.1 | General | | N/A |
| H.2 | Method A | | N/A |
| H.3 | Method B | | N/A |
| H.3.1 | Ringing signal | | N/A |
| H.3.1.1 | Frequency (Hz) | | — |
| H.3.1.2 | Voltage (V) | | — |
| H.3.1.3 | Cadence; time (s) and voltage (V) | | — |
| H.3.1.4 | Single fault current (mA): | | — |
| H.3.2 | Tripping device and monitoring voltage | | N/A |
| H.3.2.1 | Conditions for use of a tripping device or a monitoring voltage | | N/A |
| H.3.2.2 | Tripping device | | N/A |
| H.3.2.3 | Monitoring voltage (V)..... | | N/A |
| J | INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION | | N/A |
| J.1 | General | | N/A |
| | Winding wire insulation | | — |
| | Solid round winding wire, diameter (mm)..... | | N/A |

| EN 62368-1 | | | |
|----------------|---|----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²) | | N/A |
| J.2/J.3 | Tests and Manufacturing | (See separate test report) | — |
| K | SAFETY INTERLOCKS | | N/A |
| K.1 | General requirements | | N/A |
| | Instructional safeguard | | N/A |
| K.2 | Components of safety interlock safeguard mechanism | | N/A |
| K.3 | Inadvertent change of operating mode | | N/A |
| K.4 | Interlock safeguard override | | N/A |
| K.5 | Fail-safe | | N/A |
| K.5.1 | Under single fault condition | | N/A |
| K.6 | Mechanically operated safety interlocks | | N/A |
| K.6.1 | Endurance requirement | | N/A |
| K.6.2 | Test method and compliance..... | | N/A |
| K.7 | Interlock circuit isolation | | N/A |
| K.7.1 | Separation distance for contact gaps & interlock circuit elements | | N/A |
| | In circuit connected to mains, separation distance for contact gaps (mm) | | N/A |
| | In circuit isolated from mains, separation distance for contact gaps (mm) | | N/A |
| | Electric strength test before and after the test of K.7.2 | (See appended table 5.4.9) | 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 | | 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 |
| | Instructional safeguard | | N/A |

| EN 62368-1 | | | |
|------------|--|----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| M | EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS | | N/A |
| M.1 | General requirements | | N/A |
| M.2 | Safety of batteries and their cells | | N/A |
| M.2.1 | Batteries and their cells comply with relevant IEC standards.....: | | N/A |
| M.3 | Protection circuits for batteries provided within the equipment | | N/A |
| M.3.1 | Requirements | | N/A |
| M.3.2 | Test method | | N/A |
| | Overcharging of a rechargeable battery | | N/A |
| | Excessive discharging | | N/A |
| | Unintentional charging of a non-rechargeable battery | | N/A |
| | Reverse charging of a rechargeable battery | | N/A |
| M.3.3 | Compliance | (See appended table M.3) | N/A |
| M.4 | Additional safeguards for equipment containing a portable secondary lithium battery | | N/A |
| M.4.1 | General | | N/A |
| M.4.2 | Charging safeguards | | N/A |
| M.4.2.1 | Requirements | | N/A |
| M.4.2.2 | Compliance.....: | (See appended table M.4.2) | N/A |
| M.4.3 | Fire enclosure.....: | | N/A |
| M.4.4 | Drop test of equipment containing a secondary lithium battery | | N/A |
| M.4.4.2 | Preparation and procedure for the drop test | | N/A |
| M.4.4.3 | Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): | | N/A |
| M.4.4.4 | Check of the charge/discharge function | | N/A |
| M.4.4.5 | Charge / discharge cycle test | | N/A |
| M.4.4.6 | Compliance | | N/A |
| M.5 | Risk of burn due to short-circuit during carrying | | |
| M.5.1 | Requirement | | N/A |
| M.5.2 | Test method and compliance | | N/A |
| M.6 | Safeguards against short-circuits | | |
| M.6.1 | External and internal faults | | N/A |
| M.6.2 | Compliance | | N/A |
| M.7 | Risk of explosion from lead acid and NiCd batteries | | |
| M.7.1 | Ventilation preventing explosive gas concentration | | N/A |

| EN 62368-1 | | | |
|-------------|---|---------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Calculated hydrogen generation rate.....: | | N/A |
| M.7.2 | Test method and compliance | | N/A |
| | Minimum air flow rate, Q (m ³ /h) | | N/A |
| M.7.3 | Ventilation tests | | N/A |
| M.7.3.1 | General | | N/A |
| M.7.3.2 | Ventilation test – alternative 1 | | N/A |
| | Hydrogen gas concentration (%) | | N/A |
| M.7.3.3 | Ventilation test – alternative 2 | | N/A |
| | Obtained hydrogen generation rate | | N/A |
| M.7.3.4 | Ventilation test – alternative 3 | | N/A |
| | Hydrogen gas concentration (%) | | N/A |
| M.7.4 | Marking.....: | | N/A |
| M.8 | Protection against internal ignition from external spark sources of batteries with aqueous electrolyte | | N/A |
| M.8.1 | General | | N/A |
| M.8.2 | Test method | | N/A |
| M.8.2.1 | General | | N/A |
| M.8.2.2 | Estimation of hypothetical volume V _z (m ³ /s) | | — |
| M.8.2.3 | Correction factors | | — |
| M.8.2.4 | Calculation of distance d (mm) | | — |
| M.9 | Preventing electrolyte spillage | | N/A |
| M.9.1 | Protection from electrolyte spillage | | N/A |
| M.9.2 | Tray for preventing electrolyte spillage | | N/A |
| M.10 | Instructions to prevent reasonably foreseeable misuse | | N/A |
| | Instructional safeguard | | N/A |
| N | ELECTROCHEMICAL POTENTIALS | | N/A |
| | Material(s) used.....: | | — |
| O | MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES | | N/A |
| | Value of X (mm).....: | | — |
| P | SAFEGUARDS AGAINST CONDUCTIVE OBJECTS | | N/A |
| P.1 | General | No openings of enclosure. | N/A |
| P.2 | Safeguards against entry or consequences of entry of a foreign object | | N/A |
| P.2.1 | General | | N/A |
| P.2.2 | Safeguards against entry of a foreign object | | N/A |
| | Location and Dimensions (mm) | | — |

| EN 62368-1 | | | |
|------------|---|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| P.2.3 | Safeguards against the consequences of entry of a foreign object | | N/A |
| P.2.3.1 | Safeguard requirements | | N/A |
| | The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment | | N/A |
| | Transportable equipment with metalized plastic parts.....: | | N/A |
| P.2.3.2 | Consequence of entry test.....: | | N/A |
| P.3 | Safeguards against spillage of internal liquids | | N/A |
| P.3.1 | General | | N/A |
| P.3.2 | Determination of spillage consequences | | N/A |
| P.3.3 | Spillage safeguards | | N/A |
| P.3.4 | Compliance | | N/A |
| P.4 | Metallized coatings and adhesives securing parts | | N/A |
| P.4.1 | General | | N/A |
| P.4.2 | Tests | | N/A |
| | Conditioning, Tc (°C) | | — |
| | Duration (weeks).....: | | — |
| Q | CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING | | N/A |
| Q.1 | Limited power sources | | N/A |
| Q.1.1 | Requirements | | N/A |
| | a) Inherently limited output | | N/A |
| | b) Impedance limited output | | N/A |
| | c) Regulating network limited output | | N/A |
| | d) Overcurrent protective device limited output | | N/A |
| | e) IC current limiter complying with G.9 | | N/A |
| Q.1.2 | Test method and compliance.....: | (See appended table Q.1) | N/A |
| | Current rating of overcurrent protective device (A) | | N/A |
| Q.2 | Test for external circuits – paired conductor cable | | N/A |
| | Maximum output current (A) | | N/A |
| | Current limiting method.....: | | — |
| R | LIMITED SHORT CIRCUIT TEST | | N/A |
| R.1 | General | | N/A |
| R.2 | Test setup | | N/A |
| | Overcurrent protective device for test.....: | | — |

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

| EN 62368-1 | | | |
|-------------|---|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Fall test | | N/A |
| | Swing test | | N/A |
| T.7 | Drop test | (See appended table T.7) | P |
| T.8 | Stress relief test | (See appended table T.8) | N/A |
| T.9 | Glass Impact Test | (See appended table T.9) | N/A |
| T.10 | Glass fragmentation test | | N/A |
| | Number of particles counted | | N/A |
| T.11 | Test for telescoping or rod antennas | | N/A |
| | Torque value (Nm) | | N/A |
| U | MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION | | N/A |
| U.1 | General | | N/A |
| | Instructional safeguard : | | N/A |
| U.2 | Test method and compliance for non-intrinsically protected CRTs | | N/A |
| U.3 | Protective screen | | N/A |
| V | DETERMINATION OF ACCESSIBLE PARTS | | N/A |
| V.1 | Accessible parts of equipment | | N/A |
| V.1.1 | General | | N/A |
| V.1.2 | Surfaces and openings tested with jointed test probes | | N/A |
| V.1.3 | Openings tested with straight unjointed test probes | | N/A |
| V.1.4 | Plugs, jacks, connectors tested with blunt probe | | N/A |
| V.1.5 | Slot openings tested with wedge probe | | N/A |
| V.1.6 | Terminals tested with rigid test wire | | N/A |
| V.2 | Accessible part criterion | | N/A |
| X | ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS) | | N/A |
| | Clearance | (See appended table X) | N/A |
| Y | CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES | | N/A |
| Y.1 | General | | N/A |
| Y.2 | Resistance to UV radiation | | N/A |
| Y.3 | Resistance to corrosion | | N/A |
| Y.3 | Resistance to corrosion | | N/A |
| Y.3.1 | Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by | | N/A |
| Y.3.2 | Test apparatus | | N/A |

| EN 62368-1 | | | |
|------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| Y.3.3 | Water – saturated sulphur dioxide atmosphere | | N/A |
| Y.3.4 | Test procedure | | N/A |
| Y.3.5 | Compliance | | N/A |
| Y.4 | Gaskets | | N/A |
| Y.4.1 | General | | N/A |
| Y.4.2 | Gasket tests | | N/A |
| Y.4.3 | Tensile strength and elongation tests | | N/A |
| | Alternative test methods | | N/A |
| Y.4.4 | Compression test | | N/A |
| Y.4.5 | Oil resistance | | N/A |
| Y.4.6 | Securing means | (See Annex P.4) | N/A |
| Y.5 | Protection of equipment within an outdoor enclosure | | N/A |
| Y.5.1 | General | | N/A |
| Y.5.2 | Protection from moisture | | N/A |
| | Relevant tests of IEC 60529 or Y.5.3..... | | N/A |
| Y.5.3 | Water spray test | | N/A |
| Y.5.4 | Protection from plants and vermin | | N/A |
| Y.5.5 | Protection from excessive dust | | N/A |
| Y.5.5.1 | General | | N/A |
| Y.5.5.2 | IP5X equipment | | N/A |
| Y.5.5.3 | IP6X equipment | | N/A |
| Y.6 | Mechanical strength of enclosures | | N/A |
| Y.6.1 | General | | N/A |
| Y.6.2 | Impact test | (See Table T.6) | N/A |

| EN 62368-1 | | | | | | | |
|---|---|-----------------|------------|-----------------|--------------------|-------------------------------|----------|
| Clause | Requirement + Test | | | Result - Remark | | | Verdict |
| 5.2 | TABLE: Classification of electrical energy sources | | | | | | P |
| Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | | ES Class |
| | | | U (V) | I (mA) | Type ¹⁾ | Additional Info ²⁾ | |
| 9Vdc | -- | -- | 9Vdc | -- | -- | -- | ES1 |
| Supplementary information: | | | | | | | |
| 1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc; | | | | | | | |
| 2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc. | | | | | | | |

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

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

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

| 5.4.2, 5.4.3 | TABLE: Minimum Clearances/Creepage distance | | | | | | | N/A |
|---|--|----------------------|-------------------------|------------------|---------|------------------------|------------------|---------|
| Clearance (cl) and creepage distance (cr) at/of/between: | U _p (V) | U _{rms} (V) | Freq ¹⁾ (Hz) | Required cl (mm) | cl (mm) | E.S. ²⁾ (V) | Required cr (mm) | cr (mm) |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Supplementary information: | | | | | | | | |
| 1) Only for frequency above 30 kHz | | | | | | | | |
| 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied) | | | | | | | | |

| EN 62368-1 | | | | |
|---|---|-----------------|-------------------|-------------------|
| Clause | Requirement + Test | Result - Remark | Verdict | |
| 5.4.4.2 | TABLE: Minimum distance through insulation | | | N/A |
| Distance through insulation (DTI) at/of | Peak voltage (V) | Insulation | Required DTI (mm) | Measured DTI (mm) |
| -- | -- | -- | -- | -- |
| Supplementary information: | | | | |

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

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

| 5.5.2.2 | TABLE: Stored discharge on capacitors | | | | N/A |
|---|--|---|-----------------|------------------------|----------|
| Location | Supply voltage (V) | Operating and fault condition ¹⁾ | Switch position | Measured voltage (Vpk) | ES Class |
| -- | -- | -- | -- | -- | -- |
| Supplementary information: X-capacitors installed for testing: <input type="checkbox"/> bleeding resistor rating; <input type="checkbox"/> ICX: 1) Normal operating condition (e.g., normal operation, or open fuse), SC= short circuit, OC= open circuit | | | | | |

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

| 5.7.4 | TABLE: Unearthed accessible parts | | | | N/A | |
|--------------|--|--------------------|-----------------------------------|-----------------------------------|------------|----------|
| Location | Operating and fault conditions | Supply Voltage (V) | Parameters | | | ES class |
| | | | Voltage (V_{rms} or V_{pk}) | Current (A_{rms} or A_{pk}) | Freq. (Hz) | |
| -- | -- | -- | -- | -- | -- | -- |

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

Supplementary information:
Abbreviation: SC= short circuit; OC= open circuit

| 5.7.5 | TABLE: Earthed accessible conductive part | | | N/A |
|---------------------------------|--|--------------------|---------|-----|
| Supply voltage (V) | | | | — |
| Phase(s) | <input type="checkbox"/> Single Phase; <input type="checkbox"/> Three Phase: <input type="checkbox"/> Delta <input type="checkbox"/> Wye | | | |
| Power Distribution System | <input type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT | | | |
| Location | Fault Condition No in IEC 60990 clause 6.2.2 | Touch current (mA) | Comment | |
| -- | -- | -- | -- | |

Supplementary Information:

| 5.8 | TABLE: Backfeed safeguard in battery backed up supplies | | | | | N/A |
|----------|---|-------------------------------|----------|--------------------------|-------------------|----------|
| Location | Supply voltage (V) | Operating and fault condition | Time (s) | Open-circuit voltage (V) | Touch current (A) | ES Class |
| -- | -- | -- | -- | -- | -- | -- |

Supplementary information: Abbreviation: SC= short circuit, OC= open circuit

| 6.2.2 | TABLE: Power source circuit classifications | | | | | P |
|-----------------|---|-------------|-------------|------------------------------|----------|----------|
| Location | Operating and fault condition | Voltage (V) | Current (A) | Max. Power ¹⁾ (W) | Time (S) | PS class |
| All the circuit | Normal condition | 9 | 1.62 | 14.6 | 3 | PS1 |

Supplementary information: Abbreviation: SC= short circuit; OC= open circuit
1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.

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

Supplementary information:

| 6.2.3.2 | TABLE: Determination of resistive PIS | | | N/A |
|----------|---------------------------------------|---------------------|----------------------|-----|
| Location | Operating and fault condition | Dissipate power (W) | Arcing PIS? Yes / No | |
| -- | -- | -- | -- | |

Supplementary information: Abbreviation: SC= short circuit; OC= open circuit

| EN 62368-1 | | | | |
|----------------------------|----------------------------------|------------------|-------------------------------------|------------------------------------|
| Clause | Requirement + Test | Result - Remark | Verdict | |
| 8.5.5 | TABLE: High pressure lamp | | | N/A |
| Lamp manufacturer | Lamp type | Explosion method | Longest axis of glass particle (mm) | Particle found beyond 1 m Yes / No |
| -- | -- | -- | -- | -- |
| Supplementary information: | | | | |

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

| | | | | | | | | |
|---|--|--------------------|------------|--------------------|----------|------------------------|------------------------|---|
| 5.4.1.4, 9.3, B.1.5, B.2.6 | TABLE: Temperature measurements | | | | | | | P |
| Supply voltage (V)..... : | -- | 9V | -- | -- | | | — | |
| Ambient temperature during test T_{amb} (°C) : | -- | 35.0 | -- | -- | | | — | |
| Maximum measured temperature T of part/at: | T (°C) | | | | | | Allowed T_{max} (°C) | |
| Input wire | -- | 37.4 | -- | -- | | | 80 | |
| Wireless charging winding | -- | 66.4 | -- | -- | | | 130 | |
| PCB near capacitance | -- | 59.1 | -- | -- | | | 100 | |
| PCB near U1 | -- | 60.2 | -- | -- | | | 100 | |
| Enclosure inside | -- | 51.7 | -- | -- | | | 85 | |
| Enclosure outside | -- | 49.1 | -- | -- | | | 60 | |
| Ambient | -- | 35.0 | -- | -- | | | -- | |
| 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: | | | | | | | | |

| EN 62368-1 | | | | | | | | |
|----------------------------|--------------------------|-------|-------------|-------|-------------|---------|-----------------|------------------|
| Clause | Requirement + Test | | | | | | Result - Remark | Verdict |
| B.2.5 | TABLE: Input test | | | | | | | P |
| U (V) | Hz | I (A) | I rated (A) | P (W) | P rated (W) | Fuse No | I fuse (A) | Condition/status |
| 9 | -- | 1.62 | 2 | 14.6 | 18 | -- | -- | Normalcondition |
| Supplementary information: | | | | | | | | |

| B.3, B.4 | TABLE: Abnormal operating and fault condition tests | | | | | | P |
|---|--|--------------------|-----------|----------|------------------|---|----------|
| Ambient temperature T _{amb} (°C).....: | | | | | | | — |
| Power source for EUT: Manufacturer, model/type, outputrating....: | | | | | | | — |
| Component No. | Condition | Supply voltage (V) | Test time | Fuse no. | Fuse current (A) | Observation | |
| U1 1-2 | SC | 9 | 10mins | -- | -- | Unit shut down immediately, no damaged, no hazards. | |
| Supplementary information: S-C=Short circuit | | | | | | | |

| M.3 | TABLE: Protection circuits for batteries provided within the equipment | | | | | | N/A |
|---|---|------------------------------------|------------------------|-------------|-------------------------|------------------------------|-------------|
| Is it possible to install the battery in a reverse polarity position? | | | | | | | — |
| Equipment Specification | Charging | | | | | | |
| | Voltage (V) | | | Current (A) | | | |
| | -- | | | -- | | | |
| Manufacturer/type | Battery specification | | | | | | |
| | Non-rechargeable batteries | | Rechargeable batteries | | | | |
| | Discharging current (A) | Unintentional charging current (A) | Charging | | Discharging current (A) | Reverse charging current (A) | |
| | | | Voltage (V) | Current (A) | | | |
| | -- | -- | -- | -- | -- | -- | |
| Note: The tests of M.3.2 are applicable only when above appropriate data is not available. | | | | | | | |
| Specified battery temperature (°C) | | | | | | | |
| Component No. | Fault condition | Charge/discharge mode | Test time | Temp. (°C) | Current (A) | Voltage (V) | Observation |
| -- | -- | -- | -- | -- | -- | -- | -- |
| Supplementary information: Abbreviation: SC= short circuit; OC= open circuit NL= no chemical leakage; NS= no spillage of liquid; NE= no explosion; NF= no emission of flame or expulsion of molten metal. | | | | | | | |

| EN 62368-1 | | | | | |
|---|--|----------------------|----------------------|-----------------|-------------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| M.4.2 | TABLE: Charging safeguards for equipment containing a secondary lithium battery | | | | N/A |
| Maximum specified charging voltage (V).....: | | | | | — |
| Maximum specified charging current (A) | | | | | — |
| Highest specified charging temperature (°C) | | | | | |
| Lowest specified charging temperature (°C) | | | | | |
| Battery manufacturer/type | Operating and fault condition | Measurement | | | Observation |
| | | Charging voltage (V) | Charging current (A) | Temp. (°C) | |
| -- | -- | -- | -- | -- | -- |
| Supplementary information: Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature | | | | | |

| Q.1 | TABLE: Circuits intended for interconnection with building wiring (LPS) | | | | | N/A | |
|----------------------------|--|---------------------|----------|---------------------|-------|--------|-------|
| Output Circuit | Condition | U _{oc} (V) | Time (s) | I _{sc} (A) | | S (VA) | |
| | | | | Meas. | Limit | Meas. | Limit |
| -- | -- | -- | -- | -- | -- | -- | -- |
| Supplementary Information: | | | | | | | |

| T.2, T.3, T.4, T.5 | TABLE: Steady force test | | | | | | P |
|----------------------------|---------------------------------|----------------|-------|-----------|-------------------|----------------------|---|
| Part/Location | Material | Thickness (mm) | Probe | Force (N) | Test Duration (s) | Observation | |
| Enclosure | Plastic | 1.5 | -- | 100 | 5 | No damage, no hazard | |
| Supplementary information: | | | | | | | |

| T.6, T.9 | TABLE: Impact test | | | | | N/A |
|----------------------------|---------------------------|----------------|-------------|-------------|--|-----|
| Location/part | Material | Thickness (mm) | Height (mm) | Observation | | |
| -- | -- | -- | -- | -- | | |
| Supplementary information: | | | | | | |

| T.7 | TABLE: Drop test | | | | | P |
|---------------|-------------------------|----------------|-------------|----------------------|--|---|
| Location/part | Material | Thickness (mm) | Height (mm) | Observation | | |
| Enclosure | Plastic | 1.5 | 750 | No damage, no hazard | | |

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

Supplementary information:

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

Supplementary information:

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

Supplementary information:

| 4.1.2 | TABLE: List of critical components | | | | | P |
|------------------------|---|------------|-----------------------|---------------------------|-------------------------------------|---|
| Object/part No. | Manufacturer/ trademark | Type/model | Technical data | Standard (Edition / year) | Mark(s) of conformity ¹⁾ | |
| Plastic enclosure | SABIC INNOVATIVE PLASTICS US L L C | 945 (GG) | Min.1.5mm, V-0, 120°C | UL 94 | UL E121562 | |
| PCB | GLODENMAX INTERNATIONAL TECHNOLOGY (ZHUHAI) LTD | ILM-R1 | V-0, 130°C | UL 796 | UL E330731 | |
| (Alternative) | KINGBO ARD LAMINATES HOLDINGS LTD | KB-6160 | V-0, 130°C | UL 796 | UL E123995 | |
| (Alternative) | JIANGSU SUNYUAN AEROSPACE MATERIAL CO.,LTD | V-66 | V-0, 130°C | UL 796 | UL E214321 | |
| Master (U1) | Shenzhen Beiland Technology Co., Ltd. | D9200 | -- | EN 62368-1 | Tested with appliance | |
| Full bridge drive (U2) | Shenzhen Beiland Technology Co., Ltd. | D9015 | -- | EN 62368-1 | Tested with appliance | |

| EN 62368-1 | | | | | |
|---|---|------------------------------|---------------------------------------|-------------------------------|--------------------------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| COIL(CL1) | KIM CHEN INDUSTRY INTL LIMITED, | A11 | -- | EN 62368-1 | Tested with appliance |
| CBB(CBB1) | Dongguan Dafu Electronic Technology Co., Ltd. | 394J | -- | EN 62368-1 | Tested with appliance |
| Magnetic beads (T1) | Shenzhen Zhenhua Fu Electronics Co., Ltd. | 601A30T | -- | EN 62368-1 | Tested with appliance |
| Wireless charging coil | Dongguan Jinzan Intelligent Technology Co., Ltd | 20.5*43*0.08* 105P*10TS*8 | 6,3uH ± 10%, Copper wire, 130°C | EN 62368-1 | Tested with appliance |
| NTC | Chengdu Hongming Electronics Co. Ltd. | MF72- 0R5D22 | -- | DIN EN 60539-1; EN 60539-1 | VDE 40020558 |
| Supplementary information: | | | | | |
| 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. | | | | | |

Appendix
Photo documentation

Photo 1

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal

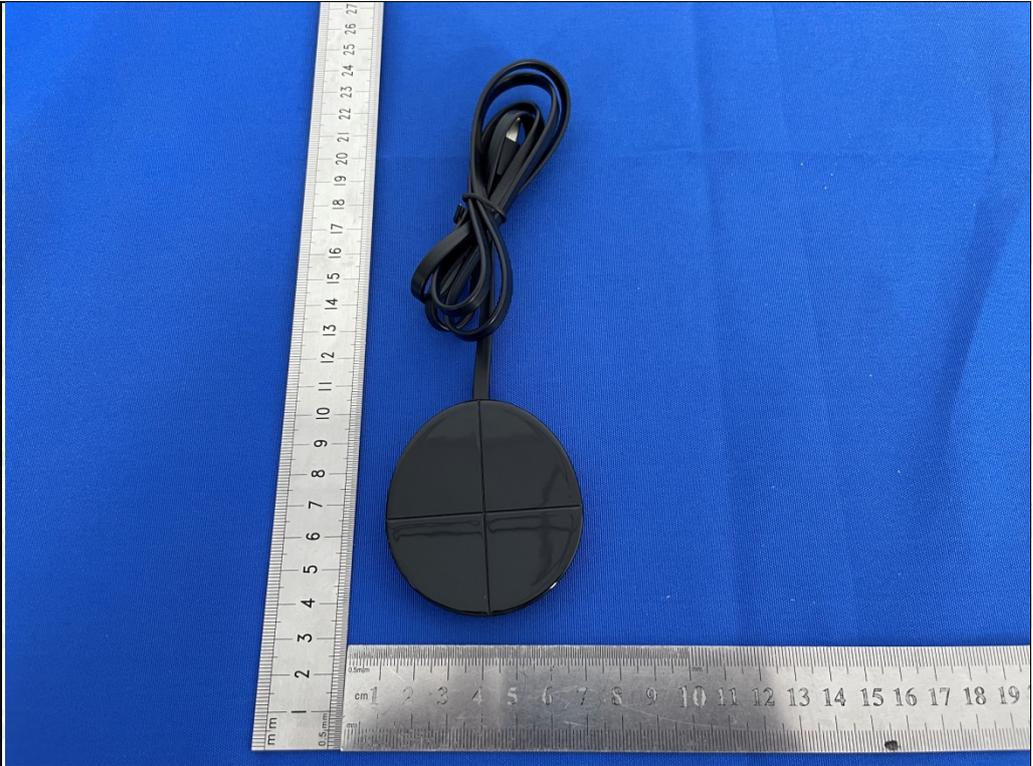


Photo 2

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo documentation

Photo 3

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo 4

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo documentation

Photo 5

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal



Photo 6

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal

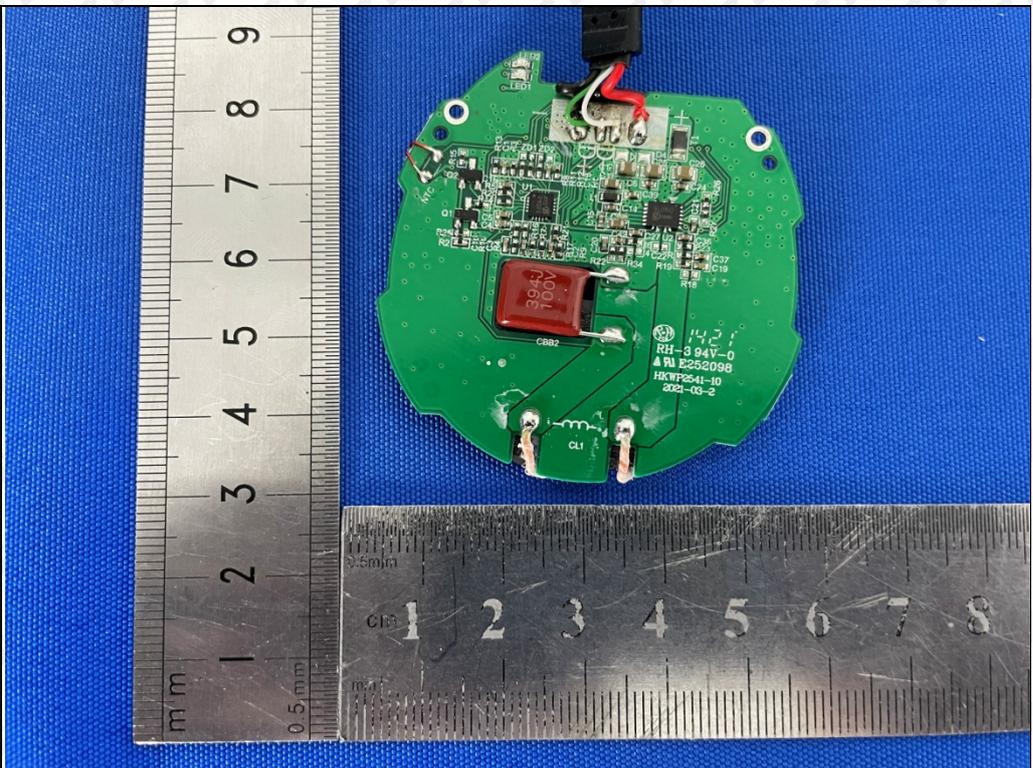
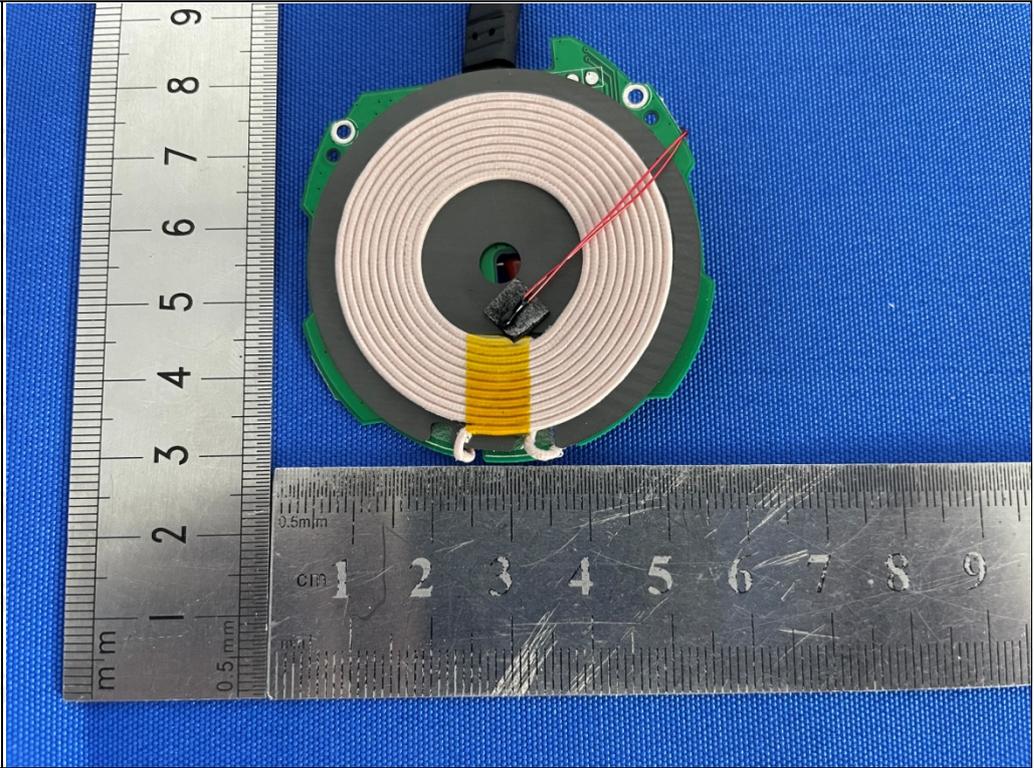


Photo documentation

Photo 7

View:

- front
- rear
- right side
- left side
- top
- bottom
- internal



*****End of the report*****