

Report No.: 18230SC00067201

Test Report

Client Name : Shenzhen EcoFlow Technology Limited

Address : 20/F, Area B, Building 7, Vanke Cloud City Phase III,
Nanshan District, Shenzhen

Product Name : R600 Portable Power Station Solar Generator

Date : Nov. 24, 2020

Shenzhen Anbotech Compliance Laboratory Limited

**Shenzhen Anbotech Compliance Laboratory Limited**

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TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment

Part 1: Safety requirements

Report Number : 18230SC00067201

Date of issue : 2020-11-24

Total number of pages : 73 pages

Applicant's name : Shenzhen EcoFlow Technology Limited

Address : 20/F, Area B, Building 7, Vanke Cloud City Phase III, Nanshan District, Shenzhen

Test specification:

Standard : IEC 62368-1:2014 (Second Edition)

Test procedure : Type Test

Non-standard test method : N/A

General disclaimer:

The test results presented in this report relate only to the object tested.

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Testing procedure and testing location:



Testing Laboratory:

Shenzhen Anbotek Compliance Laboratory Limited

Testing location/ address :

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

Tested by (name + signature) : Yoli Peng

.....

Approved by (name + signature)....: Smile Tian

.....

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| | |
|-----------------------------|---|
| Test Item description | R600 Portable Power Station Solar Generator |
| Trade Mark | EcoFlow |
| Manufacturer | Same as applicant |
| Model/Type reference | EF4 |
| Ratings | <p>Input</p> <p>AC Charge Input Voltage 100-120Vac (50Hz/60Hz) International Version 220-240Vac (50Hz/60Hz)</p> <p>AC Charge Input Power (Example 1) X-STREAM Charge 250W Max 500W Max (With Extra Battery)</p> <p>Solar Charge (Example 2) 200W 10-25V DC 12A max</p> <p>Input Car Charger 12V/24V DC 10A max</p> <p>Output</p> <p>AC Output (x3) / (x2 International Version) Full Sine Wave 600W (Surge 1200W) total, 120Vac (50Hz/60Hz) 230Vac (50Hz/60Hz)</p> <p>USB-A Output (x2) 5V DC, 2.4A, 12W Max, per port</p> <p>USB-A Fast Charge (x1) 5V DC, 9V DC, 12V DC, 2.4A, 28W Max</p> <p>USB-C Output (x1) 5V DC, 9V DC, 12V DC, 15V DC, 20V DC, 5A, 100W Max</p> <p>Car Power Output (x1) 13.6V DC, 10A Max</p> <p>DC5521 Output (x2) 13.6V DC, 3A Max (per port)</p> <p>Battery:</p> <p>Capacity: DC 28.8V 720Wh</p> |

Tests performed (name of test and test clause):

The submitted samples were found to comply with the requirements of:

Electrical safety

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

Testing location:

Shenzhen Anbotek Compliance Laboratory Limited

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. 518102

List of countries addressed: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

The product fulfils the requirements of EN 62368-1:2014 + A11:2017

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Copy of marking plate:

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

R600 Portable Power Station Solar Generator
EF4

EcoFlow

Input

AC Charge Input Voltage 100-120Vac (50Hz/60Hz) International Version 220-240Vac (50Hz/60Hz)

AC Charge Input Power (Example 1) X-STREAM Charge 250W Max 500W Max (With Extra Battery)

Solar Charge (Example 2) 200W 10-25V DC 12A max

Input Car Charger 12V/24V DC 10A max

Output

AC Output (x3) /(x2 International Version) Full Sine Wave 600W (Surge 1200W) total, 120Vac (50Hz/60Hz)

230Vac (50Hz/60Hz)

USB-A Output (x2) 5V DC, 2.4A, 12W Max, per port

USB-A Fast Charge (x1) 5V DC. 9V DC. 12V DC. 2.4A. 28W Max

USB-C Output (x1) 5V DC, 9V DC, 12V DC, 15V DC, 20V DC, 5A, 100W Max

Car Power Output (x1) 136W, 13.6V DC, 10A Max

DC5521 Output (x2) 13.6V DC, 3A Max(per port)

Battery:

Capacity: DC 28.8V 720Wh



Shenzhen EcoFlow Technology Limited

20/F, Area B, Building 7, Vanke Cloud City Phase III, Nanshan District, Shenzhen

Made in China

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| TEST ITEM PARTICULARS: | |
|--|---|
| Classification of use by | <input checked="" 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 checked="" type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input type="checkbox"/> External Circuit - not Mains connected - <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3 |
| Supply % Tolerance | <input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> + ____% / - ____% <input type="checkbox"/> None |
| Supply Connection – Type | <input checked="" type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input checked="" type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> 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 type="checkbox"/> other: |
| Considered current rating of protective device as part of building or equipment installation | N/A (Not directly connected to mains) Installation location: <input checked="" 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 type="checkbox"/> wall-mounted |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: |
| Class of equipment | <input type="checkbox"/> Class I <input checked="" type="checkbox"/> Class II <input 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 maximum operating ambient: | 40°C |
| IP protection class | <input checked="" type="checkbox"/> IPX0 |
| Power Systems | <input checked="" type="checkbox"/> TN <input checked="" type="checkbox"/> TT <input type="checkbox"/> IT - ____ V L-L |
| Altitude during operation (m) | <input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> ____ m |
| Altitude of test laboratory (m) | <input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> 500 m |
| Mass of equipment (kg) | <input checked="" type="checkbox"/> Approx. 0.820 kg |
| POSSIBLE TEST CASE VERDICTS: | |
| - test case does not apply to the test object..... | N/A |

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| | |
|---|--------------------------|
| - test object does meet the requirement | P (Pass) |
| - test object does not meet the requirement | F (Fail) |
| TESTING: | |
| Date of receipt of test item | 2020-09-01 |
| Date (s) of performance of tests | 2020-09-01 to 2020-09-09 |
| GENERAL REMARKS: | |
| <p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>1. Operating Instructions, Ratings Labels and Warnings Labels written in an Accepted or Official Language of the country in question.</p> <p>2. The equipment complies with the National Standards and/or Electrical Codes of the country in question.</p> <p>3. According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.</p> | |
| When differences exist; they shall be identified in the General product information section. | |
| Name and address of factory (ies) | Same as applicant |
| GENERAL PRODUCT INFORMATION: | |
| Product Description – | |
| <p>1. R600 Portable Power Station Solar Generator, models (see model list for details) which designed to supply power for audio, video, information and communication technology, business and office machines, for indoor use only.</p> <p>2. Before placing the products in the different countries, the manufacturer must ensure that: operating instructions, ratings labels and warnings labels are in an accepted or official language of the country in question; the equipment complies with the national standards and/or electrical codes of the country, province or city or in question.</p> | |
| Model Differences –N/A | |
| Additional application considerations – (Considerations used to test a component or sub-assembly) – | |
| <p>- Clearance was evaluated for operating altitude up to 2000m above sea level.</p> <p>- The maximum operating temperature is 40°C.</p> | |

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

(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.

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

| Source of electrical energy | Corresponding classification (ES) |
|---|-----------------------------------|
| Input terminal | ES3 |
| USB output terminal | ES1 |
| AC output terminal | ES3 |
| Internal circuits (Both primary circuits and secondary circuits) | ES3 |

Electrically-caused fire (Clause 6):

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts):

PS2

| Source of power or PIS | Corresponding classification (PS) |
|--|-----------------------------------|
| Input terminal | PS3 |
| Output terminal | PS2 |
| Internal circuits and AC output terminal (Both primary circuits and secondary circuits) | PS3 Battery |

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

| Source of hazardous substances | Corresponding chemical |
|--------------------------------|------------------------|
| Battery | Complied with Annex M |

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

| Source of kinetic/mechanical energy | Corresponding classification (MS) |
|-------------------------------------|-----------------------------------|
| Sharp edges and corners | MS1 |
| Equipment mass | MS1 |

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

| Source of thermal energy | Corresponding classification (TS) |
|--------------------------|-----------------------------------|
| External enclosure | TS1 |

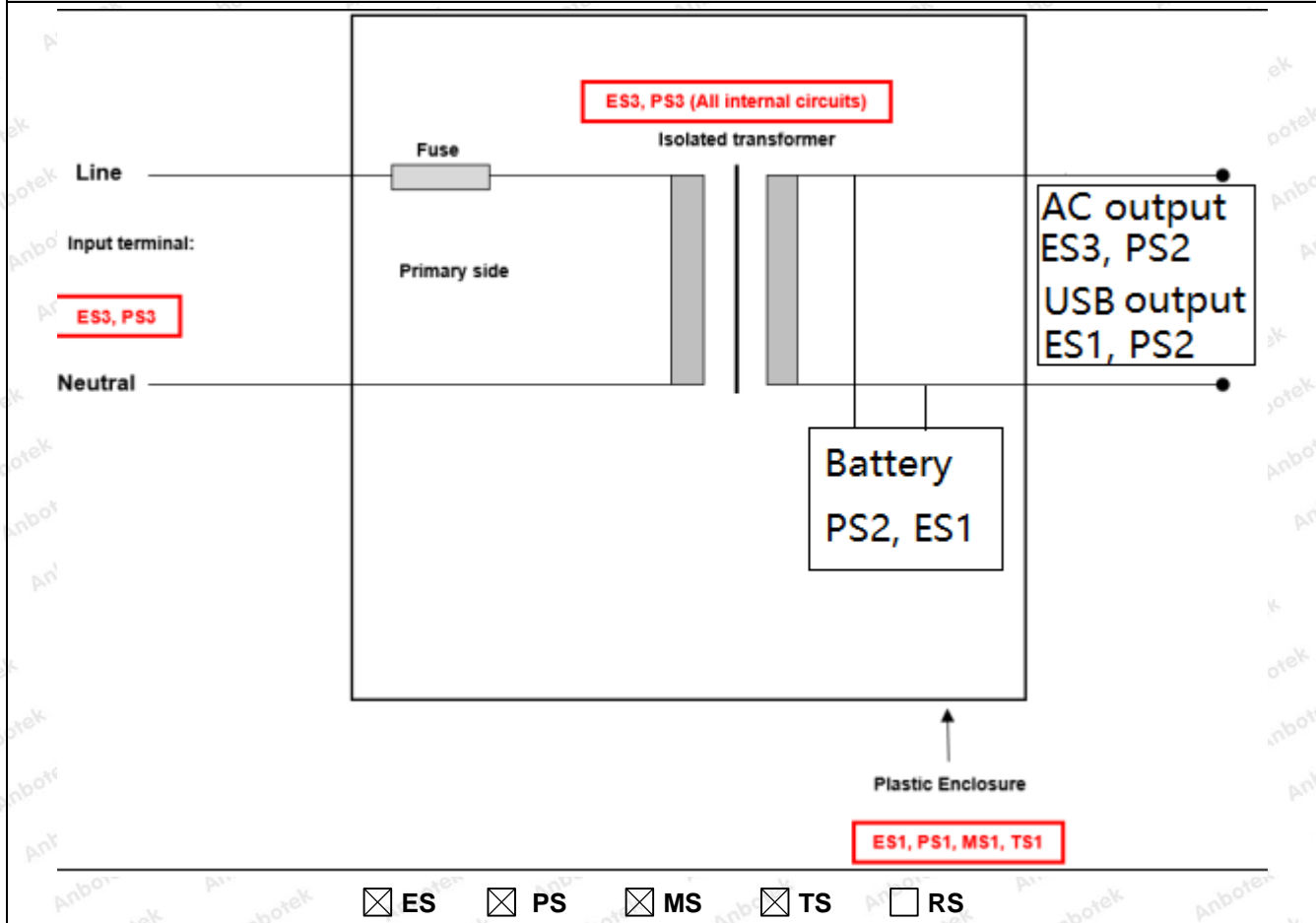
ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:**Radiation (Clause 10)**

(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) |
|-------------------|-----------------------------------|
| N/A | N/A |

ENERGY SOURCE DIAGRAM

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



| 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) |
| Ordinary person, Instructed person | ES3: Primary circuits (to secondary outputs) | N/A | N/A | Creepage and Clearance, Transformer |
| Ordinary person, Instructed person | ES3: Primary circuits (to outside accessible enclosure) | N/A | N/A | Creepage and Clearance, Enclosure |
| Skilled person | ES3: All internal circuits | N/A | N/A | N/A (Skilled safeguard) |
| Ordinary person, Instructed person, Skilled person | ES1: Output terminal | 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 |
| All combustible materials within equipment | PS3: Primary components/circuit | (N) and (A): 1. No ignition occurred; 2. No parts exceeding 90% of its spontaneous ignition temperature | Control fire spread (S): 1. V-0 PCB used; 2. All other components: at least V-2 except for mounted on min. V-1 material or small parts of combustible material; 3. Transformer complied with Annex G.5.3; 4. V-0 enclosure provided. | N/A |
| All combustible materials for external equipment which connected to output this power supply | PS2: USB Output terminal, And AC output terminal | N/A | N/A | N/A |
| 7.1 | Injury caused by hazardous substances | | | |
| Body Part (e.g., skilled) | Energy Source (hazardous material) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |

| | | | | |
|---|---|------------|---------------|---------------------------|
| Ordinary person, Skilled person | Battery, Detail see Annex M | N/A | 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) |
| Ordinary person, Instructed person, Skilled person | MS1: Sharp edges and corners | N/A | N/A | N/A |
| Ordinary person, Instructed person, Skilled person | MS1: Equipment mass (<7kg) | N/A | N/A | N/A |
| 9.1 | Thermal Burn | | | |
| Body Part (e.g., Ordinary) | Energy Source (TS2) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| Ordinary person, Instructed person, Skilled person | TS1: External surfaces | N/A | N/A | N/A |
| 10.1 | Radiation | | | |
| Body Part (e.g., Ordinary) | Energy Source (Output from audio port) | Safeguards | | |
| | | Basic | Supplementary | Reinforced |
| N/A | N/A | 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 | | P |
| 4.1.2 | Use of components | (See appended table 4.1.2) | P |
| 4.1.3 | Equipment design and construction | | P |
| 4.1.15 | Markings and instructions | (See Annex F) | P |
| 4.4.4 | Safeguard robustness | | P |
| 4.4.4.2 | Steady force tests | (See Annex T.2, T.4) | P |
| 4.4.4.3 | Drop tests | | N/A |
| 4.4.4.4 | Impact tests | (See Annex T.6) | P |
| 4.4.4.5 | Internal accessible safeguard enclosure and barrier tests | | N/A |
| 4.4.4.6 | Glass Impact tests | No glass used | N/A |
| 4.4.4.7 | Thermoplastic material tests | (See Annex T.8) | P |
| 4.4.4.8 | Air comprising a safeguard | Considered | P |
| 4.4.4.9 | Accessibility and safeguard effectiveness | All safeguards remain effective | P |
| 4.5 | Explosion | | N/A |
| 4.6 | Fixing of conductors | | P |
| 4.6.1 | Fix conductors not to defeat a safeguard | | P |
| 4.6.2 | 10 N force test applied to | Internal components | P |
| 4.7 | Equipment for direct insertion into mains socket - outlets | | 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 | No coin/button battery used | N/A |
| 4.8.2 | Instructional safeguard | | N/A |
| 4.8.3 | Battery Compartment 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 | No openings | N/A |

| | | | |
|----------|--|--------------------------|----------|
| 5 | ELECTRICALLY-CAUSED INJURY | | P |
| 5.2.1 | Electrical energy source classifications | (See appended table 5.2) | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|------------|---|--|---------|
| 5.2.2 | ES1, ES2 and ES3 limits | | P |
| 5.2.2.2 | Steady-state voltage and current..... : | (See appended table 5.2) | P |
| 5.2.2.3 | Capacitance limits : | No such capacitor | N/A |
| 5.2.2.4 | Single pulse limits : | No single pulse introduced | N/A |
| 5.2.2.5 | Limits for repetitive pulses : | No repetitive pulses introduced | N/A |
| 5.2.2.6 | Ringing signals : | No means for connection to telephone network and no ringing signal generated | N/A |
| 5.2.2.7 | Audio signals : | No audio signal terminals | 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 |
| 5.3.2.1 | Accessibility to electrical energy sources and safeguards | | P |
| 5.3.2.2 | Contact requirements | | P |
| | a) Test with test probe from Annex V : | Checked by V.1.2 (Figure V.1) and V.1.3, cannot contact with the conductive part for ES3 voltage | P |
| | b) Electric strength test potential (V) : | | N/A |
| | c) Air gap (mm) : | Max. 514V _{peak} , Air gap >0.2mm | P |
| 5.3.2.4 | Terminals for connecting stripped wire | No such terminals | N/A |
| 5.4 | Insulation materials and requirements | | P |
| 5.4.1.2 | Properties of insulating material | | P |
| 5.4.1.3 | Humidity conditioning : | Checked by 5.4.8 and then by 5.4.9.1 | P |
| 5.4.1.4 | Maximum operating temperature for insulating materials : | (See appended table 5.4.1.4) | P |
| 5.4.1.5 | Pollution degree : | Pollution degree 2 considered | — |
| 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 | | N/A |
| 5.4.1.6 | Insulation in transformers with varying dimensions | No such transformer | N/A |
| 5.4.1.7 | Insulation in circuits generating starting pulses | No such circuit | N/A |
| 5.4.1.8 | Determination of working voltage | | P |
| 5.4.1.9 | Insulating surfaces | | P |
| 5.4.1.10 | Thermoplastic parts on which conductive metallic parts are directly mounted | | P |
| 5.4.1.10.2 | Vicat softening temperature..... : | | N/A |
| 5.4.1.10.3 | Ball pressure : | (See appended table 5.4.1.10.3) | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-----------|---|---|---------|
| 5.4.2 | Clearances | | P |
| 5.4.2.2 | Determining clearance using peak working voltage | (See appended table 5.4.2.2) | P |
| 5.4.2.3 | Determining clearance using required withstand voltage | (See appended table 5.4.2.3) | P |
| | a) a.c. mains transient voltage | 2500V peak | — |
| | b) d.c. mains transient voltage | No such transient voltage | — |
| | c) external circuit transient voltage | No such transient voltage | — |
| | d) transient voltage determined by measurement: | No need to conduct this test | — |
| 5.4.2.4 | Determining the adequacy of a clearance using an electric strength test | Determine clearances according to 5.4.2.3 for procedure 2 | N/A |
| 5.4.2.5 | Multiplication factors for clearances and test voltages | Clearance was evaluated for altitude up to 5000m above sea level, the multiplication factor is 1.48 | P |
| 5.4.3 | Creepage distances | (See appended table 5.4.3) | P |
| 5.4.3.1 | General | | P |
| 5.4.3.3 | Material Group | Material group IIIa/IIIb is assumed to be used | — |
| 5.4.4 | Solid insulation | | P |
| 5.4.4.2 | Minimum distance through insulation | (See appended table 5.4.4.2) | P |
| 5.4.4.3 | Insulation compound forming solid insulation | | N/A |
| 5.4.4.4 | Solid insulation in semiconductor devices | No such component used | N/A |
| 5.4.4.5 | Cemented joints | | N/A |
| 5.4.4.6 | Thin sheet material | Insulation tape wrapped on outer of T1 used as reinforced insulation | P |
| 5.4.4.6.1 | General requirements | | P |
| 5.4.4.6.2 | Separable thin sheet material | | P |
| | Number of layers (pcs) | Min. 2 layers | P |
| 5.4.4.6.3 | Non-separable thin sheet material | No such material used | N/A |
| 5.4.4.6.4 | Standard test procedure for non-separable thin sheet material | | N/A |
| 5.4.4.6.5 | Mandrel test | | N/A |
| 5.4.4.7 | Solid insulation in wound components | | P |
| 5.4.4.9 | Solid insulation at frequencies >30 kHz | (See appended Table 5.4.4.9) | P |
| 5.4.5 | Antenna terminal insulation | No such terminal | P |
| 5.4.5.1 | General | | P |
| 5.4.5.2 | Voltage surge test | | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|------------|---|---|---------|
| | Insulation resistance (MΩ).....: | Input terminal to USB output terminal : > 2MΩ Input terminal to plastic enclosure with metal foil terminal : > 2MΩ | — |
| 5.4.6 | Insulation of internal wire as part of supplementary safeguard.....: | No such insulation | N/A |
| 5.4.7 | Tests for semiconductor components and for cemented joints | | N/A |
| 5.4.8 | Humidity conditioning | | P |
| | Relative humidity (%).....: | 95% RH | — |
| | Temperature (°C) | 40 °C | — |
| | Duration (h) | 120 h | — |
| 5.4.9 | Electric strength test.....: | (See appended table 5.4.9) | P |
| 5.4.9.1 | Test procedure for a solid insulation type test | | P |
| 5.4.9.2 | Test procedure for routine tests | | P |
| 5.4.10 | Protection against transient voltages between external circuit | No transient voltage from 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 | No such external circuit | N/A |
| 5.4.11.1 | Exceptions to separation between external circuits and earth | | N/A |
| 5.4.11.2 | Requirements | | N/A |
| | 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 | | P |
| 5.5.2 | Capacitors and RC units | | P |
| 5.5.2.1 | General requirement | (See appended table 4.1.2) | P |
| 5.5.2.2 | Safeguards against capacitor discharge after disconnection of a connector.....: | (See appended table 5.5.2.2) | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|---------|---|---------------------------------------|---------|
| 5.5.3 | Transformers | (See Annex G.5.3) | P |
| 5.5.4 | Optocouplers | (See sub-clause 5.4 or Annex G.12) | P |
| 5.5.5 | Relays | No relays | N/A |
| 5.5.6 | Resistors | No such resistors | N/A |
| 5.5.7 | SPD's | No SPDs | 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.....: | | N/A |
| 5.6 | Protective conductor | | N/A |
| 5.6.2 | Requirement for protective conductors | Class II equipment | N/A |
| 5.6.2.1 | General requirements | | N/A |
| 5.6.2.2 | Colour of insulation | | N/A |
| 5.6.3 | Requirement for protective earthing conductors | | N/A |
| | Protective earthing conductor size (mm ²) | | — |
| 5.6.4 | Requirement for protective bonding conductors | | 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 | | N/A |
| 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 | | N/A |
| 5.6.6.1 | Requirements | | N/A |
| 5.6.6.2 | Test Method Resistance (Ω).....: | | N/A |
| 5.6.7 | Reliable earthing | | N/A |
| 5.7 | Prospective touch voltage, touch current and protective conductor current | | P |
| 5.7.2 | Measuring devices and networks | | P |
| 5.7.2.1 | Measurement of touch current | Figure 4 and 5 of IEC 60990:1999 used | P |
| 5.7.2.2 | Measurement of prospective touch voltage | (See appended table 5.2) | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.7.3 | Equipment set-up, supply connections and earth connections | | P |
| | System of interconnected equipment (separate connections/single connection) | Single connection equipment | — |
| | Multiple connections to mains (one connection at a time/simultaneous connections) | Single connection to mains | — |
| 5.7.4 | Earthed conductive accessible parts | | P |
| 5.7.5 | Protective conductor current | | P |
| | Supply Voltage (V) | 264Vac | — |
| | Measured current (mA) | 0.145 mA | — |
| | Instructional Safeguard | | N/A |
| 5.7.6 | Prospective touch voltage and touch current due to external circuits | No touch current due 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 from external circuits | | N/A |
| 5.7.7 | Summation of touch currents from external circuits | No such 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 |
| 6.2.2 | Power source circuit classifications | | P |
| 6.2.2.1 | General | | P |
| 6.2.2.2 | Power measurement for worst-case load fault ... : | (See appended table 6.2.2) | P |
| 6.2.2.3 | Power measurement for worst-case power source fault | (See appended table 6.2.2) | P |
| 6.2.2.4 | PS1 | | N/A |
| 6.2.2.5 | PS2 | (See appended table 6.2.2) | P |
| 6.2.2.6 | PS3 | All internal circuits are declared as of PS3 | P |
| 6.2.3 | Classification of potential ignition sources | | P |
| 6.2.3.1 | Arcing PIS | (See appended table 6.2.3.1) | P |
| 6.2.3.2 | Resistive PIS | (See appended table 6.2.3.2) | P |
| 6.3 | Safeguards against fire under normal operating and abnormal operating conditions | | P |

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|-------------|---|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.3.1 (a) | No ignition and attainable temperature value less than 90 °C 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 | | N/A |
| 6.4 | Safeguards against fire under single fault conditions | | P |
| 6.4.1 | Safeguard Method | Method of control fire spread used | P |
| 6.4.2 | Reduction of the likelihood of ignition under single fault conditions in PS1 circuits | | N/A |
| 6.4.3 | Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits | | P |
| 6.4.3.1 | General | | P |
| 6.4.3.2 | Supplementary Safeguards | | P |
| | Special conditions if conductors on printed boards are opened or peeled | | N/A |
| 6.4.3.3 | Single Fault Conditions | (See appended table 6.4.3) | P |
| | 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 | Output terminal complies with Clause 6.6 | P |
| 6.4.5.2 | Supplementary safeguards | (See appended tables 4.1.2 and Annex G) | P |
| 6.4.6 | Control of fire spread in PS3 circuit | - Parts as in 6.4.5 above; - PCB: V-0 material used; - Fire enclosure provided | P |
| 6.4.7 | Separation of combustible materials from a PIS | | P |
| 6.4.7.1 | General | (See tables 6.2.3.1 and 6.2.3.2) | P |
| 6.4.7.2 | Separation by distance | | N/A |
| 6.4.7.3 | Separation by a fire barrier | | N/A |
| 6.4.8 | Fire enclosures and fire barriers | Fire enclosure used | P |
| 6.4.8.1 | Fire enclosure and fire barrier material properties | | P |
| 6.4.8.2.1 | Requirements for a fire barrier | | N/A |
| 6.4.8.2.2 | Requirements for a fire enclosure | Enclosure material: V-0 | P |
| 6.4.8.3 | Constructional requirements for a fire enclosure and a fire barrier | | N/A |
| 6.4.8.3.1 | Fire enclosure and fire barrier openings | | N/A |
| 6.4.8.3.2 | Fire barrier dimensions | | N/A |
| 6.4.8.3.3 | Top Openings in Fire Enclosure: dimensions (mm) | | N/A |
| | Needle Flame test | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-----------|---|---|---------|
| 6.4.8.3.4 | Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) | | 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) | | N/A |
| 6.4.8.4 | Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating | Plastic enclosure is made of V-0 class material | P |
| 6.5 | Internal and external wiring | | P |
| 6.5.1 | Requirements | | P |
| 6.5.2 | Cross-sectional area (mm ²) | | — |
| 6.5.3 | Requirements for interconnection to building wiring | | P |
| 6.6 | Safeguards against fire due to connection to additional equipment | | P |
| | External port limited to PS2 or complies with Clause Q.1 | Output terminal complies with Annex Q.1 | P |

| | | | |
|----------|--|------------------------------|----------|
| 7 | INJURY CAUSED BY HAZARDOUS SUBSTANCES | | P |
| 7.2 | Reduction of exposure to hazardous substances | No such hazardous substances | N/A |
| 7.3 | Ozone exposure | No ozone production | 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 | No batteries used | P |

| | | | |
|----------|---|--|----------|
| 8 | MECHANICALLY-CAUSED INJURY | | P |
| 8.1 | General | | P |
| 8.2 | Mechanical energy source classifications | Sharp edges and corners: MS1 classification; Equipment mass: MS1 classification | 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 |
| 8.5 | Safeguards against moving parts | No moving parts | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-----------|---|---------------------------------------|---------|
| 8.5.1 | MS2 or MS3 part required to be accessible for the function of the equipment | | N/A |
| 8.5.2 | Instructional Safeguard | | — |
| 8.5.4 | Special categories of equipment comprising moving parts | | 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 |
| 8.5.4.2.1 | Safeguards and 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 | MS1 classification | N/A |
| 8.6.1 | Product classification | | N/A |
| | Instructional Safeguard | | — |
| 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 | Not wall or ceiling mounted equipment | N/A |
| 8.7.1 | Mounting Means (Length of screws (mm) and mounting surface) | | N/A |
| 8.7.2 | Direction and applied force..... | | N/A |
| 8.8 | Handles strength | No handles used | N/A |
| 8.8.1 | Classification | | N/A |
| 8.8.2 | Applied Force | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--|--|---------|
| 8.9 | Wheels or casters attachment requirements | No wheels or caster used | N/A |
| 8.9.1 | Classification | | N/A |
| 8.9.2 | Applied force | | — |
| 8.10 | Carts, stands and similar carriers | No carts, stands and similar carriers used | 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 | 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 | No antennas | N/A |
| | Button/Ball diameter (mm) | | — |

| | | | |
|----------|--|-------------------------|----------|
| 9 | THERMAL BURN INJURY | | P |
| 9.2 | Thermal energy source classifications | External enclosure: TS1 | P |
| 9.3 | Safeguard against thermal energy sources | | P |
| 9.4 | Requirements for safeguards | | N/A |
| 9.4.1 | Equipment safeguard | | N/A |
| 9.4.2 | Instructional safeguard | | N/A |

| | | | |
|-----------|--|--------------------|------------|
| 10 | RADIATION | | N/A |
| 10.2 | Radiation energy source classification | | N/A |
| 10.2.1 | General classification | | N/A |
| 10.3 | Protection against laser radiation | No laser radiation | N/A |
| | Laser radiation that exists equipment: | | — |
| | Normal, abnormal, single-fault..... | | N/A |

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|-------------|--|--|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Instructional safeguard | | — |
| | Tool | | — |
| 10.4 | Protection against visible, infrared, and UV radiation | No 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 | No 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 |
| | Maximum radiation (pA/kg) | | N/A |
| 10.6 | Protection against acoustic energy sources | No acoustic energy sources | 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 | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | 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 | | N/A |
| | Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output..... : | | — |
| 10.6.5.2 | Corded listening devices with digital input | | 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 | | P |
| B.2.1 | General requirements..... : | (See summary of testing & appended test tables) | P |
| | Audio Amplifiers and equipment with audio amplifiers..... : | No audio amplifier circuits | N/A |
| B.2.3 | Supply voltage and tolerances | | P |
| B.2.5 | Input test..... : | (See appended table B.2.5) | P |
| B.3 | Simulated abnormal operating conditions | | P |
| B.3.1 | General requirements..... : | | P |
| B.3.2 | Covering of ventilation openings | No ventilation openings | N/A |
| B.3.3 | D.C. mains polarity test | A.C. mains supply only | N/A |
| B.3.4 | Setting of voltage selector..... : | No such voltage selector | N/A |
| B.3.5 | Maximum load at output terminals..... : | (See appended table B.3) | P |
| B.3.6 | Reverse battery polarity | No batteries used | N/A |
| B.3.7 | Abnormal operating conditions as specified in Clause E.2. | No audio amplifiers | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|---------|---|--|---------|
| B.3.8 | Safeguards functional during and after abnormal operating conditions | During an abnormal operating condition that does not lead to a single fault condition, all safeguards are remained effective. After restoration of normal operating conditions, all safeguards are compliance with applicable requirements | 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 | | N/A |
| B.4.3.1 | Motor blocked or rotor locked increasing the internal ambient temperature | No motors used | N/A |
| B.4.4 | Short circuit of functional insulation | | P |
| B.4.4.1 | Short circuit of clearances for functional insulation | (See appended table B.4) | P |
| B.4.4.2 | Short circuit of creepage distances for functional insulation | (See appended table B.4) | P |
| B.4.4.3 | Short circuit of functional insulation on coated printed boards | No coated printed boards | N/A |
| B.4.5 | Short circuit and interruption of electrodes in tubes and semiconductors | (See appended table B.4) | P |
| B.4.6 | Short circuit or disconnect of passive components | (See appended table B.4) | P |
| B.4.7 | Continuous operation of components | Not intermittent or short-time operation equipment | N/A |
| B.4.8 | Class 1 and Class 2 energy sources within limits during and after single fault conditions | | P |
| B.4.9 | Battery charging under single fault conditions ... : | | P |

| C | UV RADIATION | | N/A |
|----------|--|--------------------------------|------------|
| C.1 | Protection of materials in equipment from UV radiation | No UV radiation within the EUT | 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 apparatus | | N/A |
| C.2.4 | Xenon-arc light exposure apparatus | | N/A |

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| | | | |
|----------|----------------------------------|--|------------|
| 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 | Audio amplifier normal operating conditions | No audio amplifier | 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 | | P |
| | Instructions – Language | English checked | — |
| F.2 | Letter symbols and graphical symbols | | P |
| F.2.1 | Letter symbols according to IEC60027-1 | | P |
| F.2.2 | Graphic symbols IEC, ISO or manufacturer specific | | P |
| F.3 | Equipment markings | | P |
| F.3.1 | Equipment marking locations | Located on the external enclosure surface | P |
| F.3.2 | Equipment identification markings | | P |
| F.3.2.1 | Manufacturer identification | See copy of marking plate | — |
| F.3.2.2 | Model identification | See copy of marking plate and model list | — |
| F.3.3 | Equipment rating markings | | P |
| F.3.3.1 | Equipment with direct connection to mains | | P |
| F.3.3.2 | Equipment without direct connection to mains | | N/A |
| F.3.3.3 | Nature of supply voltage..... | See label | — |
| F.3.3.4 | Rated voltage | See label | — |
| F.3.3.4 | Rated frequency | See label | — |
| F.3.3.6 | Rated current or rated power | See label | — |
| F.3.3.7 | Equipment with multiple supply connections | Single supply connection | N/A |
| F.3.4 | Voltage setting device | No such device | N/A |
| F.3.5 | Terminals and operating devices | | P |
| F.3.5.1 | Mains appliance outlet and socket-outlet markings..... | 230Vac, 50Hz, 55W Max. | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-----------|--|----------------------------|---------|
| F.3.5.2 | Switch position identification marking : | No switch used | N/A |
| F.3.5.3 | Replacement fuse identification and rating markings : | | N/A |
| F.3.5.4 | Replacement battery identification marking : | No replacement battery | N/A |
| F.3.5.5 | Terminal marking location | | N/A |
| F.3.6 | Equipment markings related to equipment classification | | P |
| F.3.6.1 | Class I Equipment | | P |
| F.3.6.1.1 | Protective earthing conductor terminal | | P |
| F.3.6.1.2 | Neutral conductor terminal | | P |
| F.3.6.1.3 | Protective bonding conductor terminals | | P |
| F.3.6.2 | Class II equipment (IEC60417-5172) | | 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 : | IP20, no marking is needed | — |
| F.3.8 | External power supply output marking | See copy of marking plate | P |
| F.3.9 | Durability, legibility and permanence of marking | | P |
| F.3.10 | Test for permanence of markings | | P |
| F.4 | Instructions | | P |
| | a) Equipment for use in locations where children not likely to be present - marking | | P |
| | b) Instructions given for installation or initial use | | P |
| | c) Equipment intended to be fastened in place | | N/A |
| | d) Equipment intended for use only in restricted access area | | N/A |
| | e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1 | | N/A |
| | f) Protective earthing employed as safeguard | | N/A |
| | g) Protective earthing conductor current exceeding ES 2 limits | | N/A |
| | h) Symbols used on equipment | | P |
| | i) Permanently connected equipment not provided with all-pole mains switch | | N/A |
| | j) Replaceable components or modules providing safeguard function | | N/A |
| F.5 | Instructional safeguards | | P |

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| | | | |
|--|---|--|---|
| | Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction | | P |
|--|---|--|---|

| G | COMPONENTS | | P |
|---------------|--|--------------------------------|-----|
| G.1 | Switches | | N/A |
| G.1.1 | General requirements | No switches used | N/A |
| G.1.2 | Ratings, endurance, spacing, maximum load | | N/A |
| G.2 | Relays | | N/A |
| G.2.1 | General requirements | No relays used | 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 thermal cut-offs used | 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 |
| G.3.2.1a) | Thermal links separately tested with IEC 60691 | No thermal links used | 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 | No PTC thermistor used | N/A |
| G.3.4 | Overcurrent protection devices | Approved current fuse provided | N/A |
| G.3.5 | Safeguards components not mentioned in G.3.1 to G.3.4 | | P |
| 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) | P |
| G.4 | Connectors | | P |
| G.4.1 | Spacings | | N/A |

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|--------------|--|--|---------|
| G.4.2 | Mains connector configuration | AC inlet used for all models are within their ratings considered acceptable without further evaluation | P |
| G.4.3 | Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely | The output connector is such a shape that cannot insertion into a mains socket-outlet | P |
| G.5 | Wound Components | | P |
| G.5.1 | Wire insulation in wound components..... | Approved source of triple insulated wire used as secondary winding for reinforced insulation | P |
| G.5.1.2 a) | Two wires in contact inside wound component, angle between 45° and 90° | Separated by insulation tube | P |
| 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 | | P |
| G.5.3.1 | Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)..... | Comply with the requirements as below | N/A |
| | Position | T1 | — |
| | Method of protection | See G.5.3.3 | — |
| G.5.3.2 | Insulation | | P |
| | Protection from displacement of windings..... | Fixed by bobbin and insulation tape | — |
| G.5.3.3 | Overload test | (See append table B.3) | P |
| G.5.3.3.1 | Test conditions | | P |
| G.5.3.3.2 | Winding Temperatures testing in the unit | | P |
| 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 motors used | 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) | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | | P |
| G.6.1 | General | Approved source of triple insulated wire used as secondary winding for reinforced insulation | P |
| G.6.2 | Solvent-based enamel wiring insulation | | N/A |
| G.7 | Mains supply cords | | N/A |
| G.7.1 | General requirements | No mains supply cords provided | N/A |
| | Type..... | | — |
| | Rated current (A) | | — |
| | Cross-sectional area (mm ²), (AWG)..... | | — |
| 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-------------|--|------------------------|---------|
| G.7.4 | Cord Entry | | N/A |
| G.7.5 | Non-detachable cord bend protection | | N/A |
| G.7.5.1 | Requirements | | N/A |
| G.7.5.2 | 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 | | 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 | | 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 used | N/A |
| 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 | | P |
| G.11.1 | General requirements | | P |
| G.11.2 | Conditioning of capacitors and RC units | | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.11.3 | Rules for selecting capacitors | | P |
| G.12 | Optocouplers | | P |
| | Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) | | P |
| | Type test voltage Vini | | — |
| | Routine test voltage, Vini,b | | — |
| G.13 | Printed boards | | P |
| G.13.1 | General requirements | (See appended table 4.1.2) | P |
| G.13.2 | Uncoated printed boards | | P |
| G.13.3 | Coated printed boards | No coated printed boards used | 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 | (See G.13) | N/A |
| G.15 | Liquid filled components | | N/A |
| G.15.1 | General requirements | | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-------------|---|-----------------|---------|
| G.16 | IC including capacitor discharge function (ICX) | | N/A |
| a) | Humidity treatment in accordance with sc5.4.8 – 120 hours | No such IC used | 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 telephone ringing signals produce | 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 complied with | | N/A |
| H.3.2.2 | Tripping device | | N/A |
| H.3.2.3 | Monitoring voltage (V) | | — |

| J | INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION | | P |
|----------|---|---|----------|
| | General requirements | Approved triple insulated wires complied with Annex U of IEC60950-1 (It can be considered comply with Annex J of this standard) | P |

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|--------|--------------------|-----------------|---------|

| K | SAFETY INTERLOCKS | | N/A |
|-------|---|-------------------------------------|-----|
| K.1 | General requirements | No safety interlocks inside 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 | | P |
|-----|---------------------------------|---|-----|
| L.1 | General requirements | The AC inlet used as disconnect device | P |
| L.2 | Permanently connected equipment | Not such equipment | N/A |
| L.3 | Parts that remain energized | No parts remain energized after the mains plug disconnected | N/A |
| L.4 | Single phase equipment | The AC inlet disconnect both poles simultaneously | P |
| L.5 | Three-phase equipment | Single phase equipment | N/A |
| L.6 | Switches as disconnect devices | No switches used as disconnect devices | N/A |
| L.7 | Plugs as disconnect devices | | N/A |
| L.8 | Multiple power sources | Single power source | N/A |

| M | EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS | | P |
|-------|--|--|---|
| M.1 | General requirements | | P |
| M.2 | Safety of batteries and their cells | | P |
| M.2.1 | Requirements | | P |
| M.2.2 | Compliance and test method (identify method) .. : | | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|------------|--|---|---------|
| M.3 | Protection circuits | | P |
| M.3.1 | Requirements | | P |
| M.3.2 | Tests | | P |
| | - Overcharging of a rechargeable battery | | P |
| | - Unintentional charging of a non-rechargeable battery | | N/A |
| | - Reverse charging of a rechargeable battery | | P |
| | - Excessive discharging rate for any battery | | P |
| M.3.3 | Compliance | | P |
| M.4 | Additional safeguards for equipment containing secondary lithium battery | | P |
| M.4.1 | General | | P |
| M.4.2 | Charging safeguards | | P |
| M.4.2.1 | Charging operating limits | | P |
| M.4.2.2a) | Charging voltage, current and temperature | See table M.4 | — |
| 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 | | P |
| M.4.4.2 | Preparation | | P |
| M.4.4.3 | Drop and charge/discharge function tests | | P |
| | Drop | 1000mm, 3times | P |
| | Charge | Charge function effective | P |
| | Discharge | Discharge function effective | P |
| M.4.4.4 | Charge-discharge cycle test | Three complete discharge and charge cycles. | P |
| M.4.4.5 | Result of charge-discharge cycle test | Charge/discharge function effective | P |
| 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 |
| M.6 | Prevention of short circuits and protection from other effects of electric current | | P |
| M.6.1 | Short circuits | | P |
| M.6.1.1 | General requirements | | P |
| M.6.1.2 | Test method to simulate an internal fault | | P |

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| M.6.1.3 | Compliance (Specify M.6.1.2 or alternative method) | Internal short test was conducted in IEC 62133 report of built-in battery cell | P |
| 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) | Similar statement mentioned in the instructions | P |

| | | |
|----------|-----------------------------------|------------|
| N | ELECTROCHEMICAL POTENTIALS | N/A |
| | Metal(s) used | — |

| | | |
|----------|---|------------|
| O | MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES | P |
| | Figures O.1 to O.20 of this Annex applied | Considered |

| | | |
|----------|---|-------------|
| P | SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS | P |
| P.1 | General requirements | P |
| P.2.2 | Safeguards against entry of foreign object | P |
| | Location and Dimensions (mm) | No openings |
| P.2.3 | Safeguard against the consequences of entry of foreign object | N/A |
| P.2.3.1 | Safeguards against the entry of a foreign object | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Openings in 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 internal liquids | 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 | No such coatings and 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 | For output terminal (see Table Q.1) | P |
| Q.1.1 a) | Inherently limited output | | N/A |
| Q.1.1 b) | Impedance limited output | | P |
| | - Regulating network limited output under normal operating and simulated single fault condition | (See appended table Annex Q.1) | P |
| Q.1.1 c) | Overcurrent protective device limited output | | N/A |
| Q.1.1 d) | 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 | | N/A |
| R.2 | Determination of the overcurrent protective device and circuit | | N/A |

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| IEC 62368-1 | | | |
|-------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| R.3 | Test method Supply voltage (V) and short-circuit current (A). : | | 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) : | — |
| | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--|-----------------|---------|
| | After fifth flame application, flame extinguished within 1 min | | N/A |


| T | MECHANICAL STRENGTH TESTS | | P |
|-------|--------------------------------------|-------------------------------------|-----|
| T.1 | General requirements | | P |
| T.2 | Steady force test, 10 N | (See appended table T.2) | P |
| T.3 | Steady force test, 30 N | | N/A |
| T.4 | Steady force test, 100 N | (See appended table T.4) | P |
| T.5 | Steady force test, 250 N | | N/A |
| T.6 | Enclosure impact test | | P |
| | Fall test | | P |
| | Swing test | | N/A |
| T.7 | Drop test | | N/A |
| T.8 | Stress relief test | (See appended table T.8) | P |
| T.9 | Impact Test (glass) | No glass used | 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 | No glass used | N/A |
| T.11 | Test for telescoping or rod antennas | No telescoping or rod antennas used | 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 | No CRTs | 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 |

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| 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 |
| Plastic enclosure | SABIC INNOVATIVE PLASTICS B V | 940(f1) | V-0, 120°C, min. 1.5 mm thickness. | UL 94, UL 746C | UL |
| Plug holder | SABIC INNOVATIVE PLASTICS B V | 940(f1) | V-0, 120°C | UL 94, UL 746C | UL |
| PCB | GUANG DONG HONG TAI ELECTRONIC INC CO LTD | HH-1, HH-2 | V-0, 130°C | UL 796, UL 94 | UL |
| (Alternative) | MEIZHOU HUADA CIRCUIT BOARD CO LTD | HD-D | V-0, 130°C | UL 796, UL 94 | UL |
| (Alternative) | DONGGUAN YE JIU GUAN ELECTRONIC TECHNOLOGY CO LTD | YJG-1, YJG-2 | V-0, 130°C | UL 796, UL 94 | UL |
| (Alternative) | Interchangeable | Interchangeable | V-0, 130°C | UL 796, UL 94 | UL |
| Fusible resistor (RF1) | Shenzhen Great Electronics Co. Ltd. | RXF | 4.7Ω, 1W | IEC/EN 62368-1 | Tested with appliance |
| (Alternative) | Dongguan Hongda Electronic Technology Co., Ltd. | RXF series | 4.7Ω, 1W | IEC/EN 62368-1 | Tested with appliance |
| Heat shrinkable tube (Used for RF1, EC3) | SHENZHEN WOER HEAT- SHRINKABLE MATERIAL CO LTD | RSFR-H | Min. 300V, min. 125°C, VW-1 | UL 224 | UL |
| (Alternative) | DONGGUAN SALIPT CO LTD | SALIPT S-901- 300, SALIPT S- 901-600, SALIPT S-HPT-600 | Min. 300VAC, min. 125°C, VW-1 | UL 224 | UL |
| (Alternative) | CHANGYUAN ELECTRONICS GROUP CO LTD | CB-1000 | Min. 300VAC, min. 125°C, VW-1 | UL 224 | UL |
| (Alternative) | Interchangeable | Interchangeable | Min. 300VAC, min. 125°C, VW-1 | UL 224 | UL |

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|--|--|--|--|----------------|-----------------------|
| Clause | Requirement + Test | | Result - Remark | | Verdict |
| Choke (L1) | MADERORCE ELECTRONICS CO., LTD | AL0410-102K, AL0510-102K, AL0510-152K, | 130°C | IEC/EN 62368-1 | Tested with appliance |
| Transformer (T1) | YISHENG FU ELECTRONIC (SHENZHEN) CO LTD | KA06E-5V | Class B | IEC/EN 62368-1 | Tested with appliance |
| - Insulation system | YISHENG FU ELECTRONIC (SHENZHEN) CO LTD | YSF-130 | Class B | UL 1446 | UL |
| - Bobbin | CHANG CHUN PLASTICS CO LTD | T375J | V-0, 150°C. Min. 0.50mm thickness, phenolic. | UL 94, UL 746C | UL |
| - Magnet wire (Primary winding) | SHANTOU SHENGANG ELECTRICAL INDUSTRIAL CO LTD | xUEW/130, QA-x/130 | 130°C | UL 1446 | UL |
| (Alternative) | TAI-I ELECTRIC WIRE & CABLE CO LTD | UEW | 130°C | UL 1446 | UL |
| (Alternative) | DONG GUAN XIN YOU LIAN COPPER CO LTD | 2UEW | 130°C | UL 1446 | UL |
| (Alternative) | HENG YA ELECTRIC (DONGGUAN) LTD | TYP-130(UEW/QA-B) | 130°C | UL 1446 | UL |
| (Alternative) | Interchangeable | Interchangeable | Min. 130°C | UL 1446 | UL |
| - Triple Insulation wire (Secondary winding) | Great Leoflon Industrial Co., Ltd. | TRW(B) Serie(s) | 130°C | IEC/EN 60950-1 | VDE |
| - Insulation tape | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD | CT* (b)(g), PZ* (b) | 130°C | UL 510 | UL |
| - Tubing | GREAT HOLDING INDUSTRIAL CO LTD | TFT, TFS | Min. 300V, min. 200°C, VW-1 | UL 224 | UL |

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|---|--|--------------------------------|-----------------------------|---------|---------|
| Clause | Requirement + Test | | Result - Remark | | Verdict |
| (Alternative) | SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD | WF | Min. 300V, min. 200°C, VW-1 | UL 224 | UL |
| - Varnish | SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD | ET-90(a), T-1168(a), T-4260(a) | Min. 130°C | UL 1446 | UL |
| Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. | | | | | |

| | | | | |
|---|--|------------------------------------|-----------------------|--------------|
| 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) | Comments |
| -- | | -- | -- | -- |
| 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 | | -- |
| | | 7 | | -- |
| | | 8 | | -- |
| | | 9 | | -- |
| 4.8.4.4 | TABLE: Drop test | | | — |
| Impact Area | | Drop Distance | Drop No. | Observations |
| -- | | -- | 1 | -- |
| -- | | -- | 2 | -- |
| -- | | -- | 3 | -- |
| 4.8.4.5 | TABLE: Impact | | | — |
| Impacts per surface | | Surface tested | Impact energy (Nm) | Comments |

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|------------------|--------------------|-----------------|---------|
| 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.) | | | | |
| -- | | -- | -- | -- |
| 4.8.4.6 | TABLE: Crush test | | | — |
| Test position | | Surface tested | Crushing Force (N) | Duration force applied (s) |
| -- | | -- | -- | -- |
| Supplementary information: | | | | |

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

| 5.2 | Table: Classification of electrical energy sources | | | | | | P |
|---|--|-------------------------------------|-------------------------------|--------------------|--------------------|-----|-------------------|
| 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 (Apk or Arms) | Hz | |
| 1 | 264Va.c. 60Hz | All primary circuits | Normal | -- | -- | -- | ES3 (declared) |
| | | | Abnormal | -- | -- | -- | |
| | | | Single fault – SC/OC | -- | -- | -- | |
| 2 | 264Va.c. 60Hz | Transformer secondary pin A-B | Normal (output + and -) | 21.3 Vrms | -- | 55K | ES1 |
| | | | Abnormal: Over load | -- | -- | -- | |
| | | | Single fault – SC Q51 pin D-S | 0 | -- | -- | |
| 3 | 264Va.c. 60Hz | Output “+” to “-” | Normal (output + and -) | 5.10Vd.c. | -- | -- | ES1 |
| | | | Abnormal: Over load | 5.09Vd.c. | -- | -- | |
| | | | Single fault – SC D3 | 0 | -- | -- | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

| | | | | | | | |
|---|------------------|---------------------|-----------------------------|--------------|-----------------|----|-----|
| 4 | 264Va.c. 60Hz | Output "+" to earth | Normal | 218Vpeak max | 0.09mA peak (#) | 60 | ES1 |
| | | | Abnormal | -- | -- | -- | |
| | | | Single fault – Neutral open | 380Vpeak max | 0.11mA peak (@) | 60 | |

Supplementary information:

- SC - Short-circuited; OC - Open-circuited.

- #: Current (U_2 / 500 peak value) is measured using the measuring network specified in Figure 4, IEC 60990:1999.

- @: Current (U_3 / 500 peak value) is measured using the measuring network specified in Figure 5, IEC 60990:1999.

5.2.2.3 - Capacitance Limits

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | ES Class |
|-----|------------------|--|----------------------|-----------------|---------|----------|
| | | | | Capacitance, nF | Upk (V) | |
| 1 | 264Va.c. 60Hz | Input terminal (Primary input filter circuits) | 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

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| 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) : | 264V, 50Hz | | 90V, 60Hz | | Battery discharge mode | | — |
| | Ambient T _{min} (°C) : | | 40.0 | | 40.0 | | 40.0 | — |
| | Ambient T _{max} (°C) : | | 40.0 | | 40.0 | | 40.0 | — |
| | T _{ma} (°C) : | — | | | | | | — |
| Maximum measured temperature T of part/at: | | T (°C) | | | | | | Allowed T _{max} (°C) |
| E-cap C1 | | 89.4 | 101.5 | 56.1 | 67.2 | 78.3 | 90.1 | 105 |
| E-cap C2 | | 85.8 | 97.9 | 56.3 | 67.4 | 72.6 | 84.4 | 105 |
| T1 winding | | 84.9 | 97.0 | 55.2 | 66.3 | 71.9 | 83.7 | 110 |
| T1 core | | 91.2 | 103.3 | 56.4 | 67.5 | 83.9 | 95.7 | 110 |
| PCB near T1 | | 89.0 | 101.1 | 60.0 | 71.1 | 74.0 | 85.8 | 130 |
| L1 winding | | 104.8 | 116.9 | 66.2 | 77.3 | 98.4 | 110.2 | 130 |
| E-cap C52 | | 85.4 | 97.5 | 55.9 | 67.0 | 77.4 | 89.2 | 105 |
| PCB near Q15 | | 101.5 | 113.6 | 83.2 | 94.3 | 93.3 | 105.1 | 130 |
| E-cap C26 | | 87.2 | 99.3 | 64.0 | 75.1 | 78.5 | 90.3 | 105 |
| PCB near U1 | | 78.0 | 90.1 | 53.1 | 64.2 | 73.5 | 85.3 | 130 |
| L2 body | | 63.7 | 75.8 | 47.9 | 59.0 | 78.3 | 90.1 | 130 |
| E-cap C3 | | 75.0 | 87.1 | 53.5 | 64.6 | 68.7 | 80.5 | 105 |
| PCB near USB | | 59.6 | 71.7 | 44.5 | 55.6 | 64.9 | 76.7 | 130 |
| PCB near U13 | | 65.3 | 77.4 | 48.1 | 59.2 | 72.2 | 84.0 | 130 |
| PCB near U9 | | 79.2 | 91.3 | 54.6 | 65.7 | 69.9 | 81.7 | 130 |
| PCB near U15 | | 77.9 | 90.0 | 50.9 | 62.0 | 63.9 | 75.7 | 130 |
| D2 body | | 72.3 | 84.4 | 44.6 | 55.7 | 60.0 | 71.8 | 130 |
| E-cap C23 | | 58.8 | 70.9 | 28.1 | 39.2 | 63.6 | 75.4 | 105 |
| PCB2 : | | | | | | | | |
| Input line | | 52.3 | 64.4 | 47.8 | 58.9 | 48.0 | 59.8 | 80 |
| LF1 winding | | 63.0 | 75.1 | 68.5 | 79.6 | 45.9 | 57.7 | 130 |
| Y-cap CY1 | | 54.0 | 66.1 | 54.1 | 65.2 | 45.3 | 57.1 | 125 |
| L1 winding | | 64.9 | 77.0 | 62.4 | 73.5 | 49.1 | 60.9 | 130 |
| E-cap C1 | | 75.9 | 88.0 | 71.9 | 83.0 | 46.7 | 58.5 | 105 |
| PCB near Q1 | | 81.9 | 94.0 | 72.3 | 83.4 | 44.7 | 56.5 | 130 |
| T1 core | | 78.0 | 90.1 | 72.7 | 83.8 | 46.8 | 58.6 | 110 |
| T1 winding | | 85.5 | 97.6 | 76.3 | 87.4 | 46.2 | 58.0 | 110 |
| PCB near T1 | | 89.1 | 101.2 | 76.4 | 87.5 | 54.1 | 65.9 | 130 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

| | | | | | | | |
|-------------------------|-------|-------|------|-------|------|------|-----|
| Y-cap CY3 | 80.8 | 92.9 | 70.1 | 81.2 | 49.7 | 61.5 | 125 |
| U1 body、 | 80.8 | 92.9 | 70.2 | 81.3 | 52.3 | 64.1 | 130 |
| E-cap CE52 | 74.6 | 86.7 | 65.5 | 76.6 | 50.0 | 61.8 | 105 |
| L2 body | 104.7 | 116.8 | 92.6 | 103.7 | 53.4 | 65.2 | 130 |
| Battery body | 55.4 | 67.5 | 51.6 | 62.7 | 48.4 | 60.2 | Ref |
| Battery line | 64.1 | 76.2 | 56.8 | 67.9 | 49.3 | 61.1 | 105 |
| Enclosure inside | 41.6 | 53.7 | 37.6 | 48.7 | 39.2 | 51.0 | Ref |
| Ambient | 27.9 | 40.0 | 28.9 | 40.0 | 28.2 | 40.0 | -- |
| Accessible part of unit | | | | | | | |
| Plug holder | 45.4 | 57.5 | 42.8 | 53.9 | 43.7 | 55.5 | 77# |
| Enclosure outside | 37.3 | 49.4 | 36.3 | 47.4 | 37.3 | 49.1 | 77# |

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 |
|---------------------------|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| -- | -- | -- | -- | -- | -- | -- | B |

Supplementary information:

- The maximum operating temperature is 40°C.

E. # means surfaces touched in normal use (> 1 min).

| | | | | |
|----------------------------|--|-------------------------|------------------|-----|
| 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 | P |
|-----------------------------------|--|----------|

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

| Clearance (cl) and creepage distance (cr) at/of/between: | Up (V) | U r.m.s. (V) | Frequency (kHz) | Required cl (mm) | cl (mm) | Required cr (mm) | cr (mm) |
|--|--------|--------------|-----------------|------------------|---------|------------------|---------|
| L to N before F1 (BI) | <420 | 240 | <30 | 1.27 | 3.0 | 2.4 | >3.0 |
| Across F1 (BI) | <420 | 240 | <30 | 1.27 | 3.0 | 2.4 | 3.0 |
| Primary trace to secondary trace under T1 (RI) | 488 | 240 | 55 | 2.54 | 13.0 | 4.8 | 13.0 |
| Core to U1 secondary pin | 488 | 240 | 55 | 2.54 | 3.5 | 4.8 | 3.5 |
| Across U1 | 488 | 240 | 55 | 2.54 | 5.2 | 4.8 | 5.2 |
| Across CY1 | 488 | 240 | 55 | 2.54 | 6.3 | 4.8 | 6.3 |

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 IIIa/IIIb;

Note 4: BI: basic insulation; SI: supplementary insulation; DI: double insulation; RI: reinforced insulation;

Note 5: Ferrite core of transformer T1 considered as primary live part;

Note 6: If no specified, the worst conditions were recorded;

Note 7: Clearance was evaluated for altitude up to 2000m above sea level, correction factor for clearance is 1.48.

| 5.4.2.3 | TABLE: Minimum Clearances distances using required withstand voltage | | | P |
|--|--|------------------|------------------|----|
| | Overvoltage Category (OV): | | | II |
| | Pollution Degree: | | | 2 |
| Clearance distanced between: | Required withstand voltage | Required cl (mm) | Measured cl (mm) | |
| L to N before F1 (BI) | 2500Vpeak | 1.5 | >3.0 | |
| Across F1 (BI) | 2500Vpeak | 1.5 | 3.0 | |
| Primary trace to secondary trace under T1 (RI) | 2500Vpeak | 1.5 | 13.0 | |
| Core to U1 secondary pin | 2500Vpeak | 3.0 | 3.5 | |
| Across U1 | 2500Vpeak | 3.0 | 5.2 | |
| Across CY1 | 2500Vpeak | 3.0 | 6.3 | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

Supplementary information:

Note 1: BI: basic insulation; SI: supplementary insulation; DI: double insulation; RI: reinforced insulation;

Note 2: Ferrite core of transformer T1 considered as primary live part;

Note 3: If no specified, the worst conditions were recorded;

Note 4: Clearance was evaluated for altitude up to 5000m above sea level, correction factor for clearance is 1.48.

| 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: Not used the alternative method to determine the clearances. | | | | |

| 5.4.4.2, 5.4.4.5 c) 5.4.4.9 | TABLE: Distance through insulation measurements | | | | P |
|---------------------------------------|--|----------------|----------|-------------------|----------|
| Distance through insulation di at/of: | Peak voltage (V) | Frequency (Hz) | Material | Required DTI (mm) | DTI (mm) |
| Enclosure | 488 | 55K | Plastic | 0.4 | Min. 1.5 |
| Supplementary information: -- | | | | | |

| 5.4.9 | TABLE: Electric strength tests | | | P |
|--|---------------------------------------|------------------|--------------------|----------|
| Test voltage applied between: | Voltage shape (AC, DC) | Test voltage (V) | Breakdown Yes / No | |
| Functional: | | | | |
| -- | -- | -- | -- | |
| Basic/supplementary: | | | | |
| L to N before F1 (F1 disconnected) | DC | 2500 | No | |
| Reinforced: | | | | |
| L/N to accessible enclosure with metal foil | DC | 4000 | No | |
| L/N to output terminal | DC | 4000 | No | |
| T1: primary to secondary | DC | 4000 | No | |
| T1: core to secondary | DC | 4000 | No | |
| T1: one layer of insulation tape # | DC | 4000 | No | |
| Routine Tests: | | | | |
| -- | -- | -- | -- | |
| Supplementary information: # means all materials listed in table 4.1.2 are considered. | | | | |

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|------------------|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |


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

| 5.6.6.2 | TABLE: Resistance of protective conductors and terminations | | | | P |
|--|---|-------------------|---------------------|-------------------|---|
| Accessible part | Test current (A) | Duration (min) | Voltage drop (V) | Resistance (Ω) | |
| PE terminal of AC inlet to protective conductor in PCB | 32 | 2 | 0.58 | 0.018 | |
| Supplementary information: | | | | | |

| | | | |
|---|---|--------------------|---|
| 5.7.2.2, 5.7.4 | TABLE: Earthed accessible conductive part | | P |
| 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) | |
| <u>Measured to protective earthing terminal</u> | 1 | <u>N/A</u> | |
| | 2* | <u>N/A</u> | |
| | 3 | <u>N/A</u> | |
| | 4 | <u>N/A</u> | |
| | 5 | <u>N/A</u> | |
| | 6 | <u>N/A</u> | |
| | 8 | <u>N/A</u> | |
| Supplementary Information: -- | | | |
| Notes: | | | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

[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.
 N: Normal condition, R: Reverse condition.

| 6.2.2 | Table: Electrical power sources (PS) measurements for classification | | | | | P |
|-----------------------------|--|----------------------|---------------------|-----------------------|-------------------|---|
| Source | Description | Measurement | Max Power after 3 s | Max Power after 5 s*) | PS Classification | |
| Power source from AC Mains. | | | | | | |
| A | All primary circuit/ components | Power (W) : | -- | -- | PS3 (declared) | |
| | | V _A (V) : | -- | -- | | |
| | | I _A (A) : | -- | -- | | |
| B# | (Normal condition) | Power (W) : | 13.31 | -- | PS1 | |
| | | V _A (V) : | 5.109 | -- | | |
| | | I _A (A) : | 2.70 | -- | | |
| B# | USB2 output (Normal condition) | Power (W) : | 11.8 | -- | PS1 | |
| | | V _A (V) : | 5.09 | -- | | |
| | | I _A (A) : | 2.68 | -- | | |
| C& | output (SC Q2 pin 8-1) | Power (W) : | 0 | -- | PS1 | |
| | | V _A (V) : | 0 | -- | | |
| | | I _A (A) : | 0 | -- | | |
| D& | output (SC R24) | Power (W) : | 0 | -- | PS1 | |
| | | V _A (V) : | 0 | -- | | |
| | | I _A (A) : | 0 | -- | | |
| E& | 5.0V output (SC Q51 pin D-S) | Power (W) : | 0 | -- | PS1 | |
| | | V _A (V) : | 0 | -- | | |
| | | I _A (A) : | 0 | -- | | |
| Power source from battery. | | | | | | |
| A | All primary circuit/ components | Power (W) : | -- | -- | PS3 (declared) | |
| | | V _A (V) : | -- | -- | | |
| | | I _A (A) : | -- | -- | | |
| B# | (Normal condition) | Power (W) : | 13.31 | -- | PS1 | |
| | | V _A (V) : | 4.948 | -- | | |
| | | I _A (A) : | 2.69 | -- | | |

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| IEC 62368-1:2014 | | | | | |
|--|-----------------------------------|----------------------|-----------------|----|---------|
| Clause | Requirement + Test | | Result - Remark | | Verdict |
| B# | USB2 output (Normal condition) | Power (W) : | 11.8 | -- | PS1 |
| | | V _A (V) : | 4.41 | -- | |
| | | I _A (A) : | 2.67 | -- | |
| C& | output (SC U18 pin 31-17) | Power (W) : | 0 | -- | PS1 |
| | | V _A (V) : | 0 | -- | |
| | | I _A (A) : | 0 | -- | |
| Supplementary Information: Measurement taken only when limits at 3 seconds exceed PS1 limits. #: Test method-power measurement for worst-case fault. &: Test method-power measurement for worst-case power source fault. SC - Short-circuited. | | | | | |

| 6.2.3.1 | Table: Determination of Potential Ignition Sources (Arcing PIS) | | | | P |
|---|---|--|--|-------------------------|---|
| 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 | |
| Input terminal, All Internal circuits | -- | -- | -- | Yes | |
| All secondary circuits | <50 | >0.3 | >15 | No | |
| Supplementary information: All primary circuit/components were considered as arcing PIS, the open circuit of all secondary components/ circuit were not exceeded 50V. 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) | | | | P |
|--|--|--|---|--|-----------------------------|
| 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 |
| Input terminal, All Internal circuits | -- | -- | -- | -- | Yes |
| All secondary circuits | -- | <100 | >15 | -- | Yes |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

Supplementary Information:

All primary components were considered as resistive PIS, the output circuits/ components were considered as resistive PIS.

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.

| 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 |
| 90V, 50Hz | 0.742 | -- | 37.1 | -- | F1 | 0.150 | Battery was empty, and only battery charge mode. Battery charge current: 1.93A |
| 90V, 60Hz | 0.744 | -- | 37.3 | -- | F1 | 0.152 | |
| 100V, 50Hz | 0.664 | 0.25 | 37.3 | -- | F1 | 0.138 | |
| 100V, 60Hz | 0.668 | 0.25 | 37.0 | -- | F1 | 0.140 | |
| 240V, 50Hz | 0.367 | 0.25 | 36.7 | -- | F1 | 0.078 | |
| 240V, 60Hz | 0.364 | 0.25 | 36.9 | -- | F1 | 0.073 | |
| 264V, 50Hz | 0.333 | -- | 36.6 | -- | F1 | 0.077 | Battery was empty, and only battery charge mode. Battery charge |
| 264V, 60Hz | 0.329 | -- | 36.8 | -- | F1 | 0.070 | |
| 90V, 50Hz | 0.718 | -- | 35.9 | -- | F1 | 0.150 | |
| 90V, 60Hz | 0.721 | -- | 35.8 | -- | F1 | 0.152 | |
| 100V, 50Hz | 0.648 | 0.25 | 35.6 | -- | F1 | 0.138 | |
| 100V, 60Hz | 0.651 | 0.25 | 35.7 | -- | F1 | 0.140 | |

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| Clause | Requirement + Test | | | | Result - Remark | | Verdict |
|-------------------------------|--------------------|------|------|----|-----------------|-------|---|
| 240V, 50Hz | 0.356 | 0.25 | 35.8 | -- | F1 | 0.078 | current: 0.23A |
| 240V, 60Hz | 0.354 | 0.25 | 35.5 | -- | F1 | 0.073 | |
| 264V, 50Hz | 0.328 | -- | 35.6 | -- | F1 | 0.077 | |
| 264V, 60Hz | 0.325 | -- | 35.6 | -- | F1 | 0.070 | |
| -- | -- | -- | -- | -- | -- | -- | Battery was fully, and only battery discharge mode. Battery discharge current: 21.22A AC load: 500W |
| Supplementary information: -- | | | | | | | |

| B.3 | | TABLE: Abnormal operating condition tests | | | | | | P |
|--|--------------------|---|----------------|----------|-------------------|----------|--|--|
| Ambient temperature (°C) | | | | | -- | --- | | |
| Power source for EUT: Manufacturer, model/type, output rating .. | | | | | -- | --- | | |
| Component No. | Abnormal Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| USB Output | O-L | 264VAC | 2 h 20 min | RF1 | Max. 0.367A | Type K | T1 coil: 99.2°C, T1 core: 92.3°C, Max. PCB (PCB near U1): 86.2°C, Ambient: 40.0°C. Enclosure (outside, near T1): 41.1°C, Plug holder (outside): 36.3°C, Ambient: 25.0°C. | Max. loaded current was 2.7A, and ran for thermal equilibrium under it. When loaded 2.7A unit shut down immediately. No damage, no hazard. |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

Supplementary information:

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.

S-C: short circuit, O-L: overload, O-C: open circuit; CD: Components damaged;

The Hi-pot test conducted successfully after the completion of fault condition test.

Temperature limits under the fault condition:

1. Temperature limits under the fault condition: T1 winding limit: 165°C (class B), Enclosure outside: 87°C, For other parts: 300°C.

| B.4 | | TABLE: Fault condition tests | | | | | | P |
|--|-----------------|------------------------------|----------------|----------|-----------------------------------|----------|------------|---|
| Ambient temperature (°C) | | | | | 25°C (unless otherwise specified) | | | — |
| Power source for EUT: Manufacturer, model/type, output rating .. | | | | | See page 2 | | | — |
| Component No. | Fault Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| Power source from AC Mains | | | | | | | | |
| BD1 pin 1-2 # | S-C | 264 | < 1 s | F1 | 0 | -- | -- | After S-C, F1 opened immediately, BD1 damaged, No hazard. |
| EC1 # | S-C | 264 | < 1 s | F1 | 0 | -- | -- | After S-C, F1 opened immediately, BD1 damaged, No hazard. |
| CE1 | S-C | 264 | < 1 s | F1 | 0 | -- | -- | After S-C, F1 opened immediately, no hazard. |
| Q1 pin D-S # | S-C | 264 | 10 min | F1 | 0 | -- | -- | After S-C, F1 opened immediately, Q1 damaged, No hazard. |

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| Clause | Requirement + Test | | | | | Result - Remark | | Verdict |
|---|--------------------|-----|--------|----|-------|-----------------|----|--|
| U3 pin 8-7 | S-C | 264 | 10 min | F1 | 0.005 | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. |
| Q51 pin D-S | S-C | 264 | < 1 s | F1 | 0.005 | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. |
| CE51 | S-C | 264 | < 1 s | F1 | 0.005 | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. |
| Battery was charged, battery was empty. | | | | | | | | |
| Q2 pin 1-8 | S-C | 264 | < 1 s | F1 | 0.327 | -- | -- | After S-C, unit normal working, No damage, no hazard. Battery charge current: 1.93A |
| U1 pin 16-10 | S-C | 264 | < 1 s | F1 | 0.328 | -- | -- | After S-C, unit normal working, Q1 damaged, No hazard. Battery charge current: 1.80A |
| U15 pin 2-3 | S-C | 264 | 10 min | F1 | 0.328 | -- | -- | After S-C, unit normal working. USB output shutdown, no damage, no hazard. Battery charge current: 1.93A |

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| Clause | Requirement + Test | | | | | Result - Remark | | Verdict |
|--|--------------------|-----|----------|----|-------|-----------------|----|---|
| U9 pin 24-16 | S-C | 264 | 10 min | F1 | 0.329 | -- | -- | After S-C, unit normal working. no damage, no hazard. Battery charge current: 1.93A |
| Power source from battery, battery was fully | | | | | | | | |
| USB output | O-L | | 1h25mins | -- | -- | -- | -- | Unit normal working, battery discharge: 4.06A |
| U18 pin 17-31 | S-C | -- | 10 min | F1 | -- | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. Battery discharge: 0A |
| C1 | S-C | -- | 10 min | F1 | -- | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. Battery discharge: 0A |
| U1 pin 1-2 | S-C | -- | 10 min | F1 | -- | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. Battery discharge: 0A |

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| Clause | Requirement + Test | | | | | Result - Remark | | | Verdict |
|--------|--------------------|--|--|--|--|-----------------|--|--|---------|
|--------|--------------------|--|--|--|--|-----------------|--|--|---------|

| | | | | | | | | |
|--|-----|----|--------|----|----|----|----|--|
| U1 pin 3-4 | S-C | -- | 10 min | F1 | -- | -- | -- | After S-C, unit shut down immediately. No damage, no hazard. Battery discharge: 0A |
| AC output | S-C | -- | 10 min | F1 | -- | -- | -- | After S-C, unit normal working. no damage, no hazard. Battery discharge: 0A |
| USROOM 607, BLOCK G3, TCL SCIENCE PARK INTERNATIONAL E CITY, NANSHAN DISTRICT, SHENZHEN, 518055, CHINA | S-C | -- | 10 min | F1 | -- | -- | -- | After S-C, unit normal working. no damage, no hazard. Battery discharge: 0A |

Supplementary information:

- 1) S-C: short circuit, O-L: overload, O-C: open circuit; C-D: components damaged;
- 2) The Hi-pot test conducted successfully after the completion of fault condition test;
- 3) # means all types of fusible resistor listed in table 4.1.2 are considered for test and same result came out.

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| 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? :


| | 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 | -- | -- | -- | 1.93A | 5A | 3.98A | 10A | -- | -- |
| Max. current during fault condition | -- | -- | -- | 1.93A | 5A | 4.06A | 10A | -- | -- |
| | | | | | | | | | |
| Test results: | | | | | | | | Verdict | |
| - Chemical leaks | | | | | | | | P | |
| - Explosion of the battery | | | | | | | | P | |
| - Emission of flame or expulsion of molten metal | | | | | | | | P | |
| - Electric strength tests of equipment after completion of tests | | | | | | | | P | |
| Supplementary information: | | | | | | | | | |

Annex M.4 Table: Additional safeguards for equipment containing secondary lithium batteries**P**

| Battery/Cell No. | Test conditions | Measurements | | | Observation |
|------------------|-------------------------------|--------------|-------|-------------------------------------|--|
| | | U | I (A) | Temp (C) | |
| 1# | Normal working | 15.18 | 1.93 | Battery cell: 55.7 Ambient: 27.3 | Unit normal working. |
| 1# | Single fault –SC (Q2 pin 1-8) | 15.18 | 1.93 | Battery cell: 55.7 Ambient: 27.3 | After S-C, unit shut down immediately. No damage, no hazard. Battery charge current: 1.93A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------|--------------------|-----------------|---------|
|--------|--------------------|-----------------|---------|

| | | | | | |
|----|---------------------------------|-------|------|-------------------------------------|--|
| 1# | Single fault –SC (U1 pin 16-10) | 15.19 | 1.80 | Battery cell: 55.7 Ambient: 27.3 | After S-C, unit normal working, Q1 damaged, No hazard. Battery charge current: 1.80A |
| 1# | Single fault –SC (U15 pin 2-3) | 15.18 | 1.93 | Battery cell: 55.7 Ambient: 27.3 | After S-C, unit normal working. USB output shutdown, no damage, no hazard. Battery charge current: 1.93A |
| 1# | Single fault –SC (U9 pin 24-16) | 15.19 | 1.93 | Battery cell: 54.9 Ambient: 27.0 | After S-C, unit normal working. no damage, no hazard. Battery charge current: 1.93A |
| 1# | Abnormal after drop | 15.18 | 1.93 | Battery cell: 55.8 Ambient: 27.4 | Unit normal working. |

Supplementary Information:

| Battery identification | Charging at T_{lowest} (°C) | Observation | Charging at $T_{highest}$ (°C) | Observation |
|------------------------|-------------------------------|---------------|--------------------------------|---------------|
| Battery Cell | 0 | Unit shutdown | >49 | Unit shutdown |

Supplementary Information:

| 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 |
| | Normal operation | 5.15 | 2.70 | 8.0 | 13.84 | 100 |
| | SC (U15 pin 2-3) | 5.13 | 2.68 | 8.0 | 13.83 | 100 |
| | SC (R2) | 5.11 | 2.69 | 8.0 | 13.83 | 100 |
| | SC (U17 pin 17-31) | 0 | 0 | 8.0 | 0 | 100 |

Supplementary Information:

SC=Short circuit, OC=Open circuit.

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| 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 | |
| Internal components | -- | -- | 10 | 5 | Clearances and creepage distances still complied with the requirements of this standard | |
| Enclosure top | Plastic | Min. 1.5 | 100 | 5 | Enclosure remained intact | |
| Enclosure bottom | Plastic | Min. 1.5 | 100 | 5 | Enclosure remained intact | |
| Enclosure Side | Plastic | Min. 1.5 | 100 | 5 | Enclosure remained intact | |
| Supplementary information: -- | | | | | | |

| T.6, T.9 | TABLE: Impact tests | | | | N/A |
|----------------------------|---------------------|----------------|------------------------|-------------|-----|
| Part/Location | Material | Thickness (mm) | Vertical distance (mm) | Observation | |
| -- | -- | -- | -- | -- | |
| Supplementary information: | | | | | |

| T.7 | TABLE: Drop tests | | | | P |
|-------------------------------|-------------------|----------------|------------------|-------------|---|
| Part/Location | Material | Thickness (mm) | Drop Height (mm) | Observation | |
| Top | Plastic | Min. 1.5 | 1000 | No damaged | |
| Side | Plastic | Min. 1.5 | 1000 | No damaged | |
| Bottom | Plastic | Min. 1.5 | 1000 | No damaged | |
| Supplementary information: -- | | | | | |

| T.8 | TABLE: Stress relief test | | | | | P |
|-------------------------------|---------------------------|----------------|-----------------------|--------------|-------------|---|
| Part/Location | Material | Thickness (mm) | Oven Temperature (°C) | Duration (h) | Observation | |
| Overall enclosure | Plastic | Min. 1.5 | 70 | 7 | No damaged | |
| Supplementary information: -- | | | | | | |

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| IEC62368_1B - ATTACHMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|--------------|----------------------|-----------------|---------|------|---|--------|--------|------|-------|--------------|---------|------|----------------------|--------|-------------|--------------|---------|--------|---------|------|---------|------|-------|------|-----------|--------------|-------|------|---------|--------------|-----------------|-----------------|--------|--------|----------|--------|---------|--------|---|
| Clause | Requirement + Test | | | Result - Remark | | Verdict | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div>ATTACHMENT TO TEST REPORT</div> <div>IEC 62368-1</div> <div>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</div> <div>(Audio/video, information and communication technology equipment - Part 1: Safety requirements)</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Differences according to | | EN 62368-1:2014+SHENZHEN ECOFLOW TECHNOLOGY LIMITED1:2017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Attachment Form No. | | EU_GD_IEC62368_1B_II | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Attachment Originator..... | | Nemko AS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Master Attachment | | Date 2017-09-22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Copyright © 2017 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CENELEC COMMON MODIFICATIONS (EN) | | | | | Verdict | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed “Z”. | | | | | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CONTENT S | <div>Add the following annexes:</div> <div><div>Annex ZA (normative)</div><div>Annex ZB (normative)</div><div>Annex ZC (informative)</div><div>Annex ZD (informative)</div></div> <div><div>Normative references to international publications with their corresponding European publications</div><div>Special national conditions</div><div>A-deviations</div><div>IEC and CENELEC code designations for flexible cords</div></div> | | | | | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <div>Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list:</div> <table><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 | P |
| 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. | | | | | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| IEC 62368-1:2014 | | | |
|------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| 4.Z1 | Add the following new subclause after 4.9: 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): 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; 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; 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. 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. | | N/A |
| 5.4.2.3.2.4 | Add the following to the end of this subclause: The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009. | | N/A |
| 10.2.1 | Add the following to c) and d) in table 39: For additional requirements, see 10.5.1. | | N/A |

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|------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 10.5.1 | <p>Add the following after the first paragraph:</p> <p><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:</p> <p>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.</p> <p>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:</p> <p>NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.</p> | | N/A |

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

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|----------------------|--|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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. | | P |
| 5.4.11.1 and Annex G | Finland and Sweden To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either <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. 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 <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. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: <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 |

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|------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.5.2.1 | Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V). | | P |
| 5.5.6 | Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2. | | N/A |
| 5.6.1 | Denmark Add to the end of the subclause 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. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse. | | N/A |
| 5.6.4.2.1 | Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug. | | N/A |
| 5.6.5.1 | To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area. | | N/A |
| 5.7.5 | Denmark To the end of the subclause the following is added: 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. | | N/A |

| IEC 62368-1:2014 | | | |
|------------------|--|-----------------|---------|
| 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 |

| IEC 62368-1:2014 | | | |
|------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.7.6.2 | Denmark To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA . | | N/A |
| B.3.1 and B.4 | Ireland and United Kingdom The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment , tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment , until the requirements of Annexes B.3.1 and B.4 are met | | P |
| G.4.2 | Denmark To the end of the subclause the following is added: 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. 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. 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. 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. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. 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 <i>Justification:</i> Heavy Current Regulations, Section 6c | | N/A |

| IEC 62368-1:2014 | | | |
|------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.4.2 | United Kingdom To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply. | | N/A |
| G.7.1 | United Kingdom To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations. NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug. | | N/A |
| G.7.1 | Ireland To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard | | N/A |
| G.7.2 | Ireland and United Kingdom To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm ² is allowed for equipment which is rated over 10 A and up to and including 13 A. | | N/A |

| IEC 62368-1:2014 | | | |
|------------------|--|-----------------|---------|
| 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:</p> <p>For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.</p> <p><i>Justification:</i></p> <p>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 |

Photo:

Photo 1

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



Photo 2

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



Photo 3

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



Photo 4

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



Photo 5

☐ front

☒ rear

☐ right side

☐ left side

☐ top

☐ bottom

☐ internal



Photo 6

☐ front

☐ rear

☐ right side

☐ left side

☐ top

☒ bottom

☐ internal



Photo 7

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

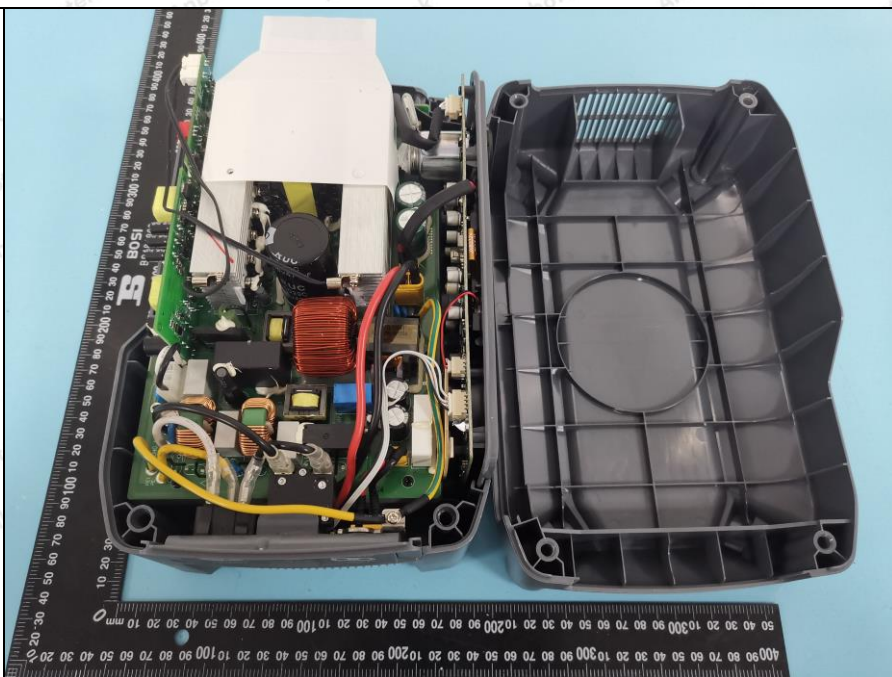
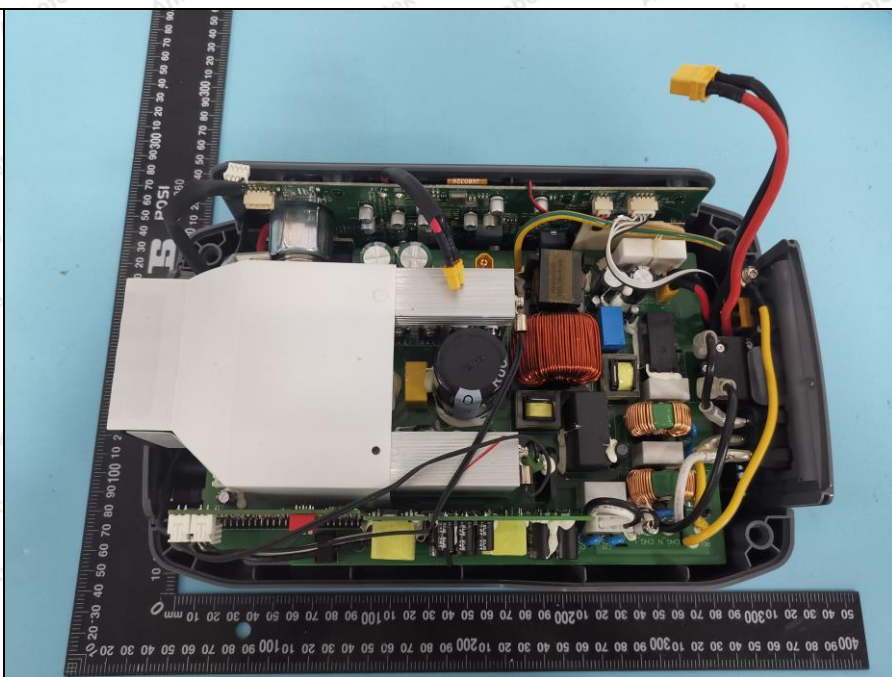


Photo 8

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



End of the report