




TEST REPORT N°: ABON-18JY1592VTBLP


TEST REPORT

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|----------|--|----------|---|
| To: | Shenzhen Gembird Electronics Ltd. | To: | - |
| Attn: | Xiangming liu | Attn: | - |
| Address: | 5/F, New Bldg D, Anfeng industry Park, Lianrun Road, Dalang Longhua, Shenzhen, China | Address: | - |
| Fax: | - | Fax: | - |
| E-mail: | sales@gembird.com | E-mail: | - |

This document includes: 61 pages

| | | | |
|--|--|-------------------|--------------------------------|
| Factory name: | Shenzhen Gembird Electronics Ltd. | | |
| Location: | 5/F, New Bldg D, Anfeng industry Park, Lianrun Road, Dalang Longhua, Shenzhen, China | Sample No: | NST/G182730-1 to NST/G182730-3 |
|  | Start date: | October 15, 2018 | |
| | Finish date: | December 26, 2018 | |
| | Standards used: (Date): | EN 62368-1:2014 | |
| | Sections examined: | All clause | |
| | Re-testing: | No | |
| INVERTER/EG-PWC-042 | | Remark / Note: | SEE PAGE 2 |

CONCLUSION: The sample satisfies to the clauses examined

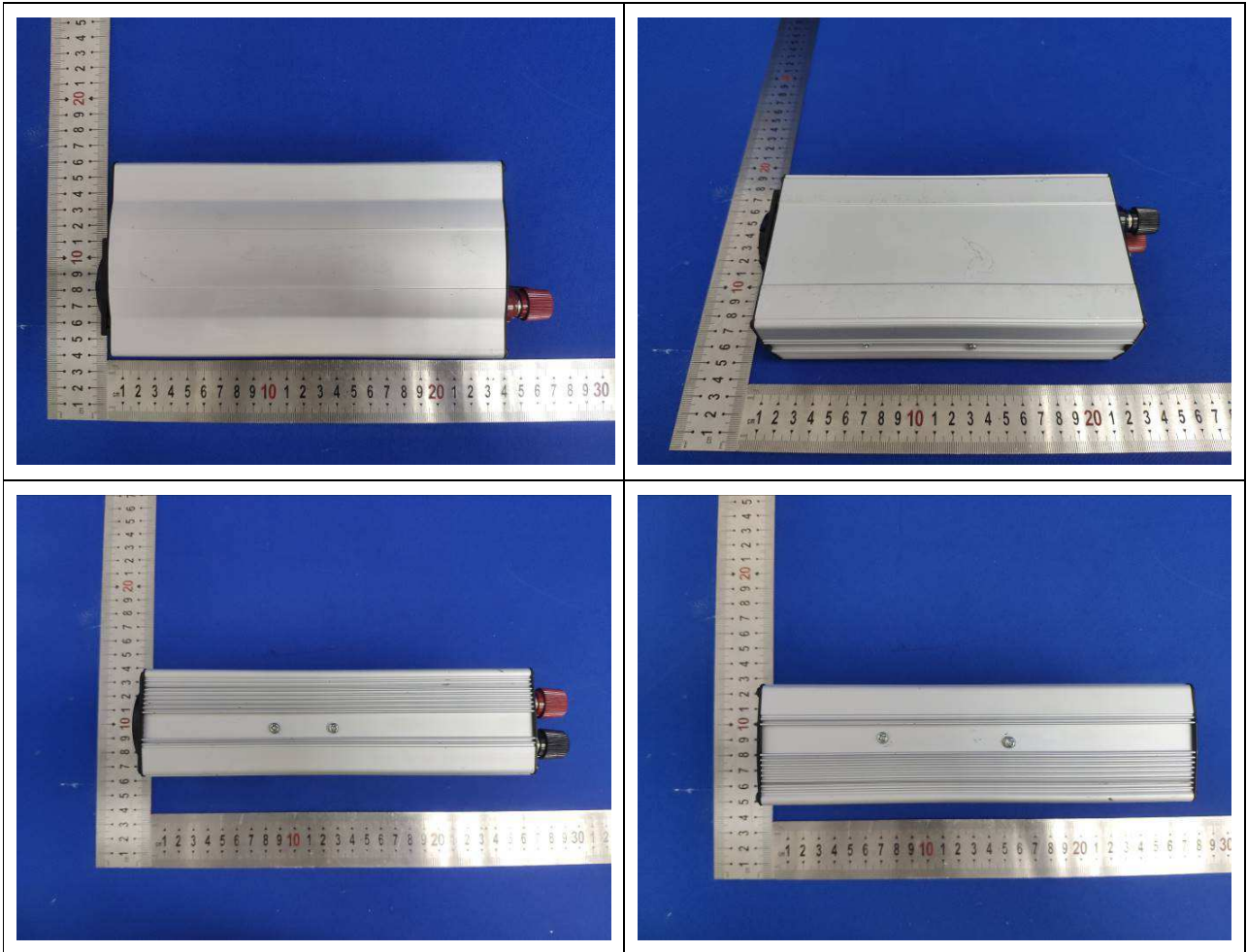
| | |
|---|---|
| Test done by, Cayce He Project Engineer  | Approved by, Tom ZHANG Project Manager |
|---|---|

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

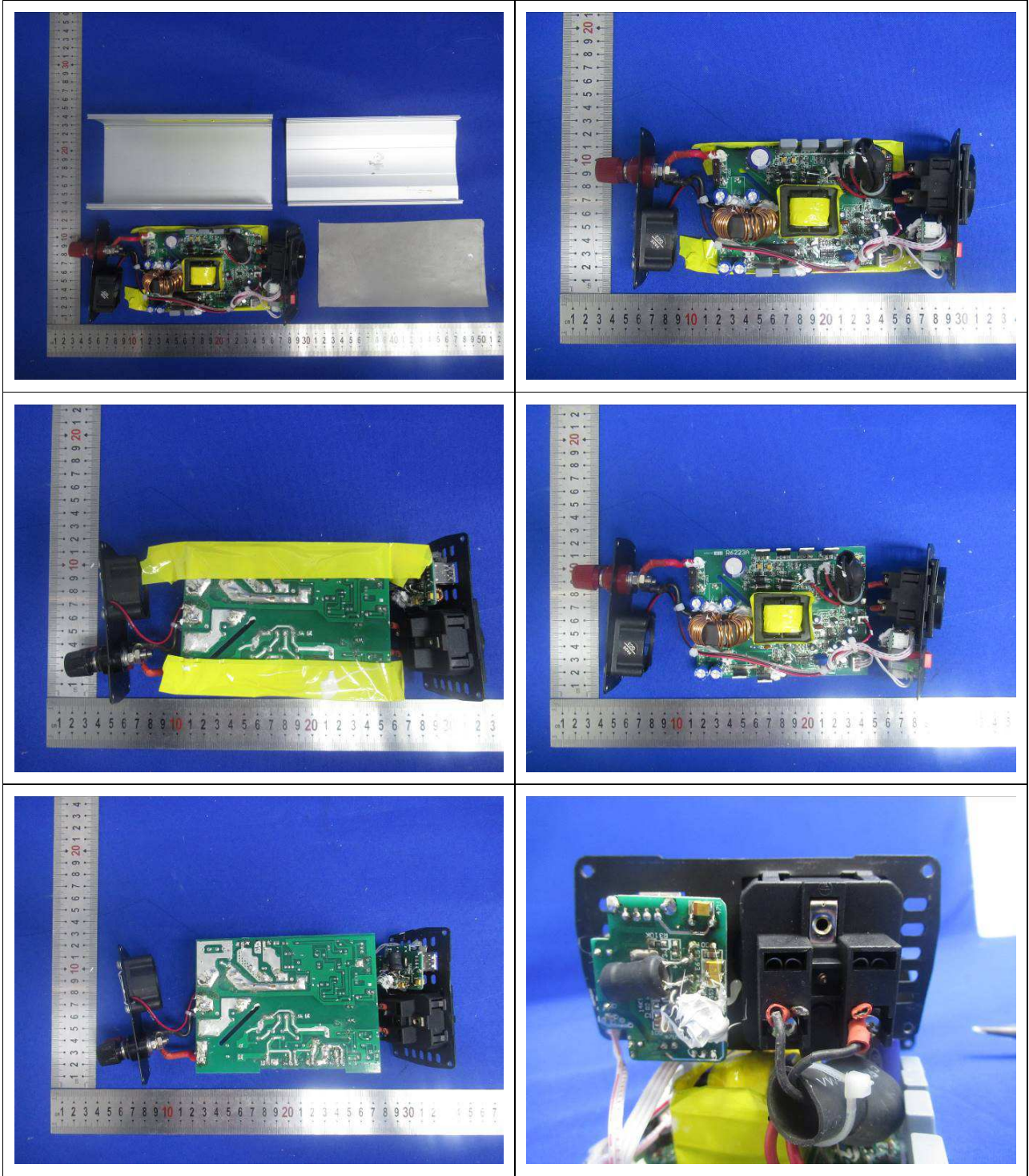


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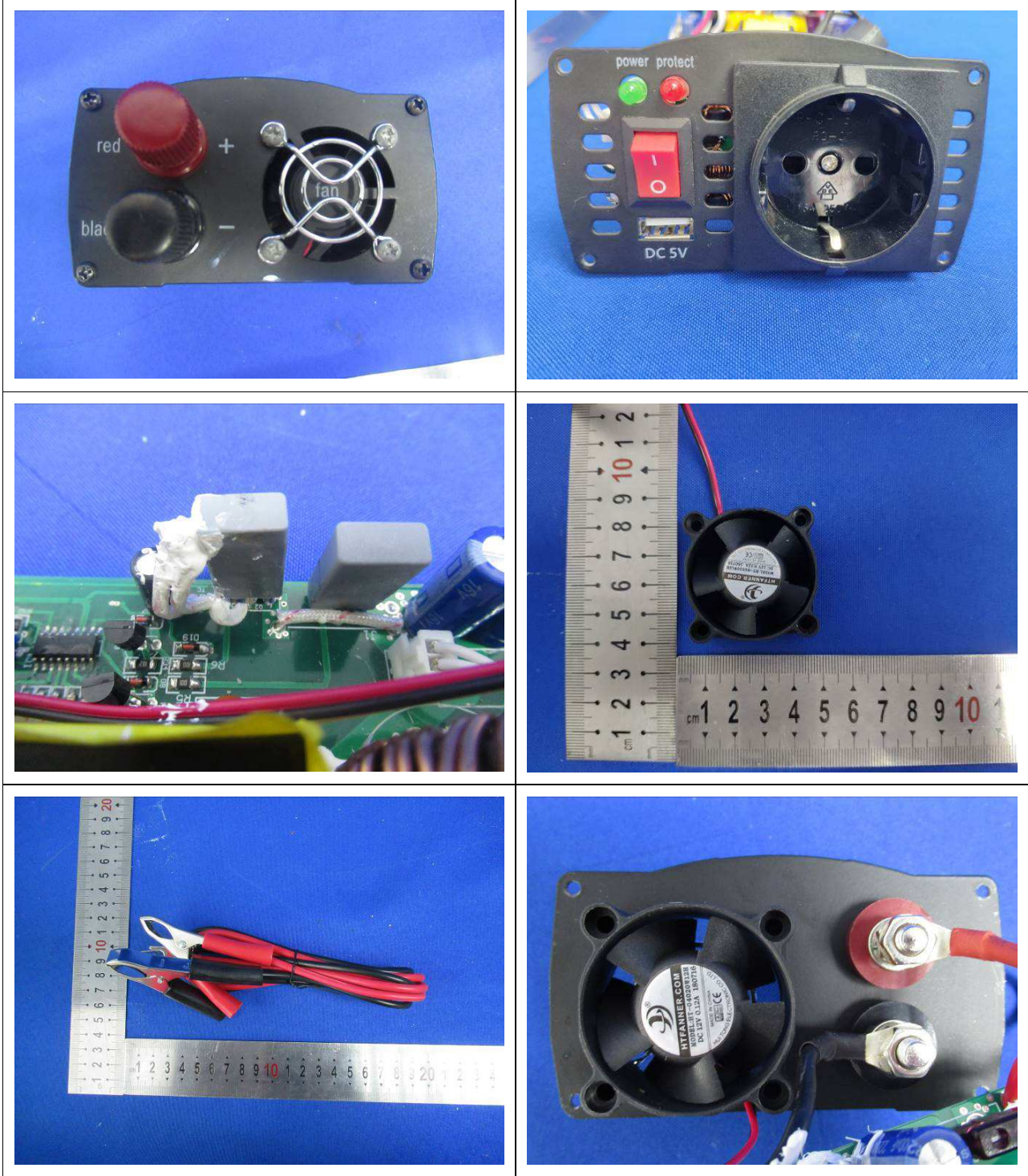
Pictures of tested sample



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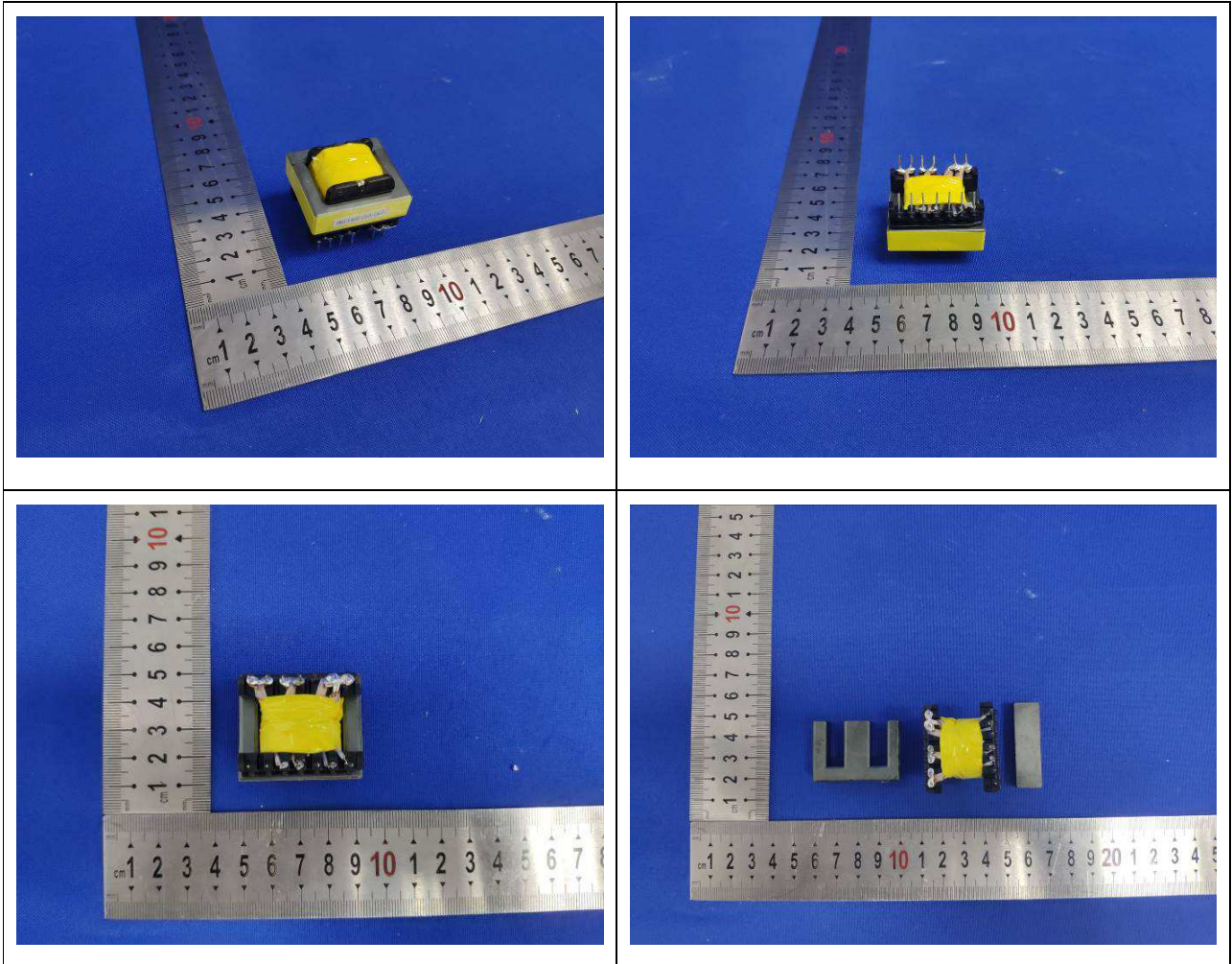


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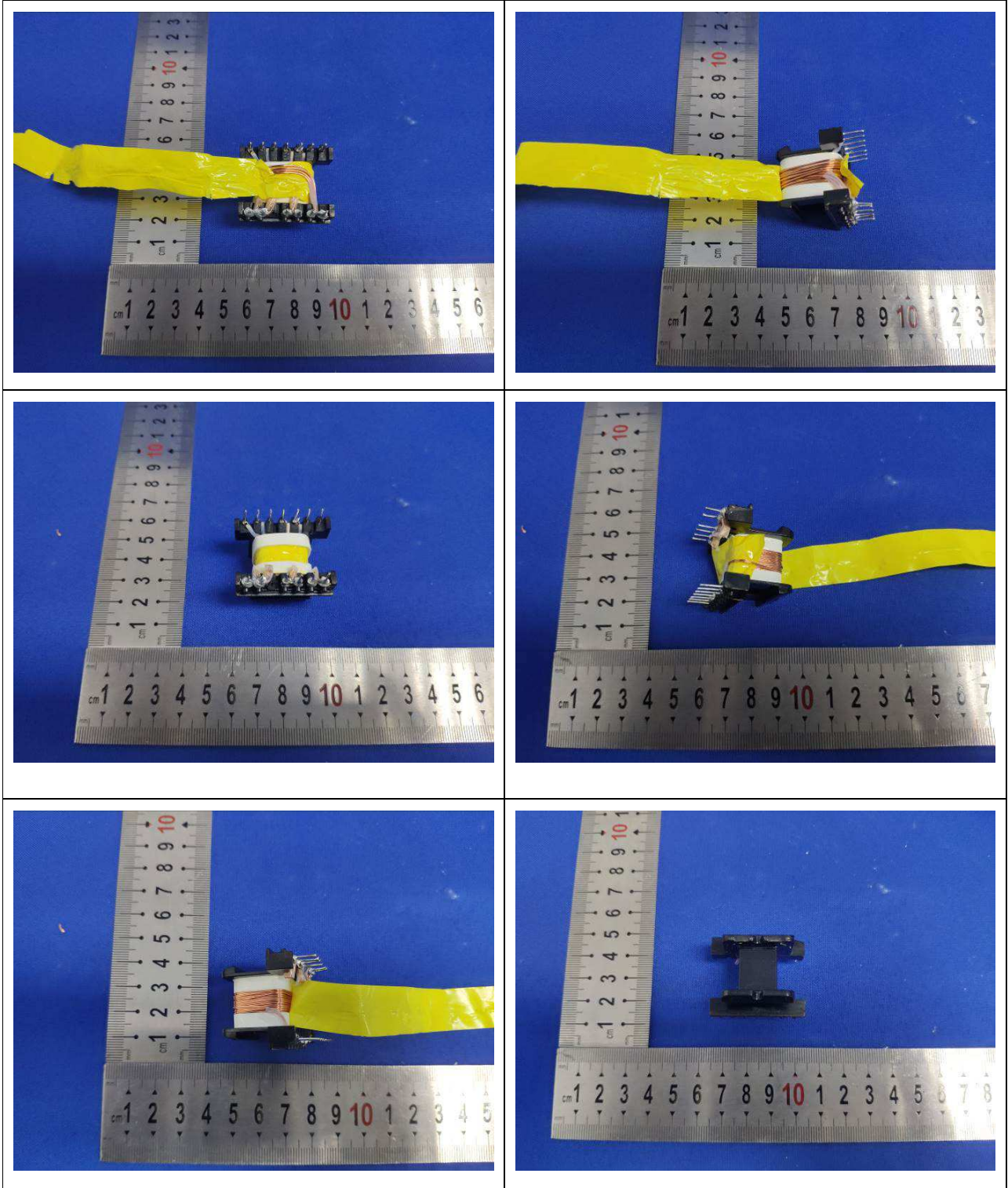


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**Pictures of tested sample
Transformer**



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|---|
| <p>Testing</p> <p>Date of receipt of test item : 2018-10-15</p> <p>Date(s) of performance of test..... : 2018-10-21 to 2018-11-15</p> |
| <p>Summary of Testing and Conclusions</p> <p>The sample(s) tested complies with the requirements of EN 62368-1:2014</p> <p>The maximum operating temperature is defined as +40°C.</p> <p>Clearance was evaluated for operating attitude up to 2000 above sea level.</p> <p>The test result in this report applied the data form worst condition otherwise not specified.</p> <p>The top enclosure is fixed with bottom enclosure by screws method.</p> <p>The sample is indoor use only.</p> |

| | |
|--|----------------------|
| Possible test case verdicts: | |
| - test object does meet the requirement : | P (Pass) |
| - test case does not apply to the test object : | N/A (Not applicable) |
| - test object does not meet the requirement : | F (Fail) |
| - test object does not demand | N/D (Not demanded) |
| General remarks: | |
| "(See remark #)" refers to a remark appended to the report. | |
| Throughout this report a comma is used as the decimal separator. | |



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Copy of marking plate



Note:

1. As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark, the postal address and series No. of products will be marked on the products before being placed on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.
2. Markings on the packaging or in documents accompanying the equipment is only acceptable if it is not possible to place such markings on the products.
3. The height of CE logo shall not be less than 5mm, height of WEEE logo shall be not less than 7mm.

Note: The instruction sheet and marking should be translated to the language where the product will be sold.



TEST REPORT N°: ACCN-18SE0346VTBLP

| IEC 62368-1 | | | |
|-------------|--|--|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4 | GENERAL REQUIREMENTS | | P |
| 4.1.1 | Acceptance of materials, components and subassemblies | | P |
| 4.1.2 | Use of components | (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.4, T.5) | P |
| 4.4.4.3 | Drop tests.....: | (See Annex T.7) | P |
| 4.4.4.4 | Impact tests.....: | (See Annex T.6) | P |
| 4.4.4.5 | Internal accessible safeguard enclosure and barrier tests.....: | (See Annex T.3) | N/A |
| 4.4.4.6 | Glass Impact tests.....: | (See Annex T.9, Annex U) | N/A |
| 4.4.4.7 | Thermoplastic material tests.....: | (See Annex T.8) | P |
| 4.4.4.8 | Air comprising a safeguard.....: | (See Annex T) | P |
| 4.4.4.9 | Accessibility and safeguard effectiveness | | 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 wire, terminal, fuse, capacitance, no movement occur and no contact between pri. and sec. | P |
| 4.7 | Equipment for direct insertion into mains socket - outlets | No such construction provided | 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 such batteries | 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.....: | Two independent and simultaneous movements to open | — |



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| IEC 62368-1 | | | |
|--------------------|--|-------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.8.4 | Battery Compartment Mechanical Tests | (See Table 4.8.4) | N/A |
| 4.8.5 | Battery Accessibility | | N/A |
| 4.9 | Likelihood of fire or shock due to entry of conductive object..... | (See Annex P) | P |

| | | | |
|----------|---|--|-----------------------------------|
| 5 | ELECTRICALLY-CAUSED INJURY | | P |
| 5.2.1 | Electrical energy source classifications..... | ES3 for AC socket output, ES1 for DC input and USB output port. | P |
| 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 | See appended table (5.2) | 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 pulse introduced | N/A |
| 5.2.2.6 | Ringling signals | No means for connection to telephone network and no ringling signal generated. | N/A |
| 5.2.2.7 | Audio signals | Equipment containing audio amplifier. | 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 | P |
| | b) Electric strength test potential (V) | (See appended table (5.4.9)) | P |
| | c) Air gap (mm) | The ES3 voltage<420Vpeak | N/A |
| 5.3.2.4 | Terminals for connecting stripped wire | | P |
| 5.4 | Insulation materials and requirements | | P |
| 5.4.1.2 | Properties of insulating material | | P |
| 5.4.1.3 | Humidity conditioning | | (See sub-clause 5.4.8) P |
| 5.4.1.4 | Maximum operating temperature for insulating materials | | (See appended table 5.4.1.4) P |



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| IEC 62368-1 | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.1.5 | Pollution degree | 2 | — |
| 5.4.1.5.2 | Test for pollution degree 1 environment and for an insulating compound | | N/A |
| 5.4.1.5.3 | Thermal cycling | | N/A |
| 5.4.1.6 | Insulation in transformers with varying dimensions | | N/A |
| 5.4.1.7 | Insulation in circuits generating starting pulses | | N/A |
| 5.4.1.8 | Determination of working voltage | | 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..... | (See appended table 5.4.1.10.2) | N/A |
| 5.4.1.10.3 | Ball pressure | (See appended table 5.4.1.10.3) | P |
| 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 | No such mains transient voltage | — |
| | b) d.c. mains transient voltage | No such mains transient voltage | — |
| | c) external circuit transient voltage..... | No such mains transient voltage | — |
| | d) transient voltage determined by measurement : | No need conduct this test | — |
| 5.4.2.4 | Determining the adequacy of a clearance using an electric strength test | (See appended table 5.4.2.4) | P |
| 5.4.2.5 | Multiplication factors for clearances and test voltages | To be used less than 2000m above sea level | N/A |
| 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 IIIb is assumed to be used | — |
| 5.4.4 | Solid insulation | | N/A |
| 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 | | P |
| 5.4.4.4 | Solid insulation in semiconductor devices | | P |
| 5.4.4.5 | Cemented joints | | P |



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| IEC 62368-1 | | | |
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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.4.6 | Thin sheet material | | P |
| 5.4.4.6.1 | General requirements | | P |
| 5.4.4.6.2 | Separable thin sheet material | | P |
| | Number of layers (pcs) : | 2 | P |
| 5.4.4.6.3 | Non-separable thin sheet material | | P |
| 5.4.4.6.4 | Standard test procedure for non-separable thin sheet material : | (See appended Table 5.4.9) | P |
| 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 | | N/A |
| 5.4.5.1 | General | | N/A |
| 5.4.5.2 | Voltage surge test | | N/A |
| | Insulation resistance (MΩ)..... : | | — |
| 5.4.6 | Insulation of internal wire as part of supplementary safeguard : | (See appended table 5.4.4.2) | P |
| 5.4.7 | Tests for semiconductor components and for cemented joints | | N/A |
| 5.4.8 | Humidity conditioning | | P |
| | Relative humidity (%)..... : | 93 | — |
| | Temperature (°C) : | 40 | — |
| | Duration (h) : | 120h | — |
| 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 | | N/A |
| 5.4.10 | Protection against transient voltages between external circuit | No transient voltages 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 |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | (See appended table 4.1.2) | P |
| 5.5.2.1 | General requirement | | P |
| 5.5.2.2 | Safeguards against capacitor discharge after disconnection of a connector..... | (See appended table 5.5.2.2) | N/A |
| 5.5.3 | Transformers | (See Annex G.5.3) | P |
| 5.5.4 | Optocouplers | (See sub-clause 5.4 or Annex G.12) | P |
| 5.5.5 | Relays | (See Annex G.2) | N/A |
| 5.5.6 | Resistors | (See Annex G.10) | N/A |
| 5.5.7 | SPD's | (See Annex G.8) | 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..... | (See Annex G.10.3) | N/A |
| 5.6 | Protective conductor | | |
| 5.6.2 | Requirement for protective conductors | No protective conductor used | 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) | No such protective conductor | — |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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). | No such protective conductor | — |
| | Protective current rating (A) | No such protective conductor | — |
| 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). | No such protective conductor | 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)..... | (See appended table 5.6.6.2) | 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 | (See appended table 5.7.4) | P |
| 5.7.2.2 | Measurement of prospective touch voltage | | P |
| 5.7.3 | Equipment set-up, supply connections and earth connections | | N/A |
| | System of interconnected equipment (separate connections/single connection) | | — |
| | Multiple connections to mains (one connection at a time/simultaneous connections) | Not multiple connections | — |
| 5.7.4 | Earthed conductive accessible parts..... | (See appended Table 5.7.4) | N/A |
| 5.7.5 | Protective conductor current | | N/A |
| | Supply Voltage (V)..... | | — |
| | Measured current (mA)..... | | — |
| | Instructional Safeguard..... | (See F.4 and F.5) | N/A |
| 5.7.6 | Prospective touch voltage and touch current due to external circuits | | N/A |
| 5.7.6.1 | Touch current from coaxial cables | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | | 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 | (See appended table 6.2.2) | P |
| 6.2.2.5 | PS2 | (See appended table 6.2.2) | N/A |
| 6.2.2.6 | PS3 | (See appended table 6.2.2) | 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 |
| 6.3.1 (a) | No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials | (See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6) | P |
| 6.3.1 (b) | Combustible materials outside fire enclosure | | P |
| 6.4 | Safeguards against fire under single fault conditions | | P |
| 6.4.1 | Safeguard Method | | P |
| 6.4.2 | Reduction of the likelihood of ignition under single fault conditions in PS1 circuits | | P |
| 6.4.3 | Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits | | P |
| 6.4.3.1 | General | | P |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | | P |
| 6.4.5 | Control of fire spread in PS2 circuits | | N/A |
| 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 | PS3 circuits exists in approved adaptors presented in this report. | P |
| 6.4.7 | Separation of combustible materials from a PIS | Clause 6.4.8 applied | N/A |
| 6.4.7.1 | General..... : | (See tables 6.2.3.1 and 6.2.3.2) | N/A |
| 6.4.7.2 | Separation by distance | | N/A |
| 6.4.7.3 | Separation by a fire barrier | | N/A |
| 6.4.8 | Fire enclosures and fire barriers | | P |
| 6.4.8.1 | Fire enclosure and fire barrier material properties | | P |
| 6.4.8.2.1 | Requirements for a fire barrier | | P |
| 6.4.8.2.2 | Requirements for a fire enclosure | | P |
| 6.4.8.3 | Constructional requirements for a fire enclosure and a fire barrier | | P |
| 6.4.8.3.1 | Fire enclosure and fire barrier openings | | P |
| 6.4.8.3.2 | Fire barrier dimensions | | P |
| 6.4.8.3.3 | Top Openings in Fire Enclosure: dimensions (mm) | | P |
| | Needle Flame test | | N/A |
| 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) | No door or cover being provided | N/A |
| 6.4.8.4 | Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating.....: | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.5 | Internal and external wiring | | P |
| 6.5.1 | Requirements | | P |
| 6.5.2 | Cross-sectional area (mm ²) | (See appended table 4.1.2) | — |
| 6.5.3 | Requirements for interconnection to building wiring | (See Annex Q.) | N/A |
| 6.6 | Safeguards against fire due to connection to additional equipment | (See Annex Q.) | P |
| | External port limited to PS2 or complies with Clause Q.1 | See clause Q.1 and Annex Q. | P |

| | | | |
|----------|--|--|-----|
| 7 | INJURY CAUSED BY HAZARDOUS SUBSTANCES | | N/A |
| 7.2 | Reduction of exposure to hazardous substances | | N/A |
| 7.3 | Ozone exposure | | N/A |
| 7.4 | Use of personal safeguards (PPE) | | N/A |
| | Personal safeguards and instructions | Warning label and warning information in user manual | — |
| 7.5 | Use of instructional safeguards and instructions | | N/A |
| | Instructional safeguard (ISO 7010) | | — |
| 7.6 | Batteries..... | (See Annex M) | N/A |

| | | | |
|----------|---|--|-----|
| 8 | MECHANICALLY-CAUSED INJURY | | P |
| 8.1 | General | | P |
| 8.2 | Mechanical energy source classifications | MS1 | P |
| 8.3 | Safeguards against mechanical energy sources | | P |
| 8.4 | Safeguards against parts with sharp edges and corners | | N/A |
| 8.4.1 | Safeguards | MS1 | N/A |
| 8.5 | Safeguards against moving parts | No such moving part | P |
| 8.5.1 | MS2 or MS3 part required to be accessible for the function of the equipment | | N/A |
| 8.5.2 | Instructional Safeguard..... | Normal operation can not touch fan blade | — |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | (See Annex F.4 and Annex K) | 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..... | (See appended table 8.5.5.2) | N/A |
| 8.6 | Stability | MS1 | N/A |
| 8.6.1 | Product classification | MS1 | 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 | | 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 | MS1 equipment has handle | N/A |
| 8.8.1 | Classification | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.8.2 | Applied Force | | N/A |
| 8.9 | Wheels or casters attachment requirements | No such wheels or casters attachment | N/A |
| 8.9.1 | Classification | | N/A |
| 8.9.2 | Applied force | | — |
| 8.10 | Carts, stands and similar carriers | | 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 | | 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..... | (See Annex T) | N/A |
| | Button/Ball diameter (mm)..... | No such device | — |

| | | | |
|----------|--|-----|-----|
| 9 | THERMAL BURN INJURY | | P |
| 9.2 | Thermal energy source classifications | TS1 | P |
| 9.3 | Safeguard against thermal energy sources | | N/A |
| 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 |
|-----------|------------------|--|-----|



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 10.2 | Radiation energy source classification | RS1,For LED indicator see below. | N/A |
| 10.2.1 | General classification | | N/A |
| 10.3 | Protection against laser radiation | No laser device | N/A |
| | Laser radiation that exists equipment: | | — |
| | Normal, abnormal, single-fault..... : | | N/A |
| | Instructional safeguard : | | — |
| | Tool..... : | | — |
| 10.4 | Protection against visible, infrared, and UV radiation | RS1 | 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 . : | | P |
| 10.4.1.d) | Normal, abnormal, single-fault conditions : | (See appended table B.3 & B.4) | 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 | | N/A |
| 10.5.1 | X- radiation energy source that exists equipment : | (See appended table B.3 & B.4) | 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 : | (See appended table B.3 & B.4) | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| | Maximum radiation (pA/kg)..... : | | N/A |
| 10.6 | Protection against acoustic energy sources | | N/A |
| 10.6.1 | General | | N/A |
| 10.6.2 | Classification | | N/A |
| | Acoustic output, dB(A)..... : | | N/A |
| | Output voltage, unweighted r.m.s..... : | | N/A |
| 10.6.4 | Protection of persons | | N/A |
| | Instructional safeguards : | | N/A |
| | Equipment safeguard prevent ordinary person to RS2..... : | | — |
| | Means to actively inform user of increase sound pressure..... : | | — |
| | Equipment safeguard prevent ordinary person to RS2..... : | | — |
| 10.6.5 | Requirements for listening devices (headphones, earphones, etc.) | | N/A |
| 10.6.5.1 | Corded passive listening devices with analog input | | 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 Test Item Particulars and appended test tables) | P |
| | Audio Amplifiers and equipment with audio amplifiers..... : | (See Annex E) | N/A |
| B.2.3 | Supply voltage and tolerances | | P |
| B.2.5 | Input test : | (See appended table B.2.5) | P |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| B.3 | Simulated abnormal operating conditions | | P |
| B.3.1 | General requirements | (See appended table B.3) | P |
| B.3.2 | Covering of ventilation openings | (See appended table B.3) | P |
| B.3.3 | D.C. mains polarity test | | P |
| 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 | | N/A |
| B.3.7 | Abnormal operating conditions as specified in Clause E.2. | | N/A |
| B.3.8 | Safeguards functional during and after abnormal operating conditions | | P |
| B.4 | Simulated single fault conditions Error! No bookmark name given. | | P |
| B.4.2 | Temperature controlling device open or short-circuited | PTC is used for control of abnormal temperature. | P |
| B.4.3 | Motor tests | | P |
| B.4.3.1 | Motor blocked or rotor locked increasing the internal ambient temperature | (See appended table B.4) | P |
| 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 | | 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 | No intermitted 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 | | N/A |
| B.4.9 | Battery charging under single fault conditions | | N/A |
| C | UV RADIATION | | N/A |
| C.1 | Protection of materials in equipment from UV radiation | No UV radiation within the EUT. | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| 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 | | 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 | — |
| 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 main-body surface | P |
| F.3.2 | Equipment identification markings | | P |
| F.3.2.1 | Manufacturer identification | See marking plate | — |
| F.3.2.2 | Model identification | See marking plate | — |
| F.3.3 | Equipment rating markings | | P |
| F.3.3.1 | Equipment with direct connection to mains | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| F.3.3.2 | Equipment without direct connection to mains | | P |
| F.3.3.3 | Nature of supply voltage | d.c. | — |
| F.3.3.4 | Rated voltage | 12V d.c. | — |
| F.3.3.4 | Rated frequency | | — |
| F.3.3.6 | Rated current or rated power | 28A | — |
| F.3.3.7 | Equipment with multiple supply connections | No multiple supply connections | 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..... | 16A 250V~ | P |
| F.3.5.2 | Switch position identification marking | Smbol" " marked on main switch to indicate "On" Smbol" ○ " marked on main switch to indicate "Off" | P |
| F.3.5.3 | Replacement fuse identification and rating markings..... | | N/A |
| F.3.5.4 | Replacement battery identification marking..... | | 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 | | N/A |
| F.3.6.1.1 | Protective earthing conductor terminal | | N/A |
| F.3.6.1.2 | Neutral conductor terminal | | N/A |
| F.3.6.1.3 | Protective bonding conductor terminals | | N/A |
| F.3.6.2 | Class II equipment (IEC60417-5172) | Class II | P |
| F.3.6.2.1 | Class II equipment with or without functional earth | | P |
| F.3.6.2.2 | Class II equipment with functional earth terminal marking | | N/A |
| F.3.7 | Equipment IP rating marking | IPX0 | — |
| F.3.8 | External power supply output marking | | N/A |
| F.3.9 | Durability, legibility and permanence of marking | | P |
| F.3.10 | Test for permanence of markings | | P |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| F.4 | Instructions | | P |
| | a) Equipment for use in locations where children not likely to be present – marking | | N/A |
| | 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) | j) Replaceable components or modules providing safeguard function | | N/A |
| F.5 | Instructional safeguards | | P |
| | 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 | | P |
| G.1.1 | General requirements | Approved mains switch used (see appended table 4.1.2) for details. | P |
| G.1.2 | Ratings, endurance, spacing, maximum load | | P |
| G.2 | Relays | | N/A |
| G.2.1 | General requirements | No relay 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 |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.3.1 | Thermal cut-offs | No such thermal cut-off 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 such thermal link 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 | PTC thermistor only used in secondary circuit to deliver signal | N/A |
| G.3.4 | Overcurrent protection devices | | N/A |
| G.3.5 | Safeguards components not mentioned in G.3.1 to G.3.4 | | P |
| G.3.5.1 | Non-resettable devices suitably rated and marking provided | | P |
| G.3.5.2 | Single faults conditions | (See appended Table B.4) | P |
| G.4 | Connectors | | N/A |
| G.4.1 | Spacings | | N/A |
| G.4.2 | Mains connector configuration | | N/A |
| G.4.3 | Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely | | N/A |
| G.5 | Wound Components | | P |
| G.5.1 | Wire insulation in wound components | (See Annex J) | P |
| G.5.1.2 a) | Two wires in contact inside wound component, angle between 45° and 90° | Insulation tube and insulation tape used in the transformer as mechanical protection | P |
| G.5.1.2 b) | Construction subject to routine testing | | N/A |
| G.5.2 | Endurance test on wound components | Certified tube to provide physical separation | N/A |
| G.5.2.1 | General test requirements | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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) | Transformers used are suitable for their intended applications and comply with relevant parts of this standard and particularly Annex C. See Annex C- Transformers. | N/A |
| | Position..... | T1 used in equipment | — |
| | Method of protection | (See G5.3.3) | — |
| G.5.3.2 | Insulation | | P |
| | Protection from displacement of windings | Fixed by bobbin,margin tape, and insulation tape | — |
| G.5.3.3 | Overload test..... | (See appended 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 | | P |
| G.5.4.1 | General requirements | The fan is certified,EN60950,TUV R50360000, model:HT-04020W12H, DC 12V 0.12A. | N/A |
| | Position | | — |
| G.5.4.2 | Test conditions | | N/A |
| G.5.4.3 | Running overload test | | N/A |
| G.5.4.4 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | — |
| G.5.4.5 | Running overload test for d.c. motors in secondary circuits | | N/A |
| G.5.4.5.2 | Tested in the unit | | N/A |
| | Electric strength test (V)..... | | — |
| G.5.4.5.3 | Tested on the Bench – Alternative test method; test time (h) | | N/A |



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| | Electric strength test (V)..... : | | — |
| G.5.4.6 | Locked-rotor overload test for d.c. motors in secondary circuits | | P |
| G.5.4.6.2 | Tested in the unit | | P |
| | Maximum Temperature : | (See G5.3.3) | P |
| | 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 | | P |
| G.6.2 | Solvent-based enamel wiring insulation | | N/A |
| G.7 | Mains supply cords | | N/A |
| G.7.1 | General requirements | | 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 Error! No bookmark name given. | | 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 | (See appended table 5.4.11.1) | N/A |
| G.7.5 | Non-detachable cord bend protection | | N/A |
| G.7.5.1 | Requirements | No equipment intended to be moved while in operation. | N/A |
| G.7.5.2 | Mass (g) | 800 | — |
| | Diameter (m) | 0.23*0.11*0.06 | — |
| | Temperature (°C) | 40°C | — |
| G.7.6 | Supply wiring space | | N/A |
| G.7.6.2 | Stranded wire | | N/A |
| G.7.6.2.1 | Test with 8 mm strand | | N/A |
| G.8 | Varistors | | N/A |
| G.8.1 | General requirements | No such varistors used | 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 resistor. | 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 |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.10.3.2 | Voltage surge test | | N/A |
| G.10.3.3 | Impulse test | | N/A |
| G.11 | Capacitor and RC units | | N/A |
| G.11.1 | General requirements | No such capacitor used | N/A |
| G.11.2 | Conditioning of capacitors and RC units | | N/A |
| G.11.3 | Rules for selecting capacitors | | N/A |
| G.12 | Optocouplers | | P |
| | Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results)..... : | Approved Optocouplers used which comply with IEC 60747-5-5:2007 Spacing, CR/CI≥6.4 | P |
| | Type test voltage Vini | | — |
| | Routine test voltage, Vini,b | | — |
| G.13 | Printed boards | | P |
| G.13.1 | General requirements | Approved Class V-0 PCB used | P |
| G.13.2 | Uncoated printed boards | | P |
| G.13.3 | Coated printed boards | | N/A |
| G.13.4 | Insulation between conductors on the same inner surface | | N/A |
| | Compliance with cemented joint requirements (Specify construction)..... : | | — |
| G.13.5 | Insulation between conductors on different surfaces | | N/A |
| | Distance through insulation..... : | (See appended table 5.4.4.5) | 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 | | NA |
| G.14.1 | Requirements | (See G.13) | N/A |
| G.15 | Liquid filled components | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 |
| G.16 | IC including capacitor discharge function (ICX) | | N/A |
| a) | Humidity treatment in accordance with sc5.4.8 – 120 hours | | 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 | | N/A |
| H.2 | Method A | | N/A |
| H.3 | Method B | | N/A |
| H.3.1 | Ringling signal | | N/A |
| H.3.1.1 | Frequency (Hz) | | — |
| H.3.1.2 | Voltage (V) | | — |
| H.3.1.3 | Cadence; time (s) and voltage (V) | | — |
| H.3.1.4 | Single fault current (mA): | | — |



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| IEC 62368-1 | | | |
|--------------------|---|-------------------------------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | | N/A |
| | General requirements | | N/A |
| 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 | (See Annex G) | 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 | (See appended table B.4) | 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 | (See appended table 5.4.11) | N/A |
| L | DISCONNECT DEVICES | | P |
| L.1 | General requirements | | P |
| L.2 | Permanently connected equipment | | N/A |
| L.3 | Parts that remain energized | | N/A |
| L.4 | Single phase equipment | | P |
| L.5 | Three-phase equipment | | N/A |
| L.6 | Switches as disconnect devices | | P |



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| IEC 62368-1 | | | |
|--------------------|--|---|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| L.7 | Plugs as disconnect devices | | N/A |
| L.8 | Multiple power sources | | N/A |
| M | EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS | | N/A |
| M.1 | General requirements | | N/A |
| M.2 | Safety of batteries and their cells | | N/A |
| M.2.1 | Requirements | | N/A |
| M.2.2 | Compliance and test method (identify method) .. : | | N/A |
| M.3 | Protection circuits | | N/A |
| M.3.1 | Requirements | | N/A |
| M.3.2 | Tests | | N/A |
| | - Overcharging of a rechargeable battery | | N/A |
| | - Unintentional charging of a non-rechargeable battery | | N/A |
| | - Reverse charging of a rechargeable battery | | N/A |
| | - Excessive discharging rate for any battery | | N/A |
| M.3.3 | Compliance | (See appended Tables and Annex M and M.4) | N/A |
| M.4 | Additional safeguards for equipment containing secondary lithium battery | | N/A |
| M.4.1 | General | | N/A |
| M.4.2 | Charging safeguards | | N/A |
| M.4.2.1 | Charging operating limits | | N/A |
| M.4.2.2a) | Charging voltage, current and temperature | (See Table M.4) | — |
| M.4.2.2 b) | Single faults in charging circuitry | (See Annex B.4) | — |
| M.4.3 | Fire Enclosure | | N/A |
| M.4.4 | Endurance of equipment containing a secondary lithium battery | | N/A |
| M.4.4.2 | Preparation | | N/A |
| M.4.4.3 | Drop and charge/discharge function tests | | N/A |
| | Drop | | N/A |
| | Charge | | N/A |
| | Discharge | | N/A |



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| IEC 62368-1 | | | |
|--------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| M.4.4.4 | Charge-discharge cycle test | | N/A |
| M.4.4.5 | Result of charge-discharge cycle test | | N/A |
| M.5 | Risk of burn due to short circuit during carrying | | N/A |
| M.5.1 | Requirement | | N/A |
| M.5.2 | Compliance and Test Method (Test of P.2.3) | | N/A |
| M.6 | Prevention of short circuits and protection from other effects of electric current | | N/A |
| M.6.1 | Short circuits | | N/A |
| M.6.1.1 | General requirements | | N/A |
| M.6.1.2 | Test method to simulate an internal fault | | N/A |
| M.6.1.3 | Compliance (Specify M.6.1.2 or alternative method) : | | N/A |
| M.6.2 | Leakage current (mA) : | | N/A |
| M.7 | Risk of explosion from lead acid and NiCd batteries | | N/A |
| M.7.1 | Ventilation preventing explosive gas concentration | | N/A |
| M.7.2 | Compliance and test method | | N/A |
| M.8 | Protection against internal ignition from external spark sources of lead acid batteries | | N/A |
| M.8.1 | General requirements | | N/A |
| M.8.2 | Test method | | N/A |
| M.8.2.1 | General requirements | | N/A |
| M.8.2.2 | Estimation of hypothetical volume Vz (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) : | | N/A |



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| IEC 62368-1 | | | |
|--------------------|---|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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..... | | — |
| 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) | 6.35*3.3 | — |
| P.2.3 | Safeguard against the consequences of entry of foreign object | | P |
| P.2.3.1 | Safeguards against the entry of a foreign object | | P |
| | Openings in transportable equipment | | P |
| | 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) | | P |
| P.3 | Safeguards against spillage of 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 | | N/A |
| P.4.2 a) | Conditioning testing | | N/A |
| | Tc (°C)..... | | — |
| | Tr (°C) | | — |
| | Ta (°C) | | — |
| P.4.2 b) | Abrasion testing | (See G.13.6.2) | N/A |
| P.4.2 c) | Mechanical strength testing | (See Annex T) | N/A |
| Q | CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING | | P |
| Q.1 | Limited power sources | | P |



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| IEC 62368-1 | | | |
|--------------------|--|-------------------------|------------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | | 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 | | 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 |
| 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 | Certified material used | 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 REPORT N°: ABON-18JY1592VTBLP

| IEC 62368-1 | | | |
|--------------------|--|--------------------------|----------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Test flame according to IEC 60695-11-5 with conditions as set out | | N/A |
| | Test specimen does not show any additional hole | | N/A |
| S.3 | Flammability test for the bottom of a fire enclosure | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm)..... | | — |
| | Cheesecloth did not ignite | | N/A |
| S.4 | Flammability classification of materials | | N/A |
| S.5 | Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W | | N/A |
| | Samples, material | | — |
| | Wall thickness (mm)..... | | — |
| | Conditioning (test condition), (°C)..... | | — |
| | Test flame according to IEC 60695-11-20 with conditions as set out | | N/A |
| | After every test specimen was not consumed completely | | N/A |
| | After fifth flame application, flame extinguished within 1 min | | N/A |
| 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 | (See appended table T3) | N/A |
| T.4 | Steady force test, 100 N | (See appended table T4) | N/A |
| T.5 | Steady force test, 250 N | (See appended table T5) | P |
| T.6 | Enclosure impact test | (See appended table T6) | P |
| | Fall test | | P |
| | Swing test | | N/A |
| T.7 | Drop test | (See appended table T7) | P |
| T.8 | Stress relief test | Fan,switch,terminal | N/A |
| T.9 | Impact Test (glass) | | N/A |



TEST REPORT N°: ABON-18JY1592VTBLP

| IEC 62368-1 | | | |
|--------------------|---|--------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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..... : | (See sub-clause 4.4.4.9) | N/A |
| T.11 | Test for telescoping or rod antennas | | N/A |
| | Torque value (Nm)..... : | | — |
| U | MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION | | N/A |
| U.1 | General requirements | | N/A |
| U.2 | Compliance and test method for non-intrinsically protected CRTs | | N/A |
| U.3 | Protective Screen..... : | (See Annex T) | 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 |



TEST REPORT N°: ACCN-18SE0346VTBLP

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

| 4.1.2 | TABLE: List of critical components | | | | | P |
|-------------------------------------|--|------------------|---|------------------------|--|---|
| Object / part No. | Manufacturer/ trademark | Type / model | Technical data | Standard | Mark(s) of conformity ¹ | |
| Power switch | Yueqing Niufulai Electronics Co., Ltd. | KCD1 B1 | AC250V6A, 10000,T125/55 | IEC/EN 61058-1 | TÜV R 50163367 | |
| -Alternative | Ningbo soken Electrical Co Ltd. | RK2-16 | AC250V, 16(6)A, 10E3, T100/55 | IEC/EN 61058-1 | VDE 40012988 | |
| Socket-outlet | RONGFENG ELECTRICAL (GUANGZHOU) CO, LTD. | E-08-L E-08-D | AC250V,16A | IEC/EN 60884-1 | TÜV R 50209406 | |
| -Alternative | Rich Bay Co Ltd. | RG-02 | AC250V,16A | DIN VDE 0620-1 | VDE 082796 | |
| -Alternative | Rich Bay Co Ltd. | RB-02 | AC250V,13A | BS 1363 | KM 89342 | |
| -Alternative | RONGFENG ELECTRICAL (GUANGZHOU) CO, LTD | E-08 | AC250V16A | IEC/EN 60884-1 | TÜV R 50209406 | |
| Fuse | LITTELFUSE INC | 257APC | 32VDC, 40A | UL 248-1 EN 62368-1 | UL E71611& Test with appliance | |
| Input wire | XINGDA ELECTRONICS WIRE & CABLE CO.,LTD. | 1015 | PVC, 105°C,13AWG | UL758 EN 62368-1 | UL E187208& Test with appliance | |
| -Alternative | 3Q WIRE & CABLE CO LTD | 1015 | PVC, 105°C, at least 1.5mm ² | UL 758 EN 62368-1 | UL E341104 & Test with appliance | |
| -Alternative | DONGGUAN CHENG XING ELECTRONIC CO LTD | 1015 | PVC, 105°C, at least 1.5mm ² | UL 758 EN 62368-1 | UL E249743 & Test with appliance | |
| Internal wire (to socket outlet) | XINGDA ELECTRONICS WIRE & CABLE CO.,LTD. | 1015 | 300V, VW-1, 20AWG min, 105°C | UL 758 EN 62368-1 | E187208& Test with appliance | |
| -Alternative | SHANGHAI QIAOPU WIRK & CABLE CO LTD | 1015 | 300V, VW-1, 20AWG min, 105°C, double insulated wire | UL 758 EN 62368-1 | UL E330901 & Test with appliance | |
| -Alternative | 3Q WIRE & CABLE CO LTD | 1015 | 300V, VW-1, 20AWG min, 105°C, double insulated wire | UL 758 EN 62368-1 | UL E341104 & Test with appliance | |



TEST REPORT N°: ABON-18JY1592VTBLP

| IEC 62368-1 | | | | | |
|--------------------|---|--------------|--|--------------------------------|----------------------------------|
| Clause | Requirement + Test | | Result - Remark | | Verdict |
| -Alternative | DONGGUAN CHENG XING ELECTRONIC CO LTD | 1015 | 300V, VW-1, 20AWG min, 105°C, double insulated wire | UL 758 EN 62368-1 | UL E249743 & Test with appliance |
| PCB | WENZHOU KANGZHENG ELECTRIC CO LTD | KZ | 94V-0, 130°C | UL 796 UL 94 EN 62368-1 | UL E309178 & Test with appliance |
| Optocoupler | SharpCorporationElectronic Components and Devices Group | PC817 | Cr>=6.4 mm Cl>=6.4mm UIOTM =890V 30/100/21 DTI>=0.4mm | IEC 60747-5-2 EN 60747-5-5 | VDE 40008087 |
| -Alternative | Lite-On Technology Corporation | LTV-817 | Cr>=7.0mm Cl>=7.0mm UIOTM =6000V 30/110/21 DTI>=0.4mm | EN 60747-5-5 | VDE 40015248 |
| -Alternative | Bright Led Electronics Corp. | BPC 817 | Cr>=8.0 mm Cl>=7.6mm UIOTM =5000V 30/100/21 DTI>=0.4mm | EN 60747-5-5 | VDE 40007240 |
| -Alternative | Changzhou Galaxy Century Micro-Electronics Co., Ltd. | BL817 | Cr>=8.0 mm Cl>=7.6mm UIOTM =5000V 30/100/21 DTI>=0.4mm | EN 60747-5-5 | VDE 40034140 |
| -Alternative | Everlight Electronics Co., Ltd | EL817 | Cr>=7.6 mm Cl>=7.6mm UIOTM =6000V 55/110/21 DTI>=0.4mm | IEC 60747-5-2 IEC 60747-5-5 | VDE 132249 |
| -Alternative | COSMO ELECTRONICS CORP. | K1010 | Cr>=8.0 mm Cl>=7.6mm UIOTM =5000V 30/100/21 DTI>=0.4mm | IEC 60747-5-2 IEC 60747-5-5 | VDE 101347 |
| DC Fan | Hui Tong Electronic Co.,Ltd. | HT-04020W12H | DC 12V 0.12A | IEC/EN 60950-1 | TUV R50360000 |
| -Alternative | YOUNG LIN TECH CO LTD | DFS402012H | DC 12V, 0.12A , Max. ambient 40°C | EN 60950-1 UL 507 | TÜV B041234564 010 UL E199993 |



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| IEC 62368-1 | | | | | |
|--------------------|--|-----------------------|-------------------------|--------------------|------------------------------------|
| Clause | Requirement + Test | Result - Remark | | | Verdict |
| Transformer | NINGBO HONGHUI ELECTRICAL APPLIANCE CO LTD | EI40-B22GV(AG) | Class 130 | EN 62368-1 | Test with appliance |
| -Bobbin | CHANG CHUN PLASTICS CO LTD | T375J, T375HF, T200HF | 150°C,V-0 | UL94, EN 62368-1 | UL E59481 & Tested with appliance |
| --Alternative | SUMITOMO BAKELITE CO LTD | PM-9820, PM-9630 | 150°C,V-0 | UL94, EN 62368-1 | UL E41429 & Tested with appliance |
| --Alternative | CHANGSHU SOUTH-EAST PLASTIC CO LTD | PF2A5-151J(b) | 130°C,V-0 | UL94, EN 62368-1 | UL E136137 & Tested with appliance |
| - Magnet wire | ELEKTRISOLA HANGZHOU CO LTD | PN155 | 130°C | UL 1446 EN 62368-1 | UL E258243 & Tested with appliance |
| --Alternative | HENG YA ELECTRIC KUN SHAN LTD | TYPYU-130(UEW/QA-B) | 130°C | UL 1446 EN 62368-1 | UL E245514 & Tested with appliance |
| --Alternative | SHANDONG SAINT ELECTRIC CO LTD | UEW/130 | 130°C | UL 1446 EN 62368-1 | UL E194410 & Tested with appliance |
| --Alternative | DEZHOU HUILONG ELECTRICAL MATERIAL CO LTD | UEW/130 | 130°C | UL 1446 EN 62368-1 | UL E234565 & Tested with appliance |
| --Alternative | JIANGSU DARTONG M & E CO LTD | XUEW/130 | 130°C | UL 1446 EN 62368-1 | UL E237377 & Tested with appliance |
| -Insulation tape | JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD | JY25-A (b) | 130°C | UL510, EN 62368-1 | UL E246950 & Tested with appliance |
| --Alternative | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD | CT* (c)(g) | 130°C | UL510, EN 62368-1 | UL E165111 & Tested with appliance |
| --Alternative | CHYUN YIH TAPE CO LTD | P2xxF(b) | 130°C | UL 510, EN 62368-1 | UL E81174 & Tested with appliance |
| Insulation tube | XIAN NING CITY HAI JIN YANG INSULATION MATERIAL CO LTD | SRG-868-7AE1 | PTFE,200°C | UL 224, EN 62368-1 | UL E303665 |
| --Alternative | CHANGYUAN ELECTRONICS GROUP CO LTD | CB-TT-T | PTFE, 200°C, VW-1, 300V | UL 224, EN 62368-1 | UL E180908 & Tested with appliance |
| --Alternative | GREAT HOLDING INDUSTRIAL CO LTD | TFT | PTFE, 200°C, VW-1, 300V | UL 224, EN 62368-1 | UL E156256 & Tested with appliance |



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| IEC 62368-1 | | | | | |
|--|---|--------------|------------------------------|--------------------|------------------------------------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| --Alternative | SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD | WF | PTFE, 200°C, VW-1, 600V | UL 224, EN 62368-1 | UL E203950 & Tested with appliance |
| --Alternative | FLUO TECH INDUSTRIES CO LTD | TFT | PTFE, 200°C, VW-1, 300V | UL 224, EN 62368-1 | UL E175982 & Tested with appliance |
| -Varnish | KYOCERA CORPORATION | TVB2180T*(a) | 155°C | UL 1446 EN 62368-1 | ULE83702 & Tested with appliance |
| --Alternative | HANG CHEUNG PETROCHEMICAL LTD. | 8562(a) | 155°C | EN 62368-1 | UL E200154 & Tested with appliance |
| Heat shrinkable tube | SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD | RSFR-H | 600V, 125°C, VW-1 | UL 94 EN 62368-1 | UL E203950 & Tested with appliance |
| Insulated mat and sleeve of transistor | JIANGSU HONGDA NTW MATERIAL CO LTD | HD-95 | 0.8(150,150,150) HB | UL 94 EN 62368-1 | UL E231325 & Tested with appliance |
| Wall tape | JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD | WF310(a) | 130°C | UL 510A | UL E246950 |
| Teflon sleeve | FLUO TECH INDUSTRIES CO LTD | TFL | 200°C | ANSI/UL 224 | UL E175982 |
| Rectifier bridge | -- | -- | 600V Min., 3A min. | EN 62368-1 | Tested with appliance |
| Electrolytic capacitor | -- | -- | 47µF/68 µF, 400V min., 105°C | EN 62368-1 | Tested with appliance |
| PTC Thermistor | NANJING SHI HENG ELECTRICS CO LTD | 50S | 100Ω /50°C | EN 62368-1 | Tested with appliance |
| Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 2) Description line content is optional. Main line description needs to clearly detail the component used for testing | | | | | |



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

| | | | |
|---------------------|---|--|-----|
| 4.8.4, 4.8.5 | TABLE: Lithium coin/button cell batteries mechanical tests | | N/A |
|---------------------|---|--|-----|

(The following mechanical tests are conducted in the sequence noted.)

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

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 | 230Vac | Output socket | Normal | -- | -- | 50Hz | ES3 Declared |
| 2 | DC 12V | AC output(L/N) to USB output terminal"+" | Normal | 138 | 0.22 mA | -- | ES1 |
| | | AC output(L/N) to USB output terminal"+" | T1 over load | 141 | 0.22 mA | -- | |
| | | AC output(L/N) to USB output terminal"+" | T1 sec.SC | 0 | 0 mA | -- | |
| | | AC output(L/N) to USB output terminal"+" | The largest group of all abnormal states(optocopler pin 3-4 SC) | 196 | 0.24 mA | -- | |



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

| 5.2 | Table: Classification of electrical energy sources | | | | | P |
|-----|--|--|---|-----|---------|-----|
| | DC 12V | AC output(L/N) to USB output terminal"-" | Normal | 138 | 0.22 mA | ES1 |
| | | AC output(L/N) to USB output terminal"-" | T1 over load | 141 | 0.22 mA | |
| | | AC output(L/N) to USB output terminal"-" | T1 sec.SC | 0 | 0 mA | |
| | | AC output(L/N) to USB output terminal"-" | The largest group of all abnormal states(optocoplér pin 3-4 SC) | 192 | 0.24 mA | |
| 3 | DC 12V | AC output(L/N) to DC output terminal"-" | Normal | 131 | 0.22 mA | ES1 |
| | | AC output(L/N) to DC output terminal"-" | T1 over load | 145 | 0.22 mA | |
| | | AC output(L/N) to DC output terminal"-" | T1 sec.SC | 0 | 0 mA | |
| | | AC output(L/N) to DC output terminal"-" | The largest group of all abnormal states(optocoplér pin 3-4 SC) | 142 | 0.27 mA | |
| | DC 12V | AC output(L/N) to DC output terminal"+" | Normal | 145 | 0.22 mA | ES1 |
| | | AC output(L/N) to DC output terminal"+" | T1 over load | 131 | 0.22 mA | |
| | | AC output(L/N) to DC output terminal"+" | T1 sec.SC | 0 | 0 mA | |
| | | AC output(L/N) to DC output terminal"+" | The largest group of all abnormal states(optocoplér pin 3-4 SC) | 142 | 0.27 mA | |



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

| 5.2 | Table: Classification of electrical energy sources | | | | | P |
|-----|--|--|--|------|----|-----|
| 4 | DC 12V | DC input terminal "+" to DC input terminal"-." | Normal | 12.0 | -- | ES1 |
| | | DC input terminal "+" to DC input terminal"-." | T1 over load | 11.4 | -- | |
| | | DC input terminal "+" to DC input terminal"-." | T1 sec.SC | 11.4 | -- | |
| | | DC input terminal "+" to DC input terminal"-." | The largest group of all abnormal states(optocoplper pin 3-4 SC) | 12.0 | -- | |

| 5.2.2.3 – Capacitance Limits | | | | | | |
|------------------------------|----------------|-------------------------------------|----------------------|-----------------|---------|----------|
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | ES Class |
| | | | | Capacitance, nF | Upk (V) | |
| -- | -- | -- | Normal | -- | -- | -- |
| | | | Abnormal | -- | -- | |
| | | | Single fault – SC/OC | -- | -- | |

| 5.2.2.4 – Single Pulses | | | | | | | |
|-------------------------|----------------|-------------------------------------|----------------------|---------------|---------|----------|----------|
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
| | | | | Duration (ms) | Upk (V) | Ipk (mA) | |
| -- | -- | -- | Normal | -- | -- | -- | -- |
| | | | Abnormal | -- | -- | -- | |
| | | | Single fault – SC/OC | -- | -- | -- | |

| 5.2.2.5 – Repetitive Pulses | | | | | | | |
|-----------------------------|----------------|-------------------------------------|-----------------|---------------|---------|----------|----------|
| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
| | | | | Off time (ms) | Upk (V) | Ipk (mA) | |
| -- | -- | -- | Normal | -- | -- | -- | -- |

LCIE CHINA
必维欧亚电气技术咨询服务（上海）有限公司

Building 4, No. 518, Xin Zhuan Road,
CaoHejing Songjiang High-Tech Park,
Shanghai P.R.C (201612)

Tel: +86 21 6195 7000
Fax: +86 21 6195 7001
Email: contact@cn.bureauveritas.com



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| IEC 62368-1 | | | |
|---|--------------------|----------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | | Abnormal | -- |
| | | Single fault – SC/OC | -- |
| Test Conditions: Normal – Abnormal – Supplementary information: SC=Short Circuit, OC=Short Circuit Tests were conducted with approved external power adaptors. | | | |

| 5.4.1.4, 6.3.2, 9.0, B.2.6 | TABLE: Temperature measurements | | P |
|--|-------------------------------------|-----------------|-------------------------------|
| | Supply voltage (V) | DC 12V | — |
| | Ambient T _{min} (°C) | -- | — |
| | Ambient T _{max} (°C) | See below | — |
| | T _{ma} (°C) | 40 | — |
| Maximum measured temperature T of part/at: | | T (°C) | Allowed T _{max} (°C) |
| Top Metal enclosure above Transformer | | 39.9 55.4 | 70 |
| Bottom metal enclosure under PCB | | 43.1 58.6 | 70 |
| Side metal enclosure near M3 | | 36.7 52.2 | 70 |
| EC body (47µF) | | 41.8 57.3 | 105 |
| EC body (2200 µF) | | 70.8 86.3 | 105 |
| Inductance | | 70.0 85.5 | 130 |
| T1 coil | | 93.2 108.7 | 110 |
| T1 bobbin | | 75.6 91.1 | Ref. |
| Internal wire near transformer | | 53.8 69.3 | 75 |
| Optocoupler body | | 32.9 48.4 | 100 |
| Primary lead wire | | 45.8 61.3 | 80 |
| Secondary lead wire | | 38.1 53.6 | 80 |
| PCB under transformer | | 59.6 75.1 | 130 |



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

| | | | |
|--|------|------|-----|
| PCB under M3 | 38.0 | 53.5 | 130 |
| PCB under bridge rectifiers | 51.7 | 67.2 | 130 |
| PCB under Q3 | 68.5 | 84.0 | 130 |
| PCB under IC KA7500B | 48.3 | 63.8 | 130 |
| PCB under IC5 | 32.8 | 48.3 | 130 |
| Power switch body(inside) | 31.0 | 46.5 | 55 |
| DC fan | 36.5 | 52.0 | -- |
| AC socket body inside(connection of wiring terminal) | 30.5 | 46.0 | 60 |
| Ambient | 24.5 | 40.0 | 40 |

Supplementary information:

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

Supplementary information:

Note 1: Tma should be considered as directed by applicable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

| 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 | P |
|--|---|--------------------------|
| Allowed impression diameter (mm) | ≤ 2 mm | — |
| Object/Part No./Material | Manufacturer/trademark* | Test temperature (°C) |
| Bobbin | CHANG CHUN PLASTICS CO LTD | 125 |
| | | Impression diameter (mm) |
| | | 0.74 |

Supplementary information: "*" means see table 4.1.2 for details.

| 5.4.2.2, 5.4.2.4 and 5.4.3 | TABLE: Minimum Clearances/Creepage distance | P |
|----------------------------|---|---|
|----------------------------|---|---|



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| IEC 62368-1 | | | | | | | |
|---|--------------------|--------------|-------------------------------|------------------|----------------------|-------------------------------|------------------|
| Clause | Requirement + Test | | | Result - Remark | | | Verdict |
| Clearance (cl) and creepage distance (cr) at/of/between: | Up (V) | U r.m.s. (V) | Frequenc y (kHz) ¹ | Required cl (mm) | cl (mm) ² | Required ³ cr (mm) | cr (mm) |
| Basic insulation: | | | | | | | |
| Two pole of DC input | ≤420 | ≤250 | <30 | 1.27 | 5.2 | 2.5 | 5.2 |
| Two pole of AC output | ≤420 | ≤250 | <30 | 1.27 | 5.0 | 2.5 | 5.0 |
| Reinforced: | | | | | | | |
| DC input circuit trace to AC output circuit trace | ≤420 | ≤250 | >30 | 2.54 | 6.5 | 5.0 | 6.6 |
| DC input trace AC output trace under optocoupler of PCB | ≤420 | ≤250 | >30 | 2.54 | 6.6 | 5.0 | 6.6 |
| DC trace to AC trace under Transformer of PCB | ≤420 | ≤250 | >30 | 2.54 | 8.8 | 5.0 | 8.8 |
| AC output circuit to metal enclosure | ≤420 | ≤250 | >30 | 2.54 | >11* | 2.5 | >11* |
| AC transistor pin to metal enclosure | ≤420 | ≤250 | >30 | 2.54 | >11 [#] | 2.5 | >11 [#] |
| Transformer: | | | | | | | |
| Core to secondary pin of Transformer of PCB | ≤420 | ≤250 | >30 | 2.54 | 7.6 | 5.0 | 8.4 |
| Core to primary pin of Transformer of PCB | ≤420 | ≤250 | >30 | 2.54 | 7.9 | 5.0 | 8.3 |
| Core to secondary winding of Transformer of PCB | ≤420 | ≤250 | >30 | 2.54 | 7.6 | 5.0 | 8.4 |
| Core to primary winding of Transformer of PCB | ≤420 | ≤250 | >30 | 2.54 | 7.9 | 5.0 | 8.3 |
| Supplementary information: "*" means two layers insulated tape reflexed wrapped on margin of AC side of PCB between PCB and metal case, and the width of insulated shape is min. 5.9mm (one to side or one bottom side) "#" means sleeve on transistor and two layers insulated tape wrapped on metal case between pin of transistor and metal case. | | | | | | | |

| | | | | |
|---|---|------------------|------------------|----|
| 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) | |
| DC input circuit trace to AC output circuit trace | 2500V | 3.0 | 6.5 | |



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| IEC 62368-1 | | | |
|--|---|----------------------------|------------------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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) |
| DC input trace AC output trace under optocoupler of PCB | | 2500V | 3.0 |
| DC trace to AC trace under Transformer of PCB | | 2500V | 3.0 |
| AC output circuit to metal enclosure | | 2500V | 3.0 |
| Core to secondary pin of Transformer of PCB | | 2500V | 3.0 |
| Core to primary pin of Transformer of PCB | | 2500V | 3.0 |
| Core to secondary winding of Transformer of PCB | | 2500V | 3.0 |
| Core to primary winding of Transformer of PCB | | 2500V | 3.0 |
| | | | Measured cl (mm) |
| | | | 6.6 |
| | | | 8.8 |
| | | | >11* |
| | | | >11 [#] |
| | | | 7.9 |
| | | | 7.6 |
| | | | 7.9 |
| Supplementary information: equipment is supplied by approved adaptors presented in this report, see table 4.1.2 for details. | | | |

| | | | | | | |
|--|--|-----------------|----------|-------------------|----------|---|
| 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 (kHz) | Material | Required DTI (mm) | DTI (mm) | |
| Enclosure | <420 | >30 | Metal | 0.4 | 1.3 | |
| Bobbin | <420 | >30 | Plastic | 0.4 | 0.7* | |
| PCB | <420 | >30 | --* | 0.4 | 1.4* | |
| Optocoupler | <420 | >30 | Plastic | 0.4 | 0.4* | |



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| IEC 62368-1 | | | | | |
|--|--------------------|-----|---|-----------------|-------------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| One layer of insulation tape of Transformer | <420 | >30 | PET films with polyester fiber tapes acrylic adhesive | Two layers | Two layers* |
| Isolation material between transistor in AC circuit and metal enclosure | <420 | >30 | Silicone Rubber | 0.4 | 0.56 |
| Isolation sheet between PCB and metal enclosure | <420 | >30 | Silicone Rubber | 0.4 | 0.56 |
| Supplementary information: “*” means See appended table 4.1.2 for details. | | | | | |

| 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: | | | | |
| -- | -- | -- | -- | |
| Reinforced: | | | | |
| AC output to USB output terminal | AC | 4000 | NO | |
| AC output to enclosure | AC | 4000 | NO | |
| AC output to DC input terminal | AC | 4000 | NO | |
| Routine Tests: | | | | |
| Insulation sheet in transformer | AC | 4000 | NO | |
| Insulation sheet between PCB and enclosure | AC | 4000 | NO | |
| Insulation sheet between transistor and enclosure | AC | 4000 | NO | |
| Supplementary information: -- | | | | |

| 5.5.2.2 | TABLE: Stored discharge on capacitors | | | | | N/A |
|------------------------|---------------------------------------|----------------------------|---------------------------|------------------------------------|-------------------|-----|
| Supply Voltage (V), Hz | Test Location | Operating Condition (N, S) | Switch position On or off | Measured Voltage (after 2 seconds) | ES Classification | |
| | | | | | | |



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

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

Supplementary information:
 X-capacitors installed for testing are:
 bleeding resistor rating:
 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 | | | | N/A |
|-----------------|---|----------------|------------------|----------------|-----|
| Accessible part | Test current (A) | Duration (min) | Voltage drop (V) | Resistance (Ω) | |
| -- | -- | -- | -- | -- | |
| -- | -- | -- | -- | -- | |
| -- | -- | -- | -- | -- | |

Supplementary information:

| 5.7.2.2, 5.7.4 | TABLE: Earthed accessible conductive part | | N/A |
|----------------------|---|--|--------------------|
| Supply voltage | -- | | — |
| Location | Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7 | | Touch current (mA) |
| -- | 1 | | -- |
| | 2* | | -- |
| | 3 | | -- |
| | 4 | | -- |



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

| | | | |
|--|--|---|----|
| | | 5 | -- |
| | | 6 | -- |
| | | 8 | -- |

Supplementary Information:

Notes:

- [1] Supply voltage is the anticipated maximum Touch Voltage
- [2] Earthed neutral conductor [Voltage differences less than 1% or more]
- [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3
- [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.
- [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

| 6.2.2 | | Table: Electrical power sources (PS) measurements for classification | | | | P |
|------------|-------------|--|---------------------|-----------------------------------|-------------------|---|
| Source | Description | Measurement | Max Power after 3 s | Max Power after 5 s ^{*)} | PS Classification | |
| EG-PWC-042 | USB output | Power (W) : | 11.3 | - | PS1 | |
| | | V _A (V) : | 4.98 | - | | |
| | | I _A (A) : | 2.6 | - | | |
| EG-PWC-042 | AC socket | Power (W) : | 337 | 337 | PS3 | |
| | | V _A (V) : | 233.2 | 233.2 | | |
| | | I _A (A) : | 1.619 | 1.619 | | |

Supplementary Information:

(*) Measurement taken only when limits at 3 seconds exceed PS1 limits

| 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 | |
| -- | -- | -- | -- | No | |
| -- | -- | -- | -- | No | |



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

Supplementary information:

All primary circuit/components were considered as arcing PIS, the open circuit of all secondary components/circuit were not exceed 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 | |
| -- | -- | -- | -- | -- | -- | |
| -- | -- | -- | -- | -- | -- | |
| -- | -- | -- | -- | -- | -- | |
| -- | -- | -- | -- | -- | -- | |

Supplementary Information:

All primary circuit/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 | -- | — | |



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| IEC 62368-1 | | | |
|--|--------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 (mA) | Condition/status |
| DC 12V | 29.12 | 28 | 349.41 | -- | Fuse1 | 29.12 | AC socket output loaded at AC 1.3A(300W),USB loaded at DC 5V,2.1A |
| Supplementary information: | | | | | | | |
| Equipment may be have rated current or rated power or both. Both should be measured | | | | | | | |

| B.3 TABLE: Abnormal operating condition tests | | | | | | | | N/A |
|--|--------------------|--------------------|-----------|----------|------------------|----------|---|--|
| Ambient temperature (°C) | | | | | -- | | | — |
| Power source for EUT: Manufacturer, model/type, output rating ...: | | | | | -- | | | — |
| Component No. | Abnormal Condition | Supply voltage (V) | Test time | Fuse no. | Fuse current (A) | T-couple | Temp. (°C) | Observation |
| AC output | SC | DC 12V | 10 min | F1 | 1.4A | Type K | No temperature higher than table" 5.4.1.4, 6.3.2, 9.0, B.2.6" | Unit shut down after output short circuit. |
| AC output | SC | DC12 V | 43min | F1 | 36.3A | Type K | PCB under bridge rectifiers: 53.0°C; PCB under transformer: 58.7°C; T1 winding: 106.3°C; T1 bobbin: 68.4°C; Enclosure outside hottest: 48.5°C; Ambient: 24.2°C | Output load to 337W. unit shut down. |



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| IEC 62368-1 | | | | | | | | |
|-------------|--------------------|--------|--------|----|--------|-----------------|---|---|
| Clause | Requirement + Test | | | | | Result - Remark | Verdict | |
| Ventilating | Block | DC 12V | 31 min | F1 | 28.29A | Type K | PCB under bridge rectifiers: 80.4°C; PCB under transformer: 85.8°C; T1 winding: 105.2°C; T1 bobbin: 92°C; Enclosure outside hottest: 64.0°C; Ambient: 22.2°C | The alarm will be sounded after 7 minutes, and the AC output is intermittent. |
| USB output | OL | DC 12V | 39 min | F1 | 28.6A | Type K | PCB under bridge rectifiers: 52.1°C; PCB under transformer: 42.3°C; T1 winding: 97.1°C; T1 bobbin: 67.9°C; Enclosure outside hottest: 42.5°C; Ambient: 24.2°C | Output load to 2.6A, 4.98Vd.c. unit shut down. |
| USB output | SC | DC 12V | 41 min | F1 | 28.7A | Type K | PCB under bridge rectifiers: 54.2°C; PCB under transformer: 50.9°C; T1 winding: 101.5°C; T1 bobbin: 76.8°C; Enclosure outside hottest: 43.8°C; Ambient: 23.8°C | Normal operation until steady condition. |



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| IEC 62368-1 | | | | | | | | |
|---|--------------------|--------|--------|----|--------|-----------------|---|--|
| Clause | Requirement + Test | | | | | Result - Remark | Verdict | |
| DC fan | Block | DC 12V | 56 min | F1 | 30.7A | Type K | PCB under bridge rectifiers: 62.9°C; PCB under transformer: 82.6°C; T1 winding: 115.1°C; T1 bobbin: 99.8°C; Enclosure outside hottest: 61.6°C; Ambient: 23.8°C | Normal operation until shut down. No high temperature. |
| PTC | SC | DC 12V | 30min | F1 | 28.96A | Type K | No temperature higher than table"5.4.1.4, 6.3.2, 9.0, B.2.6" | Normal operation until stead condition. |
| PTC | OC | DC 12V | 30min | F1 | 29.14A | Type K | No temperature higher than table"5.4.1.4, 6.3.2, 9.0, B.2.6" | Normal operation until stead condition. |
| The battery reverse connect | Reversed | DC 12V | 10min | F1 | 0 | Type K | No temperature higher than table"5.4.1.4, 6.3.2, 9.0, B.2.6" | Unit shut down, No hazard. |
| <p>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. The electric strength test conducted successfully after the completion of fault condition test.</p> | | | | | | | | |

| B.4 | TABLE: Fault condition tests | P |
|--|--|---|
| Ambient temperature (°C) | 23.5 | — |
| Power source for EUT: Manufacturer, model/type, output rating .: | Manufacturer: Shenzhen Gembird Electronics Ltd. Model: INVERTER(EG-PWC-042) Output: AC socket output loaded at AC 1.3A(300W), USB loaded at DC 5V,2.1A | — |



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

| Component No. | Fault Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current (mA) | T-couple | Temp. (°C) | Observation |
|-------------------|-----------------|---------------------|----------------|----------|-------------------|----------|------------|--|
| EC body (2200µF) | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| EC body (47µF) | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| M4 C-E | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| M4 C-B | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| M4 B-E | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| Bridge rectifiers | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| P3 C-E | SC | DC 12V | 10min | F1 | 0 | -- | -- | Q3 damaged. No high temperature rise. No hazard. |
| P3 C-B | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| P3 B-E | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| T1 sec. | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| T1 pri. | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| T1 sec. | OL | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| Q1 pin1 | OC | DC 12V | 10min | F1 | 29.14 | -- | -- | Unit Normal operation. No hazard. |



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| IEC 62368-1 | | | | | | | | |
|---|--------------------|--------|-------|----|-------|-----------------|----|--|
| Clause | Requirement + Test | | | | | Result - Remark | | Verdict |
| Q1 pin3 | OC | DC 12V | 10min | F1 | 29.13 | -- | -- | Unit Normal operation. No hazard. |
| Q1 1-2 | SC | DC 12V | 10min | F1 | 29.12 | -- | -- | Unit Normal operation. No hazard. |
| Q1 3-4 | SC | DC 12V | 10min | F1 | 29.12 | -- | -- | Unit Normal operation. No hazard. |
| R62 | SC | DC 12V | 10min | F1 | 0 | -- | -- | Unit shut down. No high temperature rise. No hazard. |
| Supplementary information: The electric strength test conducted successfully after the completion of fault condition test. | | | | | | | | |

| Annex M | TABLE: Batteries | | | | | | | | N/A |
|---|----------------------------|---------------|-------------------------|------------------------|---------------|---------------|---------------|-------------------|---------------|
| 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 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Max. current during fault condition | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Test results: | | | | | | | | | Verdict |
| - Chemical leaks | | | | | | | | -- | -- |
| - Explosion of the battery | | | | | | | | -- | -- |
| - Emission of flame or expulsion of molten metal | | | | | | | | -- | -- |
| - Electric strength tests of equipment after completion of tests | | | | | | | | -- | -- |
| Supplementary information: | | | | | | | | | |



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

| | | | |
|------------------|--|--|----|
| Annex M.4 | Table: Additional safeguards for equipment containing secondary lithium batteries | | -- |
|------------------|--|--|----|

| Battery/Cell No. | Test conditions | Measurements | | | Observation |
|------------------|----------------------|--------------|-------|----------|-------------|
| | | U | I (A) | Temp (C) | |
| -- | Normal | -- | -- | -- | -- |
| -- | Abnormal | -- | -- | -- | -- |
| -- | Single fault –SC/OC | -- | -- | -- | -- |
| -- | Normal | -- | -- | -- | -- |
| -- | Abnormal | -- | -- | -- | -- |
| -- | Single fault – SC/OC | -- | -- | -- | -- |

Supplementary Information:

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

Supplementary Information:

| | | |
|------------------|--|---|
| 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 |
| USB output | Normal operation | 5.0 | 2.6 | 8.0 | 11.3 | 100 |

Supplementary Information:

SC=Short circuit, OC=Open circuit

| | | |
|---------------------------|---------------------------------|---|
| T.2, T.3, T.4, T.5 | TABLE: Steady force test | P |
|---------------------------|---------------------------------|---|

| Part/Location | Material | Thickness (mm) | Force (N) | Test Duration (sec) | Observation |
|---------------|----------|----------------|-----------|---------------------|-------------|
|---------------|----------|----------------|-----------|---------------------|-------------|



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| IEC 62368-1 | | | | | |
|------------------------------|--------------------|----------|-----|-----------------|--------------------------|
| Clause | Requirement + Test | | | Result - Remark | Verdict |
| Internal components | Metal | Min. 1.3 | 10 | 5 | No damage and distortion |
| Metal enclosure | Metal | Min. 1.3 | 250 | 5 | No damage and distortion |
| Supplementary information:-- | | | | | |

| T.6, T.9 | TABLE: Impact tests | | | | P |
|---------------|---------------------|----------------|------------------------|--------------------------|---|
| Part/Location | Material | Thickness (mm) | Vertical distance (mm) | Observation | |
| Top | Metal | 1.3 | 1300 | No damage and distortion | |
| Bottom | Metal | 1.3 | 1300 | No damage and distortion | |
| Side | Metal | 1.3 | 1300 | No damage and distortion | |

Supplementary information:--

| T.7 | TABLE: Drop tests | | | | P |
|---------------|-------------------|----------------|------------------|--------------------------|---|
| Part/Location | Material | Thickness (mm) | Drop Height (mm) | Observation | |
| Top | Metal | 1.3 | 1000 | No damage and distortion | |
| Bottom | Metal | 1.3 | 1000 | No damage and distortion | |
| Side | Metal | 1.3 | 1000 | No damage and distortion | |

Supplementary information:--

| T.8 | TABLE: Stress relief test | | | | | P |
|---|---------------------------|----------------|-----------------------|--------------|--------------------------|---|
| Part/Location | Material | Thickness (mm) | Oven Temperature (°C) | Duration (h) | Observation | |
| Internal insulation of solid parts, fan, switch | plastic | -- | 108.6 | 7 | No damage and distortion | |

Supplementary information:--