

Report No.: 18360WC30005602S

Test Report

Applicant : **Jackery Technology GmbH**

Address : **HahnstraBe 70 FRANKFURT 60528 Germany**

Product Name : **Jackery Explorer 300 Plus**

Report Date : **July. 24, 2023**



Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT IEC 62368-1

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

Report Number : 18360WC30005602S

Date of issue : July. 24, 2023

Total number of pages : 106 pages

Applicant's name : Jackery Technology GmbH

Address : HahnstraBe 70 FRANKFURT 60528 Germany

Test specification:

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

Test procedure : Type Test

Non-standard test method : N/A

General disclaimer:

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

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Testing procedure and testing location:



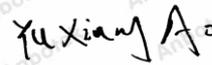
Testing Laboratory:

Shenzhen Anbotek Compliance Laboratory Limited

Testing location/ address :

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

Tested by (name + signature) : Yu Xiang Ao



Approved by (name + signature).... : Tim Sun



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| | |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Item description | Jackery Explorer 300 Plus |
| Trade Mark | Jackery |
| Manufacturer | Shenzhen Hello Tech Energy Co., Ltd. F2-3, Bldg. 7, Jiaanda Science and technology industrial park factory, the east side of Huafan Road, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China |
| Model/Type reference | JE-300B |
| Ratings | Capacity: Lithium-ion 22.5Ah/ 12.8VDC (288Wh) Charge mode AC Input: 220V-240V~ 50Hz, 15A max Bypass mode AC Input/Output: 220V-240V~ 50Hz, 10A Max DC Input (USB-C): 12- 27V=5A Max, 100W Max Total Output: 300W AC Output: 230V~50Hz, 1.31A, 300W Rated, 600W Surge peak USB-A Output: 15W Max 5V=3A 2 x USB-C Output: 100W Max 5V=3A, 9V=3A, 12V=3A, 15V=3A, 20V=5A USB Total Output: USB-C(IN/OUT): 100W Max, USB-C(OUT)+USB-A: 24W Max Car Port: 12V=10A |

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Tests performed (name of test and test clause):</p> <p>The submitted samples were found to comply with the requirements of:</p> <p>Electrical safety</p> <ul style="list-style-type: none"> - IEC 62368-1:2014 - EN 62368-1:2014 +A11:2017 | <p>Testing location:</p> <p>Shenzhen Anbotek Compliance Laboratory Limited 1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

List of countries addressed: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES
The product fulfils the requirements of EN 62368-1:2014 +A11:2017

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

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

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

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECCE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECCE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

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

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Copy of marking plate:

The artwork below may be only a draft.

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <h2 style="margin: 0;">Jackery</h2> <p>Product Name : Jackery Explorer 300 Plus Model No. : JE-300B Capacity : Lithium-ion 22.5Ah / 12.8V DC (288Wh) Charge mode AC Input : 220V~240V~50Hz, 15A max Bypass mode AC Input/Output : 220V~240V~50Hz, 10A Max DC Input(USB-C) : 12~27V=5A Max, 100W Max Total Output: 300W AC Output : 230V~50Hz, 1.31A, 300W Rated, 600W Surge peak USB-A Output : 15W Max 5V=3A 2 x USB-C Output : 100W Max 5V=3A, 9V=3A, 12V=3A, 15V=3A, 20V=5A USB Total Output : USB-C(IN/OUT) : 100W Max, USB-C(OUT)+USB-A : 24W Max Car Port : 12V=10A Charge Temperature : 0~45°C Discharge Temperature : -10~45°C</p> <div style="display: flex; justify-content: space-around; align-items: center;">       </div> <div style="display: flex; justify-content: space-between; align-items: center;">   <div style="text-align: right;"> <p>Made in China Protective Class I</p> </div> </div> | <h3 style="margin: 0;">⚠ CAUTION</h3> <p>Carefully read through the manual before usage. Avoid any damp or wet places, preventing damage to the product.</p> <ol style="list-style-type: none"> 1. Before usage or storage, plug the Jackery Power Station into the wall until fully charged. If the LCD battery is low at any point, plug into a power source, such as an AC outlet or solar panel, as soon as possible. 2. The solar charge duration may vary, depending on different weather conditions. Place your solar panel where it will receive as much direct sunlight as possible. 3. Strictly do not dismantle the Jackery Power Station by yourself. 4. Please carefully observe all input /output connector ratings before usage. 5. The product is not waterproof, so please be careful when using the product near water or in the rain. 6. Do not overcharge the internal battery. Refer to the instruction manual for further information. 7. Do not smoke, strike a match, or cause sparks near the power pack. 8. Only charge the internal battery in a well ventilated area. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

-The height dimension of CE symbol should be not less than 5mm, the height dimension of WEEE symbol should be not less than 7mm.



| TEST ITEM PARTICULARS: | |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Classification of use by | <input checked="" type="checkbox"/> Ordinary person (See General Product Information) <input checked="" type="checkbox"/> Instructed person (As above) <input checked="" type="checkbox"/> Skilled person <input checked="" type="checkbox"/> Children likely to be present |
| Supply Connection..... | <input checked="" type="checkbox"/> AC Mains (For AC input) <input type="checkbox"/> DC Mains <input checked="" type="checkbox"/> External Circuit - not Mains connected (For DC input) <input checked="" type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3 |
| Supply % Tolerance | <input checked="" type="checkbox"/> +10%/-10% (For AC input) <input type="checkbox"/> +20%/-15% <input type="checkbox"/> + ____% / - ____% <input checked="" type="checkbox"/> None: Not directly connected to the mains(For DC input) |
| Supply Connection – Type | <input checked="" type="checkbox"/> pluggable equipment type A <input type="checkbox"/> non-detachable supply cord <input checked="" type="checkbox"/> appliance coupler(For AC input) <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input checked="" type="checkbox"/> other: not Mains connected(For DC input) |
| Considered current rating of protective device as part of building or equipment installation | 16A Installation location: <input checked="" type="checkbox"/> building; <input type="checkbox"/> equipment |
| Equipment mobility | <input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in <input type="checkbox"/> rack-mounting <input type="checkbox"/> wall-mounted |
| Over voltage category (OVC) | <input type="checkbox"/> OVC I <input checked="" type="checkbox"/> OVC II <input type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other: |
| Class of equipment | <input checked="" type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Class II with functional earthing <input type="checkbox"/> Not classified |
| Access location | <input type="checkbox"/> restricted access area <input checked="" type="checkbox"/> N/A |
| Pollution degree (PD) | <input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3 |
| Manufacturer's specified maximum operating ambient: | 45°C |
| IP protection class | <input checked="" type="checkbox"/> IP30 |
| Power Systems | <input checked="" type="checkbox"/> TN <input type="checkbox"/> TT <input checked="" type="checkbox"/> IT - ____ V _{L-L} <input type="checkbox"/> dc mains <input type="checkbox"/> N/A |
| Altitude during operation (m) | <input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> 5000 m |
| Altitude of test laboratory (m) | <input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> <500_ m |

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| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mass of equipment (kg) | <input checked="" type="checkbox"/> Approx. 3.83kg |
| Possible test case verdicts: | |
| - test case does not apply to the test object..... | N/A |
| - test object does meet the requirement | P (Pass) |
| - test object does not meet the requirement | F (Fail) |
| Testing: | |
| Date of receipt of test item | 2023-04-27 |
| Date (s) of performance of tests | 2023-04-27 to 2023-06-27 |
| General remarks: | |
| <p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator. * denotes that this test item is not included in CNAS accredited scope.</p> | |
| Name and address of factory (ies) | Shenzhen Hello Tech Energy Co., Ltd. F2-4 Building 7and Building 4, Jiaanda Science and Technology Industrial Park Factory, the East Side of Huafan Road, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China |
| General product information and other remarks: | |
| <p>Product Description –</p> <ul style="list-style-type: none"> - The EUT is a Jackery Explorer 300 Plus which is intended to charging IT/AV equipment. - The maximum operating temperature is 45°C. <p>Before placing the products in the different countries, the manufacturer must ensure that: operating instructions, ratings labels and warnings labels are in an accepted or official language of the country in question; the equipment complies with the national standards and/or electrical codes of the country, province or city or in question.</p> | |
| Model Differences: N/A | |
| <p>Additional application considerations – (Considerations used to test a component or sub-assembly) –</p> <p>The part of AC socket and DC Expansion Port are not valued in this report accord to requirement of manufacturer. USB-C output port more than 100W output terminal connected products need to fire Enclosure.</p> | |



ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)
 (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e. g. PS3, ES3.)

Electrically-caused injury (Clause 5):

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)
 Example: +5 V dc input ES1

| Source of electrical energy | Corresponding classification (ES) |
|-----------------------------|-----------------------------------|
| All primary circuits | ES3 |
| DC Input | ES1 |
| AC Input | ES3 |
| AC Output | ES3 |
| USB-C Output | ES1 |
| USB-A | ES1 |
| Car port | ES1 |

Electrically-caused fire (Clause 6):

(Note: List sub-assembly or circuit designation and corresponding energy source classification)
 Example: Battery pack (maximum 85 watts): PS2

| Source of power or PIS | Corresponding classification (PS) |
|------------------------|-----------------------------------|
| All primary circuits | PS3 |
| DC Input | PS3 |
| AC Input | PS3 |
| AC Output | PS3 |
| USB-C Output | PS3 |
| USB-A | PS2 |
| Car port | PS3 |
| Battery cell | PS3 |

Injury caused by hazardous substances (Clause 7)

(Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.)
 Example: Liquid in filled component Glycol

| Source of hazardous substances | Corresponding chemical |
|--------------------------------|------------------------|
| Battery | Detail see Annex M |

Mechanically-caused injury (Clause 8)

(Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.)
 Example: Wall mount unit MS2

| Source of kinetic/mechanical energy | Corresponding classification (MS) |
|-------------------------------------|-----------------------------------|
| Sharp edges and corners | MS1 |
| Equipment mass<7Kg | MS1 |



| ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE: | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| DC fan | MS1 |
| Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1 | |
| Source of thermal energy | Corresponding classification (TS) |
| External enclosure | TS1 |
| Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1 | |
| Type of radiation | Corresponding classification (RS) |
| LED light | RS1 |

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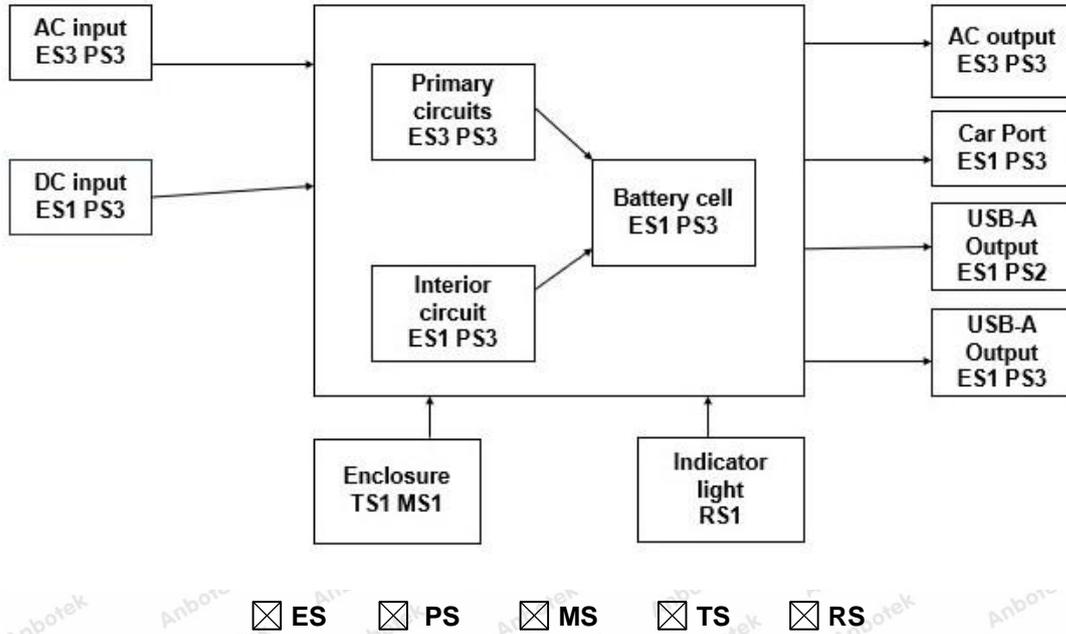
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ENERGY SOURCE DIAGRAM

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



| OVERVIEW OF EMPLOYED SAFEGUARDS | | | | |
|-----------------------------------------|--------------------------------------------------------------------------------------------------|---------------------|------------------------------|----------------------------------------------------------------------------------------------|
| Clause | Possible Hazard | | | |
| 5.1 | Electrically-caused injury | | | |
| Body Part (e.g. Ordinary) | Energy Source (ES3: Primary Filter circuit) | Safeguards | | |
| | | Basic | Supplementar y | Reinforced (Enclosure) |
| Ordinary | ES3: AC input port, AC output port and all primary circuits | N/A | N/A | Enclosure, Transformer, Y1-Capactor, See 5.4.2, 5.4.3, 5.5.2, 5.5.3 and 5.5.4 |
| Ordinary | ES1: Car Outlet | N/A | N/A | N/A |
| Ordinary | ES1: USB-A Quick Charge 3.0 and USB- C Output | N/A | N/A | N/A |
| Ordinary | ES1: The earth pin of AC socket | N/A | N/A | N/A |
| Ordinary | ES3: AC input to the earth pin of AC socket and AC output to the earth pin of AC socket | Basic insulation | Supplementar y insulation | N/A |
| 6.1 | Electrically-caused fire | | | |
| Material part (e.g. mouse enclosure) | Energy Source (PS2: 100 Watt circuit) | Safeguards | | |
| | | Basic | Supplementar y | Reinforced |
| Enclosure | PS3 circuit | See 6.3 | V-0 | N/A |
| PCB | PS3 circuit | See 6.3 | V-0 | N/A |
| The other components/materials | PS2/PS3 circuit | See 6.3 | See 6.4.5, 6.4.6 | N/A |
| 7.1 | Injury caused by hazardous substances | | | |
| Body Part (e.g., skilled) | Energy Source (hazardous material) | Safeguards | | |
| | | Basic | Supplementar y | Reinforced |
| Ordinary person | Battery | N/A | N/A | See cl. 7.6 |
| 8.1 | Mechanically-caused injury | | | |
| Body Part (e.g. Ordinary) | Energy Source (MS3: High Pressure Lamp) | Safeguards | | |
| | | Basic | Supplementar y | Reinforced (Enclosure) |
| Ordinary | MS1: Sharp edges and corners | N/A | N/A | N/A |
| Ordinary | MS1: <7Kg | N/A | N/A | N/A |
| Ordinary | MS1: DC fan | N/A | N/A | N/A |
| 9.1 | Thermal Burn | | | |

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| Body Part (e.g., Ordinary) | Energy Source (TS2) | Safeguards | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------|-------------------|------------|
| | | Basic | Supplementar y | Reinforced |
| Ordinary | TS1: External surfaces | N/A | N/A | N/A |
| 10.1 | Radiation | | | |
| Body Part (e.g., Ordinary) | Energy Source (Output from audio port) | Safeguards | | |
| | | Basic | Supplementar y | Reinforced |
| Ordinary | RS1: LED light | N/A | N/A | N/A |
| Supplementary Information: (1) See attached energy source diagram for additional details. (2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault. | | | | |

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IEC 62368-1

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

| 4 | GENERAL REQUIREMENTS | | P |
|---------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 4.1.1 | Acceptance of materials, components and subassemblies | See appended table 4.1.2 | P |
| 4.1.2 | Use of components | Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment. See also Annex G | P |
| 4.1.3 | Equipment design and construction | Evaluation of safeguards regarding access to ES3 and to limiting the outputs to fulfill ES1, and protection in regard to risk of spread of fire, mechanical-caused injury and thermal burn considered. | P |
| 4.1.15 | Markings and instructions.....: | (See Annex F) | P |
| 4.4.4 | Safeguard robustness | See below. | P |
| 4.4.4.2 | Steady force tests.....: | (See Annex T.2 and T.5) | P |
| 4.4.4.3 | Drop tests.....: | | N/A |
| 4.4.4.4 | Impact tests.....: | (See Annex T.6) | P |
| 4.4.4.5 | Internal accessible safeguard enclosure and barrier tests.....: | The external enclosure cannot be opened without damaging the product. | N/A |
| 4.4.4.6 | Glass Impact tests.....: | No such glass used. | 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 | After tests of 4.4.4.2, 4.4.4.4, 4.4.4.7, no safeguard damaged. | P |
| 4.5 | Explosion | No explosion occurs during normal/abnormal operation and single fault conditions | P |
| 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.....: | (See Annex T.2) | P |
| 4.7 | Equipment for direct insertion into mains socket - outlets | | N/A |
| 4.7.2 | Mains plug part complies with the relevant standard.....: | | N/A |
| 4.7.3 | Torque (Nm).....: | | N/A |

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|-------------|------------------------------------------------------------------------|-----------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.8 | Products containing coin/button cell batteries | No coin/button battery used | N/A |
| 4.8.2 | Instructional safeguard | | N/A |
| 4.8.3 | Battery Compartment Construction | | N/A |
| | Means to reduce the possibility of children removing the battery | | — |
| 4.8.4 | Battery Compartment Mechanical Tests | | N/A |
| 4.8.5 | Battery Accessibility | | N/A |
| 4.9 | Likelihood of fire or shock due to entry of conductive object | (See Annex P) | P |

| | | | |
|----------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------|
| 5 | ELECTRICALLY-CAUSED INJURY | | P |
| 5.2.1 | Electrical energy source classifications | (See appended table 5.2) | 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) | P |
| 5.2.2.4 | Single pulse limits | No such single pulses generated in the EUT or applied to it. | N/A |
| 5.2.2.5 | Limits for repetitive pulses | No such repetitive pulses within the EUT | N/A |
| 5.2.2.6 | Ringing signals | No such ringing signals within the EUT | N/A |
| 5.2.2.7 | Audio signals | No such audio signals | N/A |
| 5.3 | Protection against electrical energy sources | See only 4.3 and 5.3 to 5.5 which applies to protection between the accessible parts and hazardous parts of other circuits. | 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 | Only ES1 circuit can be accessed for this product. | P |
| 5.3.2.2 | Contact requirements | | P |
| | a) Test with test probe from Annex V | Test probes are unlikely to touch hazardous voltage part | P |
| | b) Electric strength test potential (V) | (See appended table 5.4.9) | P |
| | c) Air gap (mm) | Air gap to the high-voltage part was far more than 0.2 mm | P |
| 5.3.2.4 | Terminals for connecting stripped wire | No such terminals. | N/A |
| 5.4 | Insulation materials and requirements | | P |

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|-------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.4.1.2 | Properties of insulating material | The choice and application have been taken into account as specified in this Clause 5 and Annex T. Natural rubber, hygroscopic materials or asbestos are not used as insulation. | P |
| 5.4.1.3 | Humidity conditioning | No hygroscopic material used. | N/A |
| 5.4.1.4 | Maximum operating temperature for insulating materials | (See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6) | P |
| 5.4.1.5 | Pollution degree | Pollution degree 2 considered | — |
| 5.4.1.5.2 | Test for pollution degree 1 environment and for an insulating compound | Pollution degree 2 is applied. No insulating compound applied for except as in 5.4.4. | N/A |
| 5.4.1.5.3 | Thermal cycling | | N/A |
| 5.4.1.6 | Insulation in transformers with varying dimensions | No such transformer within the EUT | N/A |
| 5.4.1.7 | Insulation in circuits generating starting pulses | No such starting pulses within the EUT | N/A |
| 5.4.1.8 | Determination of working voltage | (See appended table 5.4.1.8) | P |
| 5.4.1.9 | Insulating surfaces | Considered for accessible surface of enclosure. | 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 below | N/A |
| 5.4.1.10.3 | Ball pressure | (See appended table 5.4.1.10.3) | P |
| 5.4.2 | Clearances | Procedure 1 used and the highest value in Cl 5.4.2.2 and Cl 5.4.2.3 be used. | P |
| 5.4.2.2 | Determining clearance using peak working voltage | Temporary overvoltage 2000V _{peak} assumed. | P |
| 5.4.2.3 | Determining clearance using required withstand voltage | (See appended table 5.4.2.3) | P |
| | a) a.c. mains transient voltage | 2500V for Overvoltage Cat. II | — |
| | b) d.c. mains transient voltage | No such transient | — |
| | c) external circuit transient voltage | No such transient | — |
| | d) transient voltage determined by measurement: | | — |
| 5.4.2.4 | Determining the adequacy of a clearance using an electric strength test | | N/A |
| 5.4.2.5 | Multiplication factors for clearances and test voltages | | P |
| 5.4.3 | Creepage distances | (See appended table 5.4.2.2, 5.4.2.4 and 5.4.3) | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-----------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 5.4.3.1 | General | | P |
| 5.4.3.3 | Material Group | IIIb | — |
| 5.4.4 | Solid insulation | See below | P |
| 5.4.4.2 | Minimum distance through insulation | (See appended table 5.4.4.2) | P |
| 5.4.4.3 | Insulation compound forming solid insulation | Approved optocouple used. | P |
| 5.4.4.4 | Solid insulation in semiconductor devices | | P |
| 5.4.4.5 | Cemented joints | Approved optocouple used. | P |
| 5.4.4.6 | Thin sheet material | See below | P |
| 5.4.4.6.1 | General requirements | At least two layers of insulation tape wrapped external of transformer T1/4(main board) closing to secondary components and the winding of T1/T2(small board) where used as reinforced insulation and are not expected to be subject to handling or abrasion during ordinary or instructed person servicing. | P |
| 5.4.4.6.2 | Separable thin sheet material | | P |
| | Number of layers (pcs) | Min. 2 layers | P |
| 5.4.4.6.3 | Non-separable thin sheet material | No such material used | N/A |
| 5.4.4.6.4 | Standard test procedure for non-separable thin sheet material | | N/A |
| 5.4.4.6.5 | Mandrel test | | N/A |
| 5.4.4.7 | Solid insulation in wound components | See G.5.3 and G.6.1 | 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) | | N/A |
| 5.4.6 | Insulation of internal wire as part of supplementary safeguard | No such insulation of internal wire used alone as supplementary safeguard. | N/A |
| 5.4.7 | Tests for semiconductor components and for cemented joints | See 5.4.1.5.3. | P |
| 5.4.8 | Humidity conditioning | | P |
| | Relative humidity (%)..... | 93% RH | — |
| | Temperature (°C) | 40 °C | — |
| | Duration (h) | 120 h | — |

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|------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 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 | Compliance was checked immediately following temperature test in 5.4.1.4 on the complete unit and on a sample of the transformer raised to the relevant temperature as measured during that test. (See appended table 5.4.9) | P |
| 5.4.9.2 | Test procedure for routine tests | No routine tests considered. To be considered during the relevant national approval. | N/A |
| 5.4.10 | Protection against transient voltages between external circuit | No such external circuits. | N/A |
| 5.4.10.1 | Parts and circuits separated from external circuits | | N/A |
| 5.4.10.2 | Test methods | | N/A |
| 5.4.10.2.1 | General | | N/A |
| 5.4.10.2.2 | Impulse test | | N/A |
| 5.4.10.2.3 | Steady-state test..... | | N/A |
| 5.4.11 | Insulation between external circuits and earthed circuitry | No such connections for external circuit applied within the EUT. | N/A |
| 5.4.11.1 | Exceptions to separation between external circuits and earth | No such connections to external circuit as above. | 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 | See the following details. | P |
| 5.5.2 | Capacitors and RC units | Approved Y1, Y2 and X2 type capacitors provided. See G.11.1 for compliance and their application. | 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) | P |
| 5.5.3 | Transformers | (See Annex G.5.3) | P |
| 5.5.4 | Optocouplers | (See Annex G.12) | P |
| 5.5.5 | Relays | (See Annex G.2) | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.5.6 | Resistors | (See Annex G.10.1 and G.10.2) | P |
| 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 | | N/A |
| 5.6 | Protective conductor | | P |
| 5.6.2 | Requirement for protective conductors | | P |
| 5.6.2.1 | General requirements | | P |
| 5.6.2.2 | Colour of insulation | Green-yellow colour earthing wire used | P |
| 5.6.3 | Requirement for protective earthing conductors | | P |
| | Protective earthing conductor size (mm ²) | For protective earthing conductor in power supply cord, see appended table 4.1.2. | — |
| 5.6.4 | Requirement for protective bonding conductors | | N/A |
| 5.6.4.1 | Protective bonding conductors | | N/A |
| | Protective bonding conductor size (mm ²). | | — |
| | Protective current rating (A) | | — |
| 5.6.4.3 | Current limiting and overcurrent protective devices | | N/A |
| 5.6.5 | Terminals for protective conductors | | P |
| 5.6.5.1 | Requirement | | P |
| | Conductor size (mm ²), nominal thread diameter (mm). | Terminal for PE conductor :Certificated inlet of C14 type terminal; | P |
| 5.6.5.2 | Corrosion | | P |
| 5.6.6 | Resistance of the protective system | | P |
| 5.6.6.1 | Requirements | | P |
| 5.6.6.2 | Test Method Resistance (Ω)..... | (See appended table 5.6.6.2) | P |
| 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 | Figure 4 of IEC 60990 was used in determining of the limit of ES1. | P |
| 5.7.2.1 | Measurement of touch current | (See appended table 5.2) | P |
| 5.7.2.2 | Measurement of prospective touch voltage | | P |

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|-------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 5.7.3 | Equipment set-up, supply connections and earth connections | Clause 4, 5.3 and 5.4 of IEC 60990:1999 applied. | P |
| | System of interconnected equipment (separate connections/single connection) | Single equipment. | — |
| | Multiple connections to mains (one connection at a time/simultaneous connections) | Single connection. | — |
| 5.7.4 | Earthed conductive accessible parts | (See appended table 5.7.4) | P |
| 5.7.5 | Protective conductor current | | N/A |
| | Supply Voltage (V) | | — |
| | Measured current (mA) | | — |
| | Instructional Safeguard | Not exceeding ES1 limit. | N/A |
| 5.7.6 | Prospective touch voltage and touch current due to external circuits | No such external circuits. | N/A |
| 5.7.6.1 | Touch current from coaxial cables | | N/A |
| 5.7.6.2 | Prospective touch voltage and touch current from external circuits | | N/A |
| 5.7.7 | Summation of touch currents from external circuits | No such external circuits. | N/A |
| | a) Equipment with earthed external circuits Measured current (mA) | | N/A |
| | b) Equipment whose external circuits are not referenced to earth. Measured current (mA) | | N/A |

| | | | |
|----------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------|
| 6 | ELECTRICALLY- CAUSED FIRE | | P |
| 6.2 | Classification of power sources (PS) and potential ignition sources (PIS) | | P |
| 6.2.2 | Power source circuit classifications | PS (power source) classification determined by measuring the maximum power in Figures 34 and 35 for load and power source circuits. | P |
| 6.2.2.1 | General | See the following details. | 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) | P |
| 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 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 | No ignition and no such temperature attained within the equipment. (See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6) | P |
| 6.3.1 (b) | Combustible materials outside fire enclosure | | N/A |
| 6.4 | Safeguards against fire under single fault conditions | | P |
| 6.4.1 | Safeguard Method | Method by control of fire spread applied. V-0 fire enclosure provided. | P |
| 6.4.2 | Reduction of the likelihood of ignition under single fault conditions in PS1 circuits | | N/A |
| 6.4.3 | Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits | Method by control of fire spread applied as 6.4.1. | N/A |
| 6.4.3.1 | General | | N/A |
| 6.4.3.2 | Supplementary Safeguards | | N/A |
| | Special conditions if conductors on printed boards are opened or peeled | | N/A |
| 6.4.3.3 | Single Fault Conditions | | N/A |
| | Special conditions for temperature limited by fuse | No such consideration. | N/A |
| 6.4.4 | Control of fire spread in PS1 circuits | | N/A |
| 6.4.5 | Control of fire spread in PS2 circuits | Compliance detailed as follows: - <u>Printed board</u> : rated min. V-0 - <u>Cells</u> : Complying with requirement. - <u>All other components</u> : at least V-2 except for parts mounted on min. V-1 material or small parts of combustible material (with mass less than 4g) or components complying to relevant IEC standard. - <u>Isolating transformer</u> : complying with G.5.3. - <u>Internal wire and tubing</u> comply with 6.5.1 - <u>Isolating Transformer</u> : Complying with G.5.3. | P |
| 6.4.5.2 | Supplementary safeguards | (See appended tables 4.1.2 and Annex G) | P |



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|-------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 6.4.6 | Control of fire spread in PS3 circuit | Compliance detailed as follows: - Parts as in 6.4.5 above - Fire enclosure rated V-0 used. - AC output connector: rated V-0; | P |
| 6.4.7 | Separation of combustible materials from a PIS | Fire enclosure provided for all internal parts. | 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 | No specific barrier provided. | N/A |
| 6.4.8 | Fire enclosures and fire barriers | See below. | P |
| 6.4.8.1 | Fire enclosure and fire barrier material properties | The V-0 fire enclosure is used for the whole enclosure. | P |
| 6.4.8.2.1 | Requirements for a fire barrier | No fire barrier used. | N/A |
| 6.4.8.2.2 | Requirements for a fire enclosure | For available power <4000W, the V-0 fire enclosure is used for the overall enclosure as above. | 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 | No fire barrier. | N/A |
| 6.4.8.3.3 | Top Openings in Fire Enclosure: dimensions (mm) | | N/A |
| | Needle Flame test | | N/A |
| 6.4.8.3.4 | Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) | No bottom opening | N/A |
| | Flammability tests for the bottom of a fire enclosure | | N/A |
| 6.4.8.3.5 | Integrity of the fire enclosure, condition met: a), b) or c) | | N/A |
| 6.4.8.4 | Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating.....: | Fire enclosure is made of V-0 material | P |
| 6.5 | Internal and external wiring | | P |
| 6.5.1 | Requirements | Approved wire used | P |
| 6.5.2 | Cross-sectional area (mm ²) | See appended table 4.1.2 | — |
| 6.5.3 | Requirements for interconnection to building wiring | | N/A |
| 6.6 | Safeguards against fire due to connection to additional equipment | | P |
| | External port limited to PS2 or complies with Clause Q.1 | (See appended table Q.1) | P |

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

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

| 8 | MECHANICALLY-CAUSED INJURY | | P |
|-----------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 8.1 | General | Mass 3.83kg, No touch DC fan in the equipment – see below regarding edges and corners. | P |
| 8.2 | Mechanical energy source classifications | MS1: Edges and corners of enclosure MS1: mass of unit <7kg MS1: DC Fan: $(8600/15000) + (6 * 10^{-7} * (0.053 * 20^2 * 8600^2) / 2400) = 0.57 < 1$ | P |
| 8.3 | Safeguards against mechanical energy sources | | N/A |
| 8.4 | Safeguards against parts with sharp edges and corners | Edges and corners of the enclosure are rounded. | P |
| 8.4.1 | Safeguards | | N/A |
| 8.5 | Safeguards against moving parts | DC fan cannot be touched by user without using of a tool | 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 | | — |
| 8.5.4 | Special categories of equipment comprising moving parts | | N/A |
| 8.5.4.1 | Large data storage equipment | | N/A |
| 8.5.4.2 | Equipment having electromechanical device for destruction of media | | N/A |
| 8.5.4.2.1 | Safeguards and Safety Interlocks | | N/A |
| 8.5.4.2.2 | Instructional safeguards against moving parts | | N/A |
| | Instructional Safeguard | | — |
| 8.5.4.2.3 | Disconnection from the supply | | N/A |

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|-----------|-------------------------------------------------------------------|-------------------------------------------------------------|---------|
| 8.5.4.2.4 | Probe type and force (N) | | N/A |
| 8.5.5 | High Pressure Lamps | | N/A |
| 8.5.5.1 | Energy Source Classification | | N/A |
| 8.5.5.2 | High Pressure Lamp Explosion Test..... | | N/A |
| 8.6 | Stability | | P |
| 8.6.1 | Product classification | MS1: Floor standing equipment | P |
| | Instructional Safeguard..... | No television | — |
| 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 | be equipped with wheels having a minimum diameter of 100 mm | N/A |
| | Unit configuration during 10° tilt..... | | — |
| 8.6.4 | Glass slide test | | N/A |
| 8.6.5 | Horizontal force test (Applied Force)..... | | N/A |
| | Position of feet or movable parts..... | | — |
| 8.7 | Equipment mounted to wall or ceiling | Not wall or ceiling mounted equipment | N/A |
| 8.7.1 | Mounting Means (Length of screws (mm) and mounting surface) | | N/A |
| 8.7.2 | Direction and applied force..... | | N/A |
| 8.8 | Handles strength | | P |
| 8.8.1 | Classification | MS1 | P |
| 8.8.2 | Applied Force | 115N, no damaged | P |
| 8.9 | Wheels or casters attachment requirements | Without the device | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 8.10.5 | Mechanical stability | | N/A |
| | Applied horizontal force (N) | | — |
| 8.10.6 | Thermoplastic temperature stability (°C)..... | | N/A |
| 8.11 | Mounting means for rack mounted equipment | Not such equipment | N/A |
| 8.11.1 | General | | N/A |
| 8.11.2 | Product Classification | | N/A |
| 8.11.3 | Mechanical strength test, variable N | | N/A |
| 8.11.4 | Mechanical strength test 250N, including end stops | | N/A |
| 8.12 | Telescoping or rod antennas..... | No antennas | N/A |
| | Button/Ball diameter (mm) | | — |

| 9 | THERMAL BURN INJURY | | P |
|-------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 9.2 | Thermal energy source classifications | Plastic enclosure and outer buttons considered to be accessible parts. The equipment evaluated by temperature test (see table 5.4.1.4). | P |
| 9.3 | Safeguard against thermal energy sources | Temperature of plastic enclosure and buttons classed as TS1. | P |
| 9.4 | Requirements for safeguards | | N/A |
| 9.4.1 | Equipment safeguard | Enclosure provided to limit the transfer of thermal energy of internal parts under normal operating conditions and abnormal operating conditions. | P |
| 9.4.2 | Instructional safeguard | | N/A |

| 10 * | RADIATION | | P |
|--------|--------------------------------------------------------|-----------------------------------------------|-----|
| 10.2 | Radiation energy source classification | See below | P |
| 10.2.1 | General classification | Provide reports, belong to the exempt section | P |
| 10.3 | Protection against laser radiation | No laser radiation | N/A |
| | Laser radiation that exists in the equipment: | | — |
| | Normal, abnormal, single-fault..... | | N/A |
| | Instructional safeguard | | — |
| | Tool..... | | — |
| 10.4 | Protection against visible, infrared, and UV radiation | | N/A |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 10.4.1 | General | | N/A |
| 10.4.1.a) | RS3 for Ordinary and instructed persons | | N/A |
| 10.4.1.b) | RS3 accessible to a skilled person..... | | N/A |
| | Personal safeguard (PPE) instructional safeguard..... | | — |
| 10.4.1.c) | Equipment visible, IR, UV does not exceed RS1 .. | | N/A |
| 10.4.1.d) | Normal, abnormal, single-fault conditions | | N/A |
| 10.4.1.e) | Enclosure material employed as safeguard is opaque..... | | N/A |
| 10.4.1.f) | UV attenuation..... | | N/A |
| 10.4.1.g) | Materials resistant to degradation UV | | N/A |
| 10.4.1.h) | Enclosure containment of optical radiation..... | | N/A |
| 10.4.1.i) | Exempt Group under normal operating conditions..... | | N/A |
| 10.4.2 | Instructional safeguard | | N/A |
| 10.5 | Protection against x-radiation | No x-radiation | N/A |
| 10.5.1 | X- radiation energy source that exists equipment : | | N/A |
| | Normal, abnormal, single fault conditions | | N/A |
| | Equipment safeguards..... | | N/A |
| | Instructional safeguard for skilled person..... | | N/A |
| 10.5.3 | Most unfavourable supply voltage to give maximum radiation | | — |
| | Abnormal and single-fault condition | | N/A |
| | Maximum radiation (pA/kg)..... | | N/A |
| 10.6 | Protection against acoustic energy sources | | 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..... | | — |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| 10.6.5 | Requirements for listening devices (headphones, earphones, etc.) | | N/A |
| 10.6.5.1 | Corded passive listening devices with analog input | | N/A |
| | Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output..... : | | — |
| 10.6.5.2 | Corded listening devices with digital input | | N/A |
| | Maximum dB(A)..... : | | — |
| 10.6.5.3 | Cordless listening device | | N/A |
| | Maximum dB(A)..... : | | — |

| B | NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS | | P |
|----------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------|
| B.2 | Normal Operating Conditions | | P |
| B.2.1 | General requirements..... : | (See summary of testing & appended test tables) | P |
| | Audio Amplifiers and equipment with audio amplifiers | No audio amplifier circuits | N/A |
| B.2.3 | Supply voltage and tolerances | (See appended table B.2.5) | P |
| B.2.5 | Input test..... : | (See appended table B.2.5) | P |
| B.3 | Simulated abnormal operating conditions | | P |
| B.3.1 | General requirements..... : | (See appended table B.3) | P |
| B.3.2 | Covering of ventilation openings | | P |
| B.3.3 | D.C. mains polarity test | The EUT is not connected to a D.C. mains | N/A |
| B.3.4 | Setting of voltage selector | No voltage selector used within the EUT | N/A |
| B.3.5 | Maximum load at output terminals | (See appended tables 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 | All safeguards remained effective. | P |
| B.4 | Simulated single fault conditions | | P |
| B.4.2 | Temperature controlling device open or short-circuited | No such controlling device | N/A |
| B.4.3 | Motor tests | | P |

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|-------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| B.4.3.1 | Motor blocked or rotor locked increasing the internal ambient temperature | (See appended tables B.4) | P |
| B.4.4 | Short circuit of functional insulation | See the following details. | P |
| B.4.4.1 | Short circuit of clearances for functional insulation | (See appended tables B.4) | P |
| B.4.4.2 | Short circuit of creepage distances for functional insulation | (See appended tables B.4) | P |
| B.4.4.3 | Short circuit of functional insulation on coated printed boards | No coated printed boards within the EUT | N/A |
| B.4.5 | Short circuit and interruption of electrodes in tubes and semiconductors | (See appended tables B.4 for faults on electronic components) | P |
| B.4.6 | Short circuit or disconnect of passive components | (See appended tables B.4) | P |
| B.4.7 | Continuous operation of components | The EUT is continuous operating type and no such components intended for short time operation or intermittent operation | N/A |
| B.4.8 | Class 1 and Class 2 energy sources within limits during and after single fault conditions | No change to circuits classified in 5.3. | P |
| B.4.9 | Battery charging under single fault conditions ... : | See Annex M | P |

| C * | UV RADIATION | N/A |
|------------|--------------------------------------------------------|--------------------------------|
| C.1 | Protection of materials in equipment from UV radiation | No UV radiation within the EUT |
| 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 | P |
| D.1 | Impulse test generators | P |
| D.2 | Antenna interface test generator | P |
| D.3 | Electronic pulse generator | N/A |

| E | TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS | N/A |
|----------|------------------------------------------------------------------|--------------------|
| E.1 | Audio amplifier normal operating conditions | No audio amplifier |
| | Audio signal voltage (V) | — |



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|-------------|-----------------------------------------------|-----------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | Rated load impedance (Ω) | | |
| E.2 | Audio amplifier abnormal operating conditions | | N/A |

| F | EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS | | P |
|---------|----------------------------------------------------------------|----------------------------------------------------------------------------------|-----|
| F.1 | General requirements | See the following details. | P |
| | Instructions – Language | English version provided. | — |
| F.2 | Letter symbols and graphical symbols | See the following details. | P |
| F.2.1 | Letter symbols according to IEC60027-1 | Letter symbols for quantities and units are complied with IEC 60027-1. | P |
| F.2.2 | Graphic symbols IEC, ISO or manufacturer specific | Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010. | P |
| F.3 | Equipment markings | | P |
| F.3.1 | Equipment marking locations | Equipment marking is located on the enclosure surface and is easily visible. | P |
| F.3.2 | Equipment identification markings | See the following details. | P |
| F.3.2.1 | Manufacturer identification | See copy of marking plate. | — |
| F.3.2.2 | Model identification | See copy of marking plate. | — |
| F.3.3 | Equipment rating markings | See the following details. | P |
| F.3.3.1 | Equipment with direct connection to mains | The equipment is direct connected to AC mains, see F.3.3.3 to F.3.3.6. | P |
| F.3.3.2 | Equipment without direct connection to mains | When charged via DC input port | P |
| F.3.3.3 | Nature of supply voltage..... | ~ for AC == for DC | — |
| F.3.3.4 | Rated voltage | See copy of marking plate. | — |
| F.3.3.5 | Rated frequency | See copy of marking plate. | — |
| F.3.3.6 | Rated current or rated power | See copy of marking plate. | — |
| F.3.3.7 | Equipment with multiple supply connections | Only one mains supply connection. | N/A |
| F.3.4 | Voltage setting device | No voltage selector provide within the equipment. | N/A |
| F.3.5 | Terminals and operating devices | See below. | P |
| F.3.5.1 | Mains appliance outlet and socket-outlet markings..... | Rating of the socket-outlet showed on the label. | P |
| F.3.5.2 | Switch position identification marking | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
|-----------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| F.3.5.3 | Replacement fuse identification and rating markings..... : | The current fuse is located within the equipment and not replaceable by an ordinary person or an instructed person. Identification information (F2 T40A 250V) is marked adjacent to the fuse. | P |
| F.3.5.4 | Replacement battery identification marking : | No replacement battery | N/A |
| F.3.5.5 | Terminal marking location | | P |
| F.3.6 | Equipment markings related to equipment classification | | P |
| F.3.6.1 | Class I Equipment | | P |
| F.3.6.1.1 | Protective earthing conductor terminal | | P |
| F.3.6.1.2 | Neutral conductor terminal | | N/A |
| F.3.6.1.3 | Protective bonding conductor terminals | | N/A |
| F.3.6.2 | Class II equipment (IEC60417-5172) | | N/A |
| F.3.6.2.1 | Class II equipment with or without functional earth | | N/A |
| F.3.6.2.2 | Class II equipment with functional earth terminal marking | | N/A |
| F.3.7 | Equipment IP rating marking : | IP30 | — |
| F.3.8 | External power supply output marking | See copy of marking plate | P |
| F.3.9 | Durability, legibility and permanence of marking | Marking is considered to be legible and easily discernible. See also the following details. | P |
| F.3.10 | Test for permanence of markings | The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. With the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling and lifting of the label edge. After each test, the marking remained legible. | P |
| 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 |



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|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | 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 | | P |
| | g) Protective earthing conductor current exceeding ES 2 limits | | N/A |
| | h) Symbols used on equipment | | P |
| | i) Permanently connected equipment not provided with all-pole mains switch | | N/A |
| | j) Replaceable components or modules providing safeguard function | | N/A |
| F.5 | Instructional safeguards | Battery instruction safeguards stated in the user instruction, see also clause M.10 | 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 | No switches used in PS3 circuits | P |
| G.1.2 | Ratings, endurance, spacing, maximum load | (See appended table 4.1.2) | P |
| G.2 * | Relays | | P |
| G.2.1 | General requirements | Relays used in accordance with their rating and complied with subclasses of IEC 61810-1 (See appended table 4.1.2) | P |
| G.2.2 | Overload test | Overload test 50 cycles in the 6 cycles per minute, After the test, the relay can be functional. | P |
| G.2.3 | Relay controlling connectors supply power | | P |
| G.2.4 | Mains relay, modified as stated in G.2 | | N/A |
| G.3 * | Protection Devices | | P |
| G.3.1 | Thermal cut-offs | No thermal cut-offs used | N/A |
| G.3.1.1a) &b) | Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b) | | N/A |
| G.3.1.1c) | Thermal cut-outs tested as part of the equipment as indicated in c) | | N/A |

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|--------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.3.1.2 | Thermal cut-off connections maintained and secure | | N/A |
| G.3.2 | Thermal links | | N/A |
| G.3.2.1a) | Thermal links separately tested with IEC 60691 | No thermal links used | N/A |
| G.3.2.1b) | Thermal links tested as part of the equipment | | N/A |
| | Aging hours (H) | | — |
| | Single Fault Condition | | — |
| | Test Voltage (V) and Insulation Resistance (Ω) : | | — |
| G.3.3 | PTC Thermistors | No PTC thermistor used | N/A |
| G.3.4 | Overcurrent protection devices | Approved current fuse provided, see appended table 4.1.2 | P |
| G.3.5 | Safeguards components not mentioned in G.3.1 to G.3.5 | | P |
| G.3.5.1 | Non-resettable devices suitably rated and marking provided | Miniature circuit breaker used | P |
| G.3.5.2 | Single faults conditions..... | (See appended Table B.4) | P |
| G.4 * | Connectors | | P |
| G.4.1 | Spacings | | P |
| G.4.2 | Mains connector configuration | Approved appliance inlet provided. | P |
| G.4.3 | Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely | Output connector so designed that insert into a mains socket is unlikely to occur. | P |
| G.5 | Wound Components | | P |
| G.5.1 | Wire insulation in wound components..... | See G.5.3 | P |
| G.5.1.2 a) | Two wires in contact inside wound component, angle between 45° and 90° | Physical separation provided by insulation tape or tube. | P |
| G.5.1.2 b) | Construction subject to routine testing | See 5.4.9.2. | N/A |
| G.5.2 * | Endurance test on wound components | | N/A |
| G.5.2.1 | General test requirements | | N/A |
| G.5.2.2 | Heat run test | | N/A |
| | Time (s) | | — |
| | Temperature (°C) | | — |
| G.5.2.3 | Wound Components supplied by mains | | N/A |
| G.5.3 | Transformers | | P |
| G.5.3.1 | Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)..... | The transformers meet the requirements given in G.5.3.2 and G.5.3.3. | P |



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| Clause | Requirement + Test | Result - Remark | Verdict |
|--------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| | Position..... | T1, T4 (main board), T1, T2 (small board) | — |
| | Method of protection | By protection circuit design. | — |
| G.5.3.2 | Insulation | Primary windings and secondary windings are separated by Reinforced insulation T1, T4 (main board): Primary windings and core are separated by basic insulation secondary windings and core are separated by basic insulation (The core is considered as the intermediate conductive part) T1, T2 (small board): Secondary windings and core are separated by Reinforced insulation (The core is considered as primary part as it is not isolated from primary) | P |
| | Protection from displacement of windings..... | Fixed by bobbin and insulation tape | — |
| G.5.3.3 | Overload test | (See appended tables B.3) | P |
| G.5.3.3.1 | Test conditions | (See appended tables B.3) | P |
| G.5.3.3.2 | Winding Temperatures testing in the unit | (See appended tables B.3) | P |
| G.5.3.3.3 | Winding Temperatures - Alternative test method | | N/A |
| G.5.4 | Motors | | P |
| G.5.4.1 | General requirements | DC fan used | P |
| | Position | Inside the enclosure | — |
| G.5.4.2 | Test conditions | | N/A |
| G.5.4.3 | Running overload test | | N/A |
| G.5.4.4 | Locked-rotor overload test | | N/A |
| | Test duration (days) | | — |
| G.5.4.5 | Running overload test for d.c. motors in secondary circuits | | N/A |
| G.5.4.5.2 | Tested in the unit | | N/A |
| | Electric strength test (V) | | — |
| G.5.4.5.3 | Tested on the Bench - Alternative test method; test time (h) | | N/A |
| | Electric strength test (V) | | — |
| G.5.4.6 | Locked-rotor overload test for d.c. motors in secondary circuits | | P |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| G.5.4.6.2 | Tested in the unit | | P |
| | Maximum Temperature | (See append table B.4) | P |
| | Electric strength test (V) | No more than ES1 | 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 | No dimensional or constructional requirements for input wires with basic insulation that is not under mechanical stress. Triple-insulated wiring in transformer windings insulated as reinforced safeguard in the isolating transformer that has separately complied with Annex J. See table 4.1.2. | P |
| G.6.2 | Solvent-based enamel wiring insulation | | N/A |
| G.7 | Mains supply cords | | P |
| G.7.1 | General requirements | Approved power supply cord provided. | P |
| | Type..... | See table 4.1.2 | — |
| | Rated current (A) | See table 4.1.2 | — |
| | Cross-sectional area (mm ²), (AWG)..... | See table 4.1.2 | — |
| G.7.2 | Compliance and test method | See table 4.1.2 | P |
| G.7.3 | Cord anchorages and strain relief for non-detachable power supply cords | Detachable cords used | N/A |
| G.7.3.2 | Cord strain relief | | N/A |
| G.7.3.2.1 | Requirements | | N/A |
| | Strain relief test force (N) | | — |
| G.7.3.2.2 | Strain relief mechanism failure | | N/A |
| G.7.3.2.3 | Cord sheath or jacket position, distance (mm)..... | | — |
| G.7.3.2.4 | Strain relief comprised of polymeric material | | N/A |
| G.7.4 | Cord Entry | | N/A |



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|---------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.7.5 | Non-detachable cord bend protection | | N/A |
| G.7.5.1 | Requirements | | N/A |
| G.7.5.2 | Mass (g) | | — |
| | Diameter (m) | | — |
| | Temperature (°C) | | — |
| G.7.6 | Supply wiring space | | N/A |
| G.7.6.2 | Stranded wire | | N/A |
| G.7.6.2.1 | Test with 8 mm strand | | N/A |
| G.8 | Varistors | | P |
| G.8.1 | General requirements | Approved Varistor provided, see appended table 4.1.2 | P |
| 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 | | P |
| G.10.1 | General requirements | | P |
| G.10.2 | Resistor test | | P |
| G.10.3 | Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable | After test the changed not more than 10% | P |
| G.10.3.1 | General requirements | See below | P |
| G.10.3.2 | Voltage surge test | See table D.1 | P |
| G.10.3.3 | Impulse test | After test the changed not more than 20% | P |
| G.11 | Capacitor and RC units | | P |



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|---------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.11.1 | General requirements | Capacitors used in accordance with their rating and complied with subclasses of IEC 60384-14 (See appended table 4.1.2) | P |
| G.11.2 | Conditioning of capacitors and RC units | | P |
| G.11.3 | Rules for selecting capacitors | | P |
| G.12 | Optocouplers | | P |
| | Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results).....: | Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (See appended table 4.1.2) | P |
| | Type test voltage Vini | >4000Vpk | — |
| | Routine test voltage, Vini,b | >4000Vpk | — |
| G.13 | Printed boards | | P |
| G.13.1 | General requirements | See the following details. | P |
| G.13.2 | Uncoated printed boards | The insulation between conductors on the outer surfaces of an uncoated printed board complied with the minimum clearance and creepage requirements | P |
| G.13.3 | Coated printed boards | No coated printed board applied for within the equipment. | N/A |
| G.13.4 | Insulation between conductors on the same inner surface | | P |
| | Compliance with cemented joint requirements (Specify construction).....: | See clause 5.4.4.5 | — |
| G.13.5 | Insulation between conductors on different surfaces | | N/A |
| | Distance through insulation.....: | | N/A |
| | Number of insulation layers (pcs) | | — |
| G.13.6 | Tests on coated printed boards | | N/A |
| G.13.6.1 | Sample preparation and preliminary inspection | | N/A |
| G.13.6.2a) | Thermal conditioning | | N/A |
| G.13.6.2b) | Electric strength test | | N/A |
| G.13.6.2c) | Abrasion resistance test | | N/A |
| G.14 * | Coating on components terminals | | N/A |
| G.14.1 | Requirements | No coating on component terminals considered to affect creepage or clearances. | N/A |
| G.15 * | Liquid filled components | | N/A |

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|---------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------|
| Clause | Requirement + Test | Result - Remark | Verdict |
| G.15.1 | General requirements | No such device provided within the equipment. | 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 sc 5.4.8 – 120 hours | No such IC used | N/A |
| b) | Impulse test using circuit 2 with $U_c =$ to transient voltage | | N/A |
| C1) | Application of ac voltage at 110% of rated voltage for 2.5 minutes | | N/A |
| C2) | Test voltage | | — |
| D1) | 10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer | | N/A |
| D2) | Capacitance | | — |
| D3) | Resistance | | — |

| H * | CRITERIA FOR TELEPHONE RINGING SIGNALS | | N/A |
|---------|----------------------------------------------|--------------------------------------|-----|
| H.1 | General | No telephone ringing signals produce | N/A |
| H.2 | Method A | | N/A |
| H.3 | Method B | | N/A |
| H.3.1 | Ringling signal | | N/A |
| H.3.1.1 | Frequency (Hz) | | — |
| H.3.1.2 | Voltage (V) | | — |
| H.3.1.3 | Cadence; time (s) and voltage (V) | | — |
| H.3.1.4 | Single fault current (mA):..... | | — |
| H.3.2 | Tripping device and monitoring voltage | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
|---------|-------------------------------------------------------------------------------|-----------------|---------|
| H.3.2.1 | Conditions for use of a tripping device or a monitoring voltage complied with | | N/A |
| H.3.2.2 | Tripping device | | N/A |
| H.3.2.3 | Monitoring voltage (V) | | — |

| J * | INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION | | P |
|-------|-----------------------------------------------------------------------------------------------------|-------------------------------------|-----|
| | General requirements | | P |
| K | SAFETY INTERLOCKS | | N/A |
| K.1 | General requirements | No safety interlocks inside the EUT | N/A |
| K.2 | Components of safety interlock safeguard mechanism | | N/A |
| K.3 | Inadvertent change of operating mode | | N/A |
| K.4 | Interlock safeguard override | | N/A |
| K.5 | Fail-safe | | N/A |
| | Compliance | | N/A |
| K.6 | Mechanically operated safety interlocks | | N/A |
| K.6.1 | Endurance requirement | | N/A |
| K.6.2 | Compliance and Test method | | N/A |
| K.7 | Interlock circuit isolation | | N/A |
| K.7.1 | Separation distance for contact gaps & interlock circuit elements (type and circuit location) | | N/A |
| K.7.2 | Overload test, Current (A) | | N/A |
| K.7.3 | Endurance test | | N/A |
| K.7.4 | Electric strength test | | N/A |

| L | DISCONNECT DEVICES | | P |
|-----|---------------------------------|---------------------------------------------------------|-----|
| L.1 | General requirements | Appliance coupler used as the disconnect device. | P |
| L.2 | Permanently connected equipment | Not permanently connected equipment. | N/A |
| L.3 | Parts that remain energized | | P |
| L.4 | Single phase equipment | Appliance coupler disconnects all poles simultaneously. | P |
| L.5 | Three-phase equipment | | N/A |
| L.6 | Switches as disconnect devices | | N/A |
| L.7 | Plugs as disconnect devices | | N/A |

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| | | | |
|-----|------------------------|--|-----|
| L.8 | Multiple power sources | | N/A |
|-----|------------------------|--|-----|

| M | EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS | | P |
|------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| M.1 | General requirements | | P |
| M.2 | Safety of batteries and their cells | Approved Cells used, see also appended table 4.1.2 | P |
| M.2.1 | Requirements | | P |
| M.2.2 | Compliance and test method (identify method) ... : | | P |
| M.3 | Protection circuits | | P |
| M.3.1 | Requirements | Safeguards considered during charging and discharging cycles as determined for expected and foreseeable use according to the user instructions. | P |
| M.3.2 | Tests | See appended table M.3 | P |
| | - Overcharging of a rechargeable battery | By inspection of the data for cells and tests of B3. & B4. See appended tables B.3 & B.4. | P |
| | - Unintentional charging of a non-rechargeable battery | No such battery used | N/A |
| | - Reverse charging of a rechargeable battery | The pins of battery were soldered to PCB, which not likely to charge the battery reversely | N/A |
| | - Excessive discharging rate for any battery | By inspection of the data for cells and tests of B3. & B4. See appended tables B.3 & B.4. | P |
| M.3.3 | Compliance | No chemical leaked, no explosion occurred, no flame or expulsion of parts observed after tests and the battery temperature and battery charge/discharge current didn't exceed the specifications from manufacturer during the tests. | P |
| M.4 | Additional safeguards for equipment containing secondary lithium battery | | P |
| M.4.1 | General | | P |
| M.4.2 | Charging safeguards | | P |
| M.4.2.1 | Charging operating limits | See appended table M.4 | P |
| M.4.2.2a) | Charging voltage, current and temperature | See appended table M.4 | — |
| M.4.2.2 b) | Single faults in charging circuitry | See appended table M.4 | — |

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| M.4.3 | Fire Enclosure | V-0 Fire enclosure used of the equipment | P |
| M.4.4 | Endurance of equipment containing a secondary lithium battery | Tested and complied | P |
| M.4.4.2 | Preparation | | P |
| M.4.4.3 | Drop and charge/discharge function tests | | P |
| | Drop | | P |
| | Charge | The voltage on reference battery was 50.4V throughout the 24 hour period, the voltage on dropped battery was 50.3V throughout the 24 hour period. The voltage difference not exceeded 0.2 %. | P |
| | Discharge | See appended table M.4 | P |
| M.4.4.4 | Charge-discharge cycle test | See appended table M.4 | P |
| M.4.4.5 | Result of charge-discharge cycle test | Charge/discharge function effective | P |
| M.5 | Risk of burn due to short circuit during carrying | | N/A |
| M.5.1 | Requirement | | N/A |
| M.5.2 | Compliance and Test Method (Test of P.2.3) | | N/A |
| M.6 | Prevention of short circuits and protection from other effects of electric current | Approved cell used which had considered the forced internal short circuit test, it is considered complied without further testing | P |
| M.6.1 | Short circuits | See above | P |
| 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
| M.8.2.2 | Estimation of hypothetical volume V_z (m ³ /s)..... : | | — |
| M.8.2.3 | Correction factors..... : | | — |
| M.8.2.4 | Calculation of distance d (mm) : | | — |
| M.9 | Preventing electrolyte spillage | | N/A |
| M.9.1 | Protection from electrolyte spillage | | N/A |
| M.9.2 | Tray for preventing electrolyte spillage | | N/A |
| M.10 | Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) : | Mentioned in user manual | P |

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

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

| P | SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS | P |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| P.1 | General requirements | P |
| P.2.2 | Safeguards against entry of foreign object | Side openings provided with louvres that are shaped to deflect outwards an external vertically falling object |
| | Location and Dimensions (mm) : | — |
| P.2.3 | Safeguard against the consequences of entry of foreign object | N/A |
| P.2.3.1 | Safeguards against the entry of a foreign object | N/A |
| | Openings in transportable equipment | N/A |
| | Transportable equipment with metalized plastic parts..... : | N/A |
| P.2.3.2 | Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) : | N/A |
| P.3 * | Safeguards against spillage of internal liquids | 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 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|----------|-------------------------------------------------|-----------------|---------|
| P.4 * | Metallized coatings and adhesive securing parts | | N/A |
| P.4.2 a) | Conditioning testing | | N/A |
| | Tc (°C)..... : | | — |
| | Tr (°C)..... : | | — |
| | Ta (°C)..... : | | — |
| P.4.2 b) | Abrasion testing | | N/A |
| P.4.2 c) | Mechanical strength testing | | N/A |

| Q | CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING | | P |
|----------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Q.1 | Limited power sources | Considered for USB-A ports, USB-C port (5/9/12/15V output). The car Outlet and USB-C port (20V output) not complied with LPS, fire enclosure shall be provided for equipment that connected to these ports. | P |
| Q.1.1 a) | Inherently limited output | | N/A |
| Q.1.1 b) | Impedance limited output | | P |
| | - Regulating network limited output under normal operating and simulated single fault condition | | P |
| Q.1.1 c) | Overcurrent protective device limited output | | N/A |
| Q.1.1 d) | IC current limiter complying with G.9 | | N/A |
| Q.1.2 | Compliance and test method | (See appended table Annex Q.1) | P |
| Q.2 | Test for external circuits – paired conductor cable | No such circuit for connection to the EUT | N/A |
| | Maximum output current (A) | | — |
| | Current limiting method..... : | | — |

| R * | LIMITED SHORT CIRCUIT TEST | | N/A |
|-----|----------------------------------------------------------------------|------------------------|-----|
| R.1 | General requirements | No such consideration. | N/A |
| R.2 | Determination of the overcurrent protective device and circuit | See above. | N/A |
| R.3 | Test method Supply voltage (V) and short-circuit current (A)). | See above. | N/A |



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

| S | TESTS FOR RESISTANCE TO HEAT AND FIRE | | N/A |
|-----|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----|
| S.1 | Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W | Approved fire enclosure with V-0 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 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 enclosure materials of equipment with a steady-state power exceeding 4000 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 |

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

| T | MECHANICAL STRENGTH TESTS | | P |
|-------|--------------------------------------|-------------------------------------------------|-----|
| T.1 | General requirements | | P |
| T.2 | Steady force test, 10 N | (See appended table T.2) | P |
| T.3 | Steady force test, 30 N | | N/A |
| T.4 | Steady force test, 100 N | | N/A |
| T.5 | Steady force test, 250 N | (See appended table T.5) | P |
| T.6 | Enclosure impact test | (See appended table T.6) | P |
| | Fall test | | P |
| | Swing test | | N/A |
| T.7 | Drop test | | P |
| T.8 | Stress relief test | (See appended table T.8) | P |
| T.9 | Impact Test (glass) | No glass used | N/A |
| T.9.1 | General requirements | | N/A |
| T.9.2 | Impact test and compliance | | N/A |
| | Impact energy (J) | | — |
| | Height (m) | | — |
| T.10 | Glass fragmentation test | | N/A |
| T.11 | Test for telescoping or rod antennas | No such antennas provided within the equipment. | N/A |
| | Torque value (Nm) | See above. | — |

| U * | MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION | | N/A |
|-----|------------------------------------------------------------------------------------------------|---------------------------------------|-----|
| U.1 | General requirements | No CRT provided within the equipment. | N/A |
| U.2 | Compliance and test method for non-intrinsically protected CRTs | | N/A |
| U.3 | Protective Screen | | N/A |

| V | DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES) | | P |
|-----|----------------------------------------------------------------|---------------------------------------------------|---|
| V.1 | Accessible parts of equipment | No access with test probes to any hazardous parts | P |
| V.2 | Accessible part criterion | | P |



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

| 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 cord set (EU) | Unirise Electric Wire & Cable Co., Ltd. | Plug: UE-311 | 250 VAC, 16 A | DIN VDE 0620-2-1 (VDE 0620-2-1):2016-01 DIN VDE 0620-2-1/A1 (VDE 0620-2-1/A1):2017-09 | VDE 40020596 |
| | Unirise Electric Wire & Cable Co., Ltd. | Cord: H05VV-F | 3Gx1.0mm2 | EN 50525-2-11:2011 | VDE 40017449 |
| | Unirise Electric Wire & Cable Co., Ltd. | Connector: UE-313 | 250 VAC, 10A | EN 60320-1:2015 + AC:2016 IEC 60320-1:2015 | VDE 40004546 |
| AC socket (EU) | B-STAR | BS-D01-1B | 16A, 250VAC | VDE 0620-1 | TUV SUD Cer.: B 102427 0007 Rev. 00 |
| Plastic Enclosure | FORMOSA CHEMICALS & FIBRE CORP PLASTICS DIV | AC310(+) | Thickness min. 1.5mm, V-0, 90°C | UL94, UL746 | UL E162823 |
| AC inlet | ZHE JIANG BER ER JIA ECLECTRONIC CO LTD | ST-A01-002L | 10A, 250VAC | EN 60320-1, EN 60320-3 | ENEC-03639-M1 |
| Circuit breaker | Kuoyuh W. L. Enterprise Co., Ltd. | 88 Series | Line: 125V/250V, 18A 50/60Hz, load: 32Vdc | EN 60934 UL 1077 | TUV SUD No. B 058611 0013 Rev. 00 UL E155159 |
| Battery | EVE POWER Co., Ltd. | IFR33140 | 3.2V,15Ah | IEC 62133-2:2017 | TUV JPTUV-143789 Report No.: CN22MB2Z 001 |
| AC Connector (matching J19) | Changzhou Amass Electronics Co Ltd | XT90H-M | 500V, 30A, 120°C | UL 1977 CSA-C22.2 No. 182.3 | UL E482722 |
| AC input wire | DONGGUAN ZHONGZHEN ENERGY TECHNOLOGY CO., LTD | 3135 | 14AWG, 600V, 200°C | UL 758 | UL E355578 |

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| Earth wire | DONGGUAN ZHONGZHEN ENERGY TECHNOLOGY CO., LTD | 3135 | 14AWG, 200°C | UL 758 | UL E355578 |
| Heat shrinkable tube | DONGGUAN SALIPT CO LTD | SALIPT S-901-600 | 125°C, 600V | UL 224 | UL E209436 |
| Alt. | Interchangeable | Interchangeable | Min.125 °C, VW-1, 600V | UL 224 | UL |
| DC Fan | Shenzhen Huaxia Hengtai Electronicco., Ltd | DA08025B12XP | DC12V,0.4A | IEC 62368 | TUV R 50472972 |
| LCD | Hunan Future Electronics Technology Co., Ltd. | FB001180-VLPW | 123.00(W)*81.70 (H)*11.60(T)MM | -- | -- |
| Main board | | | | | |
| PCB | SHENZHEN ZHONG LUO ELECTRONICS CO LTD | ZL-02 | 130°C, V-0 | UL 796 | UL E255554 |
| (Alternative) | Interchangeable | Interchangeable | Min.130°C, Min.V-1 | UL 796 | UL approved |
| Connector (AC1) | CWB ELECTRONICS (ZHEJIANG) CO LTD | VH-A, VH-Y | 250V 25°C~+85°C | UL 1997 | UL E200881 |
| Overload protector (F4) | HUIYANG ZING EAR INDUSTRY CO., LTD. | ZE-700S-A | 250VAC, 10 A | EN IEC 60934:2019 | TUV SUD CERTIFICAT E No.: B0870620005 Rev. 00 |
| Connector (CN3) | CWB ELECTRONICS (ZHEJIANG) CO.,LTD | VH-3AW | 250V, -20°C ~120°C | UL 1977 | UL E200881 |
| Connector (CN3) | YUEQING JIADE ELECTRONICS CO.,LTD | VH-3AW | 250V -20°C ~120°C | UL 1977 | UL E241222 |
| Battery connector (CN9) | Changzhou Amass Electronics Co., Ltd | XT60-M | 600VDC, 40A | UL 1977 | UL E482722 |
| (Alternative) | Shenzhen Gaowang Electronics Co., Ltd | GW60-M | 600VDC, 40A | UL 1977 | ETL CTRTIFICAT E No.: 5026274 |
| Connector (P3&P4) | Changzhou Amass Electronics Co Ltd | XT60-F | 600VDC, 40A | UL 1977 | UL E482722 |

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| (Alternative) | Shenzhen Gaowang Electronics Co., Ltd | GW60-F | 600VDC, 40A | UL 1977 | ETL CTRTIFICAT E No.: 5026274 |
| Varistor (MOV1) | Thinking Electronic Industrial Co., Ltd. | TVR10471 | Max. 300 VAC/ 385VDC, 2500A | IEC 61051-2:1991 IEC 61051-2:1991/AMD1:2009 IEC 61051-2:1991 IEC 61051-1:2007 | VDE 005944 |
| (Alternative) | Centra Science Corp. | CNR-10D471K | Max. 300 VAC/ 385VDC, 2500A | IEC 61051-2:1991 IEC 61051-2:1991/AMD1:2009 IEC 61051-2:1991 IEC 61051-1:2007 | VDE 40008220 |
| Capacitor (CX3) | WINDAY ELECTRONIC (DONG GUAN) CO LTD | MPX Serie(s) | 0.33uF AC Min250V 40/110/21C, X2 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 | VDE 40030283 |
| (Alternative) | GUANGDONGFENG NGMING ELECTRONICTECH.CO.,LTD. | MKP-X2 | 0.33uF AC Min275V 40/110/56, X2 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 | VDE 40025702 |
| Capacitor (CX2) | WINDAY ELECTRONIC (DONG GUAN) CO LTD | MPX Serie(s) | 0.22uF AC Min250V 40/110/21C, X2 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 | VDE 40030283 |

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| (Alternative) | Shenzhen Jinghao Capacitor Co., Ltd. | CBB62B 0.22uF AC Min250V 40/110/56, X2 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 VDE 40018690 |
| Inductor (LF4) | Huizhou Chiding Technology Co., LTD | T25*15*10C 4.5mH | IEC/EN 62368-1 Test with appliance |
| Inductor (LF3) | Huizhou Chiding Technology Co., LTD | T20*12*8C 16mH | IEC/EN 62368-1 Test with appliance |
| Inductor (LF1) | Huizhou Chiding Technology Co., LTD | T14*7*6 10.0mH | IEC/EN 62368-1 Test with appliance |
| Inductor (LF2) | Huizhou Chiding Technology Co., LTD | T12*7*5C 6uH | IEC/EN 62368-1 Test with appliance |
| Inductor (L2) | Huizhou Chiding Technology Co., LTD | AF270090 2.18mH | IEC/EN 62368-1 Test with appliance |
| Relay (RLY1, RLY2) | Xiamen Hongfa Electroacoustic Co., Ltd. | HF30F Serie(s) (HF30F 12-2HTF) 250VAC, 10A | EN 61810-1:2015/A1:2020 IEC 61810-1:2015 IEC 61810-1:2015/AMD1:2019 EN 61810-1:2015 VDE4005599-3 |
| Capacitor (CY6,CY10) | Jyh Chung Electronic Co., Ltd. | JY Min:300Vac 2200PF Y2 40/125/21 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 VDE123326 |

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|----------------------|----------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| (Alternative) | Guangdong South Hongming Electronic Science and Technology Co., Ltd. | F Min. 250VAC, 2200PF Y2, 40/125/21 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 VDE4003624 6 |
| (Alternative) | TDK Corporation | CS series Min:300Vac 2200PF Y2 125/21/B | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 ENEC-01049-A3 |
| Capacitor (CY7,CY11) | Jyh Chung Electronic Co., Ltd. | JY Min:300Vac 4700PF Y2 40/125/21 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 VDE123326 |
| (Alternative) | Guangdong South Hongming Electronic Science and Technology Co., Ltd. | F Min. 250VAC, 4700PF Y2, 40/125/21 | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 VDE 40036246 |
| (Alternative) | TDK Corporation | CS series Min:300Vac 4700PF Y2 125/21/B | EN60384-14:2013/A1:2016 IEC60384-14:2013 IEC60384-14:2013/AMD1:2016 EN60384-14:2013-08 ENEC-01049-A3 |

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| Capacitor (CY1, CY3) | Jyh Chung Electronic Co., Ltd. | JY Min:300Vac 3300PF Y2 40/125/21 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE123326 |
| (Alternative). | Guangdong South Hongming Electronic Science and Technology Co., Ltd. | F Min. 250VAC, 3300PF Y2, 40/125/21 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE 40036246 |
| (Alternative) | TDK Corporation | CS series Min:300Vac 3300PF Y2 125/21/B | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 ENEC-01049- A3 |
| Capacitor (CY5,CY12) | Dongguan Easy- gather Electronic Co., Ltd | DCF Min. 250VAC, 470 Pf, Y2, 40/125/56 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE 40015758 |
| (Alternative) | Jyh Chung Electronic Co., Ltd. | JY Min:300Vac 470PF Y2 40/125/21 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE 123326 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|----------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Capacitor (CY2,CY4,CY8, CY9, CY14, CY15) | Jyh Chung Electronic Co., Ltd. | JY Min:300Vac 1000PF Y2 40/125/21 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE123326 |
| (Alternative) | Xiamen Wanming Electronics Co., Ltd. | HM Min:250Vac 1000PF Y2 40/125/21 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE 40034436 |
| (Alternative) | Guangdong South Hongming Electronic Science and Technology Co., Ltd. | F Min. 250VAC, 1000PF Y2, 40/125/21 | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 VDE 40036246 |
| (Alternative) | TDK Corporation | CS series Min:300Vac 1000PF Y2 125/21/B | EN60384- 14:2013/A1:2016 IEC60384- 14:2013 IEC60384- 14:2013/AMD1:20 16 EN60384- 14:2013-08 ENEC-01049- A3 |
| IC (IC4) | Chengdu CrossChip Microsystems Co., LTD | CC6921SO-10A VCC: 4.5V to 5.5V, Icc:20 to25mA, TAL: -40°C to 120°C | EN 62368-1:2018 TUV R 50531533 |
| (Alternative) | Suzhou Novosense Microelectronics Co., Ltd | NSM2011- 10B5R-DSWR Cl.≥8.0mm Cr.≥8.0mm DTI.≥0.4 mm -40°C ~ 125°C | EN 62368- 1:2014/A11:2017 TUV SUD Certificate No.: B 112807 0001 Rev. 00 |

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|--------------------|--------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------|
| IC (IC24) | Suzhou Novosense Microelectronics Co.,Ltd | NSI8263W0-DSWR Cl.≥8.0mm Cr.≥8.0mm DTI.≥0.4 mm 40/125/21 | EN IEC 60747-17:2020+AC:2021 VDE 40052820 |
| (Alternative) | Shanghai Chipanalog Microelectronics Co., Ltd. | CA-IS3763LW Cl.≥8.0mm Cr.≥8.0mm DTI.≥0.4 mm 55/105/21 | EN IEC 60747-17:2020+AC:2021 VDE 40052786 |
| Optocouplers (PC3) | Lite-On Technology Corporation | LTV-817 Cl.≥7.0mm Cr.≥7.0mm DTI.≥0.4 mm 55/115/21 | EN IEC 60747-5-5:2020 VDE 40015248 |
| (Alternative) | Everlight Electronics Co., Ltd. | EL817 S1 Cl.≥7.6mm Cr.≥7.6mm DTI.≥0.4 mm 55/110/21 | EN IEC 60747-5-5:2020 VDE 132249 |
| Transformer(T1) | FOSHAN CITY SHUNDE DISTRICT QIAOJING ELECTRONIC CO LTD | EE13 Class 155(F) | UL1446 UL E365880 |
| -Bobbin | SUMITOMO BAKELITE CO LTD | PM-9823 V-0,150℃, Min.0.4mm | UL 746D UL E41429 |
| -Insulation tape | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD | PF* (d)(g) 180℃ | CAN/UL 510A, UL E165111 |
| -tube | CHANGYUAN ELECTRONICS GROUP CO LTD | CB-TT-L 200℃ | UL 224 UL E180908 |
| -TIW | SHENZHEN DARUN SCIENCE AND TECHNOLOGY CO LTD | DRTIW-F 155℃ | UL 2353, UL E335841 |
| -Magnet Wire | DONG GUAN YIDA INDUSTRIAL CO LTD | xUEW/155, 155℃ | UL 1446 UL E344055 |
| -Varnish | SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD | T-4260(a) 155℃ | UL 1446 UL E228349 |

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| Clause | Requirement + Test | | Result - Remark | Verdict | |
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| Transformer (T1) (Alternative) | Dongguan City Koreyoshi Electronics Co Ltd | EE13 | Class 155(F) | UL 1446 | UL E321058 |
| - BOBBIN | CHANG CHUN PLASTICS CO LTD | T375HF | V-0 150°C Min0.4mm | UL 746 | E59481 |
| - WIRE | 1. HUIZHOU CITY DENGGAODA ELECTROTECH CO LTD 2. NINGBO JINTIAN NEW MATERIAL CO LTD 3. ZHEJIANG HONGBO TECHNOLOGY CO LTD 4. SIHUI HENGHUI ELECTRICAL APPLIANCES CO LTD | X UEWF | 155°C | UL 1446 | UL E253843 UL E227047 UL E221719 UL E337948 |
| - TRIPLE INSULATION WIR | 1. SHENZHEN KAIZHONG HEDONG NEW MATERIALS CO LTD 2. Guangzhou Wanbao Electronic Material Co Ltd | 1. TIW-B 2. DTM-B | 130°C | UL 2353, | UL E357240 UL E323485 |
| - TAPE | 1. JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD 2. | 1 . CT-280 2 . JY25-1 | 130°C | UL 510A | UL E165111 UL E246950 |
| Trans(T4) | Huizhou Chiding Technology Co., LTD | PQ3230 | Class B | -- | Tested with appliance |
| -INSULATING PAPER | DUPONT SPECIALTY PRODUCTS USA, LLC | Nomex 410 | 220°C | UL 746 | UL E34739 |
| - WIRE | DONG GUAN YIDA INDUSTRIAL CO LTD/ TAI-I ELECTRIC WIRE & CABLE CO LTD | xUEW/155, QA- x/155 UEWF | 155°C | UL1446 | UL E344055 UL E85640 |

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| Clause | Requirement + Test | Result - Remark | Verdict | | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------|----------------|----------------------------------------|
| - TRIPLE WIRE | Huizhou Huaying Electronic Technology Co Ltd/ E&B TECHNOLOGY CO LTD/ HUIZHOU JINMAXIANCAI TECHNOLOGY CO LTD | HY-MIW-F(LZ)/ E&B-XXX*YYYYZF / TIW-F | 155°C | UL 2353 | UL E470559 UL E315265 UL E516017 |
| - TAPE | SHEN ZHEN XINHUAHUI ELECTRONIC MATERIALS CO LTD DONGGUAN TANGXIA DAWEI ELECTRONICAL MATERIAL FACTORY JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD | HKT FK-01%(a) PF* (d)(g) | 1.200°C 2.180°C 3.180°C | UL 510A | UL E328315 UL E482579 UL E165111 |
| - TUBE | CHANGYUAN ELECTRONICS GROUP CO.,LTD GREAT HOLDING INDUSTRIAL CO LTD | CB-TT-L 150V TFL 150V | 200°C | UL 224 | UL E180908 UL E156256 |
| Trans(T3) | Huizhou Chiding Technology Co., LTD | EE16 | Class B | IEC/EN 62368-1 | Tested with appliance |
| --Bobbin | CHANG CHUN PLASTICS CO LTD | T200HF | V-0, Min. 0.4mm, 150°C | UL746 | UL E59481 |
| (Alternative) | SUMITOMO BAKELITE CO LTD | PM-9823 | V-0, Min. 0.4mm, 150°C | UL746 | UL E41429 |
| --TRIPLE WIRE | Huizhou Huaying Electronic Technology Co Ltd | MIW-F * | 155(F) | UL 2353 | UL E470559 |
| (Alternative) | E&B TECHNOLOGY CO LTD | E&B-XXXF | 155(F) | UL 2353 | UL E315265 |

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|----------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------|
| --Tape | SHEN ZHEN XINHUAHUI ELECTRONIC MATERIALS CO LTD | HKT 200°C | UL 510A UL E328315 |
| (Alternative) | DONGGUAN TANGXIA DAWEI ELECTRONICAL MATERIAL FACTORY | FK-01%(a) 180°C | UL 510A UL E482579 |
| (Alternative) | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD | PF* (d)(g) 180°C | UL 510A UL E165111 |
| --Tube | GREAT HOLDING INDUSTRIAL CO LTD | TFL 200°C | UL 224 UL E156256 |
| (Alternative) | CHANGYUAN ELECTRONICS GROUP CO LTD | CB-TT-L CB-HFT 200°C 125°C | UL 224 UL E180908 |
| FUSE (F5, F6, F7) | NANJING SART SCIENCE & TECHNOLOGY DEVELOPMENT CO LTD | S1032-F-50A Voltage Rating: 72V, Current Rating: 50A | UL 248-1 UL 248-14 UL E319512 |
| Wire 1 | SHENZHEN MYSUN INSULATION MATERIALS CO LTD | 3135 10AWG, 200°C, 600Vac | UL 758 UL E239689 |
| Battery Wire | SHENZHEN MYSUN INSULATION MATERIALS CO LTD | 3512 AWG10# 200°C 600V | UL 758 UL E239689 |
| Heat Shrink Tube(FOR VDR1,VDR2) | SHENZHEN WOER HEAT- SHRINKABLE MATERLAL CO LTD | RSFR-H 600V 125°C VW-1 | UL224 CSA22.2 UL E203950 |
| (Alternative) | Interchangeable | Interchangeable Min.300V Min.80°C VW-1 | UL224 CSA22.2 UL |
| NTC(FOR HS3) | THINKING ELECTRONIC INDUSTRIAL CO LTD | NTSA0153 15K C2 | UL 1434. UL E138827 |

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| Clause | Requirement + Test | | | Result - Remark | Verdict |
|----------------------------|-------------------------------------------|-------------|--------------------------------------------------------------------|-----------------|-----------------------------------------------|
| NTC(FOR HS3) | SHENZHENSHI KEMIN SENSOR CO LTD | MF5215K | 15K C4 | UL 1434. | UL E356449 |
| FAN5 | HUI TONG ELECTRONIC CO LTD | HTD-040D12H | DC: 12V Rated Speed: 8600RPM±10% Max Air Flow: 8.82CFM | UL 507 | UL E311396 |
| Battery cell | Dalian CBAK Power Battery Co., Ltd | 26700FB2 | 3.2V, 14.4Wh, 4500mA | IEC62133-2 | Provide a report, PNC2201142 0905001 |
| LED light | Shenzhen Hello Tech Energy Co., Ltd | JE-300B | 12.8VDC | IEC6471:2006 | Provide a report, 18360LC3000 0501 |
| Supplementary information: | | | | | |

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

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

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

| | | | |
|---------|----------------------------------|--|---|
| 4.8.4.2 | TABLE: Stress Relief test | | — |
|---------|----------------------------------|--|---|

| Part | Material | Oven Temperature (°C) | Comments |
|------|----------|-----------------------|----------|
| -- | -- | -- | -- |

| | | | |
|---------|----------------------------------------|--|---|
| 4.8.4.3 | TABLE: Battery replacement test | | — |
|---------|----------------------------------------|--|---|

| | | | |
|------------------------|----|--|---|
| Battery part no.: | -- | | — |
|------------------------|----|--|---|

| | | | |
|---------------------------------|------------------------------------|--|----------|
| Battery Installation/withdrawal | Battery Installation/Removal Cycle | | Comments |
|---------------------------------|------------------------------------|--|----------|

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

| | | | |
|---------|-------------------------|--|---|
| 4.8.4.4 | TABLE: Drop test | | — |
|---------|-------------------------|--|---|

| Impact Area | Drop Distance | Drop No. | Observations |
|-------------|---------------|----------|--------------|
| -- | -- | -- | -- |

| | | | |
|---------|----------------------|--|---|
| 4.8.4.5 | TABLE: Impact | | — |
|---------|----------------------|--|---|

| Impacts per surface | Surface tested | Impact energy (Nm) | Comments |
|---------------------|----------------|--------------------|----------|
| -- | -- | -- | -- |

| | | | |
|---------|--------------------------|--|---|
| 4.8.4.6 | TABLE: Crush test | | — |
|---------|--------------------------|--|---|

| Test position | Surface tested | Crushing Force (N) | Duration force applied (s) |
|---------------|----------------|--------------------|----------------------------|
| -- | -- | -- | -- |

Supplementary information:

| | | | |
|-------|-------------------------------------------------------------------------|--|------------|
| 4.8.5 | TABLE: Lithium coin/button cell batteries mechanical test result | | N/A |
|-------|-------------------------------------------------------------------------|--|------------|

| Test position | Surface tested | Force (N) | Duration force applied (s) |
|---------------|----------------|-----------|----------------------------|
| -- | -- | -- | -- |

Supplementary information:



IEC 62368-1

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

| 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 | 264VAC 50Hz | Primary circuits | Normal | -- | -- | -- | ES3 (declared) |
| | | | Abnormal: See table B.3 | -- | -- | -- | |
| | | | Single fault: See table B.4 | -- | -- | -- | |
| 2 | 264VAC 50Hz | USB-A Output 5VDC | Normal | 5.17V dc | -- | -- | ES1 |
| | | | Abnormal: See table B.3 | 0 (Unit shut down) | -- | -- | |
| | | | Single fault: See table B.4 | 0 (Unit shut down) | -- | -- | |
| 3 | 264VAC 50Hz | USB-C 20VDC | Normal | 20.63V dc | -- | -- | ES1 |
| | | | Abnormal: See table B.3 | 0 (Unit shut down) | -- | -- | |
| | | | Single fault: See table B.4 | 0 (Unit shut down) | -- | -- | |
| 4 | 264VAC 50Hz | Car Outlet output (12VDC) | Normal | 12.40V dc | -- | -- | ES1 |
| | | | Abnormal: See table B.3 | 0 (Unit shut down) | -- | -- | |
| | | | Single fault: See table B.4 | 0 (Unit shut down) | -- | -- | |
| 5 | 264VAC 50Hz | AC Output(x1) 230VAC, 50Hz | Normal | -- | -- | -- | ES3 (declared) |
| | | | Abnormal: See table B.3 | -- | -- | -- | |
| | | | Single fault: See table B.4 | -- | -- | -- | |
| 6 | 12.8VDC | Battery pack | Normal | 12.8Vdc | -- | -- | ES1 |
| | | | Abnormal: See table B.3 | -- | -- | -- | |
| | | | Single fault: See table B.4 | -- | -- | -- | |

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| Clause | Requirement + Test | | Result - Remark | | | Verdict | |
|--------|--------------------|-------------------------------|-----------------------------|----|-------------------------|---------|-----|
| 7 | 264VAC 50Hz | USB-A Output 5VDC | Normal | -- | 0.438mA _{peak} | -- | ES1 |
| | | | Abnormal: See table B.3 | -- | 0.005mA _{peak} | -- | |
| | | | Single fault: See table B.4 | -- | 0.005mA _{peak} | -- | |
| 8 | 264VAC 50Hz | USB-C 20VDC | Normal | -- | 0.438mA _{peak} | -- | ES1 |
| | | | Abnormal: See table B.3 | -- | 0.005mA _{peak} | -- | |
| | | | Single fault: See table B.4 | -- | 0.005mA _{peak} | -- | |
| 9 | 264VAC 50Hz | Car Outlet output (12VDC) | Normal | -- | 0.438mA _{peak} | -- | ES1 |
| | | | Abnormal: See table B.3 | -- | 0.005mA _{peak} | -- | |
| | | | Single fault: See table B.4 | -- | 0.005mA _{peak} | -- | |
| 10 | 264VAC 50Hz | Plastic enclosure to earth | Normal | -- | 0.005mA _{peak} | -- | ES1 |
| | | | Abnormal: See table B.3 | -- | 0.005mA _{peak} | -- | |
| | | | Single fault: See table B.4 | -- | 0.005mA _{peak} | -- | |

Supplementary information:

5.2.2.3 - Capacitance Limits

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | ES Class |
|-----|-----------------|-------------------------------------|-----------------|-----------------|---------|----------|
| | | | | Capacitance, nF | Upk (V) | |
| 1 | 253VAC, 50Hz | See table 5.5.2.2 | -- | -- | -- | -- |
| | | | -- | -- | -- | |
| | | | -- | -- | -- | |

5.2.2.4 - Single Pulses

| No. | Supply Voltage | Location (e.g. circuit designation) | Test conditions | Parameters | | | ES Class |
|-----|----------------|-------------------------------------|----------------------|---------------|---------|----------------------|----------|
| | | | | Duration (ms) | Upk (V) | l _{pk} (mA) | |
| -- | -- | -- | Normal | -- | -- | -- | -- |
| | | | Abnormal | -- | -- | -- | |
| | | | Single fault – SC/OC | -- | -- | -- | |



IEC 62368-1

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

5.2.2.5 - Repetitive Pulses

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

Test Conditions:

Normal –

Abnormal -

Supplementary information: SC=Short Circuit, OC=Open Circuit

*:According to the customer's request, only valid values were recorded.

| 5.4.1.4, 6.3.2, 9.0, B.2.6 | TABLE: Temperature measurements | P |
|----------------------------|---------------------------------|---|
|----------------------------|---------------------------------|---|

| Supply voltage (V) | A | B | — |
|--------------------------------------------|--------|------|-------------------------------|
| Ambient T _{min} (°C) | -- | -- | -- |
| Ambient T _{max} (°C) | -- | -- | -- |
| T _{ma} (°C) | 45.0 | | — |
| Maximum measured temperature T of part/at: | T (°C) | | Allowed T _{max} (°C) |
| AC inlet | 54.2 | 51.4 | 70 |
| AC connector | 51.2 | 49.7 | 70 |
| AC input wire | 50.3 | 50.7 | 105 |
| AC output wire | 46.6 | 45.2 | 105 |
| Battery wire | 54.8 | 57.4 | 105 |
| MOV1 body | 56.7 | 55.2 | 110 |
| LF5 winding | 74.4 | 72.3 | 130 |
| F4 body | 50.8 | 50.3 | 85 |
| CX3 body | 52.1 | 54.1 | 125 |
| C4 body | 51.2 | 52.7 | 105 |
| RLY1 body | 53.7 | 54.4 | 85 |
| LF4winding | 64.2 | 66.4 | 130 |
| LF3 winding | 62.7 | 63.4 | 130 |
| CX2 body | 64.3 | 64.2 | 125 |

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| Clause | Requirement + Test | Result - Remark | Verdict |
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| LF1 winding | 59.4 | 60.7 | 130 |
| LF2 winding | 64.2 | 64.4 | 130 |
| CY3 body | 58.4 | 57.2 | 125 |
| EC6 body | 63.8 | 66.1 | 105 |
| CY2 body | 69.4 | 61.2 | 125 |
| PCB near Q4 | 75.3 | 74.1 | 130 |
| CY5 body | 53.4 | 54.1 | 125 |
| CX4 body | 52.8 | 53.9 | 125 |
| T4 winding | 58.4 | 59.8 | 110 |
| T4 core | 57.1 | 57.9 | 110 |
| PCB near T4 | 54.3 | 53.8 | 130 |
| EC2 body | 53.4 | 52.8 | 105 |
| EC3 body | 58.1 | 57.2 | 105 |
| T1 winding | 47.3 | 48.3 | 110 |
| T1 core | 45.1 | 47.6 | 110 |
| PCB near IC4 | 62.4 | 69.3 | 130 |
| L2 winding | 56.5 | 60.4 | 130 |
| CY8 body | 52.1 | 53.6 | 125 |
| T3 winding | 54.8 | 57.5 | 110 |
| T3 core | 52.7 | 53.6 | 110 |
| PCB near BD1 | 53.1 | 52.5 | 130 |
| PCB near IC1 | 54.7 | 55.9 | 130 |
| EC4 body (Control panel) | 78.3 | 76.7 | 105 |
| PCB near Q10 (Control panel) | 73.1 | 70.6 | 130 |
| PCB near U1 (Control panel) | 63.8 | 64.9 | 130 |
| Cell surface | 49.2 | 49.4 | Ref. |
| PCB near Q14 (BMS board) | 74.9 | 80.1 | 130 |
| PCB near U1 (BMS board) | 64.5 | 67.4 | 130 |
| PCB near U4 (BMS board) | 70.9 | 70.7 | 130 |
| Battery cable | 47.8 | 46.9 | 105 |
| Fan cable | 47.1 | 46.0 | 105 |
| The inside of the plastic housing is close to T4 | 52.8 | 51.4 | Ref. |
| The plastic housing is close to the battery inside | 53.6 | 52.1 | Ref. |

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| Clause | Requirement + Test | Result - Remark | | Verdict | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| | The inside of the plastic housing is close to the AC output panel | 50.7 | 52.5 | Ref. | | | |
| | The inside of the plastic housing is close to the air outlet | 54.2 | 52.8 | Ref. | | | |
| | Ambient | 45.0 | 45.0 | -- | | | |
| Accessible parts | | | | | | | |
| | Plastic housing outside close to T4 | 39.5 | 40.7 | 77* | | | |
| | The plastic housing is outside close to the battery | 39.5 | 38.9 | 77* | | | |
| | The outside of the plastic housing is near the AC output panel | 25.5 | 26.4 | 77* | | | |
| | Plastic housing outside close to the air outlet | 34.2 | 37.5 | 77* | | | |
| | button | 26.6 | 26.7 | 77* | | | |
| | Ambient | 25.0 | 25.0 | -- | | | |
| Supplementary information: - The maximum operating temperature is 45°C. -. * means that surfaces touched occasionally for very short periods (> 1 s and < 10 s). | | | | | | | |
| 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: A: Only charging with empty battery by AC input of 264VAC 50Hz B: Only charging with empty battery by AC input of 198VAC 50Hz | | | | | | | |

| 5.4.1.4, 6.3.2, 9.0, B.2.6 | TABLE: Temperature measurements | | | | | P |
|--------------------------------------------|-------------------------------------|--------|----|------|----|-------------------------------|
| | Supply voltage (V) | C | | D | | — |
| | Ambient T _{min} (°C) | -- | -- | -- | -- | — |
| | Ambient T _{max} (°C) | -- | -- | -- | -- | — |
| | T _{ma} (°C) | 45.0 | | | | — |
| Maximum measured temperature T of part/at: | | T (°C) | | | | Allowed T _{max} (°C) |
| AC inlet | | 46.2 | | 45.2 | | 70 |
| AC connector | | 46.3 | | 45.0 | | 70 |
| AC input wire | | 44.4 | | 45.1 | | 105 |
| AC output wire | | 76.3 | | 44.2 | | 105 |
| Battery wire | | 69.2 | | 63.4 | | 105 |



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| Clause | Requirement + Test | Result - Remark | Verdict |
|------------------------------|--------------------|-----------------|---------|
| MOV1 body | 46.8 | 46.3 | 110 |
| LF5 winding | 49.9 | 49.6 | 130 |
| F4 body | 45.8 | 45.6 | 85 |
| CX3 body | 46.5 | 46.1 | 125 |
| C4 body | 41.2 | 48.8 | 105 |
| RLY1 body | 47.6 | 49.1 | 85 |
| LF4winding | 51.5 | 50.1 | 130 |
| LF3 winding | 52.8 | 54.5 | 130 |
| CX2 body | 49.5 | 46.4 | 125 |
| LF1 winding | 52.1 | 51.5 | 130 |
| LF2 winding | 49.2 | 50.8 | 130 |
| CY3 body | 62.1 | 51.2 | 125 |
| EC6 body | 50.0 | 50.2 | 105 |
| CY2 body | 53.1 | 51.1 | 125 |
| PCB near Q4 | 51.1 | 59.8 | 130 |
| CY5 body | 51.2 | 60.7 | 125 |
| CX4 body | 46.2 | 47.4 | 125 |
| T4 winding | 54.7 | 57.0 | 110 |
| T4 core | 54.1 | 56.9 | 110 |
| PCB near T4 | 50.1 | 56.4 | 130 |
| EC2 body | 53.0 | 55.2 | 105 |
| EC3 body | 63.1 | 51.7 | 105 |
| T1 winding | 48.2 | 52.2 | 110 |
| T1 core | 46.1 | 51.1 | 110 |
| PCB near IC4 | 49.5 | 47.5 | 130 |
| L2 winding | 54.1 | 52.4 | 130 |
| CY8 body | 55.0 | 54.2 | 125 |
| T3 winding | 46.1 | 47.3 | 110 |
| T3 core | 46.0 | 47.0 | 110 |
| PCB near BD1 | 51.2 | 54.2 | 130 |
| PCB near IC1 | 54.1 | 56.5 | 130 |
| EC4 body (Control panel) | 49.1 | 50.2 | 105 |
| PCB near Q10 (Control panel) | 63.0 | 64.6 | 130 |

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| Clause | Requirement + Test | Result - Remark | | Verdict | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|---------------------|--------------------|--------|-------------------------------|------------------|
| PCB near U1 (Control panel) | 54.2 | 56.5 | | 130 | | | |
| Cell surface | 49.1 | 47.7 | | Ref. | | | |
| PCB near Q14 (BMS board) | 53.4 | 48.6 | | 130 | | | |
| PCB near U1 (BMS board) | 47.1 | 49.6 | | 130 | | | |
| PCB near U4 (BMS board) | 47.3 | 48.5 | | 130 | | | |
| Battery cable | 48.2 | 47.2 | | 105 | | | |
| Fan cable | 47.3 | 46.1 | | 105 | | | |
| The inside of the plastic housing is close to T4 | 47.2 | 46.1 | | Ref. | | | |
| The plastic housing is close to the battery inside | 51.1 | 48.4 | | Ref. | | | |
| The inside of the plastic housing is close to the AC output panel | 63.1 | 44.1 | | Ref. | | | |
| The inside of the plastic housing is close to the air outlet | 50.1 | 48.7 | | Ref. | | | |
| Ambient | 45.0 | 45.0 | | -- | | | |
| Accessible parts | | | | | | | |
| Plastic housing outside close to T4 | 30.7 | 31.3 | | 77* | | | |
| The plastic housing is outside close to the battery | 36.4 | 35.2 | | 77* | | | |
| The outside of the plastic housing is near the AC output panel | 43.1 | 28.7 | | 77* | | | |
| Plastic housing outside close to the air outlet | 36.2 | 32.2 | | 77* | | | |
| button | 26.1 | 26.4 | | 77* | | | |
| Ambient | 25.0 | 25.0 | | -- | | | |
| Supplementary information: - The maximum operating temperature is 45°C. - . * means that surfaces touched occasionally for very short periods (> 1 s and < 10 s). | | | | | | | |
| 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: C: When the battery is fully charged, the total output is maximum D: Only charging with empty battery by DC input of 27VDC | | | | | | | |



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

| 5.4.1.10.2 | TABLE: Vicat softening temperature of thermoplastics | | N/A |
|----------------------------|------------------------------------------------------|------------------|-----|
| Penetration (mm)..... : | --- | | --- |
| Object/ Part No./Material | Manufacturer/t rademark | T softening (°C) | |
| --- | --- | --- | |
| supplementary information: | | | |

| 5.4.1.10.3 | TABLE: Ball pressure test of thermoplastics | | | P |
|----------------------------------------|---------------------------------------------|-----------------------|--------------------------|-----|
| Allowed impression diameter (mm) | ≤2mm | | | --- |
| Object/Part No./Material | Manufacturer/trademark | Test temperature (°C) | Impression diameter (mm) | |
| AC connector (AC1) | CWB ELECTRONICS (ZHEJIANG) CO LTD | 125 | 1.25 | |
| AC connector (CN3) | CWB ELECTRONICS (ZHEJIANG) CO LTD | 125 | 1.02 | |
| Supplementary information: -- | | | | |

| 5.4.2.2, 5.4.2.4 and 5.4.3 | TABLE: Minimum Clearances/Creepage distance | | | | | | | P |
|-----------------------------------------------------------|---------------------------------------------|--------------|-----------------|------------------|---------|------------------|---------|---|
| Clearance (cl) and creepage distance (cr) at/of/between: | Up (V) | U r.m.s. (V) | Frequency (kHz) | Required cl (mm) | cl (mm) | Required cr (mm) | cr (mm) | |
| Line trace to PE trace before fuse F4 of AC input (BI) | 340 | 250 | 0.05 | 2.3 | 8.5 | 2.5 | 8.5 | |
| Neutral trace to PE trace before fuse F4 of AC input (BI) | 340 | 250 | 0.05 | 2.3 | 9.7 | 2.5 | 9.7 | |
| Line trace to Neutral trace of AC input (BI) | 340 | 250 | 0.05 | 2.3 | 4.5 | 2.5 | 4.5 | |
| Line trace to Neutral trace of AC output (BI) | 340 | 250 | 0.05 | 2.3 | 2.8 | 2.5 | 2.8 | |
| PCB trace under F4(BI) | 340 | 250 | 0.05 | 2.3 | 9.1 | 2.5 | 9.1 | |
| PCB trace under CY5(RI) | 340 | 250 | 0.05 | 4.5 | 5.4 | 5.0 | 5.4 | |
| PCB trace under CY2(RI) | 340 | 250 | 0.05 | 4.5 | 5.1 | 5.0 | 5.1 | |
| PCB trace under PC1(RI) | 340 | 250 | 0.05 | 4.5 | 6.1 | 5.0 | 6.1 | |
| PCB trace under IC4(RI) | 340 | 250 | 0.05 | 4.5 | 6.3 | 5.0 | 6.3 | |
| PCB trace under IC24(RI) | 340 | 250 | 0.05 | 4.5 | 6.5 | 5.0 | 6.5 | |

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| Clause | Requirement + Test | | | Result - Remark | | | Verdict |
|----------------------------------------------------------|--------------------|-----|------|-----------------|-----|-----|---------|
| Transformer T4 primary pin to secondary pin (RI) | 468 | 250 | 47.5 | 4.5 | 7.8 | 5.0 | 7.8 |
| Transformer T4 primary winding to secondary winding (RI) | 468 | 250 | 47.5 | 4.5 | 7.2 | 5.0 | 7.2 |
| Transformer T4 core to secondary winding (BI) | 468 | 250 | 47.5 | 2.3 | 3.0 | 2.5 | 3.0 |
| Transformer T4 core to primary winding (BI) | 468 | 250 | 47.5 | 2.3 | 3.0 | 2.5 | 3.0 |
| Transformer T1 primary pin to secondary pin (RI) | 420 | 250 | 42.2 | 4.5 | 6.7 | 5.0 | 6.7 |
| Transformer T1 core to secondary winding (RI) | 420 | 250 | 42.2 | 4.5 | 7.0 | 5.0 | 7.0 |
| Transformer T1 primary winding to secondary winding (RI) | 420 | 250 | 42.2 | 4.5 | 7.1 | 5.0 | 7.1 |
| Transformer T3 primary winding to secondary winding (RI) | 420 | 250 | 32.5 | 4.5 | 6.1 | 5.0 | 6.1 |
| Transformer T3 primary pin to secondary pin (RI) | 420 | 250 | 32.5 | 4.5 | 7.2 | 5.0 | 7.2 |
| Transformer T3 core to secondary winding (RI) | 420 | 250 | 32.5 | 4.5 | 7.2 | 5.0 | 7.2 |

Supplementary information:

Note 1: Only for frequency above 30 kHz;

Note 2: See table 5.4.2.4 if this is based on electric strength test;

Note 3: Provide Material Group IIIa/IIIb;

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

Note 5: Ferrite core of transformer T1/T3 considered as primary live part;

Note 6: Ferrite core of transformer T4 considered as middle part;

Note 7: The product is expected to be used at an altitude of 5000m and below, and the electrical gap is multiplied by the multiplication factor of 1.48.

Note 8: If no specified, the worst conditions were recorded;

| 5.4.2.3 | TABLE: Minimum Clearances distances using required withstand voltage | | | P |
|------------------------------|----------------------------------------------------------------------|------------------|------------------|----|
| | Overtoltage Category (OV): | | | II |
| | Pollution Degree: | | | II |
| Clearance distanced between: | Required withstand voltage | Required cl (mm) | Measured cl (mm) | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|--------------------------------------------|
| Basic insulation / supplementary insulation (See table 5.4.2.2, 5.4.2.4 and 5.4.3 above) | 2500V | 2.3 | See table 5.4.2.2, 5.4.2.4 and 5.4.3 above |
| Reinforced insulation (See table 5.4.2.2, 5.4.2.4 and 5.4.3 above) | 2500V | 4.5 | See table 5.4.2.2, 5.4.2.4 and 5.4.3 above |
| <p>Note 1: FI: Functional insulation; BI: basic insulation; SI: supplementary insulation; DI: double insulation; RI: reinforced insulation.</p> <p>Note 2: Ferrite core of transformer T1/T3 considered as primary live part;</p> <p>Note 3: Ferrite core of transformer T4 considered as middle part;</p> <p>Note 4: If no specified, the worst condition were recorded.</p> | | | |

| 5.4.2.4 | TABLE: Clearances based on electric strength test | | | N/A |
|-----------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------|--------------------|-----|
| Test voltage applied between: | Required cl (mm) | Test voltage (Kv) peak/ r.m.s. / d.c. | Breakdown Yes / No | |
| -- | -- | -- | -- | |
| Supplementary information: Not used the alternative method to determine the clearances. | | | | |

| 5.4.4.2, 5.4.4.5 c) 5.4.4.9 | TABLE: Distance through insulation measurements | | | | | P |
|-------------------------------------------------------------|-------------------------------------------------|----------------|----------|-------------------|----------|---|
| Distance through insulation di at/of: | Peak voltage (V) | Frequency (Hz) | Material | Required DTI (mm) | DTI (mm) | |
| Enclosure | 420 | 50 | Plastics | 0.4 | 1) | |
| Bobbin of T1 | 420 | 32.5K | Phenolic | 0.4 | 1) | |
| Bobbin of T3 | 420 | 42.1K | Phenolic | 0.4 | 1) | |
| Supplementary information: 1). See appended table 4.1.2. | | | | | | |

| 5.4.9 | TABLE: Electric strength tests | | | P |
|-------------------------------|--------------------------------|------------------|--------------------|---|
| Test voltage applied between: | Voltage shape (AC, DC) | Test voltage (V) | Breakdown Yes / No | |
| Functional: | | | | |
| -- | -- | -- | -- | |
| Basic/supplementary: | | | | |
| L to N (with F4 opened) | DC | 2500 | No | |

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| Clause | Requirement + Test | Result - Remark | Verdict |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|---------|
| L & N to earthing | DC | 2500 | No |
| Primary to core of transformer T4 | DC | 2500 | No |
| Secondary to core of transformer T4 | DC | 2500 | No |
| Reinforced: | | | |
| AC output ports to all DC output ports | DC | 4000 | No |
| L/N to accessible enclosure with metal foil | DC | 4000 | No |
| L/N to Car Outlet output terminal | DC | 4000 | No |
| L/N to USB-A output terminal | DC | 4000 | No |
| L/N to USB-C output terminal | DC | 4000 | No |
| T4:Primary pins to secondary pins | DC | 4000 | No |
| T3:Primary pins to secondary pins | | | |
| T1:Primary pins to secondary pins | DC | 4000 | No |
| T1:Core to Primary pins(Small board) | DC | 4000 | No |
| T3:Core to Primary pins(Small board) | DC | 4000 | No |
| Insulation tape (single layer) | DC | 4000 | No |
| Routine Tests: | | | |
| -- | -- | -- | -- |
| Supplementary information: Core of transformer T4 was considered as intermediate conductive part. Core of transformer T1/T3 was considered as primary. Test after humidity treatment, heating test, and for unit primary to secondary, primary to plastic enclosure electric strength after each fault condition test. Tests were performed on product with each source listed in table 4.1.2. The DC voltage source was performed on all testing once in forward and once in reverse. | | | |

| 5.5.2.2 TABLE: Stored discharge on capacitors | | | | | P |
|-----------------------------------------------|------------------|----------------------------|---------------------------|------------------------------------|-------------------|
| Supply Voltage (V), Hz | Test Location | Operating Condition (N, S) | Switch position On or off | Measured Voltage (after 2 seconds) | ES Classification |
| 230VAC/60Hz | Phase to Neutral | N | -- | 8V | ES1 |
| 230VAC/60Hz | Phase to Neutral | S: R301 opened | -- | 16V | ES1 |
| 230VAC/60Hz | Phase to Neutral | S: F4 opened | -- | 0 | ES1 |

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

Supplementary information:

X-capacitors installed for testing are: CX3=0.33uF

bleeding resistor rating: R74=R75=R90=27K ohm, 0.25W

ICX:

Notes:

Test Location:

Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth

B. Operating condition abbreviations:

N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition

| 5.6.6.2 | TABLE: Resistance of protective conductors and terminations | | | | P |
|-------------------------------------------------------|-------------------------------------------------------------|----------------|------------------|----------------|---|
| Accessible part | Test current (A) | Duration (min) | Voltage drop (V) | Resistance (Ω) | |
| PE of AC input connector to PE of AC output connector | 32 | 2 | -- | 0.08 | |

Supplementary information:

| 5.7.2.2, 5.7.4 | TABLE: Earthed accessible conductive part | | P |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| Supply voltage | -- | — | |
| Location | Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7 | | Touch current (mA) |
| L/N of AC inlet to earthing of AC output socket | 1 | <u>0.438mA/0.438mA</u> | |
| | 2 | N/A | |
| | 3 | N/A | |
| | 4 | N/A | |
| | 5 | N/A | |
| | 6 | N/A | |
| | 8 | N/A | |

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)

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

provided.

N: Normal condition, R: Reverse condition.

| 6.2.2 | Table: Electrical power sources (PS) measurements for classification | | | | P |
|--------------|----------------------------------------------------------------------|----------------------|---------------------|----------------------------------|-------------------|
| Source | Description | Measurement | Max Power after 3 s | Max Power after 5 s [#] | PS Classification |
| AC Output | All primary circuit/ components | Power (W) : | -- | -- | PS3 (declared) |
| | | V _A (V) : | -- | -- | |
| | | I _A (A) : | -- | -- | |
| Battery | Battery cell output | Power (W) : | -- | >100W | PS3 |
| | | V _A (V) : | -- | -- | |
| | | I _A (A) : | -- | -- | |
| USB-C Output | | | | | |
| Output | (Normal condition) Output load 5Vdc/3A | Power (W) : | -- | 15.60 | PS2 |
| | | V _A (V) : | -- | 4.70 | |
| | | I _A (A) : | -- | 3.32 | |
| Output | (SC U7 pin10-15) Output load 5Vdc/3A | Power (W) : | 0 | -- | PS1 |
| | | V _A (V) : | 0 | -- | |
| | | I _A (A) : | 0 | -- | |
| Output | (Normal condition) Output load 9Vdc/3A | Power (W) : | -- | 29.78 | PS2 |
| | | V _A (V) : | -- | 8.81 | |
| | | I _A (A) : | -- | 3.38 | |
| Output | (SC U7 pin10-15) Output load 9Vdc/3A | Power (W) : | 0 | -- | PS1 |
| | | V _A (V) : | 0 | -- | |
| | | I _A (A) : | 0 | -- | |
| Output | (Normal condition) Output load 12Vdc/3A | Power (W) : | -- | 41.66 | PS2 |
| | | V _A (V) : | -- | 12.18 | |
| | | I _A (A) : | -- | 3.42 | |
| Output | (SC U7 pin10-15) Output load 12Vdc/3A | Power (W) : | 0 | -- | PS1 |
| | | V _A (V) : | 0 | -- | |
| | | I _A (A) : | 0 | -- | |
| Output | (Normal condition) Output load 15Vdc/3A | Power (W) : | -- | 51.77 | PS2 |
| | | V _A (V) : | -- | 15.27 | |

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| Clause | Requirement + Test | Result - Remark | | Verdict | |
|--------------------------------------------------------------------------------------|---------------------------------------------|----------------------|----|---------|-----|
| Output | (SC U7 pin10-15) Output load 15Vdc/3A | I _A (A) : | -- | 3.39 | PS1 |
| | | Power (W) : | 0 | -- | |
| | | V _A (V) : | 0 | -- | |
| Output | (Normal condition) Output load 20Vdc/5A | I _A (A) : | 0 | -- | PS3 |
| | | Power (W) : | -- | 107.50 | |
| | | V _A (V) : | -- | 19.87 | |
| Output | (SC U7 pin10-15) Output load 20Vdc/5A | I _A (A) : | -- | 5.41 | PS1 |
| | | Power (W) : | 0 | -- | |
| | | V _A (V) : | 0 | -- | |
| USB-A Output | | | | | |
| Output | (Normal condition) Output load 5Vdc/3A | I _A (A) : | 0 | -- | PS2 |
| | | Power (W) : | -- | 21.09 | |
| | | V _A (V) : | -- | 3.80 | |
| Output | (SC U7 pin10-15) Output load 5Vdc/3A | I _A (A) : | -- | 5.55 | PS1 |
| | | Power (W) : | 0 | -- | |
| | | V _A (V) : | 0 | -- | |
| Car Outlet output | | | | | |
| Output | Output load 12Vdc/10A (Normal condition) | I _A (A) : | 0 | -- | PS3 |
| | | Power (W) : | -- | 152.81 | |
| | | V _A (V) : | -- | 11.13 | |
| Output | (SC U9 pin11-15) | I _A (A) : | -- | 13.73 | PS1 |
| | | Power (W) : | 0 | -- | |
| | | V _A (V) : | 0 | -- | |
| Supplementary Information: #: Test method-power measurement for worst-case fault. | | | | | |

| 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 |
| Primary circuit, AC output circuit | -- | -- | -- | Yes |

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| 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 exceeded 50V.

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

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

Supplementary Information:

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

A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter.

If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification.

A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.

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

Supplementary information: --

| B.2.5 | TABLE: Input test | | | | | | P |
|-------|-------------------|-------------|-------|-------------|----------|------------|------------------|
| U (V) | I (A) | I rated (A) | P (W) | P rated (W) | Fuse No. | I fuse (A) | Condition/status |

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

| B.2.5 | | TABLE: Input test | | | | | | P |
|-------------------------------------------------------------------------------------------------------------------------|-------|-------------------|--------|-------------|----------|-----------|-----------------------------------|---|
| U (V) | I (A) | I rated (A) | P (W) | P rated (W) | Fuse No. | Ifuse (A) | Condition/status | |
| Only charging mode with empty battery by AC input | | | | | | | | |
| 198V/50Hz | 1.054 | -- | 207.4 | -- | F4 | 1.054 | Battery charging current: 13.39A. | |
| 220V/50Hz | 0.943 | 10 | 206.4 | -- | F4 | 0.943 | Battery charging current: 13.35A. | |
| 240V/50Hz | 0.866 | 10 | 206.2 | -- | F4 | 0.866 | Battery charging current: 13.33A. | |
| 264V/50Hz | 0.795 | -- | 205.8 | -- | F4 | 0.795 | Battery charging current: 13.32A. | |
| Only charging mode with empty battery by DC Input | | | | | | | | |
| 12VDC | 4.641 | 5 | 55.69 | -- | -- | -- | Battery charging current:3.76A. | |
| 27VDC | 4.225 | 5 | 114.08 | -- | -- | -- | Battery charging current:7.86A. | |
| The battery is fully charged and the product is fully loaded: AC output 300W+USB-C output 100W+ car charger output 120W | | | | | | | | |
| 14.6VDC | -- | -- | -- | -- | -- | -- | Battery discharge current: 37.5A. | |
| Power supplied by full charger battery | | | | | | | | |
| Supplementary information: | | | | | | | | |

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



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

| Ambient temperature (°C) | | 25.0 | | — | | | | |
|-------------------------------------------------------------------|--------------------|---------------------|----------------|----------|-------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power source for EUT: Manufacturer, model/type, output rating ... | | -- | | — | | | | |
| Component No. | Abnormal Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| USB-C Output (20V output) | O-L | 14.6VD C | 1hrs 30 mins | -- | -- | Type K | T1 winding: 32.4°C, T4 winding: 33.5°C, T3 winding: 30.1°C, Battery surface: 30.6°C, Enclosure (outside): 44.2°C, Ambient: 25.0°C. | The USB-C port has A maximum load of 5.41A and runs steadily for a period of temperature rise. When the load is 5.41A, the USB-C port has no output, and the other ports work normally without danger. The battery current is 37.5A to 38.9A. |
| USB-A (5V output) | O-L | 14.6VD C | 1hrs 20 mins | -- | -- | Type K | T1 winding: 30.1°C, T4 winding: 32.8°C, T3 winding: 30.1°C, Battery surface: 30.1°C, Enclosure (outside): 42.5°C, Ambient: 25.0°C. | After the maximum load of USB-A port is 5.55A and the temperature rises steadily for a period, when the load is 5.55A, the USB-A port has no output, the other ports work normally without danger, and the battery current is 37.5A to 38.0A. |

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| Clause | Requirement + Test | | | | | Result - Remark | Verdict |
|--------------------------------|----------------------------------|-------------|--------------|----|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Car Outlet Output (12V output) | O-L | 14.6VD C | 1hrs 30 mins | -- | -- | Type K T1 winding: 32.5°C, T4 winding: 35.1°C, T3 winding: 30.1 Battery surface: 31.3°C, Enclosure (outside): 44.7°C, Ambient: 25.0°C. | After the maximum load of the car charger port is 13.73A and the temperature rises steadily for a period, the car charger port has no output when the load is 17.19A, the other ports work normally without danger, and the battery current is 37.5A to 42.3A. |
| AC output | O-L | 14.6VD C | 20mins | -- | -- | Type K -- | After the maximum load of the AC port is 300W and stable for 5 minutes, the AC port is protected when the load is 500W, and the other ports work normally without danger. The battery current is 37.5A to 50.5A. |
| Opening | Covering of ventilation openings | 14.6VA C | 1hrs 30 mins | -- | -- | Type K T1 winding: 30.0°C, T4 winding: 33.8°C, T3 winding: 30.1 Battery surface: 30.4°C, Enclosure (outside): 43.8°C, Ambient: 25.0°C. | Block all vents, Unit normal working. No damage, no explosion, no hazard. Battery discharge current: 37.5A. |

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| Clause | Requirement + Test | | | | | | Result - Remark | Verdict |
|--------|--------------------|------------|--------------|----|----|--------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| DC Fan | Blocked | 264VA C | 1h40 mins | F4 | -- | Type K | T4 winding: 40.1°C, T3 winding: 36.2°C, T1 winding: 28.4°C, Battery surface: 30.9°C, Enclosure (outside): 30.4°C, Ambient: 25.0°C. | Unit normal working. No damage, no explosion, no hazard. Battery charging current: 13.32A. |

Supplementary information:

Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column "Abnormal/Fault." Specify if test condition by indicating "Abnormal" then the condition for a Clause B.3 test or "Single Fault" then the condition for Clause B.4.

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

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

Temperature limits under the fault condition:

| B.4 TABLE: Fault condition tests | | | | | | | | P |
|------------------------------------------------------------------|-----------------|---------------------|----------------|----------|-------------------|-------------------------------------|------------|--------------------------------------------------------------------------|
| Ambient temperature (°C) | | | | | | 25.0°C (unless otherwise specified) | | — |
| Power source for EUT: Manufacturer, model/type, output rating .. | | | | | | -- | | — |
| Component No. | Fault Condition | Supply voltage, (V) | Test time (ms) | Fuse no. | Fuse current, (A) | T-couple | Temp. (°C) | Observation |
| Maximum load when the battery is fully charged | | | | | | | | |
| EC7 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. |
| C55 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. |

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| Clause | Requirement + Test | | | | Result - Remark | | | | Verdict |
|-------------|--------------------|---------|-------|----|-----------------|----|----|--------------------------------------------------------------------------|---------|
| Q4 pin D-S | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| T4 pin 1-3 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| T4 pin 4-6 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| T1 pin 6-10 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| T1 pin 1-2 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| T1 pin 4-5 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |

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| Clause | Requirement + Test | | | | Result - Remark | | | | Verdict |
|--------------|--------------------|---------|-------|----|-----------------|----|----|---------------------------------------------------------------------------------------|---------|
| IC9 pin 1-8 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| PC1 pin 1-2 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| PC1 pin 3-4 | S-C | 14.6VDC | 10min | -- | -- | -- | -- | After short circuit, EUT circuit protection, can be restored, no danger. | |
| USB-C Output | S-C | 14.6VDC | 10min | -- | -- | -- | -- | USB-C output shut down immediately, other ports normal output, no damaged, no hazard. | |
| USB-A Output | S-C | 14.6VDC | 10min | -- | -- | -- | -- | USB-A output shut down immediately, other ports normal output, no damaged, no hazard. | |

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| Clause | Requirement + Test | | | | Result - Remark | | | | Verdict |
|----------------------------------------------------------------------------------------------------------|--------------------|---------|-------|----|-----------------|----|----|-------------------------------------------------------------------------------------|---------|
| Car Outlet | S-C | 14.6VDC | 10min | -- | -- | -- | -- | Car Outlet shut down immediately, other ports normal output, no damaged, no hazard. | |
| AC output | S-C | 14.6VDC | 10min | -- | -- | -- | -- | AC output shut down immediately, other ports normal output, no damaged, no hazard. | |
| Supplementary information: S-C: short circuit, O-L: overload, O-C: open circuit; C-D: components damaged | | | | | | | | | |

| Annex M | TABLE: Batteries | | | | | | | | P |
|-----------------------------------------------------------------------------------------|----------------------------|---------------|-------------------------|----------------------------------------------|---------------|-------------------------|---------------|-------------------|---------------|
| The tests of Annex M are applicable only when appropriate battery data is not available | | | | | | | | | P |
| Is it possible to install the battery in a reverse polarity position? | | | | | | | | | P |
| | 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 | -- | -- | -- | 13.32A | 22.5A | 37.5A | 67.5A | -- | -- |
| Max. current during fault condition | -- | -- | -- | 14.67A (Battery board of PCB Q14 pin D-S) | 22.5A | 50.0A (AC output OL) | 67.5A | -- | -- |
| Test results: | | | | | | | | | Verdict |
| - Chemical leaks | | | | | | No leakage | | | P |
| - Explosion of the battery | | | | | | No explosion | | | P |
| - Emission of flame or expulsion of molten metal | | | | | | No flame | | | P |
| - Electric strength tests of equipment after completion of tests | | | | | | | | | P |
| Supplementary information: | | | | | | | | | |

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

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

| Battery/Cell No. | Test conditions | Measurements | | | Observation |
|------------------|----------------------------------------------------|--------------|-------|-----------|-------------------------------|
| | | U (V) | I (A) | Temp (°C) | |
| Cell 1 (4S5P) | Normal | 3.2VDC | 2.66 | -- | No fire or explosion occurred |
| | Single fault – Battery board of PCB Q14 pin D-S | 3.2VDC | 2.93 | -- | No fire or explosion occurred |

Supplementary Information:

| c | Charging at T _{lowest} (°C) | Observation | Charging at T _{highest} (°C) | Observation |
|----------------------------------------------|--------------------------------------|-------------------------|---------------------------------------|----------------------|
| Dalian CBAK Power Battery Co., Ltd/ 26700FB2 | -1 | Charging current: 1.13A | 53.7 | Charging current: 0A |

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-C Output load 5Vdc/3A | Normal operation | 5.18 | 3.32 | 8.0 | 15.60 | 100 |
| USB-C Output load 5Vdc/3A | (SC U7 10-15) | 0 | 0 | 8.0 | 0 | 100 |
| USB-C Output load 9Vdc/3A | Normal operation | 9.28 | 3.38 | 8.0 | 29.78 | 100 |
| USB-C Output load 9Vdc/3A | (SC U7 10-15) | 0 | 0 | 8.0 | 0 | 100 |
| USB-C Output load 12Vdc/3A | Normal operation | 12.39 | 3.42 | 8.0 | 41.66 | 100 |



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| Clause | Requirement + Test | | | Result - Remark | | Verdict |
|----------------------------------------------------|--------------------|-------|------|-----------------|-------|---------|
| USB-C Output load 12Vdc/3A | (SC U7 10-15) | 0 | 0 | 8.0 | 0 | 100 |
| USB-C Output load 15Vdc/3A | Normal operation | 15.45 | 3.39 | 8.0 | 51.77 | 100 |
| USB-C Output load 15Vdc/3A | (SC U7 10-15) | 0 | 0 | 8.0 | 0 | 100 |
| USB-A Quick Charge Output load 5Vdc/3A | Normal operation | 5.17 | 5.55 | 8.0 | 21.09 | 100 |
| USB-A Quick Charge Output load 5Vdc/3A | (SC U7 10-15) | 0 | 0 | 8.0 | 0 | 100 |

Supplementary Information:

| T.2, T.3, T.4, T.5 | | | | | TABLE: Steady force test | P |
|---------------------|-----------------|-----------------|-----------|---------------------|-----------------------------------------------------------------------------------------|---|
| Part/Location | Material | Thickness (mm) | Force (N) | Test Duration (sec) | Observation | |
| Internal components | -- | -- | 10 | 5 | Clearances and creepage distances still complied with the requirements of this standard | |
| Enclosure Top | See table 4.1.2 | See table 4.1.2 | 250 | 5 | No crack, no damaged | |
| Enclosure Bottom | See table 4.1.2 | See table 4.1.2 | 250 | 5 | No crack, no damaged | |
| Enclosure Side | See table 4.1.2 | See table 4.1.2 | 250 | 5 | No crack, no damaged | |

Supplementary information:

| T.6, T.9 | | | | TABLE: Impact tests | P |
|------------------|-----------------|-----------------|------------------------|---------------------|---|
| Part/Location | Material | Thickness (mm) | Vertical distance (mm) | Observation | |
| Enclosure Top | See table 4.1.2 | See table 4.1.2 | 1300 | No damaged | |
| Enclosure Bottom | See table 4.1.2 | See table 4.1.2 | 1300 | No damaged | |
| Enclosure Side | See table 4.1.2 | See table 4.1.2 | 1300 | No damaged | |

Supplementary information:

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

| T.7 | TABLE: Drop tests | | | | P |
|----------------------------|-------------------|-----------------|------------------|-------------|---|
| Part/Location | Material | Thickness (mm) | Drop Height (mm) | Observation | |
| Enclosure Top | See table 4.1.2 | See table 4.1.2 | 1000 | No damaged | |
| Enclosure Bottom | See table 4.1.2 | See table 4.1.2 | 1000 | No damaged | |
| Enclosure Side | See table 4.1.2 | See table 4.1.2 | 1000 | No damaged | |
| Supplementary information: | | | | | |

| T.8 | TABLE: Stress relief test | | | | | P |
|----------------------------|---------------------------|-----------------|-----------------------|--------------|-------------|---|
| Part/Location | Material | Thickness (mm) | Oven Temperature (°C) | Duration (h) | Observation | |
| Overall enclosure | See table 4.1.2 | See table 4.1.2 | 70 | 7 | No damaged | |
| Supplementary information: | | | | | | |



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

ATTACHMENT TO TEST REPORT

IEC 62368-1

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

(Audio/video, information and communication technology equipment - Part 1: Safety requirements)

| | |
|--------------------------------|--------------------------|
| Differences according to | EN 62368-1:2014+A11:2017 |
| Attachment Form No. | EU_GD_IEC62368_1D_II |
| Attachment Originator..... | Nemko AS |
| Master Attachment | Date 2021-02-04 |

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|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|-------------------------|-----------------|--------|------|-------|--------------|---------|------|-------------------------|--------|-------------|--------------|---------|--------|---------|------|---------|------|-------|------|-----------|--------------|-------|------|---------|--------------|--------------------|-----------------|--------|--------|----------|--------|---------|--------|---|
| | Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed "Z". | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CONTENTS | <p>Add the following annexes:</p> <p>Annex ZA (normative) Normative references to international publications with their corresponding European publications</p> <p>Annex ZB (normative) Special national conditions</p> <p>Annex ZC (informative) A-deviations</p> <p>Annex ZD (informative) IEC and CENELEC code designations for flexible cords</p> | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p>Delete all the "country" notes in the reference document (IEC 62368-1:2014) according to the following list:</p> <table border="1"> <thead> <tr> <th>0.2.1</th> <th>Note</th> <th>1</th> <th>Note 3</th> <th>4.1.15</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>4.7.3</td> <td>Note 1 and 2</td> <td>5.2.2.2</td> <td>Note</td> <td>5.4.2.3.2.2 Table 13</td> <td>Note c</td> </tr> <tr> <td>5.4.2.3.2.4</td> <td>Note 1 and 3</td> <td>5.4.2.5</td> <td>Note 2</td> <td>5.4.5.1</td> <td>Note</td> </tr> <tr> <td>5.5.2.1</td> <td>Note</td> <td>5.5.6</td> <td>Note</td> <td>5.6.4.2.1</td> <td>Note 2 and 3</td> </tr> <tr> <td>5.7.5</td> <td>Note</td> <td>5.7.6.1</td> <td>Note 1 and 2</td> <td>10.2.1 Table 39</td> <td>Note 2, 3 and 4</td> </tr> <tr> <td>10.5.3</td> <td>Note 2</td> <td>10.6.2.1</td> <td>Note 3</td> <td>F.3.3.6</td> <td>Note 3</td> </tr> </tbody> </table> | 0.2.1 | Note | 1 | Note 3 | 4.1.15 | Note | 4.7.3 | Note 1 and 2 | 5.2.2.2 | Note | 5.4.2.3.2.2 Table 13 | Note c | 5.4.2.3.2.4 | Note 1 and 3 | 5.4.2.5 | Note 2 | 5.4.5.1 | Note | 5.5.2.1 | Note | 5.5.6 | Note | 5.6.4.2.1 | Note 2 and 3 | 5.7.5 | Note | 5.7.6.1 | Note 1 and 2 | 10.2.1 Table 39 | Note 2, 3 and 4 | 10.5.3 | Note 2 | 10.6.2.1 | Note 3 | F.3.3.6 | Note 3 | P |
| 0.2.1 | Note | 1 | Note 3 | 4.1.15 | Note | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.7.3 | Note 1 and 2 | 5.2.2.2 | Note | 5.4.2.3.2.2 Table 13 | Note c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.4.2.3.2.4 | Note 1 and 3 | 5.4.2.5 | Note 2 | 5.4.5.1 | Note | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.5.2.1 | Note | 5.5.6 | Note | 5.6.4.2.1 | Note 2 and 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.7.5 | Note | 5.7.6.1 | Note 1 and 2 | 10.2.1 Table 39 | Note 2, 3 and 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.5.3 | Note 2 | 10.6.2.1 | Note 3 | F.3.3.6 | Note 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | For special national conditions, see Annex ZB. | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | <p>Add the following note:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2011/65/EU.</p> | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| Clause | Requirement + Test | Result - Remark | Verdict |
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| 4.Z1 | <p>Add the following new subclause after 4.9:</p> <p>To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p> | | P |
| 5.4.2.3.2.4 | <p>Add the following to the end of this subclause:</p> <p>The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.</p> | No external circuit. | N/A |
| 10.2.1 | <p>Add the following to ^{c)} and ^{d)} in table 39:</p> <p>For additional requirements, see 10.5.1.</p> | No radiation. | N/A |



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

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| Clause | Requirement + Test | Result - Remark | Verdict |
| Bibliography | <p>Add the following standards:</p> <p>Add the following notes for the standards indicated:</p> <p>IEC 60130-9 NOTE Harmonized as EN 60130-9.</p> <p>IEC 60269-2 NOTE Harmonized as HD 60269-2.</p> <p>IEC 60309-1 NOTE Harmonized as EN 60309-1.</p> <p>IEC 60364 NOTE some parts harmonized in HD 384/HD 60364 series.</p> <p>IEC 60601-2-4 NOTE Harmonized as EN 60601-2-4.</p> <p>IEC 60664-5 NOTE Harmonized as EN 60664-5.</p> <p>IEC 61032:1997 NOTE Harmonized as EN 61032:1998 (not modified).</p> <p>IEC 61508-1 NOTE Harmonized as EN 61508-1.</p> <p>IEC 61558-2-1 NOTE Harmonized as EN 61558-2-1.</p> <p>IEC 61558-2-4 NOTE Harmonized as EN 61558-2-4.</p> <p>IEC 61558-2-6 NOTE Harmonized as EN 61558-2-6.</p> <p>IEC 61643-1 NOTE Harmonized as EN 61643-1.</p> <p>IEC 61643-21 NOTE Harmonized as EN 61643-21.</p> <p>IEC 61643-311 NOTE Harmonized as EN 61643-311.</p> <p>IEC 61643-321 NOTE Harmonized as EN 61643-321.</p> <p>IEC 61643-331 NOTE Harmonized as EN 61643-331.</p> | | N/A |
| ZB | ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN) | | P |
| 4.1.15 | <p>Denmark, Finland, Norway and Sweden</p> <p>To the end of the subclause the following is added:</p> <p>Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord."</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p> | | N/A |
| 4.7.3 | <p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex</p> | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
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| 5.2.2.2 | <p>Denmark</p> <p>After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.</p> | | N/A |
| 5.4.11.1 and Annex G | <p>Finland and Sweden</p> <p>To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV. <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; <p>the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.</p> | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
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| 5.5.2.1 | Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V). | | P |
| 5.5.6 | Finland, Norway and Sweden To the end of the subclause the following is added: Resistors used as basic safeguard or bridging basic insulation in class I pluggable equipment type A shall comply with G.10.1 and the test of G.10.2. | No such resistor used. | N/A |
| 5.6.1 | Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse. | Added. | P |
| 5.6.4.2.1 | Ireland and United Kingdom After the indent for pluggable equipment type A , the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug. | Added. | P |
| 5.6.5.1 | To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is:1,25 mm ² to 1,5 mm ² in cross-sectional area. | Added. | N/A |
| 5.7.5 | Denmark To the end of the subclause the following is added: The installation instruction shall be affixed to the equipment if the protective conductor current exceeds the limits of 3,5 mA a.c. or 10 mA d.c. | | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
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| 5.7.6.1 | <p>Norway and Sweden</p> <p>To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system.</p> <p>It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example.</p> <p>The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkøp utstyr – og er tilkøp et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkøp av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.”</p> <p>Translation to Swedish: ”Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”</p> | | N/A |
| 5.7.6.2 | <p>Denmark</p> <p>To the end of the subclause the following is added: The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p> | | N/A |

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| B.3.1 and B.4 | <p>Ireland and United Kingdom</p> <p>The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met</p> | Not direct plug-in equipment. | N/A |
| G.4.2 | <p>Denmark</p> <p>To the end of the subclause the following is added: Supply cords of single phase appliances having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1:2011. CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2. Mains socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance DS 60884-2-D1:2011 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with Standard Sheet DKA 1-3a or DKA 1-1c. Mains socket-outlets with earth shall be in compliance with DS 60884-2-D1:2011 Standard Sheet DK 1-3a, DK 1-1c, DK1-1d, DK 1-5a or DK 1-7a <i>Justification:</i> Heavy Current Regulations, Section 6c</p> | | N/A |
| G.4.2 | <p>United Kingdom</p> <p>To the end of the subclause the following is added: The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p> | Not direct plug-in equipment. | N/A |



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| Clause | Requirement + Test | Result - Remark | Verdict |
| G.7.1 | <p>United Kingdom</p> <p>To the first paragraph the following is added: Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p> | | N/A |
| G.7.1 | <p>Ireland</p> <p>To the first paragraph the following is added: Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p> | | N/A |
| G.7.2 | <p>Ireland and United Kingdom</p> <p>To the first paragraph the following is added: A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.</p> | | N/A |
| ZC | ANNEX ZC, NATIONAL DEVIATIONS (EN) | | N/A |
| 10.5.2 | <p>Germany</p> <p>The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.</p> <p><i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p>NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de</p> | | N/A |



Photo:

Photo 1



Photo 2



Photo 3



Photo 4



Photo 5

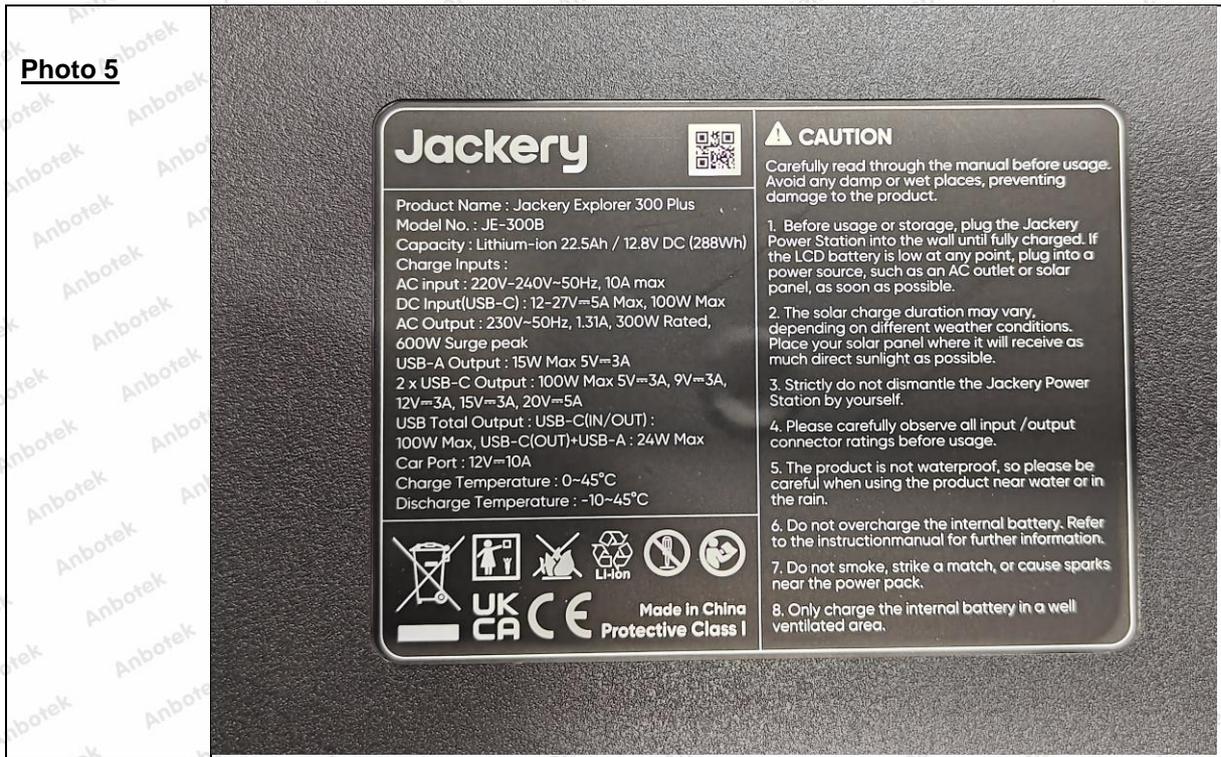


Photo 6



Photo 7



Photo 8



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Photo 9

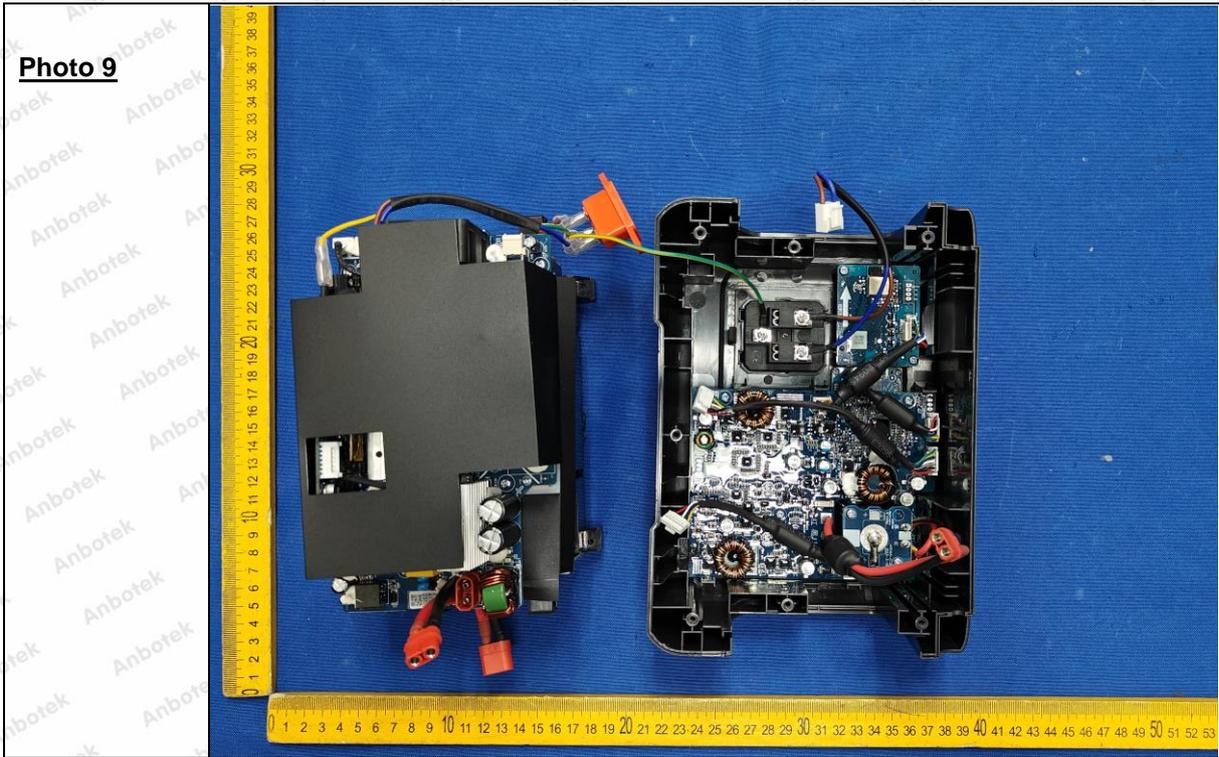


Photo 10

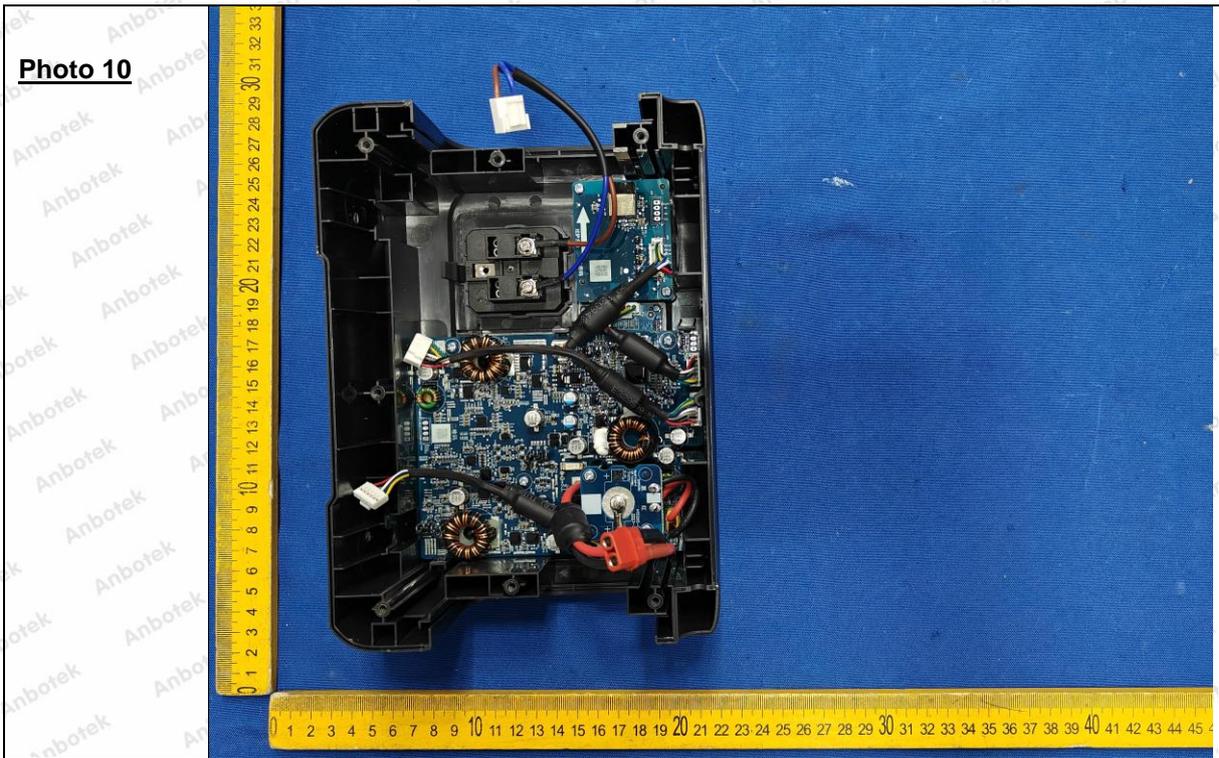


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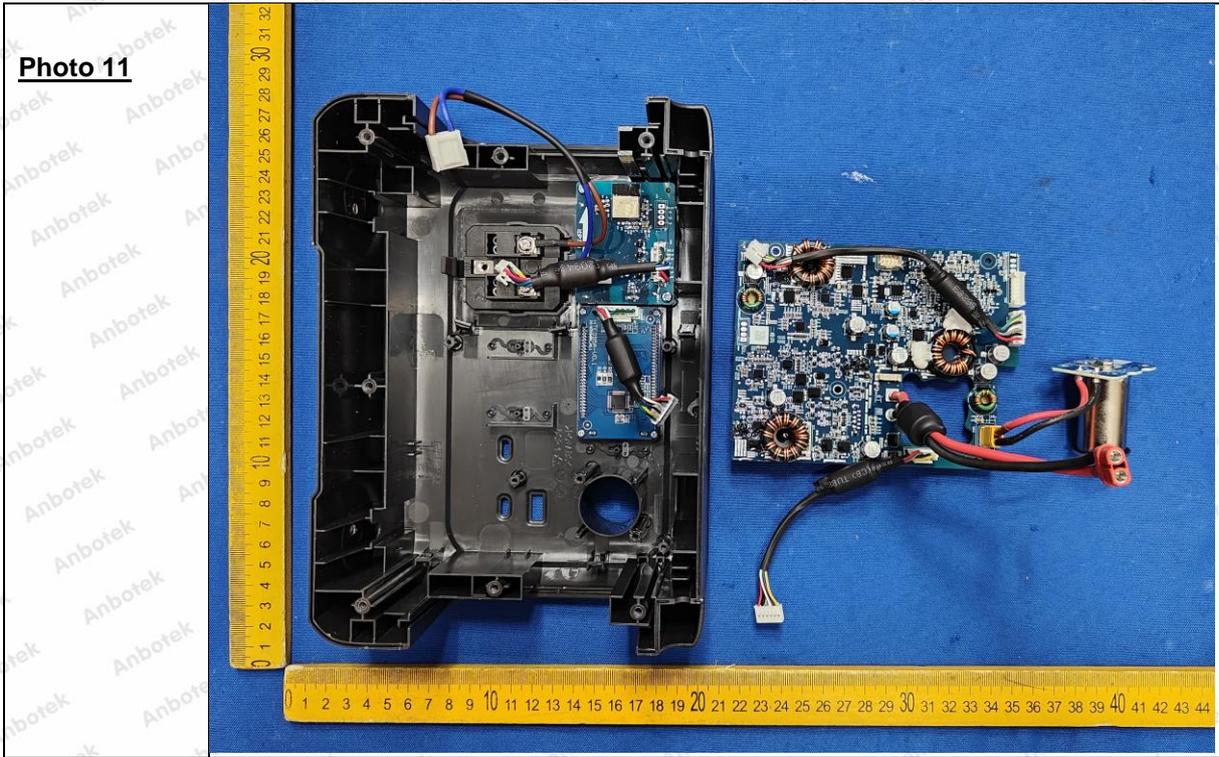


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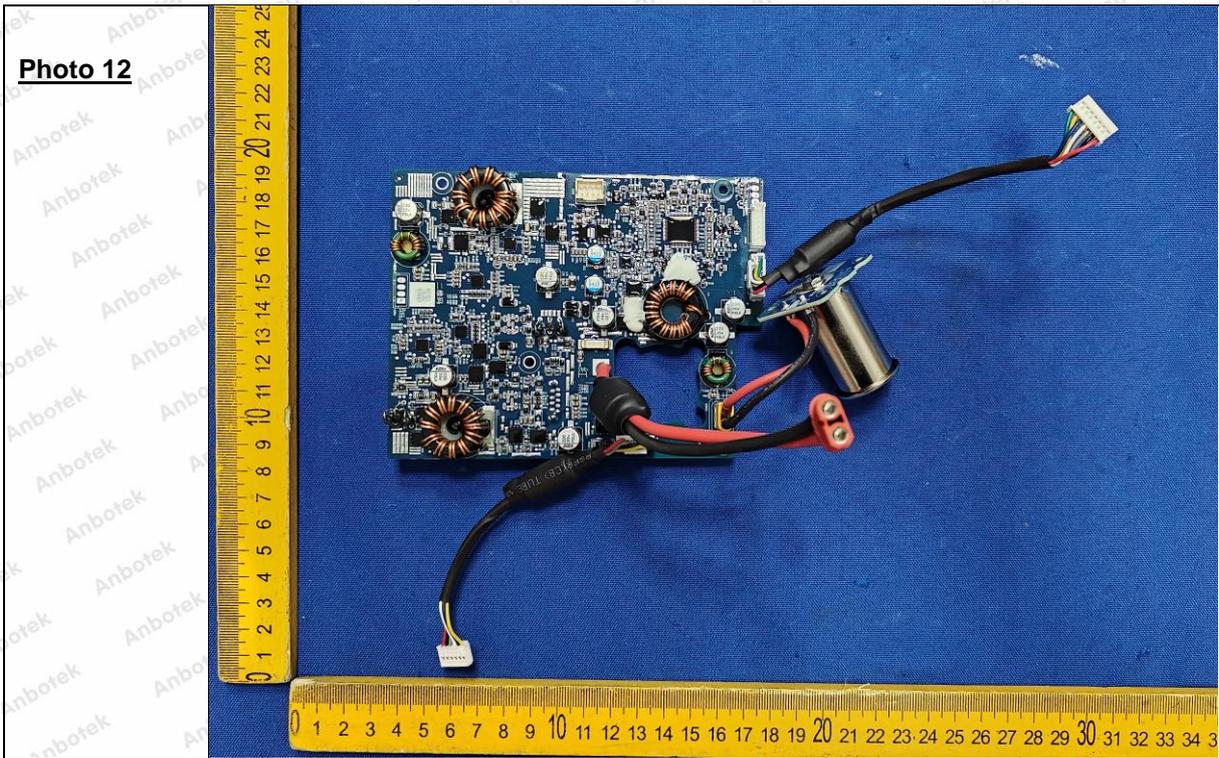


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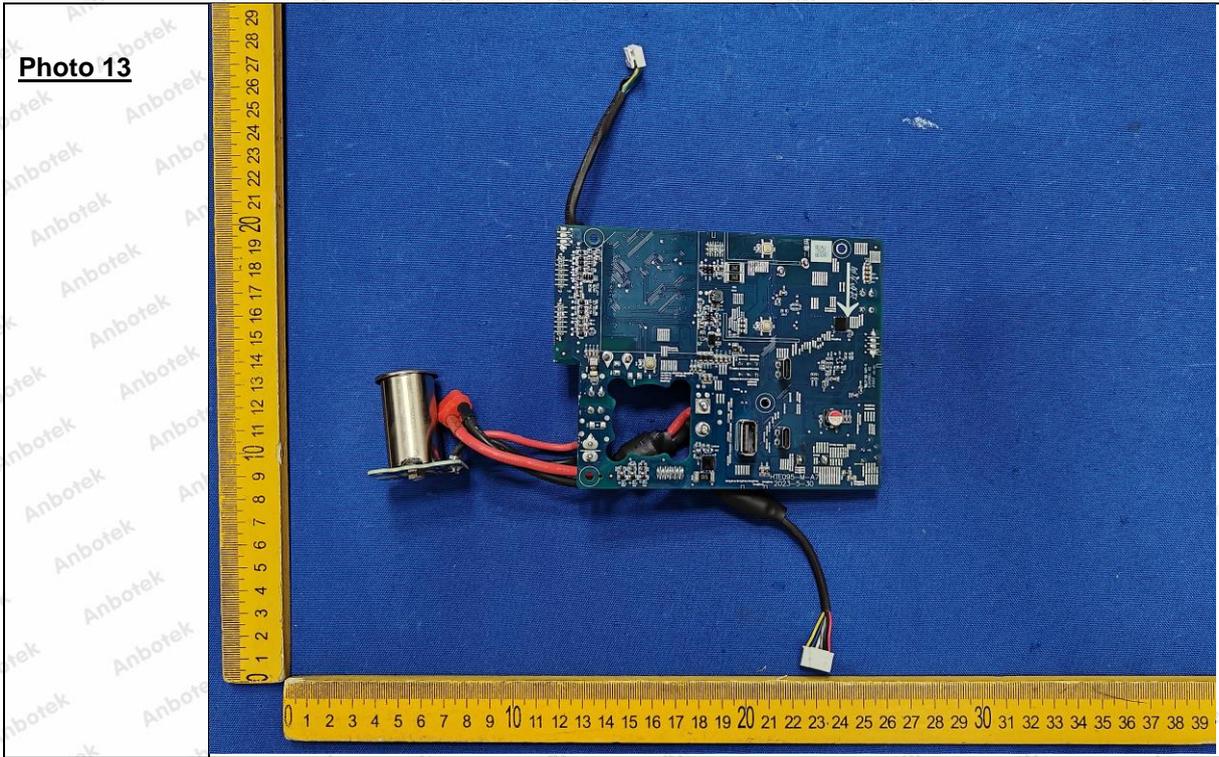


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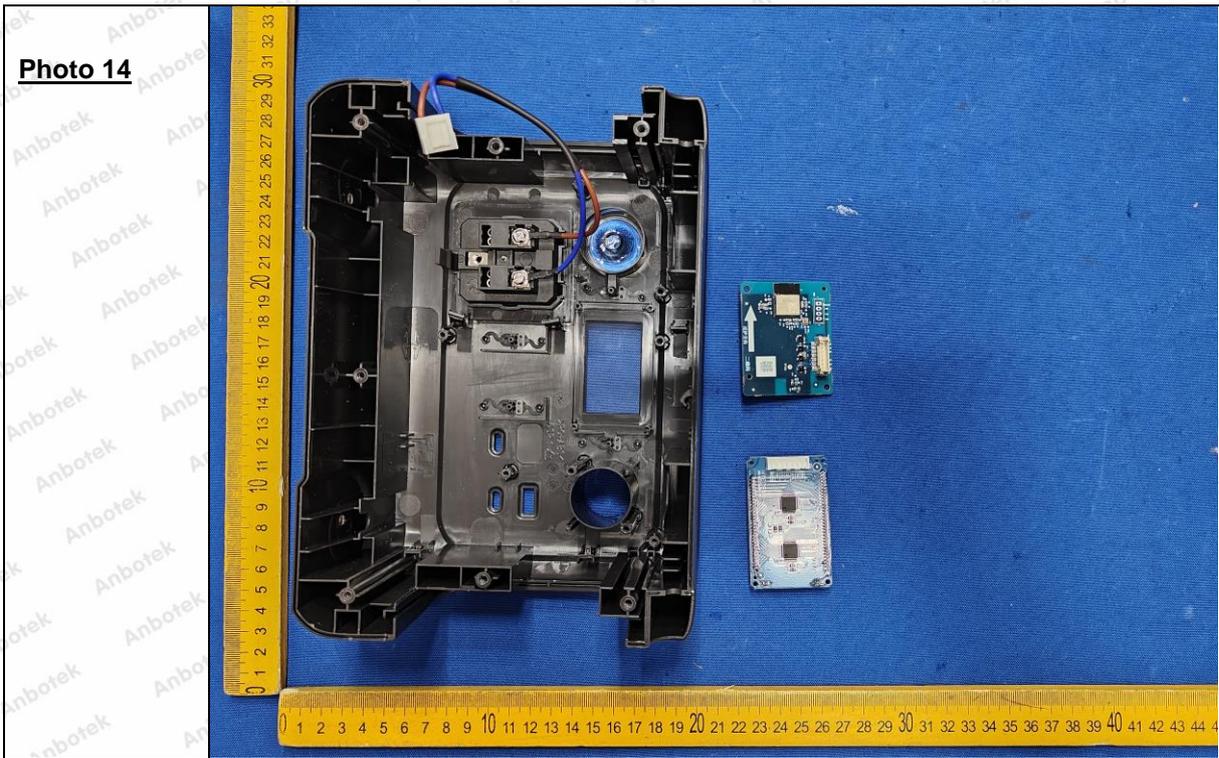


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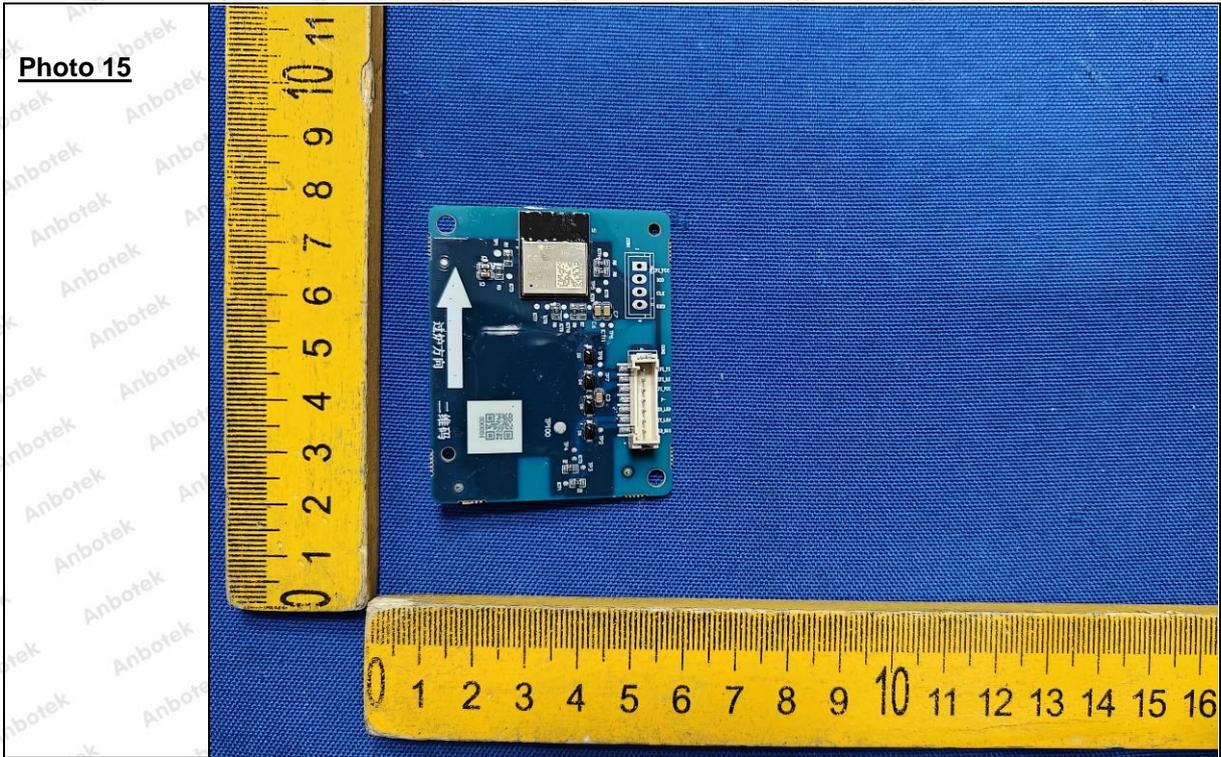


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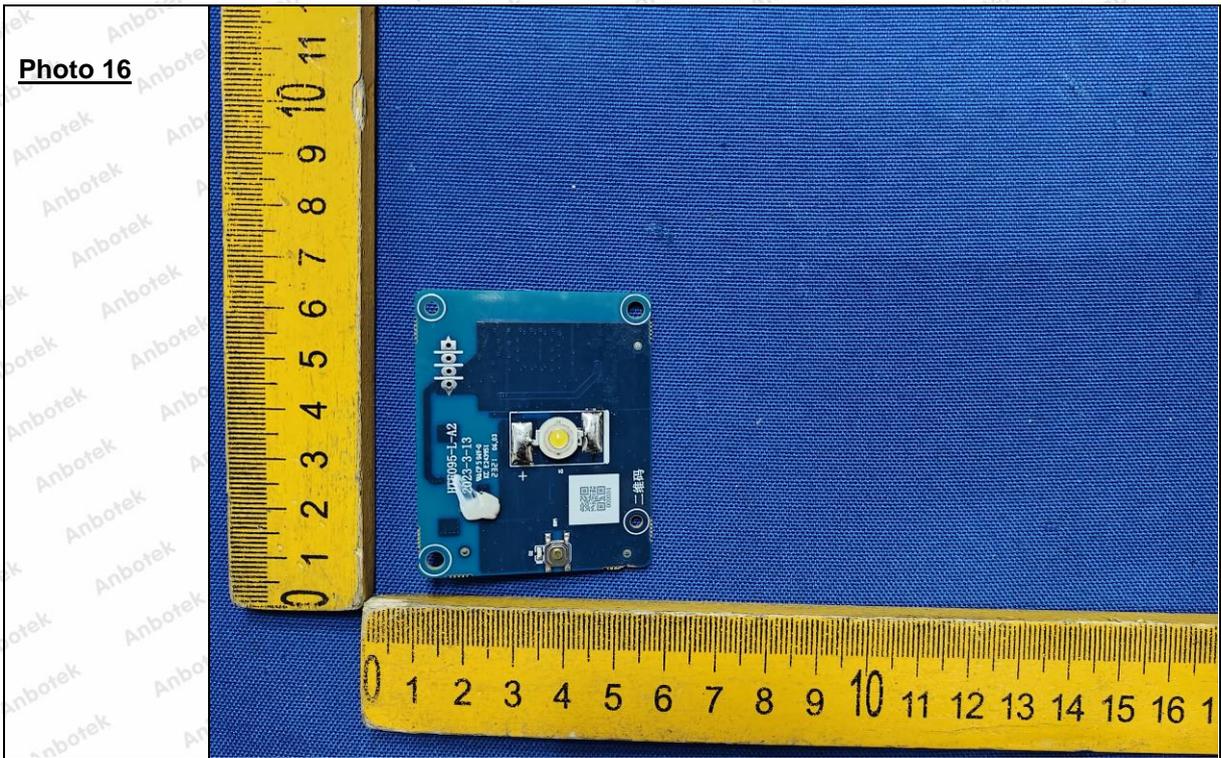


Photo 17

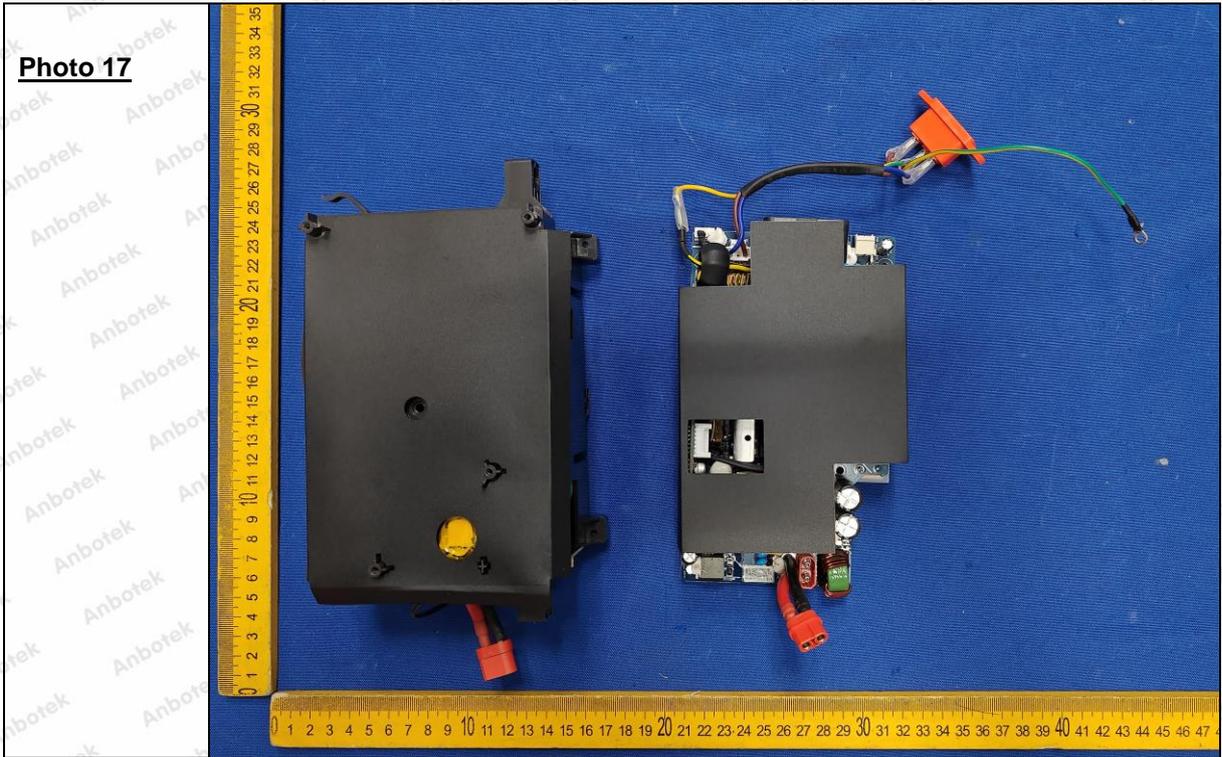


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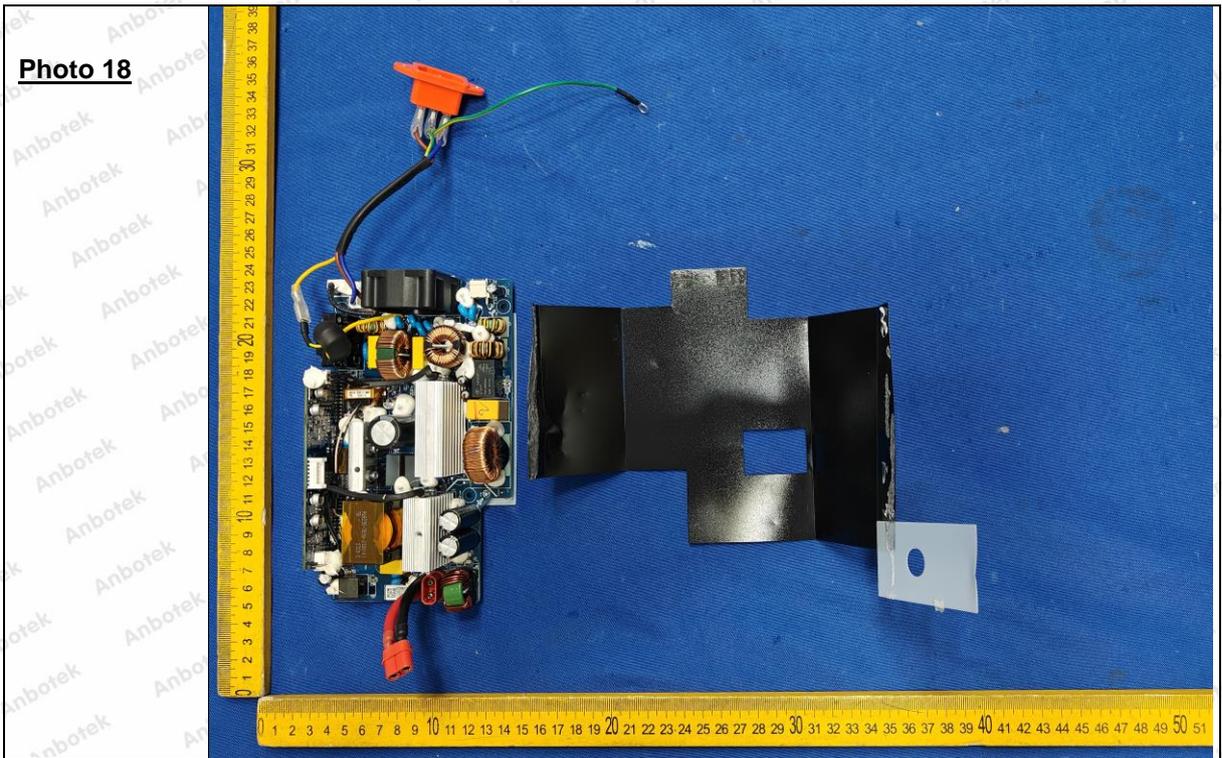


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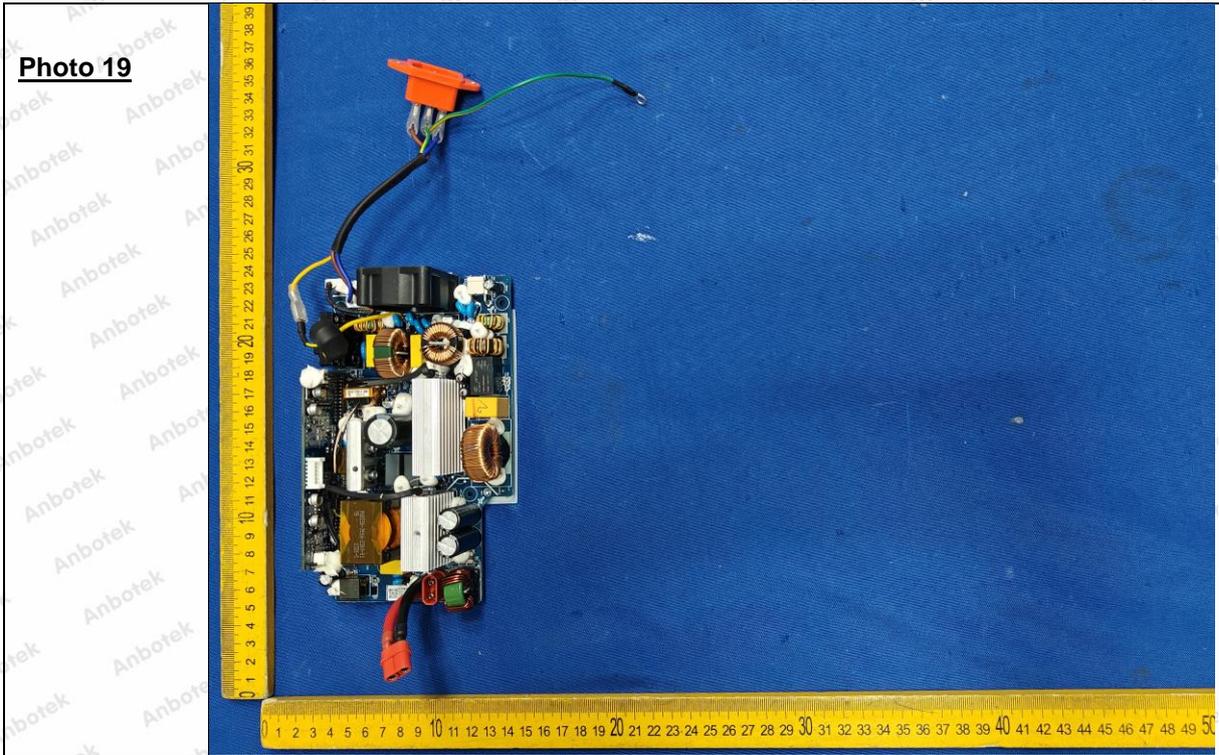


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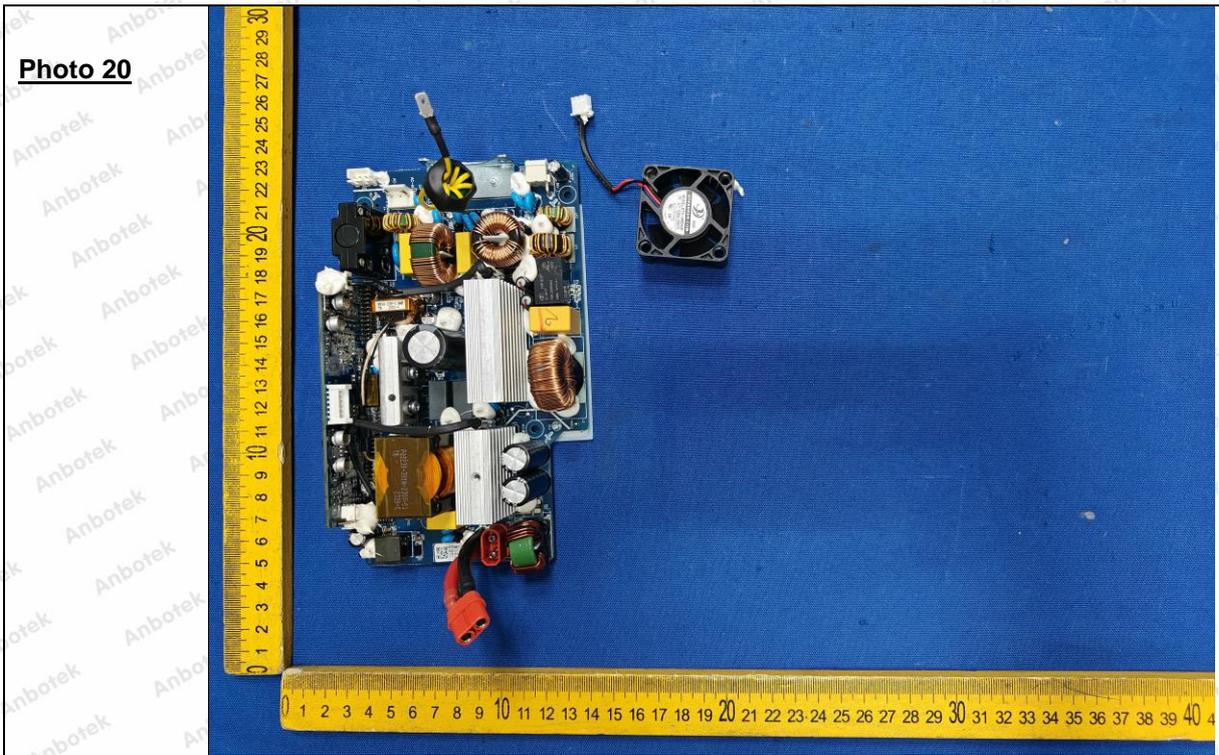


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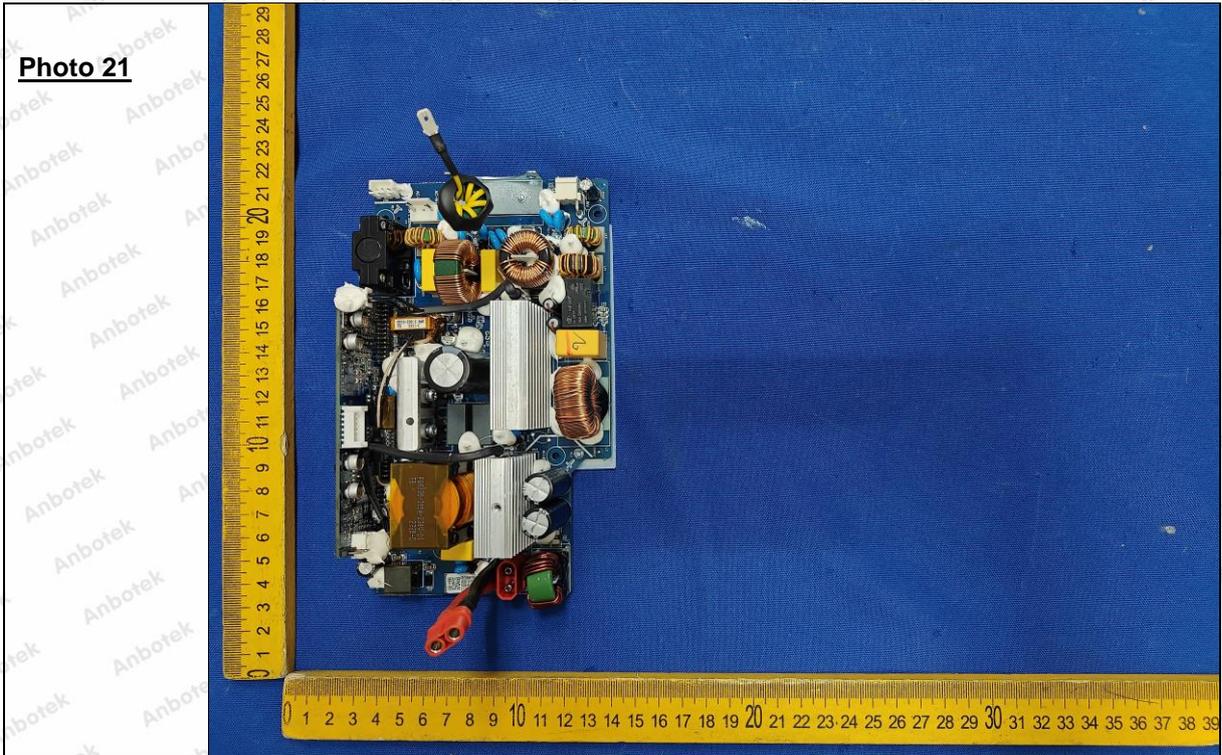


Photo 22



Photo 23

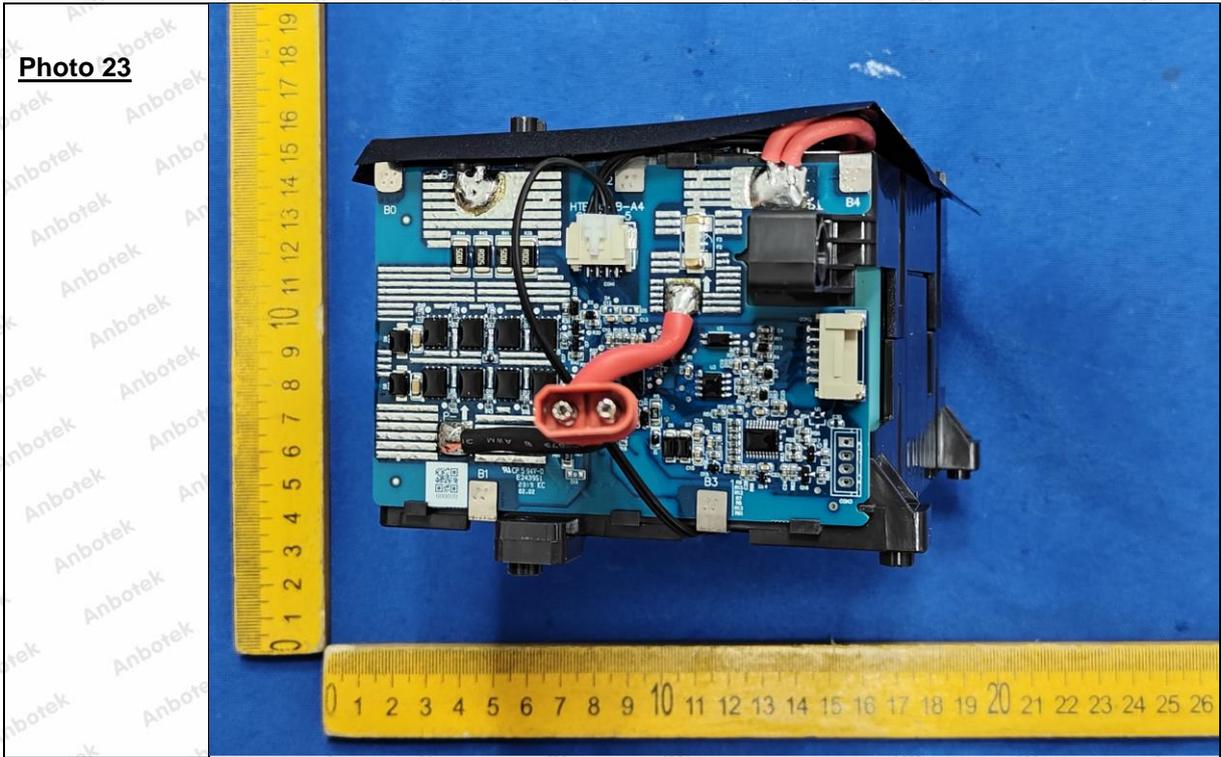


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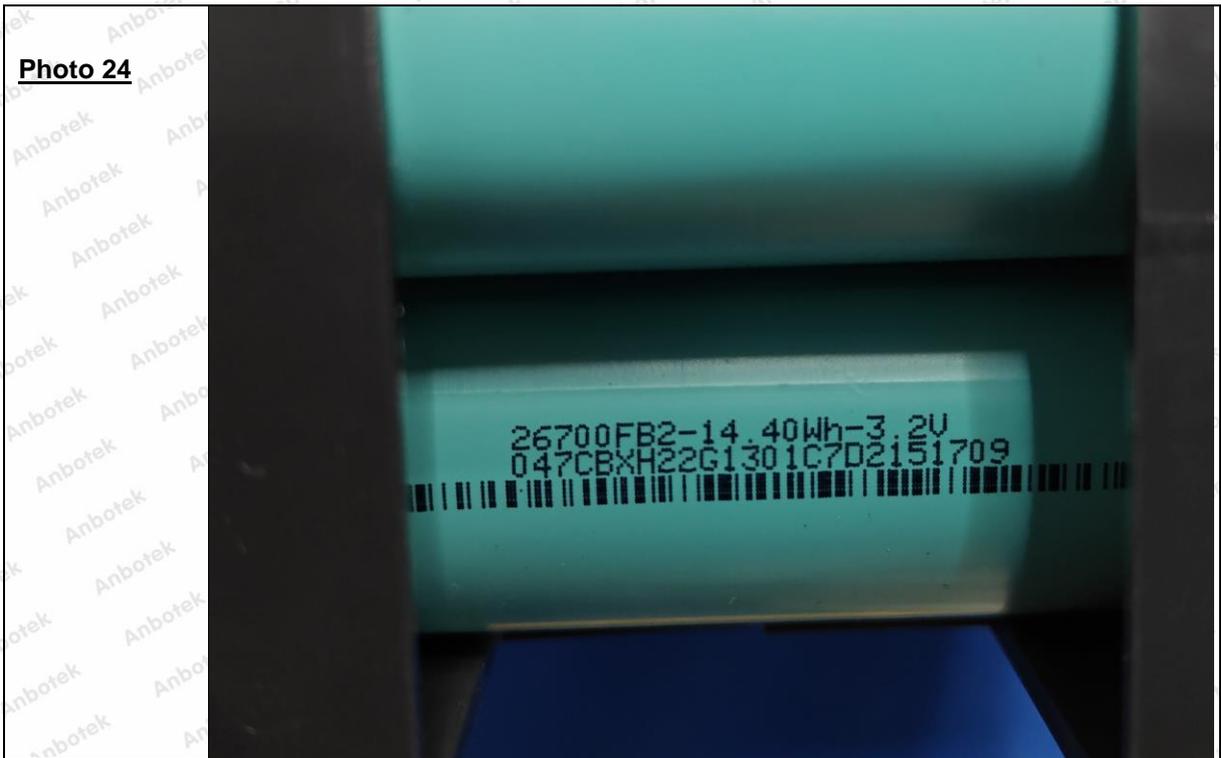


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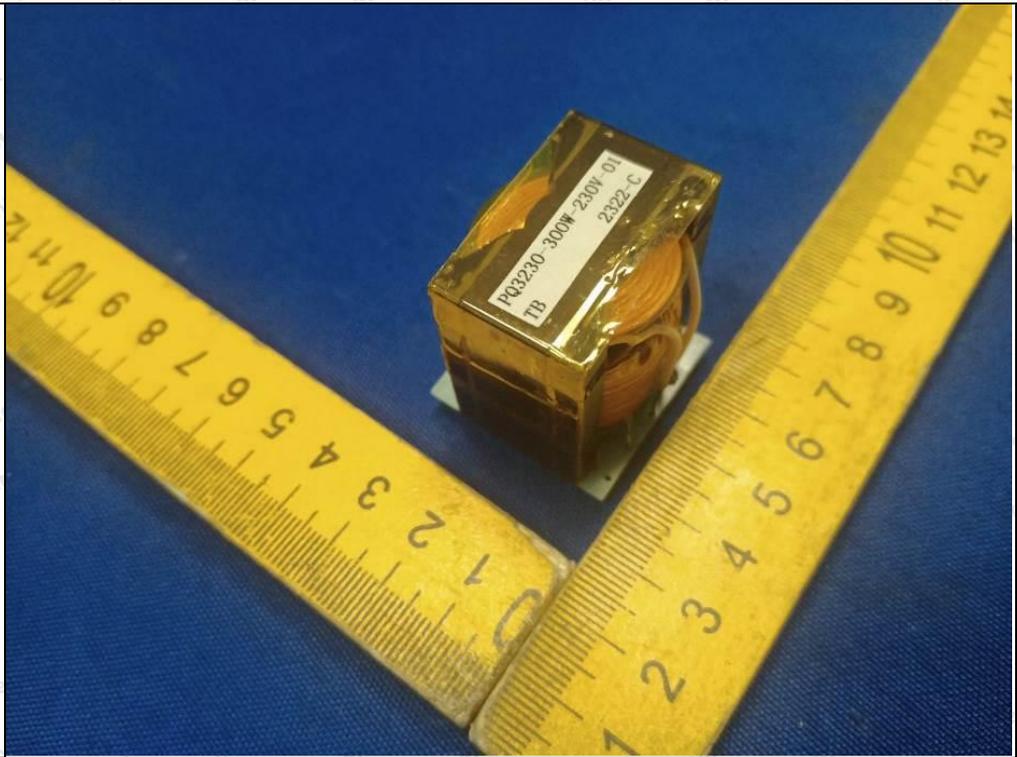


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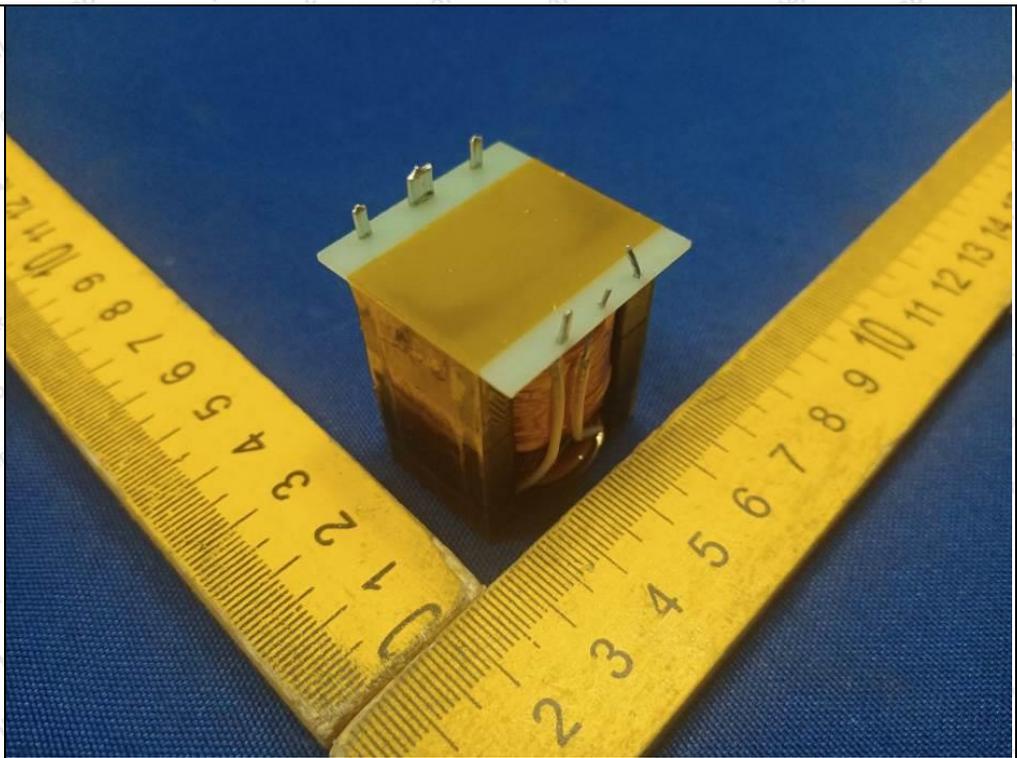


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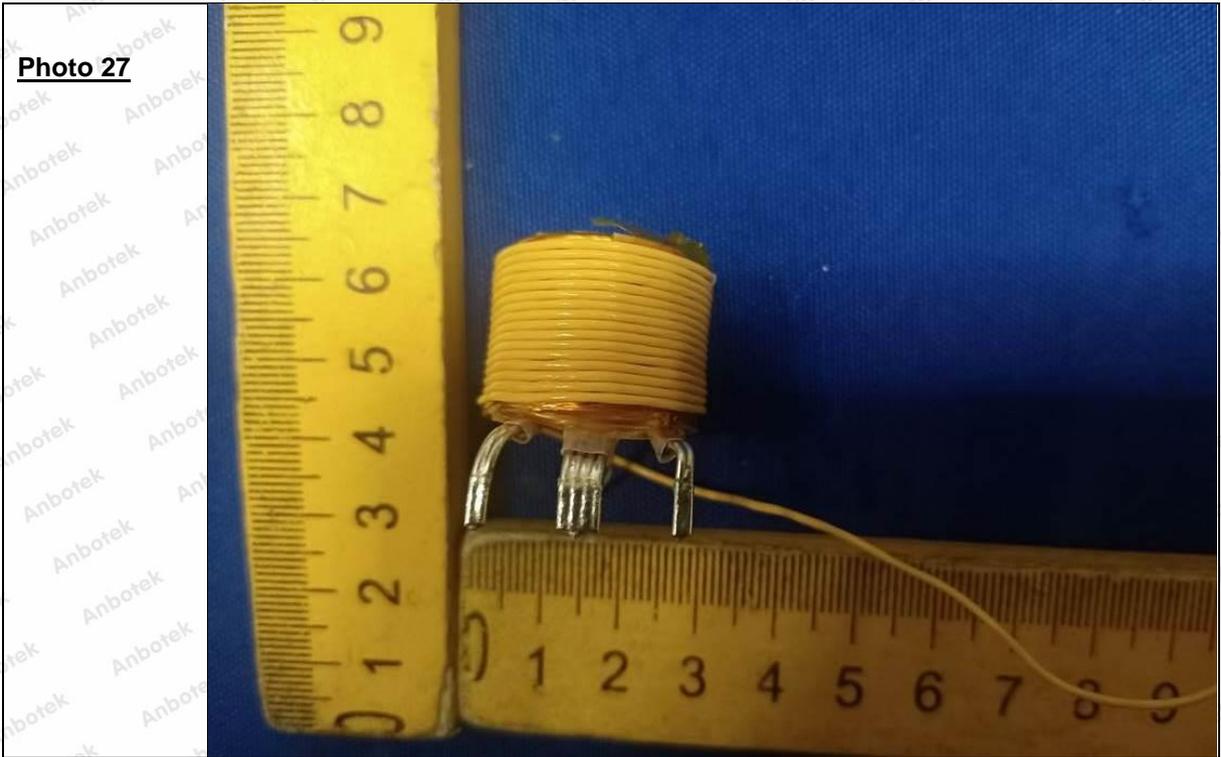


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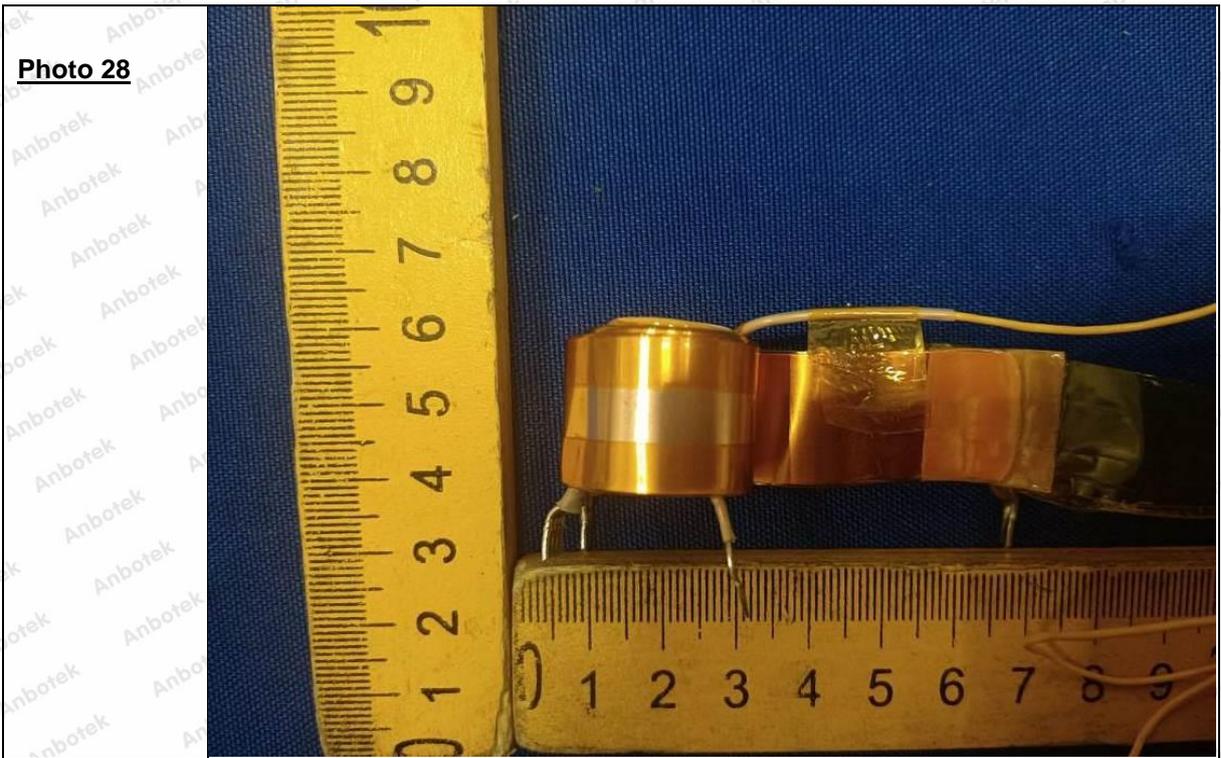


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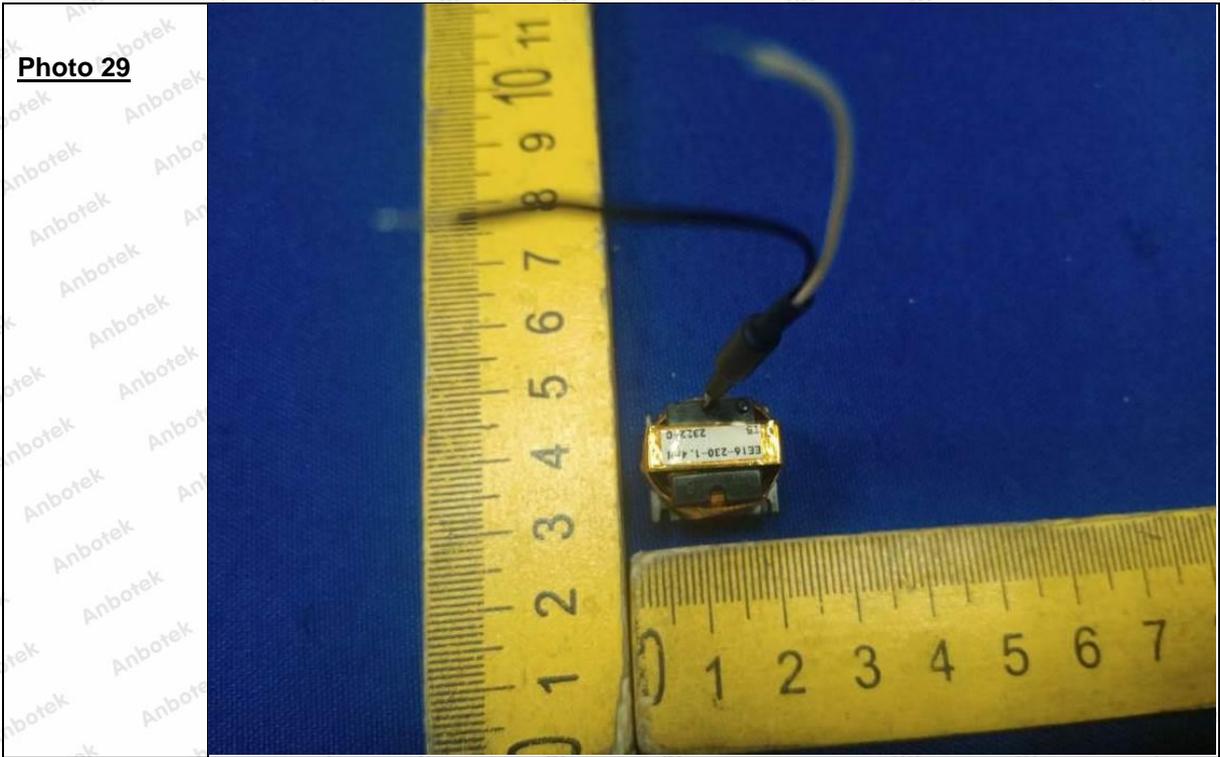


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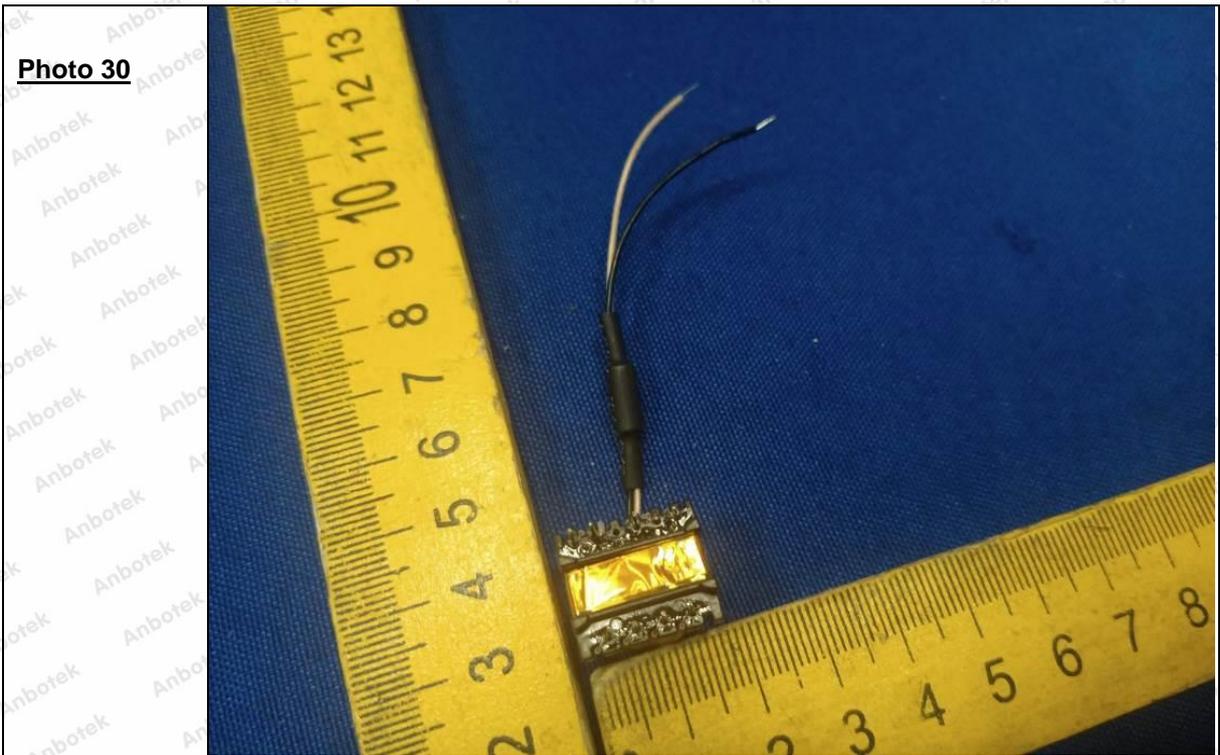


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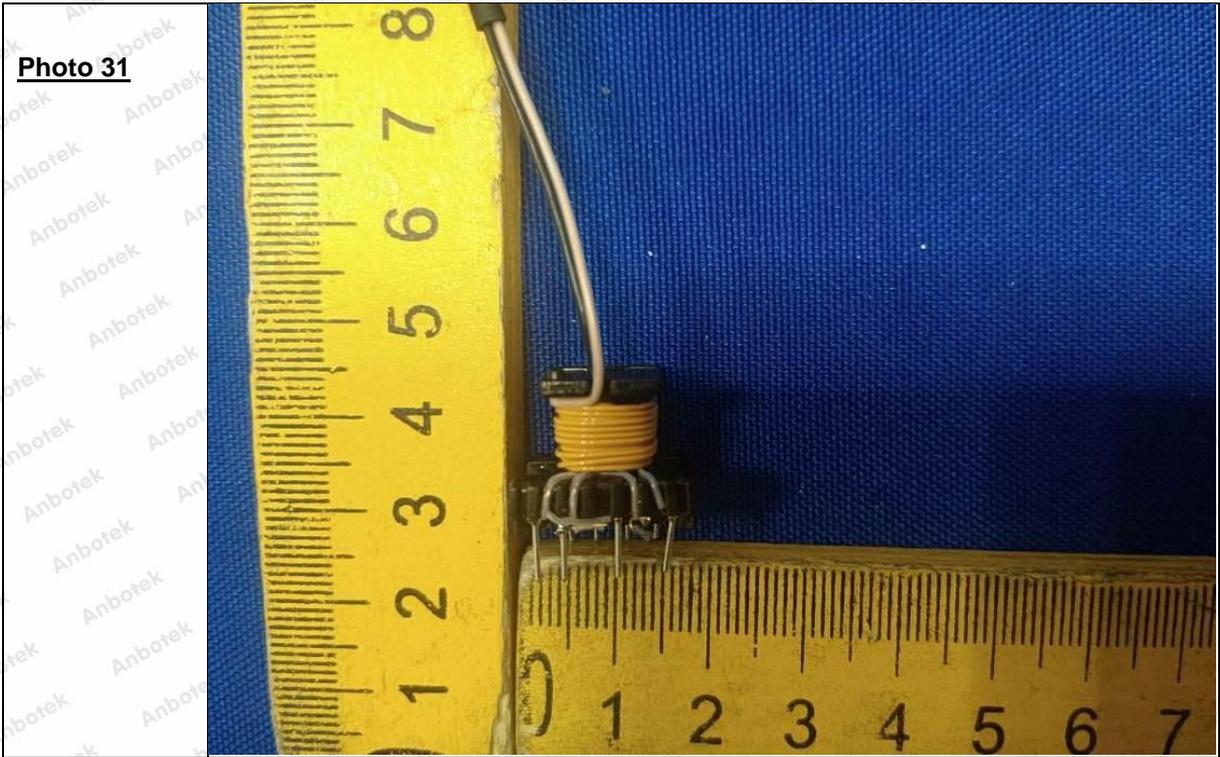


Photo 32

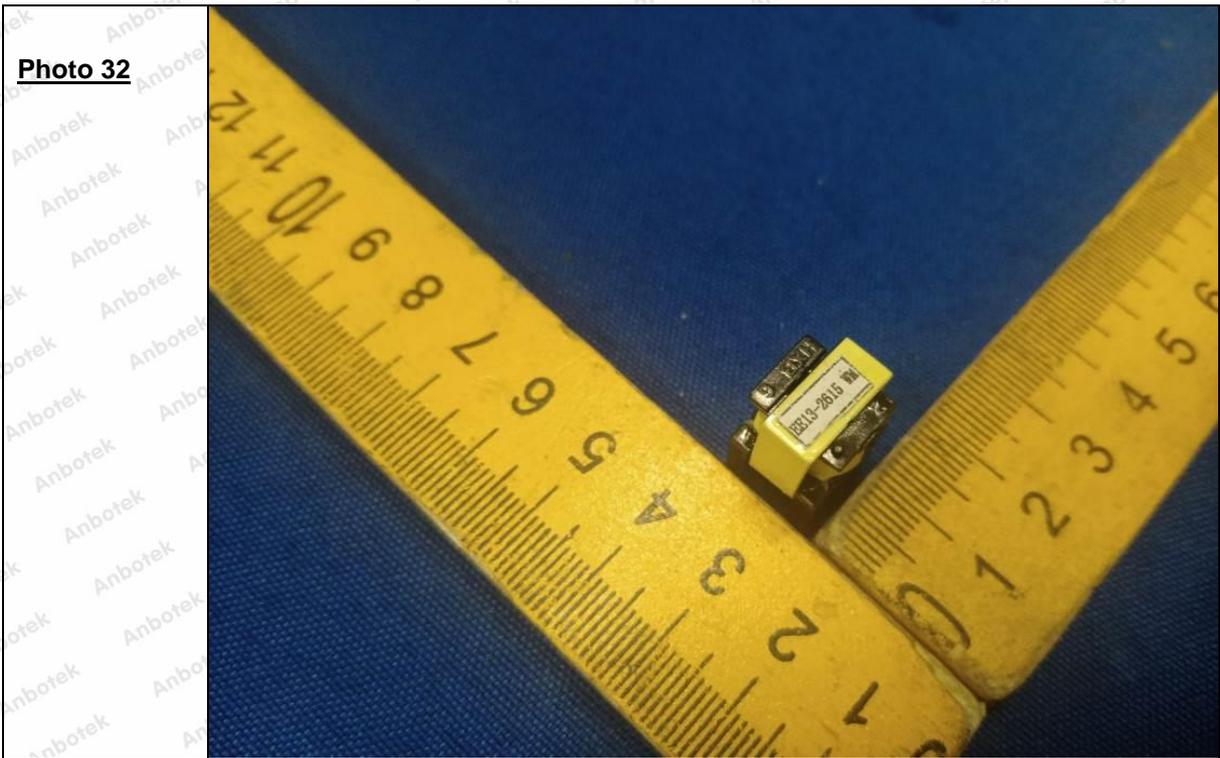


Photo 33

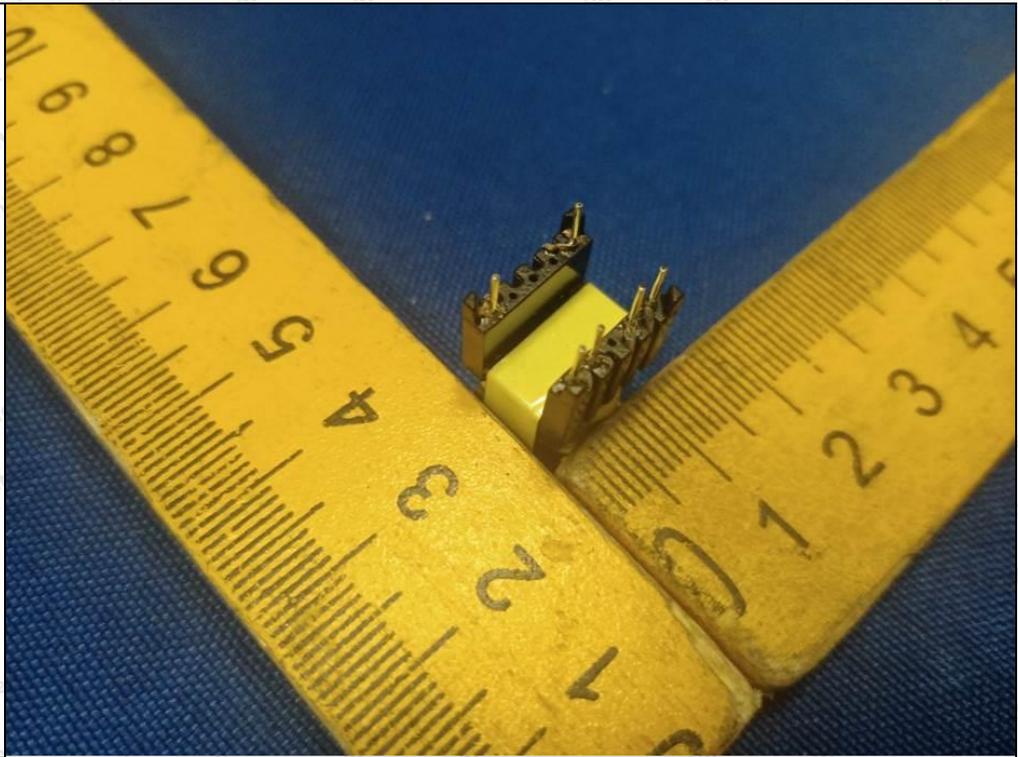
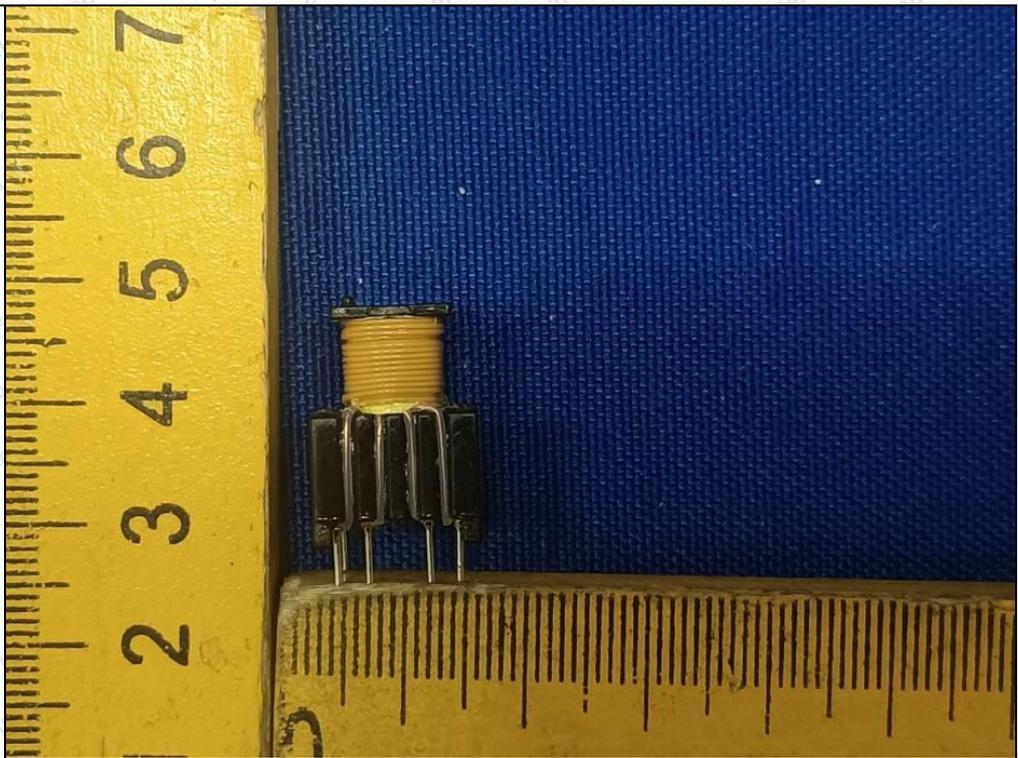


Photo 34



---End of the report---

