

Report No.: 18220WC20181302S

Test Report

Client Name : EcoFlow Inc.

**Client Address : Plant A202, Founder Technology Industrial
Park, Shiyan Sub-district, Bao'an District
Shenzhen, Guangdong 518000 China**

Product Name : Portable Power Station

Report Date : Oct.14, 2022

Shenzhen Anbotek Compliance Laboratory Limited

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 : 18220WC20181302S

Date of issue : Oct.14, 2022

Total number of pages : 95 pages

Applicant's name : EcoFlow Inc.

Address : Plant A202, Founder Technology Industrial Park, Shiyan Sub-district,
Bao'an District Shenzhen, Guangdong 518000 China

Test specification:

Standard : IEC 62368-1:2014 (Second Edition)
EN 62368-1:2014 +A1:2017

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) : Janet Qi


Janet Qi

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

Tim Sun

Shenzhen Anbotek Compliance Laboratory Limited

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Test Item description	Portable Power Station
Trade Mark	
Manufacturer	Same as applicant
Model/Type reference	EFR600
Ratings	Capacity:256Wh (20Ah 12.8V===) AC Input: 200V-240V~, 50Hz/60Hz, 8A Max Solar/DC Input: 11-30V===, 8A 110W Max Total Output: 484W DC Output: 12.6V===8A 100W Max AC Output(x1): 230V~, 1.3A(total), 50Hz/60Hz,300W AC Output(Bypass)(x1): 200V-240V~,600W (total), 50Hz/60Hz USB-A Output(x2): 5V===2.4A, 12W ,Max per port USB-C Input/Output(x1): 5/9/12/15/20V===, 3A, 60W, Max

Tests performed (name of test and test clause):

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

Electrical safety

- IEC 62368-1:2014
- EN 62368-1:2014 +A1:2017

Testing location:

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

List of countries addressed: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

The product fulfils the requirements of EN 62368-1:2014 +A1:2017

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 IECEE.

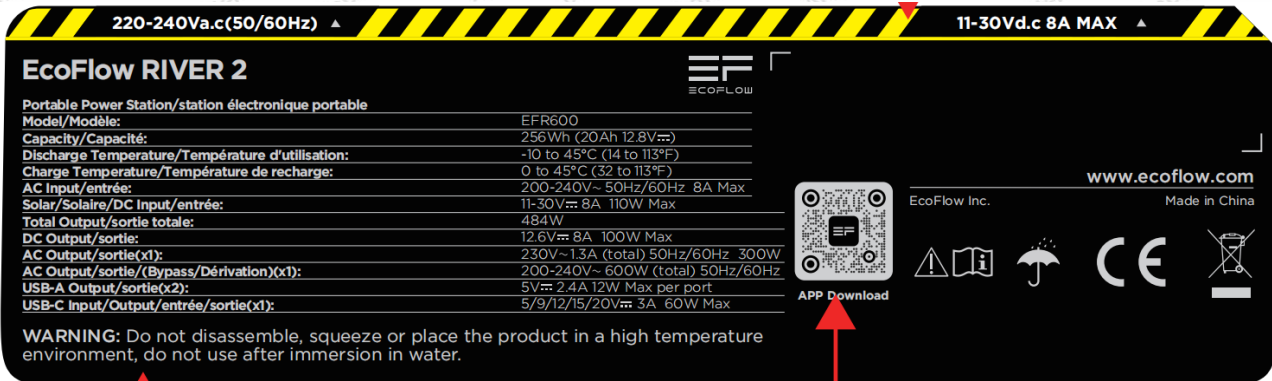
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

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



Copy of marking plate:

The artwork below may be only a draft.



-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 <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person <input checked="" type="checkbox"/> Children likely to be present
Supply Connection	<input checked="" type="checkbox"/> AC Mains <input type="checkbox"/> DC Mains <input type="checkbox"/> External Circuit - not Mains connected - <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input type="checkbox"/> ES3
Supply % Tolerance	<input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> + ____ %/ - ____ % <input type="checkbox"/> None: Not directly connected to the mains
Supply Connection – Type	<input checked="" type="checkbox"/> pluggable equipment type A <input type="checkbox"/> non-detachable supply cord <input checked="" type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> mating connector <input type="checkbox"/> pluggable equipment type B - <input type="checkbox"/> non-detachable supply cord <input type="checkbox"/> appliance coupler <input type="checkbox"/> permanent connection <input type="checkbox"/> mating connector <input type="checkbox"/> other:
Considered current rating of protective device as part of building or equipment installation	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 checked="" 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"/> IPX0
Power Systems	<input checked="" type="checkbox"/> TN <input checked="" type="checkbox"/> TT <input 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
Mass of equipment (kg)	<input checked="" type="checkbox"/> Approx. 3.51 kg

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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.....:	2022-08-10
Date (s) of performance of tests.....:	2022-08-10 to 2022-09-18
General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>Note: Before placing the products in the different countries, the manufacturer must ensure that:</p> <ol style="list-style-type: none"> 1. Operating Instructions, Ratings Labels and Warnings Labels written in an Accepted or Official Language of the county in question. 2. The equipment complies with the National Standards and/or Electrical Codes of the country in question. 3. According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market. 	
General product information and other remarks:	
<p>Product Description –</p> <ul style="list-style-type: none"> - The EUT is a Portable Power Station which is intended to charging IT 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>	
<p>Model Differences :</p> <p>N/A</p>	
<p>Additional application considerations – (Considerations used to test a component or sub-assembly) –</p> <p>The part of solar and AC socket is not valued in this report accord to requirement of manufacturer.</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
----------	-----

USB-C input	ES1
-------------	-----

AC Output	ES3
-----------	-----

DC Output	ES1
-----------	-----

USB-C Output	ES1
--------------	-----

USB-A Output	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
----------	-----

USB-C input	PS2
-------------	-----

AC Output	PS3
-----------	-----

DC Output	PS3
-----------	-----

USB-C Output	PS2
--------------	-----

USB-A Output	PS1
--------------	-----

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
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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



ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

Source of kinetic/mechanical energy	Corresponding classification (MS)
Sharp edges and corners	MS1
Equipment mass	MS1
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	RS1

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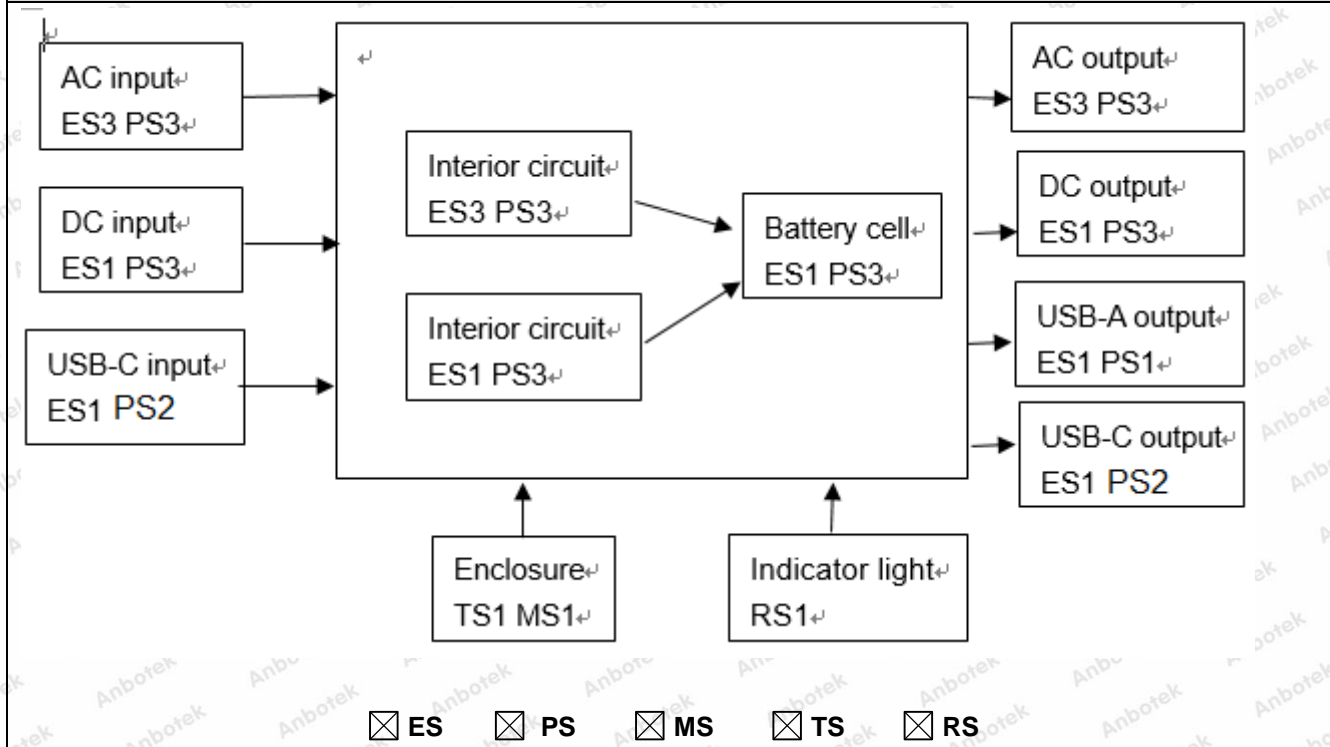


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ENERGY SOURCE DIAGRAM

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	Supplementary	Reinforced (Enclosure)
Ordinary person/ Instructed person	ES3: All primary circuits	N/A	N/A	Enclosure, Isolation transformer, isolated switching integrated circuit, Y1- cap.
Ordinary person/ Instructed person	ES2: AC plug (2s after disconnection of AC plug)	Bleeder resistors provided	Accessible voltage didn't exceed ES2 limits of Table 5 under fault condition	N/A
Ordinary person/ Instructed person/ Skilled person	ES1: Secondary circuits	N/A	N/A	N/A
Ordinary person, Instructed person	ES3: Internal circuits (secondary circuits) ES3:AC output	N/A	N/A	Creepage and Clearance, Transformer
Ordinary person, Instructed person, Skilled person	ES1:DC Input terminal ES1: USB-A Output terminal ES1: USB-C Output terminal ES1: DC Output terminal	N/A	N/A	N/A
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced

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All combustible materials within equipment	PS3: AC output and AC input PS3: Battery cell output PS3: DC Input terminal PS2: USB-C Output terminal PS3: DC Output terminal	(N) and (A): 1. No ignition occurred; 2. No parts exceeding 90% of its spontaneous ignition temperature	Control fire spread (S): 1. V-0 PCB used; 2. All other components: at least V-2 except for mounted on min. V-1 material or small parts of combustible material; 3. Transformer complied with Annex G.5.3;	V-0 enclosure provided.
All combustible materials for external equipment which connected to output this power supply	PS3: Cigarette Lighter Output terminal	N/A	N/A	See instruction
All combustible materials within equipment	PS1: USB-A Output terminal	N/A	N/A	N/A
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person, Skilled person	Battery, Detail see Annex M	N/A	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3: High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person, Instructed person, Skilled person	MS1: Sharp edges and corners	N/A	N/A	N/A
Ordinary person, Instructed person, Skilled person	MS1: Equipment mass (<7 kg)	N/A	N/A	See instruction
Ordinary person, Instructed person, Skilled person	MS1: DC fan	N/A	N/A	See instruction
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person, Instructed person, Skilled person	TS1: External surfaces	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person, Instructed person, Skilled person	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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Clause	Requirement + Test	Result - Remark	Verdict
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4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components	(See appended table 4.1.2)	P
4.1.3	Equipment design and construction		P
4.1.15	Markings and instructions.....:	(See Annex F)	P
4.4.4	Safeguard robustness		P
4.4.4.2	Steady force tests.....:	(See Annex T.2, T.5)	P
4.4.4.3	Drop tests.....:	(See Annex T.7)	P
4.4.4.4	Impact tests.....:		N/A
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:		N/A
4.4.4.6	Glass Impact tests.....:	No glass used	N/A
4.4.4.7	Thermoplastic material tests.....:	(See Annex T.8)	P
4.4.4.8	Air comprising a safeguard.....:	Considered	P
4.4.4.9	Accessibility and safeguard effectiveness	All safeguards remain effective	P
4.5	Explosion		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.....:	Internal components	P
4.7	Equipment for direct insertion into mains socket - outlets		N/A
4.7.2	Mains plug part complies with the relevant standard.....:		N/A
4.7.3	Torque (Nm).....:		N/A
4.8	Products containing coin/button cell batteries	No coin/button battery used	N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery.....:		—
4.8.4	Battery Compartment Mechanical Tests.....:		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object.....:	(See Annex P)	P

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Clause	Requirement + Test	Result - Remark	Verdict
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..... :		N/A
5.2.2.5	Limits for repetitive pulses..... :		N/A
5.2.2.6	Ringing signals..... :		N/A
5.2.2.7	Audio signals..... :		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.2.1	Accessibility to electrical energy sources and safeguards		P
5.3.2.2	Contact requirements		P
	a) Test with test probe from Annex V..... :	Checked by V.1.2 (Figure V.1) and V.1.3, cannot contact with the conductive part for ES3 voltage	P
	b) Electric strength test potential (V)..... :		N/A
	c) Air gap (mm)..... :	Air gap >1.5mm	P
5.3.2.4	Terminals for connecting stripped wire	No such terminals	N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material		P
5.4.1.3	Humidity conditioning..... :		N/A
5.4.1.4	Maximum operating temperature for insulating materials..... :	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degree..... :	Pollution degree 2 considered	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage		P
5.4.1.9	Insulating surfaces		P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat softening temperature..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.10.3	Ball pressure	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances		P
5.4.2.2	Determining clearance using peak working voltage	(See appended table 5.4.2.2)	P
5.4.2.3	Determining clearance using required withstand voltage	(See appended table 5.4.2.3)	P
	a) a.c. mains transient voltage	2500V peak	—
	b) d.c. mains transient voltage	No such transient voltage	—
	c) external circuit transient voltage	No such transient voltage	—
	d)* transient voltage determined by measurement:	No need to conduct this test	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages	Assessed for altitude up to 5000m	P
5.4.3	Creepage distances	(See appended table 5.4.3)	P
5.4.3.1	General		P
5.4.3.3	Material Group	Material group IIIa/IIIb is assumed to be used	—
5.4.4	Solid insulation		P
5.4.4.2	Minimum distance through insulation	(See appended table 5.4.4.2)	P
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices	No such component used	N/A
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material	Insulation tape wrapped on outer of T1, T2, used as reinforced insulation	P
5.4.4.6.1	General requirements		P
5.4.4.6.2	Separable thin sheet material		P
	Number of layers (pcs)	Min. 2 layers	P
5.4.4.6.3	Non-separable thin sheet material	No such material used	N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		P
5.4.4.9	Solid insulation at frequencies >30 kHz	(See appended Table 5.4.4.9)	P
5.4.5	Antenna terminal insulation		P
5.4.5.1	General		P
5.4.5.2	Voltage surge test		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulation resistance (MΩ)	(See Annex G.10.3.1 & G.10.3.2)	—
5.4.6	Insulation of internal wire as part of supplementary safeguard	No such insulation	P
5.4.7	Tests for semiconductor components and for cemented joints		P
5.4.8	Humidity conditioning		P
	Relative humidity (%)	93% RH	—
	Temperature (°C)	40 °C	—
	Duration (h)	120 h	—
5.4.9	Electric strength test	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test		P
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit	No transient voltage from external circuit	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test		N/A
5.4.10.2.3	Steady-state test.....		N/A
5.4.11	Insulation between external circuits and earthed circuitry	No such external circuit	N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op} (V)		—
	Nominal voltage U_{peak} (V)		—
	Max increase due to variation U_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$		—
5.5	Components as safeguards		
5.5.1	General	See the following details.	P
5.5.2	Capacitors and RC units		P
5.5.2.1	General requirement	(See appended table 4.1.2)	P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector.....	(See appended table 5.5.2.2)	P
5.5.3	Transformers	(See Annex G.5.3)	P



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Clause	Requirement + Test	Result - Remark	Verdict
5.5.4	Optocouplers	(See Annex G.12)	P
5.5.5	Relays	See table 5.4	P
5.5.6	Resistors	No such resistors	N/A
5.5.7	SPD's	(See Annex G.8)	P
5.5.7.1	Use of an SPD connected to reliable earthing		P
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-and-yellow wire	P
5.6.3	Requirement for protective earthing conductors		P
	Protective earthing conductor size (mm ²)	0.75	—
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).	Nominal thread diameter:3.8mm	P
5.6.5.2	Corrosion		P
5.6.6	Resistance of the protective system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω).....	(See appended table 5.6.6.2)	P
5.6.7	Reliable earthing		P
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current	(See appended table 5.2 or 5.7.4)	P
5.7.2.2	Measurement of prospective touch voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
	System of interconnected equipment (separate connections/single connection)	No interconnected equipment	—
	Multiple connections to mains (one connection at a time/simultaneous connections)		—
5.7.4	Earthed conductive accessible parts		P
5.7.5	Protective conductor current		P
	Supply Voltage (V)	264V~	—
	Measured current (mA)	0.125	—
	Instructional Safeguard		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits	No touch current due to external circuits	N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits	No such external circuits	N/A
	a) Equipment with earthed external circuits Measured current (mA)		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA)		N/A

6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications		P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault ... :	(See appended table 6.2.2)	P
6.2.2.3	Power measurement for worst-case power source fault	(See appended table 6.2.2)	P
6.2.2.4	PS1	(See appended table 6.2.2)	P
6.2.2.5	PS2	(See appended table 6.2.2)	P
6.2.2.6	PS3	All internal circuits are declared as of PS3	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS	(See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS	(See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
6.3.1 (a)	No ignition and attainable temperature value less than 90 °C defined by ISO 871 or less than 300 °C for unknown materials	(See appended table 5.4.1.4, 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 of control fire spread used	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		P
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		P
6.4.3.1	General		P
6.4.3.2	Supplementary Safeguards		P
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions	(See appended table 6.4.3)	P
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		P
6.4.5.2	Supplementary safeguards	(See appended tables 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuit	- Parts as in 6.4.5 above; - PCB: V-0 material used; - Fire enclosure provided	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General	(See tables 6.2.3.1 and 6.2.3.2)	N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	Fire enclosure used	P
6.4.8.1	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure	Enclosure material: V-0	P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		P
6.4.8.3.1	Fire enclosure and fire barrier openings	More than 15mm distance between the PIS of PS3 and the flank openings plastics enclosure	P
6.4.8.3.2	Fire barrier dimensions		P



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)	More than 15mm distance between the PIS of PS3 and the flank openings plastics enclosure	P
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)	More than 15mm distance between the PIS of PS3 and the flank openings plastics enclosure	P
	Flammability tests for the bottom of a fire enclosure		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c)		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating	Plastic enclosure is made of V-0 class material	P
6.5	Internal and external wiring		P
6.5.1	Requirements		P
6.5.2	Cross-sectional area (mm ²)	See 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	Output terminal complies with Annex Q.1	P

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		P
8.2	Mechanical energy source classifications	Sharp edges and corners: MS1 classification; Equipment mass: MS1 Classification DC fan: MS1	P

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
8.3	Safeguards against mechanical energy sources		N/A
8.4	Safeguards against parts with sharp edges and corners		N/A
8.4.1	Safeguards		N/A
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard		—
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	See the user manual	—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N)		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test		N/A
8.6	Stability		N/A
8.6.1	Product classification		N/A
	Instructional Safeguard		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt		—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force)		N/A
	Position of feet or movable parts		—
8.7	Equipment mounted to wall or ceiling	Not wall or ceiling mounted equipment	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)		N/A
8.7.2	Direction and applied force		N/A
8.8	Handles strength	MS1 equipment having only one handle	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements	No wheels or caster used	N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N)		—
8.10.6	Thermoplastic temperature stability (°C)		N/A
8.11	Mounting means for rack mounted equipment	Not such equipment	N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i>		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas	No antennas	N/A
	Button/Ball diameter (mm)		—

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



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
10 *	RADIATION		P
10.2	Radiation energy source classification		P
10.2.1	General classification	Indicator light:RS1	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
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



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
10.6.2	Classification		N/A
	Acoustic output, dB(A)		N/A
	Output voltage, unweighted r.m.s.....		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards		N/A
	Equipment safeguard prevent ordinary person to RS2.....		—
	Means to actively inform user of increase sound pressure.....		—
	Equipment safeguard prevent ordinary person to RS2.....		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output.....		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A)		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A)		—

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.2	Normal Operating Conditions		P
B.2.1	General requirements.....	(See summary of testing & appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers	No audio amplifier circuits	N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test.....	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements.....	(See appended table B.3)	P
B.3.2	Covering of ventilation openings	(See appended table B.3)	P
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector	No such voltage selector	N/A
B.3.5	Maximum load at output terminals	(See appended table B.3)	P
B.3.6	Reverse battery polarity		N/A

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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	During an abnormal operating condition that does not lead to a single fault condition, all safeguards are remained effective. After restoration of normal operating conditions, all safeguards are compliance with applicable requirements	P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited	No such controlling device	N/A
B.4.3	Motor tests		P
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature	DC fan used	P
B.4.4	Short circuit of functional insulation		P
B.4.4.1	Short circuit of clearances for functional insulation	(See appended table B.4)	P
B.4.4.2	Short circuit of creepage distances for functional insulation	(See appended table B.4)	P
B.4.4.3	Short circuit of functional insulation on coated printed boards	No coated printed boards	N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors	(See appended table B.4)	P
B.4.6	Short circuit or disconnect of passive components	(See appended table B.4)	P
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		P
B.4.9	Battery charging under single fault conditions ... :	(See appended table B.4)	P

C *	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation	No UV radiation within the EUT	N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
C.2.4	Xenon-arc light exposure apparatus		N/A
D *	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A

E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Audio amplifier normal operating conditions	No audio amplifier	N/A
	Audio signal voltage (V)		—
	Rated load impedance (Ω)		
E.2	Audio amplifier abnormal operating conditions		N/A

F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General requirements		P
	Instructions – Language	English checked	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Located on the external enclosure surface	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification	See copy of marking plate	—
F.3.2.2	Model identification	See copy of marking plate and model list	—
F.3.3	Equipment rating markings		P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of supply voltage.....	See label	—
F.3.3.4	Rated voltage	See label	—
F.3.3.5	Rated frequency	See label	—
F.3.3.6	Rated current or rated power	See label	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		P



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :	AC output voltage marked on the socket-outlet	P
F.3.5.2	Switch position identification marking :	Indicator light used identification	P
F.3.5.3	Replacement fuse identification and rating markings..... :		N/A
F.3.5.4	Replacement battery identification marking :	No replacement battery	N/A
F.3.5.5	Terminal marking location		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		N/A
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		P
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking :	IPX0	—
F.3.8	External power supply output marking	See copy of marking plate	P
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings		P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use		P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		N/A
	g) Protective earthing conductor current exceeding ES 2 limits		N/A
	h) Symbols used on equipment		P
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
	j) Replaceable components or modules providing safeguard function		N/A

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
F.5	Instructional safeguards		P
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction		P

G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General requirements	No switches used	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2 *	Relays		P
G.2.1	General requirements	Relays comply with IEC 61810-1	P
G.2.2	Overload test		P
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3 *	Protection Devices		P
G.3.1	Thermal cut-offs	No thermal cut-offs used	N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691	No thermal links used	N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H)		—
	Single Fault Condition		—
	Test Voltage (V) and Insulation Resistance (Ω) . :		—
G.3.3	PTC Thermistors	No PTC thermistor used	N/A
G.3.4	Overcurrent protection devices	Approved current fuse provided	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions.....	(See appended Table B.4)	N/A
G.4 *	Connectors		P
G.4.1	Spacings		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.4.2	Mains connector configuration	AC inlet used for all models are within their ratings considered acceptable without further evaluation	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	The output connector is such a shape that cannot insertion into a mains socket-outlet	P
G.5	Wound Components		P
G.5.1	Wire insulation in wound components.....	Approved source of triple insulated wire used as secondary winding for reinforced insulation	P
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°	Separated by insulation tube	P
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2 *	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s)		—
	Temperature (°C)		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	Transformers		P
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1).....	Comply with the requirements as below	P
	Position.....	See the photo of the unit	—
	Method of protection	See G.5.3.3	—
G.5.3.2	Insulation		P
	Protection from displacement of windings.....	Fixed by bobbin and insulation tape	—
G.5.3.3	Overload test	(See append table B.3)	P
G.5.3.3.1	Test conditions		P
G.5.3.3.2	Winding Temperatures testing in the unit		P
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	Motors		P
G.5.4.1	General requirements	DC fan used	P
	Position	See the photo of the unit	—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days)		—

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V)		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h)		N/A
	Electric strength test (V)		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		P
G.5.4.6.2	Tested in the unit		P
	Maximum Temperature	(See append table B.3)	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	Approved source of triple insulated wire used as secondary winding for reinforced insulation	P
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	Mains supply cords		P
G.7.1	General requirements		P
	Type.....	PVC sheathed	—
	Rated current (A)	10A	—
	Cross-sectional area (mm ²), (AWG).....	0.75mm ²	—
G.7.2	Compliance and test method		P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords	Detachable power supply cords	N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).....		—



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g)		—
	Diameter (m)		—
	Temperature (°C)		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	Varistors		P
G.8.1	General requirements	Varistors comply with IEC 61051-1: 2007, IEC 61051-2, IEC 61051-2-2: 1991 (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		N/A
G.10.1	General requirements	No such resistors used	N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
G.10.3.3	Impulse test		N/A
G.11	Capacitor and RC units		P
G.11.1	General requirements	Capacitor comply with IEC 6384-14 (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 appended table 4.1.2)	P
G.13.2	Uncoated printed boards		N/A
G.13.3	Coated printed boards		P
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction)		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14 *	Coating on components terminals		N/A
G.14.1	Requirements	(See G.13)	N/A
G.15 *	Liquid filled components		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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
H.2	Method A	N/A
H.3	Method B	N/A
H.3.1	Ringing signal	N/A
H.3.1.1	Frequency (Hz)	—
H.3.1.2	Voltage (V)	—
H.3.1.3	Cadence; time (s) and voltage (V)	—
H.3.1.4	Single fault current (mA):.....	—
H.3.2	Tripping device and monitoring voltage	N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with	N/A
H.3.2.2	Tripping device	N/A
H.3.2.3	Monitoring voltage (V)	—



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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J *	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		P
	General requirements	Approved triple insulated wires complied with Annex U of IEC60950-1 (It can be considered comply with Annex J of this standard)	P
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	AC inlet	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		N/A
L.8	Multiple power sources		N/A

M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements		P

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Clause	Requirement + Test	Result - Remark	Verdict
M.2	Safety of batteries and their cells		P
M.2.1	Requirements		P
M.2.2	Compliance and test method (identify method) .. :	The cell comply with IEC 62133-2:2017	P
M.3	Protection circuits		P
M.3.1	Requirements		P
M.3.2	Tests		P
	- Overcharging of a rechargeable battery		P
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		P
M.3.3	Compliance	See table B.4	P
M.4	Additional safeguards for equipment containing secondary lithium battery		P
M.4.1	General		P
M.4.2	Charging safeguards		P
M.4.2.1	Charging operating limits		P
M.4.2.2a)	Charging voltage, current and temperature	See table M.4	—
M.4.2.2 b)	Single faults in charging circuitry	See table M.4	—
M.4.3	Fire Enclosure	Enclosure material: V-0	P
M.4.4	Endurance of equipment containing a secondary lithium battery		P
M.4.4.2	Preparation		P
M.4.4.3	Drop and charge/discharge function tests		P
	Drop	1000mm, 3times	P
	Charge	Charge function effective	P
	Discharge	Discharge function effective	P
M.4.4.4	Charge-discharge cycle test	Three complete discharge and charge cycles.	P
M.4.4.5	Result of charge-discharge cycle test	Charge/discharge function effective	P
M.5	Risk of burn due to short circuit during carrying		P
M.5.1	Requirement		P
M.5.2	Compliance and Test Method (Test of P.2.3)		P
M.6	Prevention of short circuits and protection from other effects of electric current		P

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Clause	Requirement + Test	Result - Remark	Verdict
M.6.1	Short circuits		P
M.6.1.1	General requirements		P
M.6.1.2	Test method to simulate an internal fault		P
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method)		N/A
M.6.2	Leakage current (mA)	<10mA	P
M.7 *	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8 *	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s).....		—
M.8.2.3	Correction factors.....		—
M.8.2.4	Calculation of distance d (mm)		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing)		P

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

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

P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS	P
P.1	General requirements	P
P.2.2	Safeguards against entry of foreign object	P



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
	Location and Dimensions (mm)	Openings that meet the requirements of IP3X	—
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
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	For output terminal (see Table Q.1)	P
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method	(See appended table Annex Q.1)	P
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		—
	Current limiting method		—

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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R *	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A). :		N/A

S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		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 :		—

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm)		—
	Conditioning (test condition), (°C)		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A

T	MECHANICAL STRENGTH TESTS		P
T.1	General requirements		P
T.2	Steady force test, 10 N	(See appended table T.2)	P
T.3	Steady force test, 30 N		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		N/A
	Fall test		N/A
	Swing test		N/A
T.7	Drop test	(See appended table T.7) Enclosure material: see table 4.1.2	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		N/A
	Torque value (Nm)		—

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

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Clause	Requirement + Test	Result - Remark	Verdict
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V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		P
V.1	Accessible parts of equipment		P
V.2	Accessible part criterion		P

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Clause	Requirement + Test	Result - Remark	Verdict
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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⁾
PCB	SHENZHEN TONGCHUANGXIN ELECTRONICS CO LTD	TCX	V-0, 130 °C	UL796	UL E250336
--Alternative	Interchangeable	Interchangeable	V-0, 130 °C	UL796	UL
Enclosure material	Guangdong Xingshengdi Technology Co Ltd	XD-6615(X)	Min.2.5mm thickness, V-0, 85 °C	UL94	UL E342846
Inner wires (J1)	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	10368	16AWG, 300Vac, 105 °C, VW-1	UL 758	UL E336285
--Alternative	Interchangeable	Interchangeable	min.16AWG, min.300Vac, min.80 °C, VW-1	UL 758	UL
Inner wire (J2)	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	10368	24AWG, 300Vac, 105 °C , VW-1	UL 758	UL E336285
--Alternative	Interchangeable	Interchangeable	Min.24AWG, min.300Vac, min.80 °C , VW-1	UL 758	UL
PE wire (J6)	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	1015	18AWG, 600Vac, 105 °C , VW-1, Yellow&Green	UL 758	UL E336285
--Alternative	Interchangeable	Interchangeable	Min.18AWG, min.300Vac, min.80 °C , VW-1, Yellow&Green	UL 758	UL
Inner wires for output	DONGGUAN ZHONGZHENG WIRE & CABLE TECH CO LTD	1015	18AWG, 600Vac, 105 °C , VW-1	UL 758	UL E336285
--Alternative	Interchangeable	Interchangeable	Min.18AWG, min.300Vac, min.80 °C, VW-1	UL 758	UL
Fan	SHENZHEN HUAXIA HENGTAI ELECTRONIC CO LTD	DA06025B12L R	12Vdc, 0.15A, 70 °C , 4500CFM	UL507	UL E254715
Heat shrinkable tube	DONGGUAN SALIPT CO LTD	SALIPT S-901- 600	600 V, 125°C, VW- 1	UL224	UL (E209436)
--Alternative	DONG GUAN HUANG FENG INSULATION MATERIAL CO LTD	HFT-2	600 V, 125°C, VW- 1	UL224	UL (E236485)
--Alternative	Interchangeable	Interchangeable	600V, 125°C, VW- 1	UL224	UL

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IEC 62368-1

Clause	Requirement + Test		Result - Remark		Verdict
AC Socket (EU)	Shenzhen HuaXingHui Electronics Technology Co.,Ltd	GE-1P	250Vac, 16A	DIN VDE 0620-1:2016/A1:2017	TUV SUD 097227 0007
AC Socket (UK)	Shenzhen B-Star Technology Co.Ltd	BS-Y01-2	250Vac, 13A	BS 1363-2:2016/A1:2018	TUV SUD B 102427 0004
AC Socket (Switzerland)	Zhe Jiang BeiErJia Electronic Co.,LTD	ST-A02-005B	250Vac, 10A	IEC60884-1:2002+A1+A2 SN 441011-1:2019+Corr.1:2019 SN 441011-2-1:2019+Corr.1:2019	TUV R 50551672
AC Socket (AU)	Shenzhen HuaXingHui Electronics Technology Co.,Ltd	AS-1P	250Vac, 10A	AS/NZS 3112:2017 AS/NZS 3100:2017 Inc A1	SAA-201778-EA
Power Cord Set (EU)	LINOYA ELECTRONIC TECHNOLOGY CO LTD	Plug: XYP-02L	250Vac, 16A	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 (40015292)
		Cable:H05VV-F	3*0.75mm ²	EN 50525-2-11:2011	VDE (40035072)
		Connector: XYC-03	250Vac, 10A	EN 60320-1:2015 + AC:2016 IEC 60320-1:2015	VDE (40016051)
—Alternative	Shenzhen Heng-Well Electric Co., Ltd.	Plug: LP-33	250Vac, 16A	NF C 61-314:2017	NF No.: NF012_3130
	Awin Wire & Cable Co., Ltd.	Cable:H05VV-F	3*0.75mm ²	NF C 61-314:2017	NF No.: NF012_3130
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	EN 50525-2-11:2011	VDE (40023114)
Power Cord Set (AU)	Dongguan Linoya Intelligent Technology Co., Ltd.	Plug: XYP-05	250Vac, 10A	AS/NZS 3112:2017 AS/NZS 3100:2017 Inc A1	SAA-192723-EA
	Linoya Electronic Technology Co Ltd	Cable:H05VV-F	3*0.75mm ²	AS/NZS 60227.5	NSW25761
	Shenzhen Linoya Electronic Co Ltd	Connector: XYC-03	250Vac, 10A	AS/NZS 60320	NSW21729
—Alternative	Heng-Well Electric Co., Ltd.	Plug: LP-23A	250Vac, 10A	AS/NZS 3112:2017 Inc A1 AS/NZS 3100:2017 Inc A1-3	SAA-170633-EA
	Awin Wire & Cable Co Ltd	Cable:H05VV-F	3*0.75mm ²	AS/NZS 60227.5	NSW23371
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	AS/NZS 60320	SAA-211162-EA

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IEC 62368-1

Clause	Requirement + Test		Result - Remark		Verdict
Power Cord Set (UK)	Linoya Electronic Technology Co., Ltd.	Plug: XYP-213	250Vac, 10A	BS 1363-1: 2016 +A1: 2018	ASTA: 1043
	Linoya Electronic Technology Co., Ltd.	Cable:H05VV-F	3*1mm ²	EN 50525-2-11: 2011	VDE (40035072)
	Dongguan Linoya Intelligent Technology Co., Ltd.	Connector: XYC-03	250Vac, 10A	EN 60320-1:2015 EN 60320-3:2014	ENEC: CA02.05749
—Alternative	Awin Wire and Cable Co Ltd	Plug: AW301	250Vac, 10A	BS 1363-1:2016	BSI: KM 504558
	Awin Wire & Cable Co., Ltd.	Cable:H05VV-F	3*1mm ²	EN 50525-2-11:2011	VDE (40023114)
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	EN 60320-1:2015	ENEC: ENEC_1110
Power Cord Set (Switzerland)	Dongguan Linoya Intelligent Technology Co., Ltd.	Plug: XYP-214	250Vac, 10A	IEC 60884-1(ed.3): 2002+A1:06+A2:13 SN 441011-1:2019+corr1:19 SN 441011-2-1:2019+corr1:19	Certificate: 21.0292
	LINOYA ELECTRONIC TECHNOLOGY CO LTD	Cable:H05VV-F	3*0.75mm ²	EN 50525-2-11:2011	VDE 40035072
	Dongguan Linoya Intelligent Technology Co., Ltd.	Connector: XYC-03	250Vac, 10A	EN 60320-1:2015 EN 60320-3:2014	ENEC: CA02.05749
—Alternative	Awin Wire & Cable Co., Ltd.	Plug: AW106	250Vac, 10A	IEC 60884-1(ed.3):02+A1:06 SEV 1011:09	Certificate: 20.0616
	Awin Wire & Cable Co., Ltd.	Cable:H05VV-F	3*0.75mm ²	EN 50525-2-11:2011	VDE (40023114)
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	EN 60320-1:2015	ENEC: ENEC_1110
Power Cord Set (Source Africa)	AWIN	Plug: AW132A	250Vac, 16A	VC 8008	00000015733 1/001
	Awin Wire & Cable Co., Ltd.	Cable:H05VV-F	3*0.75mm ²	EN 50525-2-11:2011	VDE (40023114)
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	EN 60320-1:2015	ENEC_1110
Power Cord Set (Saudi Arabia)	Ye Tatsu	Plug: YTB21	250V, Max.13A	SASO 2203:2018 GSO BS 1363-1:2016	SOSO report 180807053G ZU-001
	Awin Wire & Cable Co., Ltd.	Cable:H05VV-F	3*0.75mm ²	EN 50525-2-11:2011	VDE (40023114)
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	EN 60320-1:2015	ENEC_1110



IEC 62368-1

Clause	Requirement + Test		Result - Remark		Verdict
Power Cord Set (Brazil)	AWIN WIRE CABLE CO., LTD.	Plug: AW602	250Vac, 10A	ABNT NBR NM 60884-1:2004, NBR 14136:2002, IN METRO Decree 85 of April 03, 2006, INMETRO Decree 271 of June 21, 2011, and IN METRO Decree 322 of June 21, 2012.	TUV 20.1809
	Awin Wire & Cable Co., Ltd.	Cable:H05VV-F	3*0.75mm ²	IEC60227-5(ed.3):2011 in conjunction with IEC60227-1(ed.3):2007 and IEC60227-2(ed.2):1997+A1:2003 EN 50525	CB CN51905
	Shenzhen Heng-Well Electric Co., Ltd.	Connector: LS-60	250Vac, 10A	EN 60320-1:2015	ENEC_1110
Battery Pack (include BMS board)					
Battery Pack	Ecoflow Inc.	EFR600-NZ	12.8Vdc, 20Ah	IEC62133-2:2021	CB DSS_FI-53918
Cell	EVE POWER Co., Ltd.	C40	3.2Vdc, 20Ah	UL 1642 IEC62133-2:2021	UL MH62190 CB JPTUV-133350
—Alternative	GUANGZHOU GREAT POWER ENERGY&TECHNOLOGY CO LTD	IFR40135_20Ah	3.2Vdc, 20Ah	UL 1642 IEC62133-2:2021	UL MH27311 CB NI-82638
Fuse (F1)	ADVANCED SURGETECH MATERIALS LTD	A121005-80	75V, 80A	UL248-1	UL E470032
IC (U1)	O2Micro International Limited	OZ77205	35V, 85 °C	IEC62133-2	Tested with compliance
Mosfet (Q3,Q4,Q5,Q7,Q8,Q9,Q10,Q11,Q15)	CR Micro	CRTM030N04L	40V, 116A	IEC62133-2	Tested with compliance
—Alternative	Silan	SVG042R5NL5	40V, 108A	IEC62133-2	Tested with compliance
Sense Resistor (R23, R26)	Interchangeable	Interchangeable	3W, 1mΩ	IEC62368-1	Tested with appliance

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IEC 62368-1

Clause	Requirement + Test			Result - Remark	Verdict
Plastic frame for cells	SILVER AGE ENGINEERING PLASTICS (DONGGUAN) CO LTD	PC2330	Min.2mm thickness, V-0, 115 °C	UL94	UL E225348
—Alternative	Guangdong Xingshengdi Technology Co Ltd	XD933V(X)(f1)	Min.2mm thickness, V-0, 125 °C	UL94	UL E342846
NTC (RT1,RT2)	SHENZHENSHI KEMIN SENSOR CO LTD	MF5210K	10kΩ at 25 °C	UL1434	UL E356449
UV-PD board					
Fuse (F3,L5,L6)	DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD	126	72V, 3A	UL248-1	UL E300003
—Alternative	ADVANCED SURGETECH MATERIALS LTD	12 110	72V, 3A	UL248-1	UL E355868
—Alternative	ADVANCED SURGETECH MATERIALS LTD	123	72V, 3A	UL248-1	UL E300003
Fuse (F2)	ADVANCED SURGETECH MATERIALS LTD	12 111.8	72V, 3A	UL248-1	UL E355868
—Alternative	DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD	127	72V, 3A	UL248-1	UL E300003
—Alternative	ADVANCED SURGETECH MATERIALS LTD	12 110.20	72V, 3A	UL248-1	UL E355868
Fuse (F1)	DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD	126	32V, 20A	UL248-1	UL E300003
Alternative	ADVANCED SURGETECH MATERIALS LTD	12 100	32V, 20A	UL248-1	E355868
PSDR board					
Photo Coupler (U13,U16,U17,U19,U20,U21)	EVERLIGHT ELECTRONICS CO LTD	EL816	Cr&Cl≥7.62mm, 110 °C , Viso=5000Vrms, DTI=0.4mm	UL1577 IEC60747-5-5	UL E214129 VDE 132249
—Alternative	LITE-ON Technology Corporation	LTV-817	Cr&Cl≥7mm, 110 °C ,Viso=5000Vrms, DTI=0.4mm	UL1577 IEC60747-5-5	UL E113898 VDE 40015248
Fuse (F1)	SHENZHEN VICTORS INDUSTRIAL CO LTD	VF215-P010	250V, 10A	UL248-1 UL248-14	UL E357828, CE N8A 085790 0027

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IEC 62368-1

Clause	Requirement + Test			Result - Remark	Verdict
Fuse (F4)	DONGGUAN BETTER ELECTRONICS TECHNOLOGY CO LTD	24922009	72V, 20A	UL248-1	UL E300003
Alternative	ADVANCED SURGETECH MATERIALS LTD	24 148.20	72V, 20A	UL248-1	UL E355868
IC (U6)	Suzhou Novosense Microelectronics Co.,Ltd	NSI6602A-DSWR	125 °C , Viso=5700Vrms, Cr&Cl=8mm	UL1577 DIN VDE V 0884-11:2017-01	UL E500602 VDE 40052820
MOV (MOV1)	HANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	20D471K	300V, 470kΩ, 125 °C	UL1449 IEC61051-1 IEC61051-2	UL E330837 VDE 40023049
Relay (RY1,RY3)	DONGGUAN CHUROD ELECTRONICS CO LTD	A1-S-112IA2	250Vac,30Vdc,8A, 100k ops, 85 °C	UL60947-1 UL60947-4-1	UL E341422 TUV R 50174892
Relay (RY2)	DONGGUAN CHUROD ELECTRONICS CO LTD	CHI05-V-212HA2	250Vac, 12Vdc, 10A, 300k cycles, 85 °C	UL60947-1 UL60947-4-1	UL E341422 TUV R 1111242911
—Alternative	SONG CHUAN PRECISION CO LTD	894-2AH2-F-C	250Vac, 12A, 30000 cycles, 70 °C	UL60384-14 IEC60384-14	UL E88991 VDE 40007827
Y Capacitor (CY1,CY5)	DONGGUAN CIGU ELECTRONIC TECHNOLOGY CO LTD	CE	Max.4.7nF, 300Vac, 125 °C, Y2	UL60384-14 IEC60384-14	UL E481614 VDE 40043430
X capacitor (CX1,CX2)	GUANGDONG FENGMING	MKP-X2	Max.1uF, 320V, 105 °C	UL60384-14, IEC/EN60384-14	UL E345487, VDE 40025702
—Alternative	Sichuan Sincerity Technology Co Ltd	MPX, MKP	Max.1uF, 320V, 110 °C	UL60384-14, IEC/EN60384-14	UL E319615 VDE 40028812
—Alternative	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	MPX	Max.1uF, 275V, 110 °C	UL60384-14, IEC/EN60384-14	UL E208107 VDE 40034679
NTC (RT3)	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	3D-9X	3Ω, 3A	UL 1434, ANSI/UL 60730-1, EN 60539-1	UL E474052 VDE 40050168
NTC (RT1,RT2,RT4)	SHENZHENSHI KEMIN SENSOR CO LTD	MF5210K	10kΩ at 25 °C	UL1434	UL E356449

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
Connector (P1 female)	SHENZHEN YONG FENG YING ELECTRONIC CO LTD	CS-1120-03 250V, 7A, 105 °C UL1977	UL E241915
Connector (P1 male)	SHENZHEN YONG FENG YING ELECTRONIC CO LTD	CS-1121-03 250V, 7A, 105 °C UL1977	UL E241915
AC Inlet (P2)	Shenzhen HuaXingHui Electronics Technology Co Ltd	HP14-100A7 250V, 10A, 70 °C UL498	VDE 40048856
Connector (J11)	Changzhou Amass Electronics Co Ltd	XT60PW 500V, 20A, 120 °C UL1977	UL E482722
Resistor (R105 to R112)	Yageo Corporation	RC0805FR-071ML 1MΩ, 0.125W IEC62368-1	Tested with appliance
—Alternative	Ralec	RTT051004FT P 1MΩ, 0.125W IEC62368-1	Tested with appliance
—Alternative	Uniroyal Electronics Global Co., Ltd.	0805W8F1004 T5E 1MΩ, 0.125W IEC62368-1	Tested with appliance
Resistor (R17,R24,R25,R26)	Yageo Corporation	RC1206FR-0751KL 150kΩ, 0.125W IEC62368-1	Tested with appliance
—Alternative	Ralec	RTT065102FT P 150kΩ, 0.125W IEC62368-1	Tested with appliance
—Alternative	Uniroyal Electronics Global Co., Ltd.	1206W4F5102 T5E 150kΩ, 0.125W IEC62368-1	Tested with appliance
Inductance (L1,L3)	Dongguan Zhengmao Electronics Co.,Ltd	BQ0SQ15-5074 Class B, 130 °C IEC62368-1	Tested with appliance
--Bobbin	CHANG CHUN PLASTICS CO LTD	T375HF 150 °C , V-0 UL94	UL E59481
--Alternative Bobbin	SUMITOMO BAKELITE CO LTD	PM9820 150 °C , V-0 UL94	UL E41429
--Magnet wire	WELL ASCENT ELECTRONIC(GANZHOU)CO LTD	SFT-UEWH 180 °C UL1446	UL E318511
Inductance (L2)	Dongguan Zhengmao Electronics Co.,Ltd	ZM-21017B Class B, 130 °C IEC62368-1	Tested with appliance
--Magnet wire	SHENZHEN DAYANG INDUSTRY CO LTD	PEW-H 155 °C UL1446	UL E176101
--PCB	KINGBOARD LAMINATES HOLDINGS LTD	FR4 130 °C UL94	UL E123995
Transformer T1	HUIZHOU BANQIAO ELECTRONICS CO.,LTD	BQ0PQ32-4959 Class F, 155 °C IEC62368-1	Tested with compliance

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IEC 62368-1

Clause	Requirement + Test		Result - Remark	Verdict	
--insulation system	SHENZHEN DARUN SCIENCE AND TECHNOLOGY CO LTD	DRTIW-F(155)	Class F	UL 1446	UL (E349174)
--Bobbin	CHANG CHUN PLASTICS CO LTD	T375HF	V-0, 150 °C	UL94	UL E59481
--Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PF* (d)(g)	180 °C	UL510A	UL E165111
--Magnet wire	SHENZHEN CHENGWEI INDUSTRY CO LTD	(x)PEW(EI)-H	180 °C	UL1446	UL E227475
--Alternative Magnet wire	TAI-I COPPER (GUANZHOU) CO LTD	UEW	130 °C	UL1446	UL E234896
--PCB	KINGBOARD LAMINATES LTD	KB-6150	130 °C , V-0	UL94	UL E123995
--Alternative PCB	KINGBOARD LAMINATES LTD	KB6160A	130 °C , V-0	UL94	UL E123995
--Vanish	SUZHOU TAHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	130 °C	UL1446	UL E228349
Transformer T2	Dongguan Zhengmao Electronics Co.,Ltd	ZM-22112A	Class F, 155°C	IEC62368-1	Tested with compliance
--insulation system	SHENZHEN DARUN SCIENCE AND TECHNOLOGY CO LTD	DRTIW-F(155)	Class F, 155°C	UL 1446	UL (E349174)
--Bobbin	SUMITOMO BAKELITE CO LTD	PM9820	150°C, V-0	UL94	UL (E41429)
--Magnet wire	DAYANG ELECTRICAL TECHNOLOGY(HEYUAN) CO.,LTD	xUEW@	155°C	UL1446	UL (E518668)
--Tripple insulation wire	SHENZHEN DARUN SCIENCE AND TECHNOLOGY CO LTD	DRTIW-F	155°C	UL2353	UL (E335841)
--Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PF* (d)(g)	180°C	UL510A	UL E165111
--Tube	GREAT HOLDING INDUSTRIAL CO LTD	TFL	200°C	UL224	UL (E156256)
Supplementary information:					
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N/A
(The following mechanical tests are conducted in the sequence noted.)				
4.8.4.2	TABLE: Stress Relief test			—
Part		Material	Oven Temperature (°C)	Comments
--		--	--	--
4.8.4.3	TABLE: Battery replacement test			—
Battery part no.:			--	—
Battery Installation/withdrawal			Battery Installation/Removal Cycle	Comments
--			1	--
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
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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, 60Hz	Primary circuits	Normal: --	--	--	--	ES3 (declared)
			Abnormal: --	--	--	--	
			Single fault: --	--	--	--	
2	264VAC, 50Hz	T2 pin 1 to 2	Normal: --	32.5Vpk	--	--	ES1
			Single fault SC 1 to 2	0 (Unit shut down)	--	--	
			Single fault SC U17 pin 1-3	0 (Unit shut down)	--	--	
3	264VAC, 50Hz	T2 pin 1 to 2 after D36	Normal	20.00Vdc	--	--	ES1
			Single fault SC 1 to 2	0 (Unit shut down)	--	--	
			Single fault SC U17 pin 1-3	0 (Unit shut down)	--	--	
4	264VAC, 60Hz	USB-A(x2) 5VDC/2.4A	Normal: --	4.87 V dc	--	--	ES1
			Abnormal: --	--	--	--	
			Single fault: --	--	--	--	
5	264VAC, 60Hz	USB-C(x1) 20VDC/3A	Normal: --	19.83 V dc	--	--	ES1
			Abnormal: --	--	--	--	
			Single fault: --	--	--	--	
6	264VAC, 60Hz	DC output (12.6VDC)	Normal: --	12.62V dc	--	--	ES1
			Abnormal: --	--	--	--	
			Single fault: --	--	--	--	
7	264VAC, 60Hz	AC Output(x1) 230VAC, 50/60Hz	Normal: --	--	--	--	ES3
			Abnormal: --	--	--	--	
			Single fault: --	--	--	--	

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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8	14.6VDC	Battery pack	Normal: --	14.6V dc	--	--	ES1
			Abnormal: --	--	--	--	
			Single fault: --	--	--	--	

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)	
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)	Ipk (mA)	
--	--	--	Normal	--	--	--	--
			Abnormal	--	--	--	
			Single fault – SC/OC	--	--	--	

5.2.2.5 - Repetitive Pulses

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

Test Conditions:

Normal –
Abnormal -

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



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements				P
	Supply voltage (V)	180VAC/60Hz	264VAC/50Hz		—
	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		61.2	60.9	70	
MOV1 body		74.3	81.7	125	
CX2 body		65.2	70.2	105	
L3 winding		67.4	70.6	130	
CT2 winding		63.3	69.1	130	
CT2 core		63.7	69.7	130	
L1 winding		66.8	72.2	130	
L10 winding		67.0	80.8	130	
C10 body		67.5	70.7	105	
L2 winding		104.9	113.1	130	
CT1 winding		69.2	71.7	130	
CT1 core		70.2	72.4	130	
C8 body		66.8	70.3	105	
PCB near Q4		75.0	75.2	130	
C63 body		87.9	72.5	105	
T2 winding		89.2	73.0	110	
T2 core		83.4	72.3	110	
T1 winding		83.1	82.5	110	
T1 core		81.2	81.8	110	
C18 body		70.8	71.4	105	
L7 winding		65.8	65.6	130	
OPO-U21 body		85.2	77.9	110	
PCB near Q22		99.0	74.0	130	
PCB near U6		67.6	68.6	130	
L6 winding		68.3	68.5	130	
PCB near U26		71.3	71.7	130	
DC output connector		63.8	63.1	70	
L1 winding (low voltage board)		60.8	61.6	130	

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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict				
Fan wire	62.6	62.6	105				
AC output wire	59.5	63.7	105				
Battery cell	66.4	66.1	Ref.				
Battery wire	65.5	65.5	105				
Enclosure inside near T1 top	66.1	66.4	85				
Enclosure inside near battery	51.4	49.0	85				
Ambient	45.0	45.0	--				
Accessible parts							
Enclosure outside near T1 top	38.8	39.5	77*				
Enclosure outside near battery	30.9	28.8	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:							

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements					P
	Supply voltage (V)	Battery is full discharge		264VAC 50Hz(Charging and discharging)		—
	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		59.3		58.4		70
MOV1 body		59.3		69.7		125
CX2 body		63.6		59.4		105
L3 winding		65.4		65.3		130
CT2 winding		62.1		60.4		130
CT2 core		62.6		60.2		130
L1 winding		65.1		62.9		130
L10 winding		63.0		63.5		130



IEC 62368-1

Clause	Requirement + Test			Result - Remark			Verdict
C10 body	65.1			59.9			105
L2 winding	84.6			101.0			130
CT1 winding	68.8			62.4			130
CT1 core	69.3			63.6			130
C8 body	66.3			60.4			105
PCB near Q4	74.8			71.2			130
C63 body	70.7			66.5			105
T2 winding	71.8			70.3			110
T2 core	71.1			69.9			110
T1 winding	80.8			81.4			110
T1 core	80.2			80.5			110
C18 body	74.9			62.0			105
L7 winding	65.2			62.6			130
OPO-U21 body	73.3			77.6			110
PCB near Q22	72.9			68.1			130
PCB near U6	74.6			64.2			130
L6 winding	67.9			64.8			130
PCB near U26	74.5			68.9			130
DC output connector	62.6			59.5			70
L1 winding (low voltage board)	92.6			74.8			130
Fan wire	68.7			58.2			105
AC output wire	58.4			53.5			105
Battery cell	77.0			56.2			Ref.
Battery wire	76.0			56.2			105
Enclosure inside near T1 top	65.1			60.6			85
Enclosure inside near battery	57.2			49.1			85
Ambient	45.0			45.0			--
Accessible parts							
Enclosure outside near T1 top	38.2			38.5			77*
Enclosure outside near battery	33.1			27.3			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
--	--	--	--	--	--	--	--

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Clause	Requirement + Test	Result - Remark	Verdict
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Supplementary information:

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

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics				P
Allowed impression diameter (mm) : ≤ 2 mm					—
Object/Part No./Material	Manufacturer/trademark	Test temperature (°C)		Impression diameter (mm)	
AC connector	SHENZHEN YONG FENG YING ELECTRONIC CO LTD / CS-1120-03	125		1.3	
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)
L between N	340	240	0.06	2.3	6.7	2.4	6.7
Between the fuse pins(Inverter board)	340	240	0.06	2.3	3.4	2.4	3.4
CY1 and CY5 capacitor primary to secondary	340	240	0.06	4.5	8.0	4.8	8.0
Primary trace to secondary trace under T1	500	250	62.3	4.5	15.7	5.0	15.7
T1 Core to secondary pins	500	250	62.3	2.3	3.0	2.5	3.0
T1 primary windings to Core	500	250	62.3	2.3	3.0	2.5	3.0
Primary trace to secondary trace under T2	510	250	64.1	4.5	6.8	5.0	6.8
T2 primary windings/ Core to secondary pins	510	250	64.1	4.5	7.2	5.0	7.2
Optocoupler U17 primary to secondary	340	240	0.06	4.5	6.4	4.8	6.4

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Clause	Requirement + Test			Result - Remark			Verdict
Optocoupler U16 primary to secondary	340	240	0.06	4.5	6.4	4.8	6.4
Optocoupler U13 primary to secondary	340	240	0.06	4.5	6.4	4.8	6.4
Optocoupler U19 primary to secondary	340	240	0.06	4.5	6.4	4.8	6.4
Optocoupler U20 primary to secondary	340	240	0.06	4.5	6.4	4.8	6.4
Optocoupler U21 primary to secondary	340	240	0.06	4.5	6.4	4.8	6.4
U6 primary to secondary	340	240	0.06	4.5	7.0	4.8	7.0

Supplementary information:

Note 1: Only for frequency above 30 kHz;

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

Note 3: Provide Material Group IIIa/IIIb;

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

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

Note 6: Ferrite core of transformer T2 considered as primary live part;

Note 7: If no specified, the worst conditions were recorded;

Note 8: Clearance was evaluated for altitude up to 5000m above sea level, correction factor for clearance is 1.48.

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			P
	Overvoltage Category (OV):			II
	Pollution Degree:			II
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)
Same as the "TABLE: Minimum Clearances/Creepage distance"		2500V _{peak}	2.3(for BI) 4.5 (for RI)	Same as the "TABLE: Minimum Clearances/Creepage distance"
<p>Note 1: FI: Functional insulation; BI: basic insulation; SI: supplementary insulation; DI: double insulation; RI: reinforced insulation.</p> <p>Note 2: Unit was evaluated for altitude up to 5000m above sea level correction factor for clearance is 1.48.</p> <p>Note 3: Ferrite core of transformer T1 considered as middle part;</p> <p>Note 4: Ferrite core of transformer T2 considered as primary live part;</p> <p>Note 5: If no specified, the worst condition were recorded.</p>				

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Clause	Requirement + Test	Result - Remark	Verdict
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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		340	60	Plastics	0.4	2.5
Bobbin of T2*		510	64.1K	Phenolic	0.4	Min. 0.4
Bobbin of T1*		500	62.3K	Phenolic	0.4	Min. 0.4
Supplementary information:						
* The bobbin of T1, T2 is used as reforced insulation where working voltage exceeds ES2 voltage limitation.						

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Functional:				
--	--	--	--	--
Basic/supplementary:				
L to N before fuse	DC	2500	No	
T1: core to secondary winding	DC	2500	No	
T1: core to primary winding	DC	2500	No	
L/N to PE	DC	2500	No	
Reinforced:				
L/N to accessible enclosure with metal foil	DC	4000	No	
L/N to DC output terminal	DC	4000	No	
L/N to USB-A1 output terminal	DC	4000	No	
L/N to USB-A2 output terminal	DC	4000	No	
L/N to USB-C output terminal	DC	4000	No	
T1: primary to secondary	DC	4000	No	
T1: one layer of insulation tape #	DC	4000	No	

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Clause	Requirement + Test	Result - Remark	Verdict
T2: primary/core to secondary	DC	4000	No
T2: one layer of insulation tape #	DC	4000	No
Routine Tests:			
--	--	--	--
Supplementary information:			
# means all materials listed in table 4.1.2 are considered.			
Ferrite core of transformer T1 considered as middle part;			
Ferrite core of transformer T2 considered as primary live part;			

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	
264V/60Hz	Phase to Neutral	N	--	4V	ES1	
264V/60Hz	Phase to Neutral	S: R26 opened	--	12V	ES1	

Supplementary information:

X-capacitors installed for testing are: CX1= CX2=1000uF

☒ bleeding resistor rating: R17=R24=R25=R26=150K ohm

☐ 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	1.4	<0.1	
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		Touch current (mA)



IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
		in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	
Measured to protective earthing terminal	1	0.45mA/0.45mA	
	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) 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	>100W	PS3
		V _A (V) :	--	--	
		I _A (A) :	--	--	
USB-C Output load 5Vdc/3A					
Output	(Normal condition)	Power (W) :	15.52	15.51	PS2
		V _A (V) :	4.41	4.41	
		I _A (A) :	3.52	3.52	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	

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Clause	Requirement + Test		Result - Remark		Verdict
		I _A (A) :	0	0	
USB-C Output load 9Vdc/3A					
Output	(Normal condition)	Power (W) :	29.53	29.53	PS2
		V _A (V) :	8.39	8.39	
		I _A (A) :	3.52	3.52	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	0	
USB-C Output load 12Vdc/3A					
Output	(Normal condition)	Power (W) :	40.03	40.03	PS2
		V _A (V) :	3.53	3.53	
		I _A (A) :	11.34	11.34	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	0	
USB-C Output load 15Vdc/3A					
Output	(Normal condition)	Power (W) :	51.69	51.69	PS2
		V _A (V) :	14.28	14.28	
		I _A (A) :	3.62	3.62	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	0	
USB-C Output load 20Vdc/3A					
Output	(Normal condition)	Power (W) :	67.69	67.69	PS2
		V _A (V) :	19.23	19.23	
		I _A (A) :	3.52	3.52	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	0	
USB-A1 Output load 5Vdc/2.4A					
Output	5V output	Power (W) :	12.43	--	PS1



IEC 62368-1

Clause	Requirement + Test		Result - Remark		Verdict
	(Normal condition)	V _A (V) :	4.69	--	
		I _A (A) :	2.65	--	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	0	
USB-A2 Output load 5Vdc/2.4A					
Output	5V output (Normal condition)	Power (W) :	13.21	--	PS1
		V _A (V) :	4.70	--	
		I _A (A) :	2.81	--	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	0	
DC Output load 12.6Vdc/10A					
Output	12.6V output (Normal condition)	Power (W) :	100.02	100.02	PS3
		V _A (V) :	11.63	11.63	
		I _A (A) :	8.60	8.60	
Output	(SC C12)	Power (W) :	0	0	PS1
		V _A (V) :	0	0	
		I _A (A) :	0	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 × I _{rms})	Arcing PIS? Yes / No
AC Input terminal, All Internal circuits, AC output	--	--	--	Yes
All secondary circuits (except AC output and USB-A)	<50	>0.3	>15	No
Supplementary information:				
All primary circuit/components were considered as arcing PIS, the open circuit of all secondary components/circuit were not exceeded 50V.				
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V _p) and normal operating condition rms current (I _{rms}) is greater than 15.				

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Clause	Requirement + Test	Result - Remark	Verdict
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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
AC Input terminal, All Internal circuits, AC output	--	--	--	--	Yes
All secondary circuits (expect AC output, DC output)	--	<100	>15	--	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.	Ifuse (A)	Condition/status
Only charging mode with empty battery by AC input							

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Clause	Requirement + Test				Result - Remark		Verdict
180V/50Hz	1.70	--	300.6	--	F1	1.70	Battery current: 19.64A.
180V/60Hz	1.70	--	300.3	--	F1	1.70	Battery current: 19.64A.
200V/50Hz	1.59	8	309.0	--	F1	1.59	Battery current: 19.62A.
200V/60Hz	1.59	8	308.4	--	F1	1.59	Battery current: 19.62A.
240V/50Hz	1.50	8	328.1	--	F1	1.50	Battery current: 19.70A.
240V/60Hz	1.50	8	328.3	--	F1	1.50	Battery current: 19.70A.
264V/50Hz	1.38	--	327.0	--	F1	1.38	Battery current: 17.30A.
264V/60Hz	1.39	--	327.3	--	F1	1.39	Battery current: 17.30A.
Charging with empty battery by AC input and Total output 484W(AC output 300W+USB-C output 60W+USB-A output 24W+DC output 100W)							
180V/50Hz	2.80	--	500.6	--	F1	2.80	Battery current: 1.80A.
180V/60Hz	2.80	--	500.5	--	F1	2.80	Battery current: 1.80A.
200V/50Hz	2.78	8	540.4	--	F1	2.78	Battery current: 4.50A.
200V/60Hz	2.78	8	545.2	--	F1	2.78	Battery current: 4.50A.
240V/50Hz	2.80	8	668.5	--	F1	2.80	Battery current: 6.69A.
240V/60Hz	2.82	8	670.8	--	F1	2.82	Battery current: 6.68A.
264V/50Hz	2.82	--	740.6	--	F1	2.82	Battery current: 8.25A.
264V/60Hz	2.85	--	745.4	--	F1	2.85	Battery current: 8.26A.
Only charging mode with empty battery by USB-C Input							
5VDC	0.97	3	4.85	--	--	--	Battery current: 0.35A.
9VDC	0.96	3	8.64	--	--	--	Battery current: 0.51A.
12VDC	1.26	3	15.12	--	--	--	Battery current: 0.89A.
15VDC	1.35	3	20.25	--	--	--	Battery current: 1.24A.
20VDC	2.76	3	55.2	--	--	--	Battery current: 3.02A.
Only charging mode with empty battery by DC Input							
11VDC	7.89	8	86.79	--	--	--	Battery current: 5.97A.
30VDC	3.54	8	106.2	--	--	--	Battery current: 7.56A.
Only discharging mode with full battery (Total output 484W (AC output 300W+USB-C output 60W+USB-A output 24W+DC output 100W))							
14.6	--	--	--	--	--	--	Battery discharge current: 43.3A.
Power supplied by full charger battery							
Supplementary information: --							

B.3	TABLE: Abnormal operating condition tests	P
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IEC 62368-1

Clause	Requirement + Test	Result - Remark	Verdict
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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	14.6VDC	2hrs 32 mins	--	--	Type K	T1 winding: 62.5°C, T2 winding: 53.8°C, Battery surface: 58.9°C, Enclosure (outside, near T1): 39.7°C, Ambient: 25.0°C.	After test, The USB-C output port maximum loaded current was 3.6A and ran for thermal equilibrium under it. Over it, USB-C output shut down immediately, Other output ports normal working. No chemicals leak, explosion, molten metal emission or expulsion observed. Battery current: 43.3A to 43.5A

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Clause	Requirement + Test					Result - Remark		Verdict
USB-A Output (5V output)	O-L	14.6VDC	2hrs 20 mins	--	--	Type K	<p>T1 winding: 63.2°C, T2 winding: 53.0°C, Battery surface: 58.5°C, Enclosure (outside, near T1): 38.5°C, Ambient: 25.0°C.</p> <p>After test, The USB-A output port maximum loaded current was 2.8A and ran for thermal equilibrium under it. Over it, USB-A output shut down immediately, Other output ports normal working. No chemicals leak, explosion, molten metal emission or expulsion observed.</p> <p>Battery current: 43.3A to 43.4A</p>	
DC Output	O-L	14.6VDC	2hrs 20 mins	--	--	Type K	<p>T1 winding: 68.9°C, T2 winding: 60.3°C, Battery surface: 60.8°C, Enclosure (outside, near T1): 40.2°C, Ambient: 25.0°C.</p> <p>After test, The DC output port maximum loaded current was 8.7A and ran for thermal equilibrium under it. Over it, DC output shut down immediately, Other output ports normal working. No chemicals leak, explosion, molten metal emission or expulsion observed.</p> <p>Battery current: 43.3A to 43.5A</p>	



IEC 62368-1

Clause	Requirement + Test					Result - Remark		Verdict
AC output	O-L	264VAC	2hrs	F1	2.82A to 2.90A	Type K	T1 winding: 62.3°C, T2 winding: 55.3°C, Battery surface: 42.3°C, Enclosure (outside, near T1): 40.2°C, Ambient: 25.0°C.	After test, The AC output port maximum loaded 300W and ran for thermal equilibrium under it. Over it, AC output shut down immediately, Other output ports normal working. No chemicals leak, explosion, molten metal emission or expulsion observed. Battery current: 8.25A to 8.26A
Opening	Covering of ventilation openings	14.6VDC	2hrs 40 mins	--	--	Type K	T1 winding: 67.4°C, T2 winding: 58.6°C, Battery surface: 57.5°C, Enclosure (outside, near T1): 43.9°C, Ambient: 24.1°C.	Unit normal working. No damage, no explosion, no hazard. Battery current: 43.3A.
DC Fan	Blocked	14.6VDC	30 mins	--	--	--	--	Unit normal shut down immediately. No damage, no explosion, no hazard. Battery current: 43.3A to 0.15A.

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Clause	Requirement + Test	Result - Remark	Verdict
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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
Only charging mode with empty battery by AC input								
U1 pin 2-16	S-C	264VAC	10min	F1	0.01	--	--	After S-C, unit shut down immediately, protection. No damage, no explosion, no hazard. Battery current: 0.001A.
C12	S-C	264VAC	10min	F1	0.01	--	--	After S-C, unit shut down immediately, protection. No damage, no explosion, no hazard. Battery current: 0.001A.
Battery board of PCB Q4 pin D-S	S-C	264VAC	7h	F1	1.38A to 1.40A	--	Battery surface: 48.5°C, Ambient: 25.0°C.	After S-C, unit normal working. No damage, no explosion, no hazard. Battery current: 19.72A to 20.0A.
Only discharging mode with full battery (Total output 484W (AC output 300W+USB-C output 60W+USB-A output 24W+DC output 100W))								

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Clause	Requirement + Test					Result - Remark		Verdict
U1 pin 2-15	S-C	--	10min	--	--	--	--	After S-C, unit shut down immediately, protection. No damage, no explosion, no hazard. Battery current: 0.001A.
C19	S-C	--	10min	--	--	--	--	After S-C, unit shut down immediately, protection. No damage, no explosion, no hazard. Battery current: 0.001A.
Battery board of PCB Q3 pin D-S	S-C	--	7h	--	--	--	Battery surface: 58.3°C, Ambient: 25.0°C.	After S-C, unit normal working. No damage, no explosion, no hazard. Battery current: 43.3A to 45.2A.
Only AC input and DC output 184W(USB-C output 60W+USB-A output 24W+DC output 100W)								
USB-C Output	S-C	264	30mins	F1	1.25A to 1.22A	--	--	USB-C output shut down immediately, other ports normal output, no damaged, no hazard.
USB-A Output	S-C	264	30mins	F1	1.25A to 1.24A	--	--	USB-A output shut down immediately, other ports normal output, no damaged, no hazard.
Q1 C-E	S-C	264	1s	F1	0	--	--	Fuse F1 opened immediately, no hazard.
C10	S-C	264	1s	F1	0	--	--	Fuse F1 opened immediately, no hazard.

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Clause	Requirement + Test					Result - Remark		Verdict
Q12 C-E	S-C	264	1s	F1	0	--	--	Fuse F1 opened immediately, no hazard.
T1 pin 3-6	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard.
T1 pin 8-9	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard.
T2 pin 1-2	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard.
T2 pin 9-10	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard.
T2 pin 4-5	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard.
T2 pin 6-7	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard.
U17 pin 1-2	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard. U16,U19, U20, U13, U21's result same as U17.

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Clause	Requirement + Test					Result - Remark		Verdict
U17 pin 3-4	S-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard. U16,U19, U20, U13, U21's result same as U17.
U17 pin 3	O-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard. U16,U19, U20, U13, U21's result same as U17.
U17 pin 1	O-C	264	10mins	F1	0.01	--	--	Unit shut down immediately, recoverable, no damaged, no hazard. U16,U19, U20, U13, U21's result same as U17.
Supplementary information: S-C: short circuit, O-L: overload, O-C: open circuit; C-D: components damaged								

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Clause	Requirement + Test	Result - Remark	Verdict
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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	--	--	--	19.70A	20A	43.3A	60A	--	--
Max. current during fault condition	--	--	--	20.0A (Battery board of PCB Q4 pin D-S)	20A	45.2A (Battery board of PCB Q3 pin D-S)	60A	--	--
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								--	
Supplementary information:									

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)		
EVE POWER Co.,Ltd./C40	Normal	14.6	19.70	--	After S-C, unit normal working. No chemicals leak, explosion, molten metal emission or expulsion observed.	



IEC 62368-1

Clause	Requirement + Test	Result - Remark		Verdict
	Single fault – Battery board of PCB Q4 pin D-S	14.6	20.0	See table B.4 After S-C, unit normal working. No chemicals leak, explosion, molten metal emission or expulsion observed.
	Abnormal (after drop test)	14.6	19.70	-- After S-C, unit normal working. No chemicals leak, explosion, molten metal emission or expulsion observed.

Supplementary Information:

Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at T_{highest} (°C)	Observation
EVE POWER Co.,Ltd./C40	0	Charging current: 1.30 A	44	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						
Output	Normal operation	5.01	3.52	8.0	15.52	100
Output	(SC C12)	0	0	8.0	0	100
USB-C Output load 9Vdc/3A						
Output	Normal operation	8.99	3.52	8.0	29.53	100
Output	(SC C12)	0	0	8.0	0	100
USB-C Output load 12Vdc/3A						
Output	Normal operation	11.96	3.53	8.0	40.03	100
Output	(SC C12)	0	0	8.0	0	100
USB-C Output load 15Vdc/3A						

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Clause	Requirement + Test			Result - Remark		Verdict
Output	Normal operation	14.89	3.62	8.0	51.69	100
Output	(SC C12)	0	0	8.0	0	100
USB-C Output load 20Vdc/3A						
Output	Normal operation	19.83	3.65	8.0	67.69	100
Output	(SC C12)	0	0	8.0	0	100
USB-A2 Output load 5Vdc/2.4A						
Output	Normal operation	4.87	2.65	8.0	12.43	100
Output	(SC C12)	0	0	8.0	0	100
USB-A2 Output load 5Vdc/2.4A						
Output	Normal operation	4.87	2.81	8.0	13.21	100
Output	(SC C12)	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	1.5	250	5	No crack, no damaged	
Enclosure Bottom	See table 4.1.2	1.5	250	5	No crack, no damaged	
Enclosure Side	See table 4.1.2	1.5	250	5	No crack, no damaged	
Supplementary information:						

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

T.7	TABLE: Drop tests				P
Part/Location	Material	Thickness (mm)	Drop Height (mm)	Observation	

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Clause	Requirement + Test			Result - Remark	Verdict
Enclosure Top	See table 4.1.2	1.5	750	No damaged	
Enclosure Bottom	See table 4.1.2	1.5	750	No damaged	
Enclosure Side	See table 4.1.2	1.5	750	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	1.5	77	7	No damaged	
Supplementary information:						

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IEC62368_1D - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
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ATTACHMENT TO TEST REPORT

IEC 62368-1

EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

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

Differences according to: EN 62368-1:2014+A11:2017

Attachment Form No.: EU_GD_IEC62368_1D_II

Attachment Originator.....: Nemko AS

Master Attachment: Date 2021-02-04

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



IEC62368_1D - ATTACHMENT

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



IEC62368_1D - ATTACHMENT

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



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



IEC62368_1D - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex		N/A
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		P

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



IEC62368_1D - ATTACHMENT

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



IEC62368_1D - ATTACHMENT

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



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



IEC62368_1D - ATTACHMENT

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



IEC62368_1D - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A
10.5.2	<p>Germany</p> <p>The following requirement applies:</p> <p>For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking.</p> <p>Justification:</p> <p>German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM.</p> <p>NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de</p>		N/A

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Photo 1



Photo 2



Photo 3



Photo 4



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Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10

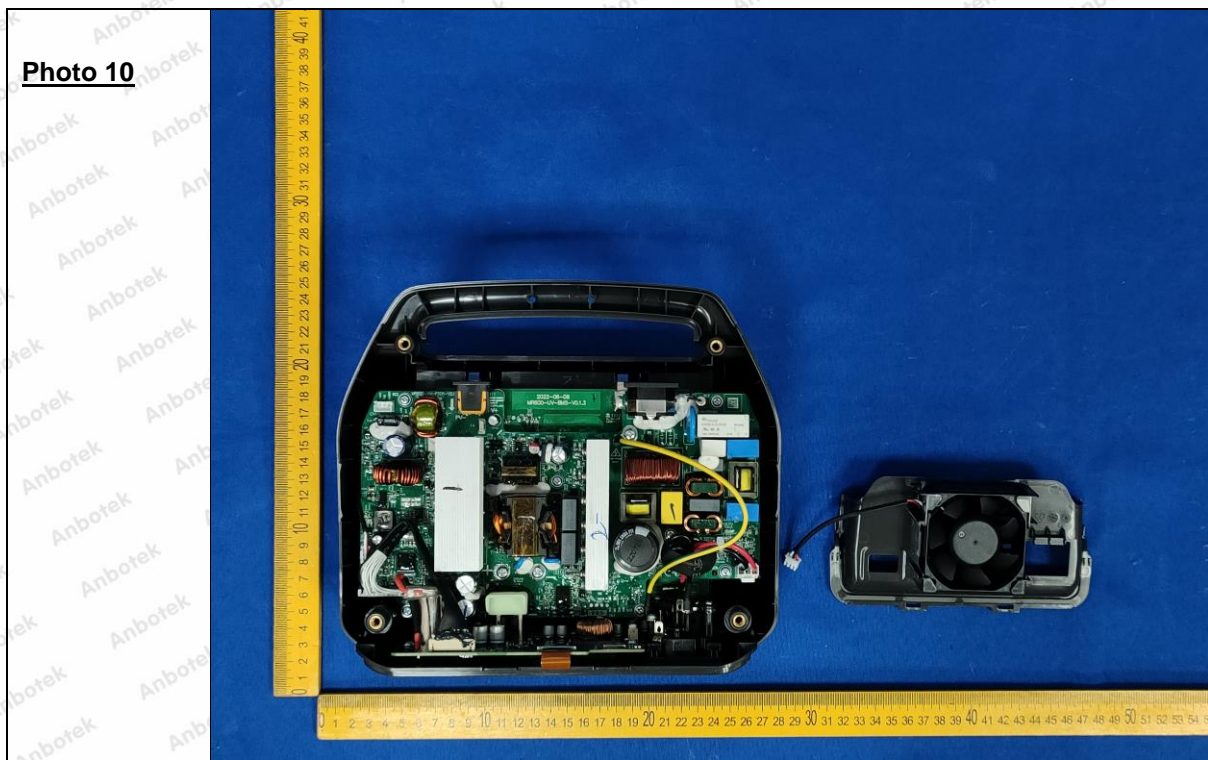


Photo 11

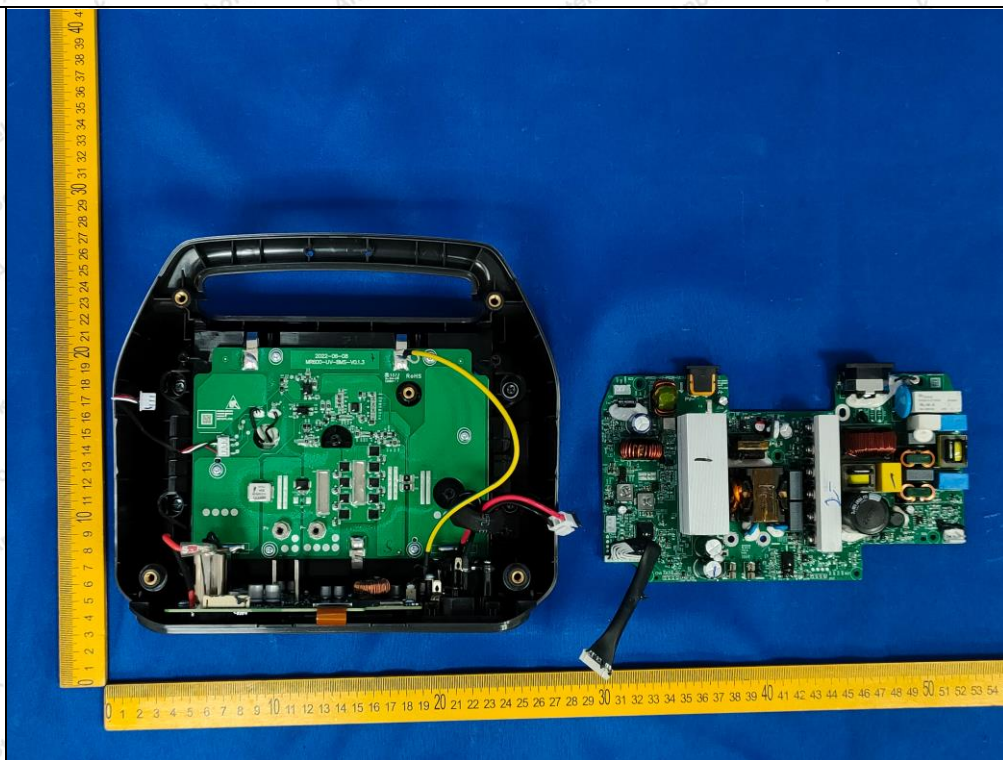


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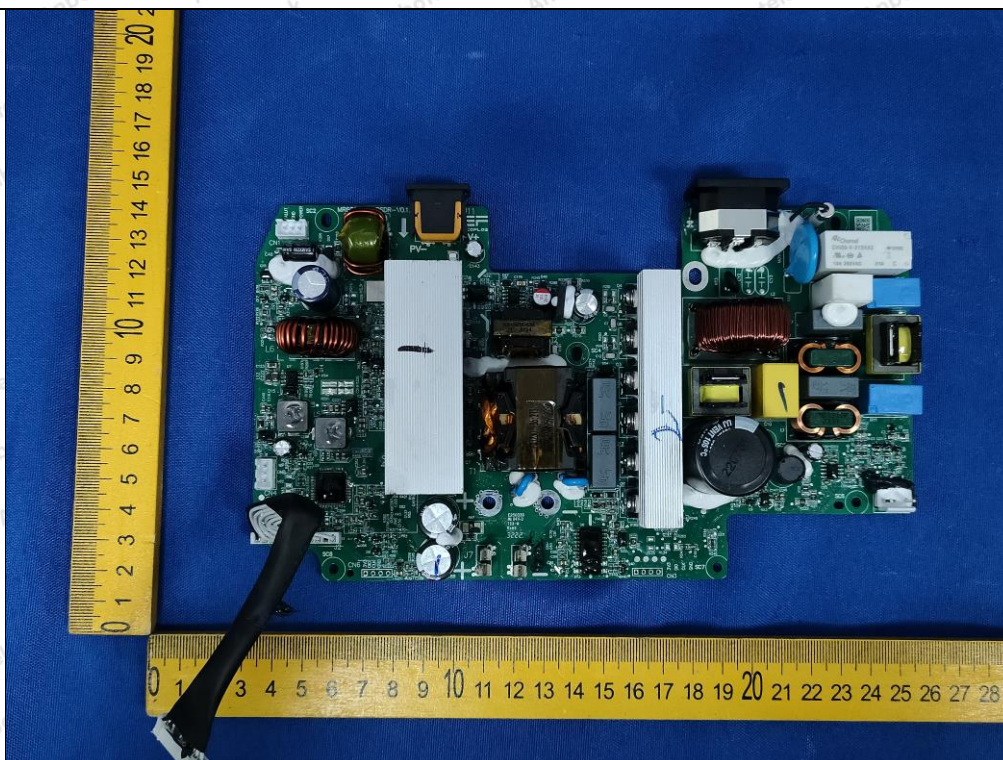


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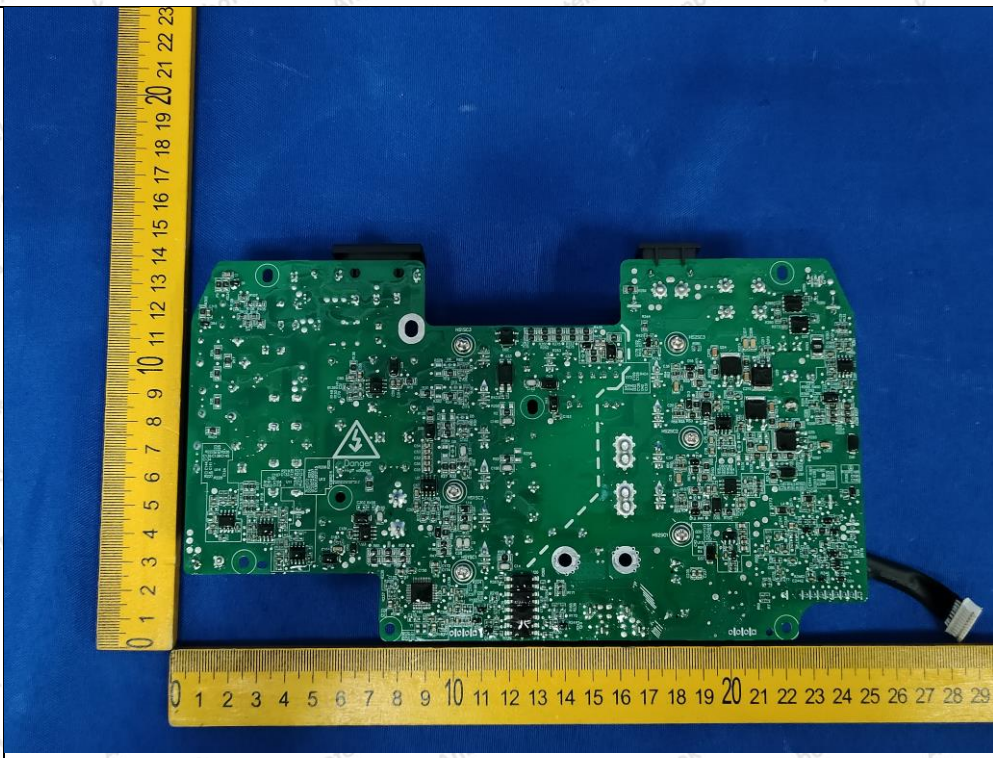


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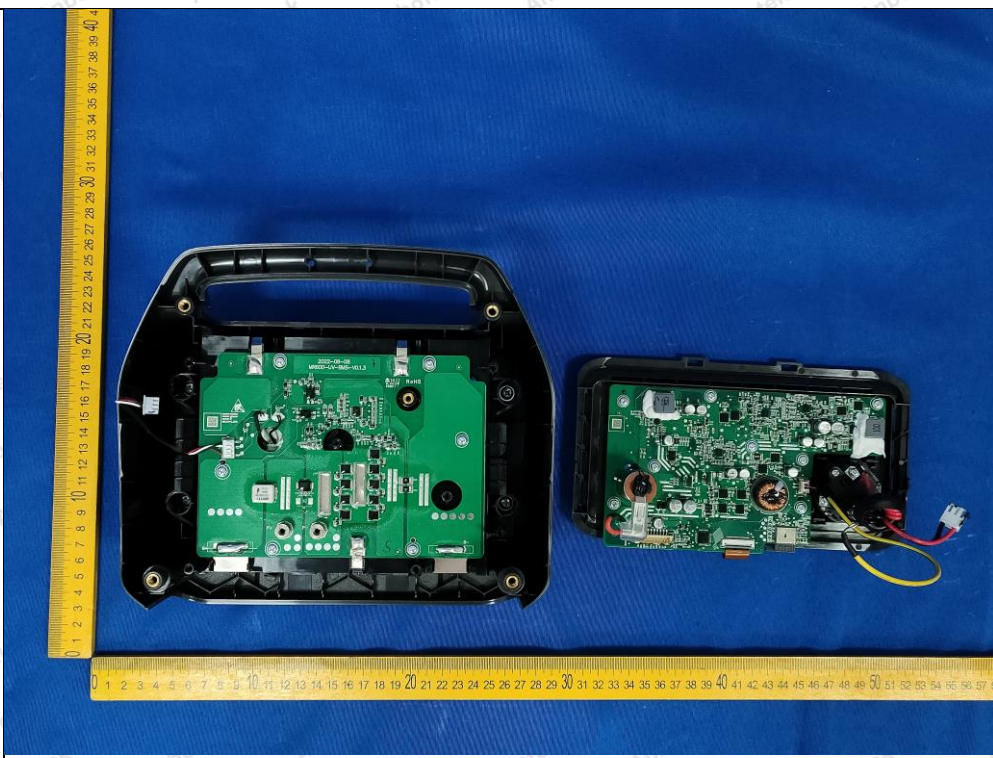


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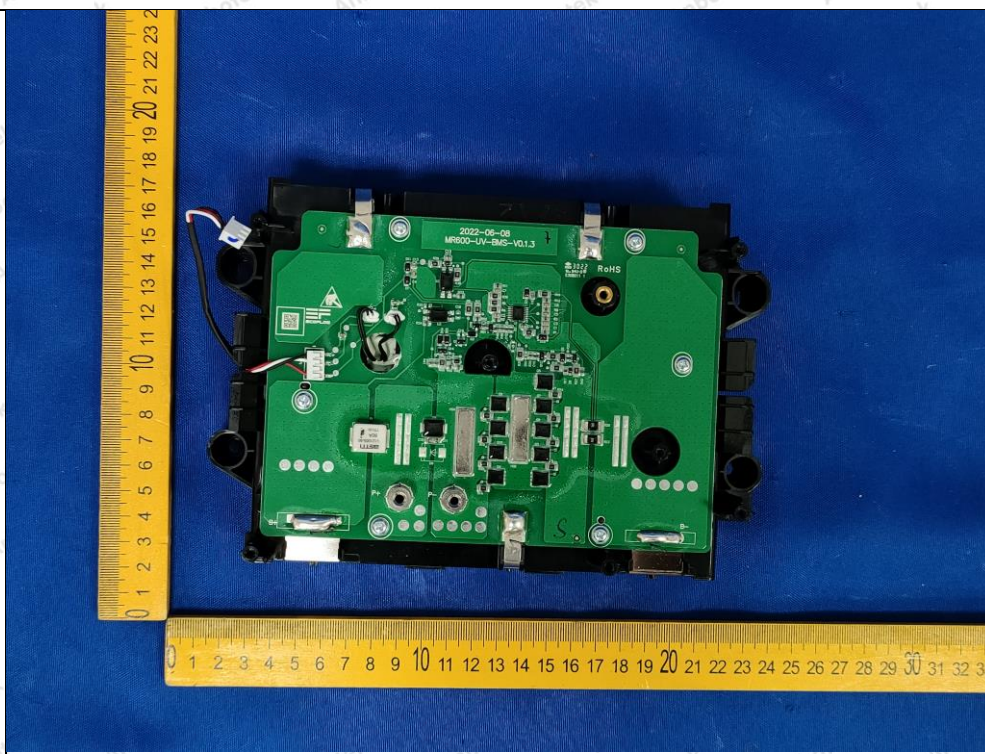


Photo 16

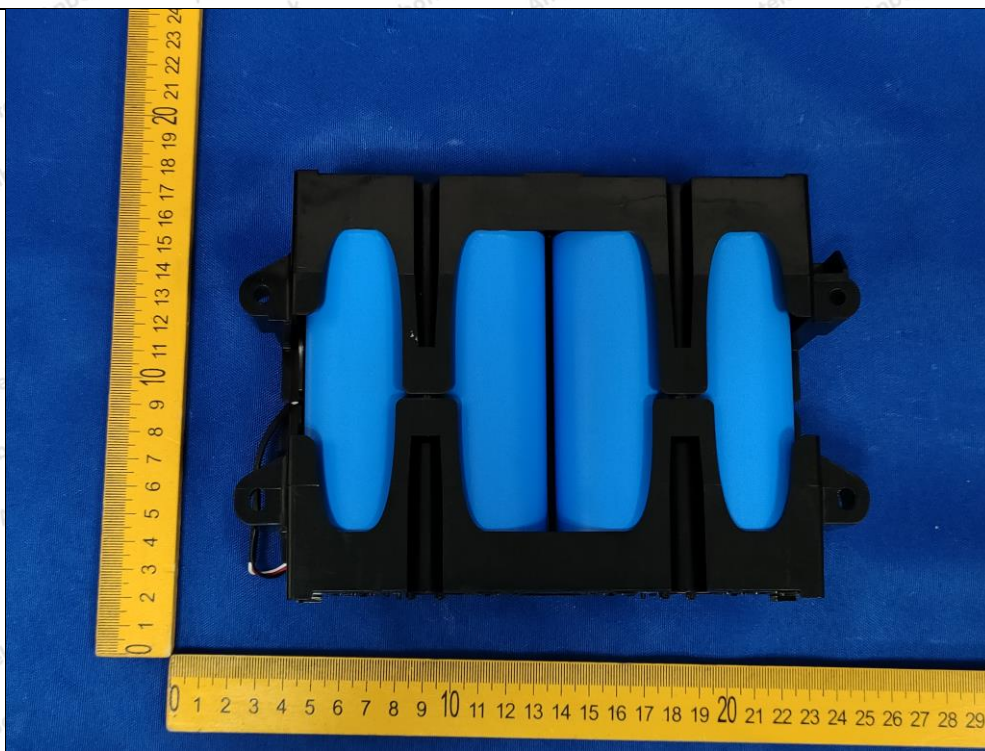


Photo 17

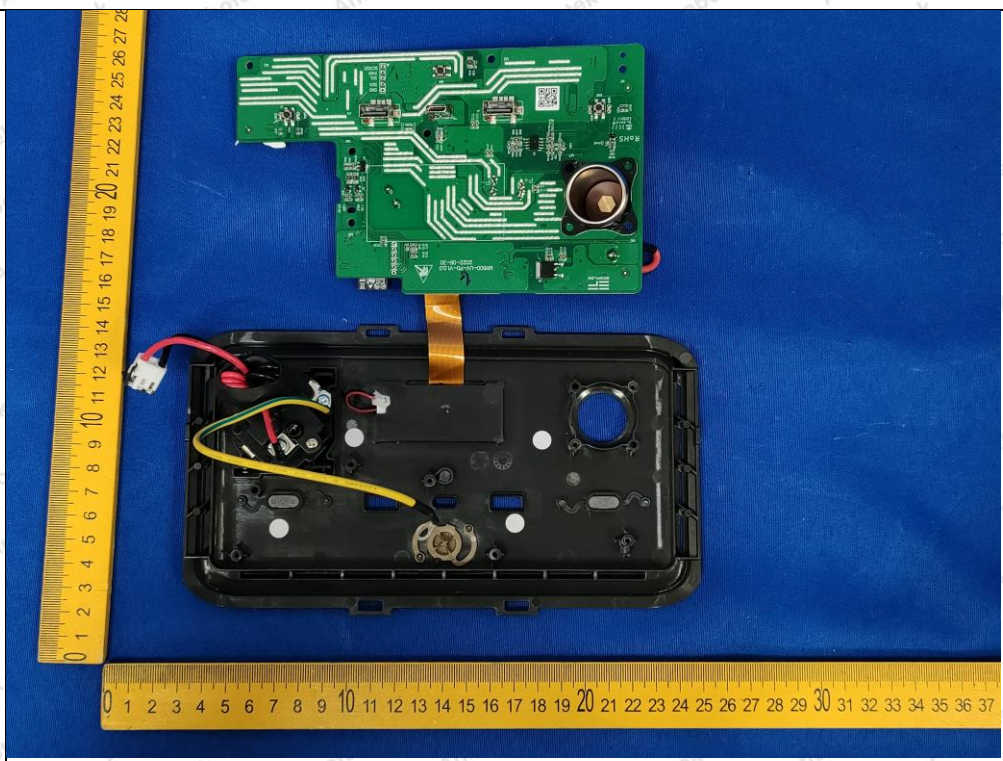


Photo 18

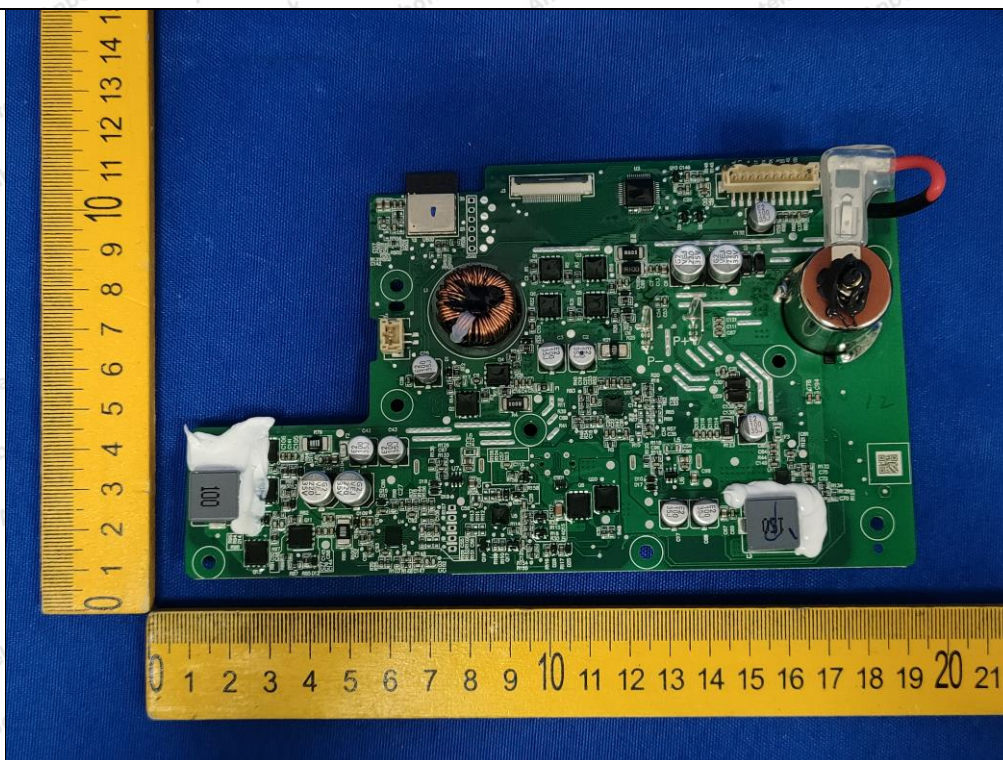


Photo 19

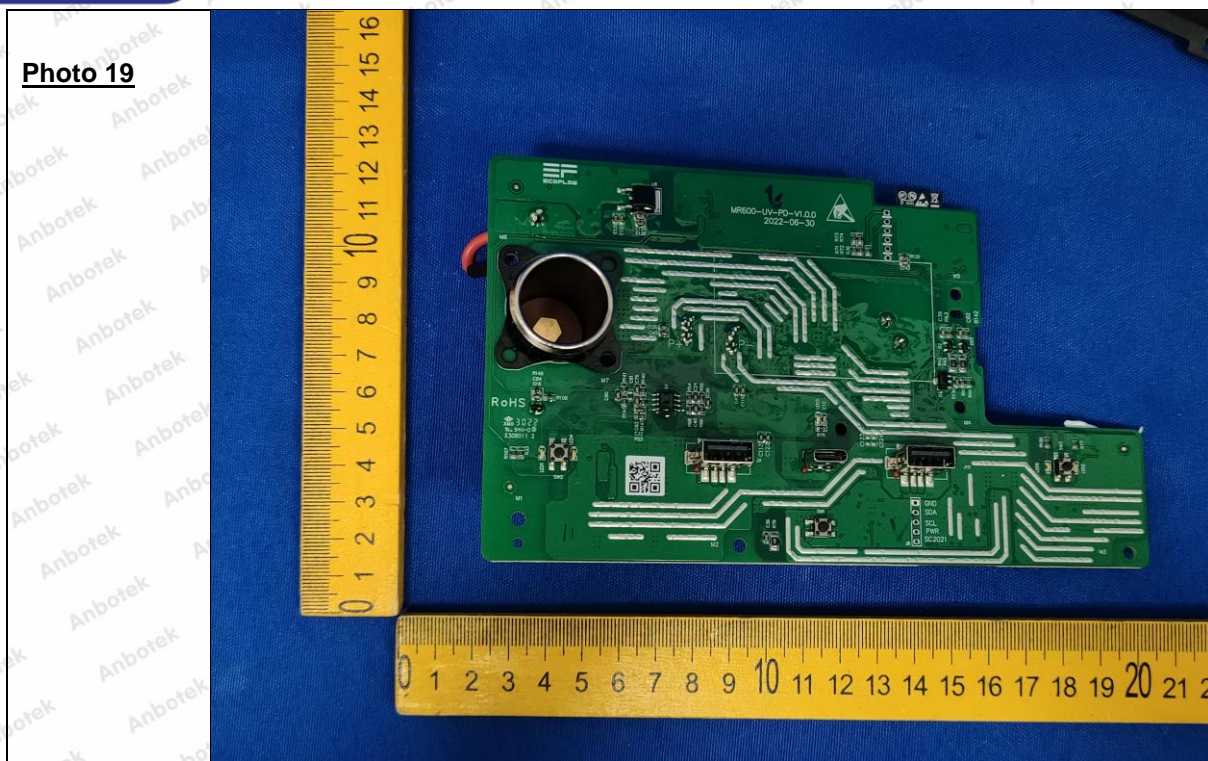
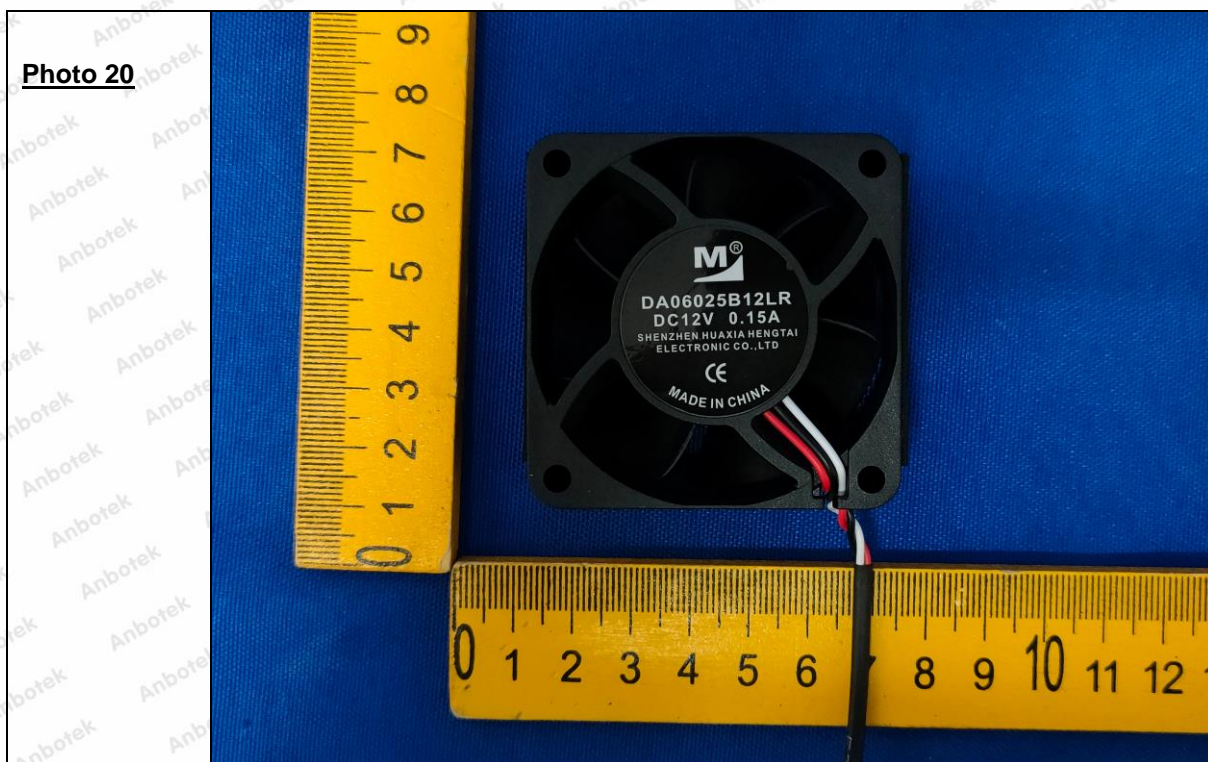


Photo 20



---End of the report---

