



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

Report Number.....: ZKT-240315L2574S

Date of issue.....: Mar.20, 2024

Total number of pages.....: 59 Page

Name of Testing Laboratory preparing the Report.....: **Shenzhen ZKT Technology Co., Ltd.**
1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name.....: **SHENZHEN ITOONER TECHNOLOGY CO.,LTD**
Address.....: No.5 GangZai Road, Shangxing Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China

Test specification:

Standard.....: IEC 62368-1:2018

Test procedure.....: IEC Scheme

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

TRF template used.....: IECEE OD-2020-F1:2020, Ed.1.3

Test Report Form No.....: IEC62368_1E

Test Report Form(s) Originator.....: UL(US)

Master TRF.....: Dated 2021-02-04

This test report is specially limited to the above client company and product model only. It may not be duplicated without prior written consent of ZKT Test.



Test item description.....	Power Supply
Trade Mark.....	N/A
Manufacturer.....	SHENZHEN ITOONER TECHNOLOGY CO., LTD No.5 GangZai Road, Shangxing Community, Xinqiao Street, Baoan District,Shenzhen,Guangdong,China
Model/Type reference.....	GNT-IP52520WS GNT-IP52130WS,(Rated Input: 130W); GNT-IP52260WS, (Rated Input: 260W); GNT-IP52520WS,(Rated Input: 520W); GNT-P9XXXXX, GNT-P4XXXXX, GNT-P1XXXXX, GNT-69PXX, GNT-6FPXX, GNT-MPXXXX, GNT-RPXXXX, GNT-P54XXXX, GNT-G54XXXX, GNT-G24XXXX, GNT-IG32XX, GNT-IG33XX, GNT-EXXXX, GNT-MGXXXX, GNT-RGXXXX, GNT-RP94XXXX, GNT-RP96XXXX, GNT-P34XXXX
Ratings.....	Input: AC 90-264V~, 50/60Hz, 520W Output: DC52V, 2.5A




Testing procedure and testing location:

Testing Laboratory.....: **Shenzhen ZKT Technology Co., Ltd.**
Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Date of Test.....: Mar.06, 2024 to Mar.20, 2024

Tested by (name + signature).....: Peter Huang 

Reviewer (name + signature).....: Simon Gong 

Approved (name + signature).....: Awen He 



**List of Attachments (including a total number of pages in each attachment):**

Attachment 1: 7 pages (Photo)

Summary of testing:**Tests performed (name of test and test clause):**

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

- IEC 62368-1:2018.

Testing location:**Shenzhen ZKT Technology Co., Ltd.**

1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

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

Power Supply

Model: GNT-IP52520WS

Input: AC 90-264V~, 50/60Hz, 520W

Output: DC52V, 2.5A



Manufacturer: SHENZHEN ITOONER TECHNOLOGY CO., LTD

Address: No.5 GangZai Road, Shangxing Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, China

Made in China

Notes:

The above labels are draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.



1. The height of graphical symbols “” shall not be less than 7 mm;
2. The main rating label was attached in enclosure.



Test item particulars:		
Product group	<input checked="" type="checkbox"/> end product	<input type="checkbox"/> built-in component
Classification of use by	<input checked="" type="checkbox"/> Ordinary person <input checked="" type="checkbox"/> Instructed person <input checked="" type="checkbox"/> Skilled person	<input checked="" type="checkbox"/> Children likely present
Supply connection	<input checked="" type="checkbox"/> AC mains <input type="checkbox"/> not mains connected: <input type="checkbox"/> ES1 <input type="checkbox"/> ES2 <input checked="" type="checkbox"/> ES3	<input type="checkbox"/> DC mains
Supply tolerance	<input checked="" type="checkbox"/> +10%/-10% <input type="checkbox"/> +20%/-15% <input type="checkbox"/> + %/ - % <input type="checkbox"/> None	
Supply connection – type	<input checked="" type="checkbox"/> pluggable equipment type A - <input type="checkbox"/> non-detachable supply cord <input checked="" type="checkbox"/> appliance coupler <input type="checkbox"/> direct plug-in <input type="checkbox"/> 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	<input checked="" type="checkbox"/> 16A for building; 6.3A for equipment. Location: <input checked="" type="checkbox"/> building <input checked="" type="checkbox"/> equipment	
Equipment mobility	<input checked="" type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input type="checkbox"/> direct plug-in <input type="checkbox"/> stationary <input type="checkbox"/> for building-in <input type="checkbox"/> wall/ceiling-mounted <input type="checkbox"/> SRME/rack-mounted <input type="checkbox"/> other:	
Overvoltage 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"/> Not classified <input type="checkbox"/>	
Special installation location	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> restricted access area <input type="checkbox"/> outdoor location <input type="checkbox"/>	
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3	
Manufacturer's specified T_{ma}	25°C <input type="checkbox"/> Outdoor: minimum °C	
IP protection class	<input checked="" type="checkbox"/> IPX0 <input type="checkbox"/> IP__	
Power systems	<input checked="" type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT - V _{L-L} <input type="checkbox"/> not AC mains	
Altitude during operation (m)	<input checked="" type="checkbox"/> 2000 m or less <input type="checkbox"/> 5000 m	
Altitude of test laboratory (m)	<input type="checkbox"/> 2000 m or less <input checked="" type="checkbox"/> <50 m	
Mass of equipment (kg)	Approx <7kg	



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..... : Mar.06, 2024	
Date (s) of performance of tests.....: Mar.06, 2024 to Mar.20, 2024	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)..... : SHENZHEN ITOONER TECHNOLOGY CO., LTD No.5 GangZai Road, Shangxing Community, Xinqiao Street, Baoan District,Shenzhen,Guangdong,China	
General product information and other remarks:	
Product Description:	
1. EUT is a Power Supply manufactured by SHENZHEN ITOONER TECHNOLOGY CO.,LTD according to the information technology equipment.	
2. All tests were conducted at the model of GNT-IP52520WS. The test results comply with the requirement of the relevant standards.	
Additional Information	
1. The Label in Copy of marking plate is a draft of an artwork pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.	



OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	Possible Hazard			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES3: Primary circuits supplied by a.c. mains supply	Ordinary	N/A	N/A	Y-cap., transformer, enclosure, Optocoupler,
ES1: Output	Ordinary	N/A	N/A	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1 st S	2 nd S
PS3: All primary circuits inside the equipment enclosure	All combustible materials within equipment fire enclosure	Equipment safeguard (e.g., no ignition occurs)	V-0	N/A
PS3: Secondary output connector	Connections of secondary equipment	Equipment safeguard (e.g., no ignition occurs)	V-0	N/A
7	Injury caused by hazardous substances			
Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: Equipment Mass	Ordinary	N/A	N/A	N/A
MS1: Sharp edges and corner of product	Ordinary	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS1: All accessible parts	Ordinary	N/A	N/A	N/A
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
Supplementary Information:				



“B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard

ENERGY SOURCE DIAGRAM

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

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

ES PS MS TS RS



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies	(See appended Table 4.1.2.)	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment. See also Annex G	P
4.1.3	Equipment design and construction	Evaluation of safeguards regarding access to ES3, and protection in regard to risk of spread of fire, mechanical-caused injury and thermal burn considered.	P
4.1.4	Specified ambient temperature for outdoor use (°C) :		N/A
4.1.5	Constructions and components not specifically covered		P
4.1.8	Liquids and liquid filled components (LFC)	No such parts used.	N/A
4.1.15	Markings and instructions	(See Annex F)	P
4.4.3	Safeguard robustness	See below	P
4.4.3.1	General		P
4.4.3.2	Steady force tests	(See Annex T.2 and T.5)	P
4.4.3.3	Drop tests	(See Annex T.7)	P
4.4.3.4	Impact tests		N/A
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests		N/A
4.4.3.9	Air comprising a safeguard		N/A
4.4.3.10	Accessibility, glass, safeguard effectiveness		N/A
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks		N/A
4.5	Explosion		P
4.5.1	General		P



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Clause	Requirement + Test	Result - Remark	Verdict
4.5.2	No explosion during normal/abnormal operating condition	(See Clause B.2, B.3)	P
	No harm by explosion during single fault conditions	(See Clause B.4)	P
4.6	Fixing of conductors		P
	Fix conductors not to defeat a safeguard		P
	Compliance is checked by test..... :	10 N pull / push test performed for all relevant conductors.	P
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	Mains plug part complies with relevant standard... :	Not direct plug-in equipment.	N/A
4.7.3	Torque (Nm)..... :		N/A
4.8	Equipment containing coin/button cell batteries		N/A
4.8.1	General	No coin/button batteries used.	N/A
4.8.2	Instructional safeguard..... :		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	Likelihood of fire or shock due to entry of conductive object		P
4.10	Component requirements		P
4.10.1	Disconnect Device	Power Supplies and coupler	P
4.10.2	Power Supplies and relays	(See Annex G.1 and G.2)	P

5	ELECTRICALLY-CAUSED INJURY		P
5.2	Classification and limits of electrical energy sources		P
5.2.2	ES1, ES2 and ES3 limits		P
5.2.2.2	Steady-state voltage and current limits..... :	(See appended table 5.2)	P
5.2.2.3	Capacitance limits..... :	(See appended table 5.2)	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



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Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.7	Audio signals	(See Clause E.1)	P
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons	See below.	P
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		P
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards	ES2 or ES3 source cannot access by ordinary persons	P
	Accessibility to outdoor equipment bare parts	No outdoor equipment.	N/A
5.3.2.2	Contact requirements		P
	Test with test probe from Annex V	Figure V.1, V.2 can't contact any bare internal conductive part	—
5.3.2.2 a)	Air gap – electric strength test potential (V)..... :	(See appended table 5.4.9)	N/A
5.3.2.2 b)	Air gap – distance (mm) :	>0.2	P
5.3.2.3	Compliance		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	Hygroscopic materials are not used for insulating material.	P
5.4.1.3	Material is non-hygroscopic	(See clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials..... :	(See appended table 5.4.1.4, 6.3.2, 9.0, B.2.6)	P
5.4.1.5	Pollution degrees..... :	PD2	P
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	Pollution degree 2 is applied.	N/A
5.4.1.5.3	Thermal cycling test		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage..... :	(See appended table 5.4.1.8)	P
5.4.1.9	Insulating surfaces	Considered.	P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat test..... :		N/A
5.4.1.10.3	Ball pressure test..... :	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances	(See appended table 5.4.2.2, 5.4.2.4 and 5.4.3)	P
5.4.2.1	General requirements		P



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Clause	Requirement + Test	Result - Remark	Verdict
	Clearances in circuits connected to AC Mains, Alternative method	(See Annex X)	N/A
5.4.2.2	Procedure 1 for determining clearance	(See appended table 5.4.2, 5.4.3)	P
	Temporary overvoltage	2000Vpeak.	—
5.4.2.3	Procedure 2 for determining clearance	(See appended table 5.4.2, 5.4.3)	P
5.4.2.3.2.2	a.c. mains transient voltage..... :	2500Vpeak.	—
5.4.2.3.2.3	d.c. mains transient voltage	--	—
5.4.2.3.2.4	External circuit transient voltage..... :	--	—
5.4.2.3.2.5	Transient voltage determined by measurement..... :	--	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test	(See appended table 5.4.2)	N/A
5.4.2.5	Multiplication factors for clearances and test voltages		N/A
5.4.2.6	Clearance measurement..... :	(See appended table 5.4.2, 5.4.3)	P
5.4.3	Creepage distances	(See appended table 5.4.2, 5.4.3)	P
5.4.3.1	General	See below.	P
5.4.3.3	Material group..... :	IIIa or IIIb	—
5.4.3.4	Creepage distances measurement..... :	(See appended table 5.4.3)	P
5.4.4	Solid insulation	See below	P
5.4.4.1	General requirements		P
5.4.4.2	Minimum distance through insulation	(See appended table 5.4.4.2, 5.4.4.5 c), 5.4.4.9)	P
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices	Approved optocoupler used. Requirements of G.12 met, see table 4.1.2 for listed component used.	P
5.4.4.5	Insulating compound forming cemented joints	No such construction within the EUT	N/A
5.4.4.6	Thin sheet material		P
5.4.4.6.1	General requirements	At least 2 layers of insulation tape are used for reinforced insulation and are not expected to be subject to handling or abrasion during ordinary or instructed person servicing.	P




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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.2	Separable thin sheet material	Two layers of insulating tape provided as double/reinforced insulation and each layer passed the electric strength test for reinforced insulation. See appended Table 5.4.9.	P
	Number of layers (pcs)	2-layer min.	P
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs)		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material.....		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components	(See G.5.3 and G.6.1)	P
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P , K_R , d , V_{PW} (V).....	(See appended table 5.4.4.9)	P
	Alternative by electric strength test, tested voltage (V), K_R	(See appended Tables 5.4.4.9 and 5.4.9)	N/A
5.4.5	Antenna terminal insulation		P
5.4.5.1	General		P
5.4.5.2	Voltage surge test	Surge test with 50 discharges at a maximum rate of 12/min from a 1 nF capacitor charged to 10 kV performed.	P
5.4.5.3	Insulation resistance (M Ω).....	Measured 100M Ω between mains supply to secondary circuit.	P
	Electric strength test.....		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%), temperature ($^{\circ}$ C), duration (h).....	95%, 30 $^{\circ}$ C, 48h	—
5.4.9	Electric strength test	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for type test of solid insulation.....	Method 1 used.	P
5.4.9.2	Test procedure for routine test		P
5.4.10	Safeguards against transient voltages from external circuits		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.2.2	Impulse test..... :		N/A
5.4.10.2.3	Steady-state test..... :		N/A
5.4.10.3	Verification for insulation breakdown for impulse test..... :		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V)..... :		—
	Nominal voltage U_{peak} (V)..... :		—
	Max increase due to variation ΔU_{sp} :		—
	Max increase due to ageing ΔU_{sa} :		—
5.4.11.3	Test method and compliance..... :		N/A
5.4.12	Insulating liquid		N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid..... :		N/A
5.4.12.3	Compatibility of an insulating liquid..... :		N/A
5.4.12.4	Container for insulating liquid..... :		N/A
5.5	Components as safeguards		P
5.5.1	General		P
5.5.2	Capacitors and RC units	Approved X capacitor and Y capacitor provided. (See appended table 4.1.2)	P
5.5.2.1	General requirement		P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector..... :	(See Table 4.1.6)	P
5.5.3	Transformers	(See Annex G.5.3)	P
5.5.4	Optocouplers	(See Annex G.12)	P
5.5.5	Relays	No such relay used as safeguard	N/A
5.5.6	Resistors	No such resistor used	N/A
5.5.7	SPDs	No such varistor used	N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA)..... :		—



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Clause	Requirement + Test	Result - Remark	Verdict
5.6	Protective conductor	Class I equipment	P
5.6.2	Requirement for protective conductors		P
5.6.2.1	General requirements	No Power Supply, current limiting devices or overcurrent protective devices provided in protective earthing conductors and protective bonding conductors.	P
5.6.2.2	Colour of insulation	After appliance inlet, the insulation of protective bonding conductor is green-and-yellow.	P
5.6.3	Requirement for protective earthing conductors	An appliance inlet provided that is connected by an approved appliance coupler serves as main protective earthing conductor terminal.	P
	Protective earthing conductor size (mm ²) :	0.75mm ²	—
	Protective earthing conductor serving as a reinforced safeguard		P
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors	Reliable connection of the green-and-yellow protective bonding wire from earthed pin of appliance inlet to metal chassis, which fixed in earthing tab of appliance inlet by hooking-in and soldering, and the other end terminated in a ring type crimp which is secured to metal chassis by a screw and star washer.	P
5.6.4.1	Protective bonding conductors	See the following details.	P
	Protective bonding conductor size (mm ²)..... :	0.75 mm ² (18 AWG) for protective bonding conductor.	—
5.6.4.2	Protective current rating (A)..... :	≤16A.	P
5.6.5	Terminals for protective conductors	Symbol  used. In addition, the green-and-yellow wire connected to metal chassis was considered as protective bonding conductor. See also subclause 5.6.6.	P
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :	See above.	P
	Terminal size for connecting protective bonding conductors (mm)..... :	See above.	P



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Clause	Requirement + Test	Result - Remark	Verdict
5.6.5.2	Corrosion	No combination above the line in Annex N is used.	P
5.6.6	Resistance of the protective bonding system	See below.	P
5.6.6.1	Requirements	Compliance checked.	P
5.6.6.2	Test Method..... :	(See appended table 5.6.6.2)	P
5.6.6.3	Resistance (Ω) or voltage drop..... :	(See appended table 5.6.6.2)	P
5.6.7	Reliable connection of a protective earthing conductor	The equipment is not permanently connected equipment.	N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm^2)..... :		N/A
	Class II with functional earthing marking :		N/A
	Appliance inlet cl & cr (mm)..... :		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current	(See appended table 5.7.4)	P
5.7.2.2	Measurement of voltage	(See appended table 5.7.4)	P
5.7.3	Equipment set-up, supply connections and earth connections		P
5.7.4	Unearthed accessible parts..... :	Touch current at unearthed accessible conductive parts is not exceeding ES1 limits. (See appended table 5.7.4)	P
5.7.5	Earthed accessible conductive parts..... :		P
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA)..... :		N/A
	b) Equipment connected to unearthed external circuits, current (mA)..... :		N/A
5.8	Backfeed safeguard in battery backed up supplies		N/A
	Mains terminal ES..... :	(See appended table 5.8)	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Air gap (mm)..... :		N/A

6	ELECTRICALLY- CAUSED FIRE		P
6.2	Classification of PS and PIS		P
6.2.2	Power source circuit classifications..... :	(See appended table 6.2.2)	N
6.2.3	Classification of potential ignition sources	See below.	P
6.2.3.1	Arcing PIS :	Primary circuits are considered as arcing PIS.	P
6.2.3.2	Resistive PIS :	All components located within the EUT are considered as resistive PIS.	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 900 °C for unknown materials..... :	(See appended table 5.4.1.4, 9.3, B.1.5, B.2.6)	P
	Combustible materials outside fire enclosure..... :	V-0	P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard method	Method of Control fire spread used.	P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		P
6.4.3.1	Supplementary safeguards		P
6.4.3.2	Single Fault Conditions..... :	(See appended table B.4)	P
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		P
6.4.5	Control of fire spread in PS2 circuits	See below.	P
6.4.5.2	Supplementary safeguards	Compliance detailed as follows: - Printed board: rated V-1 or VTM-1 min. class material; - Internal wire: complying with 6.5. - Other components other than PCB and wires are mounted on PCB rated V-1 or VTM-1 min., or made of V-2, VTM-2 or HF2 min. - Isolating transformer: complying with G.5.3.	P



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Clause	Requirement + Test	Result - Remark	Verdict
6.4.6	Control of fire spread in PS3 circuits	Compliance detailed as follows: – Parts as in 6.4.0.5 Above – Fire enclosure: rated V-0 used.	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.2	Separation by distance		P
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	Equipment enclosure was evaluated as a fire enclosure.	P
6.4.8.2	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		P
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier	See below	P
6.4.8.3.1	Fire enclosure and fire barrier openings	No fire enclosure opening	P
6.4.8.3.2	Fire barrier dimensions	No fire barrier	N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :	No openings	N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :	No openings	N/A
	Flammability tests for the bottom of a fire enclosure	(See Clause S.3)	N/A
	Instructional Safeguard..... :		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating..... :		N/A
6.4.9	Flammability of insulating liquid..... :		N/A
6.5	Internal and external wiring		P
6.5.1	General requirements	The material of VW-1 on internal wiring were considered compliance equal to equivalent to IEC/EN 60695-11-21 relevant standards	P
6.5.2	Requirements for interconnection to building wiring :	No such interconnection to building wiring.	N/A
6.5.3	Internal wiring size (mm ²) for socket-outlets..... :	No socket-outlet used.	N/A
6.6	Safeguards against fire due to the connection to additional equipment		P



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Clause	Requirement + Test	Result - Remark	Verdict

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

8	MECHANICALLY-CAUSED INJURY		P
8.2	Mechanical energy source classifications		P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners		P
8.4.1	Safeguards	MS1 applied for edges and corners.	N/A
	Instructional Safeguard..... :		N/A
8.4.2	Sharp edges or corners	Accessible edges and corners of the equipment are rounded and are classified as MS1.	P
8.5	Safeguards against moving parts		N/A
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts	No moving parts	N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard..... :		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m)..... :		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Space between end point and nearest fixed mechanical part (mm)..... :		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly..... :		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts..... :		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N)..... :		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps		N/A
	Explosion test..... :		N/A
8.5.5.3	Glass particles dimensions (mm)..... :		N/A
8.6	Stability of equipment		N/A
8.6.1	General	MS1	N/A
	Instructional safeguard..... :		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test..... :		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm)..... :		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test..... :		N/A
8.7	Equipment mounted to wall, ceiling or other structure		N/A
8.7.1	Mount means type..... :		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N)..... :		N/A
	Test 2, number of attachment points and test force (N)..... :		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm)..... :		N/A
8.8	Handles strength		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles.....:		—
	Force applied (N).....:		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.2	Pull test		N/A
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions.....:		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N).....:		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N).....:		N/A
8.10.6	Thermoplastic temperature stability		N/A
8.11	Mounting means for slide-rail mounted equipment (SRME)		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied.....:		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	Telescoping or rod antennas		N/A
	Button/ball diameter (mm).....:		—

9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications		P
9.3	Touch temperature limits		P
9.3.1	Touch temperatures of accessible parts.....:	(See appended table 9.3)	P
9.3.2	Test method and compliance		P
9.4	Safeguards against thermal energy sources		P
9.5	Requirements for safeguards		N/A
9.5.1	Equipment safeguard		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
9.5.2	Instructional safeguard..... :		N/A
9.6	Requirements for wireless power transmitters		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance..... :	(See appended table 9.6)	N/A

10	RADIATION		N/A
10.2	Radiation energy source classification		N/A
10.2.1	General classification		N/A
	Lasers..... :		—
	Lamps and lamp systems..... :		—
	Image projectors..... :		—
	X-Ray..... :		—
	Personal music player..... :		—
10.3	Safeguards against laser radiation		N/A
	The standard(s) equipment containing laser(s) comply..... :		N/A
10.4	Safeguards against optical radiation from lamps and lamp systems (including LED types)		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location..... :		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure..... :	(See Annex C)	N/A
10.4.3	Instructional safeguard..... :		N/A
10.5	Safeguards against X-radiation		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons..... :		—
10.5.3	Maximum radiation (pA/kg)..... :	(See appended tables B.3, B.4)	—
10.6	Safeguards against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A)..... :		N/A
	Unweighted RMS output voltage (mV)..... :		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	Digital output signal (dBFS)..... :		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30)..... :		N/A
	Warning for MEL \geq 100 dB(A)..... :		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards..... :		N/A
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A)..... :		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A)..... :		N/A
			N/A

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.1	General		P
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	P
B.2	Normal operating conditions		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Power Supplies and equipment with Power Supplies		P
B.2.3	Supply voltage and tolerances	+10% and -10% for a.c. mains.	P
B.2.5	Input test..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General	(See appended tables B.3, B.4)	P
B.3.2	Covering of ventilation openings	(See appended table B.3)	P
	Instructional safeguard..... :		N/A
B.3.3	DC mains polarity test		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
B.3.4	Setting of voltage selector	No voltage selector	N/A
B.3.5	Maximum load at output terminals	(See appended tables B.3, B.4)	P
B.3.6	Reverse battery polarity		N/A
B.3.7	Power Supply abnormal operating conditions		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions..... :	(See appended tables B.3, B.4)	P
B.4	Simulated single fault conditions		P
B.4.1	General		P
B.4.2	Temperature controlling device	No such devices.	N/A
B.4.3	Blocked motor test	No motor used.	N/A
B.4.4	Functional insulation	(See appended tables B.3, B.4)	P
B.4.4.1	Short circuit of clearances for functional insulation		P
B.4.4.2	Short circuit of creepage distances for functional insulation		P
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		P
B.4.6	Short circuit or disconnection of passive components		P
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions :	(See appended tables B.3, B.4)	P
B.4.9	Battery charging and discharging under single fault conditions	(See Annex M)	N/A
C	UV RADIATION		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	TEST GENERATORS		P
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		P



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Clause	Requirement + Test	Result - Remark	Verdict
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING Power SupplyS		N/A
E.1	Electrical energy source classification for audio signals		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω)		—
	Open-circuit output voltage (V)..... :		—
	Instructional safeguard..... :		—
E.2	Power Supplynormal operating conditions		N/A
	Audio signal source type..... :		—
	Audio output power (W)..... :		—
	Audio output voltage (V)..... :		—
	Rated load impedance (Ω)		—
	Requirements for temperature measurement		N/A
E.3	Power Supplyabnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General		P
	Language	English. Versions in other languages will be provided when national certificate approval.	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		N/A
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	The equipment marking is located on the surface and is easily visible.	P
F.3.2	Equipment identification markings	See below.	P
F.3.2.1	Manufacturer identification	See copy of marking plate	P
F.3.2.2	Model identification	See copy of marking plate	P
F.3.3	Equipment rating markings	See below.	P
F.3.3.1	Equipment with direct connection to mains	See copy of marking plate	P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of the supply voltage..... :	See copy of marking plate	P
F.3.3.4	Rated voltage..... :	See copy of marking plate	P
F.3.3.5	Rated frequency..... :	See copy of marking plate	P



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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3.6	Rated current or rated power.....:	See copy of marking plate	P
F.3.3.7	Equipment with multiple supply connections	Only one connection.	N/A
F.3.4	Voltage setting device	No voltage setting device.	N/A
F.3.5	Terminals and operating devices	See below.	P
F.3.5.1	Mains appliance outlet and socket-outlet markings:		N/A
F.3.5.2	Power Supply position identification marking.....:		N/A
F.3.5.3	Replacement fuse identification and rating markings:	The Fuse is located within the equipment and not replaceable by an ordinary person or an instructed person. The fuse marking is marked on PCB near fuse: F1 T6.3AL 250VAC	P
	Instructional safeguards for neutral fuse.....:		N/A
F.3.5.4	Replacement battery identification marking.....:		N/A
F.3.5.5	Neutral conductor terminal	Not permanently connected equipment	N/A
F.3.5.6	Terminal marking location		P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I equipment		P
F.3.6.1.1	Protective earthing conductor terminal.....:		P
F.3.6.1.2	Protective bonding conductor terminals		P
F.3.6.2	Equipment class marking.....:	See copy of marking plate.	P
F.3.6.3	Functional earthing terminal marking.....:		N/A
F.3.7	Equipment IP rating marking.....:	IPX0	N/A
F.3.8	External power supply output marking.....:	See copy of marking plate	P
F.3.9	Durability, legibility and permanence of marking	All markings required are easily discernible under normal lighting conditions.	P
F.3.10	Test for permanence of markings	After rubbing test by water and petroleum spirit, the marking still legible; it is not easily possible to remove the marking plate and show no curling.	P
F.4	Instructions		P
	a)..... Information prior to installation and initial use		P



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Clause	Requirement + Test	Result - Remark	Verdict
	b)..... Equipment for use in locations where children not likely to be present		N/A
	c)..... Instructions for installation and interconnection	Provided in user's manual.	P
	d)..... Equipment intended for use only in restricted access area		N/A
	e)..... Equipment intended to be fastened in place		N/A
	f)..... Instructions for audio equipment terminals		P
	g)..... Protective earthing used as a safeguard		N/A
	h)..... Protective conductor current exceeding ES2 limits		N/A
	i)..... Graphic symbols used on equipment		P
	j)..... Permanently connected equipment not provided with all-pole mains Power Supply		N/A
	k)..... Replaceable components or modules providing safeguard function		N/A
	l)..... Equipment containing insulating liquid		N/A
	m)..... Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		P
G	COMPONENTS		P
G.1	Power Supplies		P
G.1.1	General	VDE approved. 10000 operating cycles; normal pollution situation, level 3; and flammability material of plastic material V- 0, UL approved.	P
G.1.2	Ratings, endurance, spacing, maximum load	(See appended table 4.1.2)	P
G.1.3	Test method and compliance		P
G.2	Relays		N/A
G.2.1	Requirements		N/A
G.2.2	Overload test		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	Protective devices		P
G.3.1	Thermal cut-offs		N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links		N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors		N/A
G.3.4	Overcurrent protection devices	Certified source used. (See appended table 4.1.2)	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		P
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions..... :	(See appended table B.4)	P
G.4	Connectors		P
G.4.1	Spacings	See below.	P
G.4.2	Mains connector configuration..... :	Approved according to UL 498 appliance inlet was used.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely	No mismatching of connectors, plugs or sockets possible.	P
G.5	Wound components		P
G.5.1	Wire insulation in wound components	Approved TIW used for secondary winding of T1	P
G.5.1.2	Protection against mechanical stress	be achieved by providing physical separation in the form of insulating sleeving or sheet material.	P
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle)..... :		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Test temperature (°C)..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers		P
G.5.3.1	Compliance method..... :	The transformers meet the requirements given in G.5.3.2 and G.5.3.3.	P
	Position..... :	See table	P
	Method of protection..... :	Over current protection by circuit design.	P
G.5.3.2	Insulation	Basic / supplementary / double insulation.	P
	Protection from displacement of windings..... :	By insulating tape and bobbin	—
G.5.3.3	Transformer overload tests	(See appended table B.3, B.4)	P
G.5.3.3.1	Test conditions	Tested in the complete equipment.	P
G.5.3.3.2	Winding temperatures	(See appended table B.3, B.4)	P
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW		N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation..... :		N/A
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage :		—
G.6	Wire Insulation		P
G.6.1	General	Triple insulated winding in T100, T1F, T401 secondary windings used as reinforced safeguard in the isolating transformer that has separately complied with Annex J. See Appended table 4.1.2. No other wires other than Basic insulated wires not under stress used in the EUT.	P
G.6.2	Enamelled winding wire insulation		N/A
G.7	Mains supply cords		P
G.7.1	General requirements		P
	Type..... :	See appendable table 4.1.2 for details.	—
G.7.2	Cross sectional area (mm ² or AWG)..... :	See appendable table 4.1.2 for details.	P
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords	Appliance inlet used.	N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm)..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, <i>D</i> (mm)..... :		—



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Clause	Requirement + Test	Result - Remark	Verdict
	Radius of curvature after test (mm)..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	Varistors		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	Integrated circuit (IC) current limiters		N/A
G.9.1	Requirements		N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	Resistors		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	Capacitors and RC units		P
G.11.1	General requirements	the Y-Capacitor are used as safeguard and complied with IEC/EN 60384-14: 2013 (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 with specifics	The optocouplers used in the equipment are complied with IEC/EN 60747-5-5. (see appended table 4.1.2)	P
	Type test voltage $V_{ini, a}$:		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Routine test voltage, $V_{ini, b}$:		—
G.13	Printed boards		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation..... :		N/A
	Number of insulation layers (pcs) :		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements :	(See Clause G.13)	N/A
G.15	Pressurized liquid filled components		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16.1	Condition for fault tested is not required		N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test..... :		—
	Mains voltage that impulses to be superimposed on :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test..... :		—
G.16.3	Capacitor discharge test..... :		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—
H.3.1.4	Single fault current (mA):.....		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V).....		N/A
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		P
J.1	General		P
	Winding wire insulation.....	Approved triple insulated wire used. (See appended table 4.1.2)	—
	Solid round winding wire, diameter (mm).....		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm ²).....		N/A
J.2/J.3	Tests and Manufacturing	(See separate test report)	N/A
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
	Instructional safeguard.....		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
K.5.1	Under single fault condition		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance.....		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2..... :	(See appended table 5.4.9)	N/A
K.7.2	Overload test, Current (A)..... :		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		P
L.1	General requirements	Plug used for disconnect device	P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single-phase equipment	The disconnect device disconnect both poles simultaneously.	P
L.5	Three-phase equipment		N/A
L.6	Power Supplies as disconnect devices		N/A
L.7	Plugs as disconnect devices		P
L.8	Multiple power sources		N/A
	Instructional safeguard..... :		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		N/A
M.1	General requirements		N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards..... :		N/A
M.3	Protection circuits for batteries provided within the equipment		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery	(See appended table M.3)	N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance	(See appended table M.3)	N/A
M.4	Additional safeguards for equipment containing a portable secondary lithium battery		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance.....:	(See appended table M.4.2)	N/A
M.4.3	Fire enclosure.....:		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%):		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	Risk of burn due to short-circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	Safeguards against short-circuits		N/A
M.6.1	External and internal faults		N/A
M.6.2	Compliance		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate.....:		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m ³ /h).....:		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%)......:		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate.....:		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%)......:		N/A
M.7.4	Marking.....:		N/A
M.8	Protection against internal ignition from external spark sources of batteries with aqueous electrolyte		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)..... :		—
M.8.2.3	Correction factors..... :		—
M.8.2.4	Calculation of distance d (mm) :		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard..... :		N/A
N	ELECTROCHEMICAL POTENTIALS		N/A
	Material(s) used..... :		—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Value of X (mm)..... :	Complied.	—
P	SAFEGUARDS AGAINST CONDUCTIVE OBJECTS		P
P.1	General	No openings.	P
P.2	Safeguards against entry or consequences of entry of a foreign object		P
P.2.1	General		P
P.2.2	Safeguards against entry of a foreign object		P
	Location and Dimensions (mm) :	Top enclosure: 2.5mm x 29.2mm max. Side enclosure: Φ 2.5mm	—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts..... :		N/A
P.2.3.2	Consequence of entry test..... :		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	Metallized coatings and adhesives securing parts		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Conditioning, T _c (°C).....:		—
	Duration (weeks).....:		—
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		N/A
Q.1	Limited power sources		N/A
Q.1.1	Requirements		N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance.....:		N/A
	Current rating of overcurrent protective device (A):		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		N/A
	Current limiting method.....:		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General		N/A
R.2	Test setup		N/A
	Overcurrent protective device for test.....:		—
R.3	Test method		N/A
	Cord/cable used for test.....:		—
R.4	Compliance		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material.....:		—
	Wall thickness (mm).....:		—
	Conditioning (°C).....:		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material.....:		—



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
S.3	Flammability test for the bottom of a fire enclosure		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A
	Mounting of samples		—
	Wall thickness (mm)..... :		—
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power exceeding 4 000 W		N/A
	Samples, material..... :		—
	Wall thickness (mm)..... :		—
	Conditioning (°C)..... :		—
T	MECHANICAL STRENGTH TESTS		P
T.1	General		P
T.2	Steady force test, 10 N :	(See appended table T.2)	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)	P
T.8	Stress relief test..... :		N/A
T.9	Glass Impact Test..... :		N/A
T.10	Glass fragmentation test		N/A
	Number of particles counted..... :	No such glass provided.	N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)	No such antennas provided.	N/A
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General		N/A
	Instructional safeguard :		N/A
U.2	Test method and compliance for non-intrinsically protected CRTs		N/A
U.3	Protective screen		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
V	DETERMINATION OF ACCESSIBLE PARTS		P
V.1	Accessible parts of equipment		P
V.1.1	General	Following the probes test specified in this annex Figure V.1, V.2, V.0.5 Are suitable.	P
V.1.2	Surfaces and openings tested with jointed test probes		P
V.1.3	Openings tested with straight unjointed test probes		P
V.1.4	Plugs, jacks, connectors tested with blunt probe		P
V.1.5	Slot openings tested with wedge probe		P
V.1.6	Terminals tested with rigid test wire		P
V.2	Accessible part criterion		P
X	ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (900 V RMS)		N/A
	Clearance..... :	(See appended table X)	N/A
Y	CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES		N/A
Y.1	General		N/A
Y.2	Resistance to UV radiation		N/A
Y.3	Resistance to corrosion		N/A
Y.3	Resistance to corrosion		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure..... :		N/A
Y.3.5	Compliance		N/A
Y.4	Gaskets		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means	(See Annex P.4)	N/A
Y.5	Protection of equipment within an outdoor enclosure		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A



IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Relevant tests of IEC 60529 or Y.5.3..... :		N/A
Y.5.3	Water spray test		N/A
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	Mechanical strength of enclosures		N/A
Y.6.1	General		N/A
Y.6.2	Impact test..... :	(See Table T.6)	N/A



IEC62368_1E - ATTACHMENT							
Clause	Requirement + Test	Result - Remark					Verdict
5.2	TABLE: Classification of electrical energy sources						P
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type ¹⁾	Additional Info ²⁾	
290.4Vdc 60Hz	Primary circuits supplied by a.c. mains supply	Normal	290.4Vrms	--	--	--	ES3 (declared)
		Abnormal – See appended table B.3	--	--	--	--	
		Single fault – See appended table B.4	--	--	--	--	
290.4Vdc 60Hz	T1 secondary pin A-B	Normal	168Vrms	--	SS	57.1K	ES3
		Single fault – SC pin A-B	0 (Unit shut down)	--	--	--	
290.4Vdc 60Hz	Output “+” to “-”	Normal	52.03V	--	--	--	ES1
		Abnormal: Overload	51.95V	--	--	--	
		Single fault – Neutral open	--	--	--	--	
		Single fault – EC4 SC	--	--	--	--	
		Single fault – L1 SC	--	--	--	--	
290.4Vdc 60Hz	Output +/- to earth	Normal	--	0.176mA	SS	60Hz	ES1
		Abnormal: Overload	--	0.176mA	SS	60Hz	
		Single fault – Neutral open	--	0.176mA	SS	60Hz	
		Single fault – EC4 SC	--	0.176mA	SS	60Hz	
		Single fault – L1 SC	--	0.176mA	SS	60Hz	
290.4Vdc	Plastic enclosure	Normal	--	0.027mA	SS	60Hz	ES1



IEC62368_1E - ATTACHMENT							
Clause	Requirement + Test			Result - Remark			Verdict
60Hz	to Earth	Abnormal: Overload	--	0.027mA	SS	60Hz	
		Single fault – Neutral open	--	0.027mA	SS	60Hz	
		Single fault – EC4 SC	--	0.027mA	SS	60Hz	
		Single fault – L1 SC	--	0.027mA	SS	60Hz	
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc.							
2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

5.4.1.8	TABLE: Working voltage measurement					P
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments		
T1 pin 1 - pin A	224	368	61.24K Max.	--		
T1 pin 2 - pin A	234	427		--		
T1 pin 4 -pin A	278	520		The highest RMS and Peak voltage		
T1 pin 3 -pin A	228	356		--		
T1 pin 1 - pin B	230	368		--		
T1 pin 2 - pin B	232	448		--		
T1 pin 4 -pin B	229	521		--		
T1 pin 3 -pin B	227	339		--		
U2 pin 1- pin 3	232	364	60	--		
U2 pin 1- pin 4	232	364	60	--		
U2 pin 2- pin 3	232	364	60	--		
U2 pin 2- pin 4	232	364	60	--		
CY1 pin 1 - pin 2	216	348	60	--		
Supplementary information:						

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



IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

5.4.1.10.3 TABLE: Ball pressure test of thermoplastics					P
Allowed impression diameter (mm)..... : ≤ 2 mm					—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)	
AC connector (CON1)	Land Win Electronic Corp	1.5	125	1.0	
AC connector (CON1)	Zhejiang Jieshitai Electronics Co Ltd	2.0	125	1.1	
Supplementary information: --					

5.4.2, 5.4.3 TABLE: Minimum Clearances/Creepage distance								P
Clearance (cl) and creepage distance (cr) at/of/between:	U _p (V)	U _{rms} (V)	Freq ¹⁾ (kHz)	Required cl (mm)	cl (mm)	E.S. 2) (V)	Required cr (mm)	cr (mm)
Basic insulation:								
Trace of L, N before F1	420	250	<30	1.5	>1.5	--	2.5	>2.5
Trace of F1 different polarities	420	250	<30	1.5	>1.5	--	2.5	>2.5
Reinforced Insulation:								
Primary live parts to accessible enclosure	420	250	<30	3.0	>5.5	--	5.0	>5.5
Primary to secondary under PCB trace	520	273	61.24	3.0	>5.5	--	5.5	>5.5
T1 primary winding to secondary winding	520	273	61.24	3.0	>5.5	--	5.5	>5.5
T1 core to secondary winding	520	273	61.24	3.0	>5.5	--	5.5	>5.5
Supplementary information: 1) Only for frequency above 30 kHz 2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)								

5.4.4.2 TABLE: Minimum distance through insulation					P
Distance through insulation (DTI) at/of	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)	
Bobbin	520	Reinforce	0.4	See table 4.1.2	
Supplementary information: 1) See appended table 4.1.2 for details.					

5.4.4.9 TABLE: Solid insulation at frequencies >30 kHz				P
--	--	--	--	---



IEC62368_1E - ATTACHMENT						
Clause	Requirement + Test			Result - Remark		Verdict
Insulation material	E _P	Frequency (kHz)	K _R	Thickness d (mm)	Insulation	V _{PW} (Vpk)
T1 bobbin	17	88.81	0.80	0.45	Reinforce	408
T1 insulation tape	17	88.81	0.80	0.16	Reinforce	408
Supplementary information: --						

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No	
Functional:				
L to N before fuse	DC	2500	No	
Basic/supplementary:				
L&N to accessible metal enclosure	DC	2500	No	
Reinforced:				
L&N to accessible terminal	DC	4000	No	
Transformer T1 primary winding to secondary winding	DC	4000	No	
Transformer T1 core to secondary winding	DC	4000	No	
One layers of insulation tape of transformer (All source)	DC	4000	No	
Insulation sheet (Under PCB)	DC	4000	No	
Supplementary information: --				

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



IEC62368_1E - ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
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5.6.6	TABLE: Resistance of protective conductors and terminations				P
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)	
Accessible metal parts and earthing terminal	32	2	0.602	0.025	
Supplementary information: --					

5.7.4	TABLE: Unearthed accessible parts					P
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V_{rms} or V_{pk})	Current (A_{rms} or A_{pk})	Freq. (Hz)	
Metal enclosure	Normal	290.4	--	0.14mA	60	ES1
	Abnormal – see table B.3, B.4 for detail	290.4	--	0.14mA	60	ES1
	Single fault – see table B.3, B.4 for detail	290.4	--	0.22mA	60	ES1
Accessible terminal	Normal	290.4	--	0.60mA	60	ES1
	Abnormal – see table B.3, B.4 for detail	290.4	--	0.60mA	60	ES1
	Single fault – see table B.3, B.4 for detail	290.4	--	0.60mA	60	ES1
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit						

5.7.5	TABLE: Earthed accessible conductive part			P
Supply voltage (V).....:	264			—
Phase(s)	[X] Single Phase; [] Three Phase: [] Delta [] Wye			—
Power Distribution System	<input checked="" type="checkbox"/> TN <input type="checkbox"/> TT <input type="checkbox"/> IT			—
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Line to earth, Neutral to earthed accessible parts	1	0.18 mApk	Pass	
Supplementary Information: --				



IEC62368_1E - ATTACHMENT						
Clause	Requirement + Test			Result - Remark		Verdict
5.8	TABLE: Backfeed safeguard in battery backed up supplies					N/A
Location	Supply voltage (V)	Operating and fault condition	Time (s)	Open-circuit voltage (V)	Touch current (A)	ES Class
--	--	--	--	--	--	--
Supplementary information: Abbreviation: SC= short circuit, OC= open circuit						

6.2.2	TABLE: Power source circuit classifications					P
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power ¹⁾ (W)	Time (S)	PS class
Output	Normal operation	50.482	2.96	149.43	5	PS3
	Single fault - EC4 SC	0	0	0	0	PS1
	Single fault - L1 SC	0	0	0	0	PS1
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit 1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3. 2) * Unit shutdown immediately recoverable, no hazard.						

6.2.3.1	TABLE: Determination of Arcing PIS			P
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No
All primary circuits and components parts	290.4Vrms	--	--	Yes (declared)
Supplementary information: --				

6.2.3.2	TABLE: Determination of resistive PIS			P
Location	Operating and fault condition	Dissipate power (W)	Resistive PIS? Yes / No	
All primary circuits and components parts	--	--	Yes (declared)	
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit				

8.5.5	TABLE: High pressure lamp				N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No	



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Clause	Requirement + Test		Result - Remark	Verdict
--	--	--	--	--
Supplementary information: --				

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

5.4.1.4, 9.3, B.1.5, B.2.6	TABLE: Temperature measurements							P
Supply voltage (V):	81V/60Hz			290.4V/50Hz			—	
Ambient temperature during test T_{amb} (°C):	Actual			Actual			—	
Maximum measured temperature T of part/at:	T (°C)						Allowed T_{max} (°C)	
AC connected	36.3			34.8			130	
PCB near D8	96.3			95.4			130	
C10	76.5			72.7			105	
U4	101.9			96.8			130	
CY1	84.6			81.3			125	
U2	88.0			84.6			110	
T1 winding	93.5			89.7			110	
T1 core	87.8			81.2			Ref	
C25	92.4			89.6			105	
PCB near BD1	115.6			109.4			130	
PCB near U7	107.9			103.2			130	
PCB near D9	100.2			96.5			130	
C24	89.1			86.7			105	
PCB near U5	98.4			95.4			130	
Metal enclosure	42.5			40.1			60	
Ambient	24.5			24.2			--	
Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class	



IEC62368_1E - ATTACHMENT							
Clause	Requirement + Test					Result - Remark	Verdict
--	--	--	--	--	--	--	--
Supplementary information: Tested with HDMI mode.							

B.2.5 TABLE: Input test								P	
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status	
81	50	5.721	--	463.4	--	F1	5.721	Max load.	
81	60	5.702	--	461.9	--	F1	5.702		
90	50	5.246	--	472.1	520	F1	5.246		
90	60	5.262	--	473.6		F1	5.262		
264	50	1.843	--	486.5		F1	1.843		
264	60	1.847	--	487.7	F1	1.847			
290. 4	50	1.689	--	490.4	--	F1	1.689		
290. 4	60	1.691	--	491.2	--	F1	1.691		
Supplementary information: -									

B.3, B.4 TABLE: Abnormal operating and fault condition tests							P
Ambient temperature T_{amb} (°C)..... :					25°C if not specified		—
Power source for EUT: Manufacturer, model/type, outputrating... :					--		—
Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation	
BD1	SC	290.4	1S	F1	0.01	F1 open immediately, no hazards.	
Q2 Pin 1-3	SC	290.4	1S	F1	0.01	F1 open immediately, no hazards.	
C10	SC	290.4	1S	F1	0.01	F1 open immediately, no hazards.	
T1 pin 1-2	SC	290.4	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazards.	
T1 pin 4-5	SC	290.4	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazards.	
T1 pin 6-7	SC	290.4	10min	F1	0.01	Unit shut down immediately, recoverable, no damage, no hazards.	
D9	SC	290.4	10mins	F1	0.01	Unit shutdown immediately and recoverable, no damaged, no hazard.	



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Clause	Requirement + Test				Result - Remark	Verdict
C2	SC	290.4	10mins	F1	0.01	Unit shutdown immediately and recoverable, no damaged, no hazard.
C24	SC	290.4	10mins	F1	0.01	Unit shutdown immediately and recoverable, no damaged, no hazard.
L1	SC	290.4	10mins	F1	0.01	Unit shutdown immediately and recoverable, no damaged, no hazard.
Supplementary information: --						

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

M.4.2	TABLE: Charging safeguards for equipment containing a secondary lithium battery						N/A
Maximum specified charging voltage (V).....:					--	—	
Maximum specified charging current (A)					--	—	
Highest specified charging temperature (°C)					--	—	
Lowest specified charging temperature (°C)					--	—	
Battery manufacturer/type	Operating and fault condition	Measurement			Observation		
		Charging voltage (V)	Charging current (A)	Temp. (°C)			



IEC62368_1E - ATTACHMENT							
Clause	Requirement + Test				Result - Remark		Verdict
--	--	--	--	--	--	--	
Supplementary information: Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature.							

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

T.2, T.3, T.4, T.5	TABLE: Steady force test						P
Part/Location	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation	
Internal components / parts	--	--	V.2	10	5	No damaged	
Top enclosure	Metal	Min. 1.8	--	100	5	No damaged	
Side enclosure	Metal	Min. 1.8	--	100	5	No damaged	
Bottom enclosure	Metal	Min. 1.8	--	100	5	No damaged	
Supplementary information: --							

T.6, T.9	TABLE: Impact test				P
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Top enclosure	Metal	Min. 1.8	1300	No damaged	
Side enclosure	Metal	Min. 1.8	1300	No damaged	
Bottom enclosure	Metal	Min. 1.8	1300	No damaged	
Supplementary information: --					

T.7	TABLE: Drop test				P
Location/part	Material	Thickness (mm)	Height (mm)	Observation	
Top enclosure	Metal	Min. 1.8	1000	No damaged	
Side enclosure	Metal	Min. 1.8	1000	No damaged	
Bottom enclosure	Metal	Min. 1.8	1000	No damaged	
Supplementary information: --					



IEC62368_1E - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

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

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

4.1.2	TABLE: Critical components information					P
Object / part No.	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
PCB	Interchangeable	Interchangeable	94V-0, 130°C	UL94	UL	
Metal enclosure	Interchangeable	Interchangeable	Min. thickness 1.5mm, Aluminium alloy	IEC 62368-1:2018	Tested with appliance	
Fuse(F1)	Xuyi Sanwei Electric Co. Ltd.	RF1	T2AL250V	IEC60127-3: 2015	VDE 40034490	
Opto-coupler (U4)	SHENZHEN ORIENT COMPONENTS CO LTD	OR-1008	Cr.&Cl.= min.8.0mm; dti≥0.4mm, 110°C	IEC/EN 60747-5-5	VDE 40029733 UL E323844	
Y capacitor (CY1)	Shantou High-New TechnologyDev. Zone Songtian Enterprise Co., Ltd.	CD	2200pF; 500VAC/400VAC/250VAC, 40/125/21;	IEC 60384-14:2013/AMD1:2016	VDE 40025754	
Bleeder Resister (R1, R2, R3, R4)	Interchangeable	Interchangeable	R1= 2.2MΩ, R2= 2.2MΩ, R3= 2.2MΩ, R4= 2.2MΩ, min. 1/4W	IEC 62368-1, EN IEC 62368-1	Test with appliance	
Bridge Rectifiers (BD1)	Shandong Xinnuo Electronic Science and Technology Co., Ltd.	DBF36	3A, 600V	IEC 62368-1, EN IEC 62368-1	Test with appliance	



IEC62368_1E - ATTACHMENT					
Clause	Requirement + Test			Result - Remark	Verdict
Electrolytic Capacitor (C2)	Interchangeable	Interchangeable	22uF, Min. 400V, 105°C	IEC 62368-1, EN IEC 62368-1	Test with appliance
Transformer(T1)	Zhongshan DongfengKaison Electronics Co. , Ltd.	EF1510	Only below 2000M above sea level		
--Bobbin	CHANG CHUN PLASTICS CO., LTD.	T200HF	V-0, 150°C	UL	UL E59481
-- Magnet wire	DONG GUAN YIDA INDUSTRIAL CO., LTD.	2UE/155	155°C	UL	UL E344055
-- Insulating Tape	SUZHOU MAILADUONA ELECTRIC MATERIAL CO., LTD.	JY313#	130°C	UL	UL E188295
--Varnish	YUEYANG GREEN TECHNOLOGY CO., LTD.	JX-1150*	130°C	UL	UL E303754
NTC(NTC1)	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	5D-7	Min 2A, 250V	IEC 60539-1:2016	UL E474052
Varistor (MOV1)	Cerglass MFG Inc	10D471K	Max. 420VAC, Max. peak current: 2500A 85°C	IEC/EN 61051-1, IEC/EN 61051-2-2	VDE 40028836
Plastic sheet	Interchangeable	Interchangeable	V-0, 115° C, min. thickness 0.4mm	UL 746C	UL E315185
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-2039.					
2) Description line content is optional. Main line description needs to clearly detail the component used for testing.					



Photos

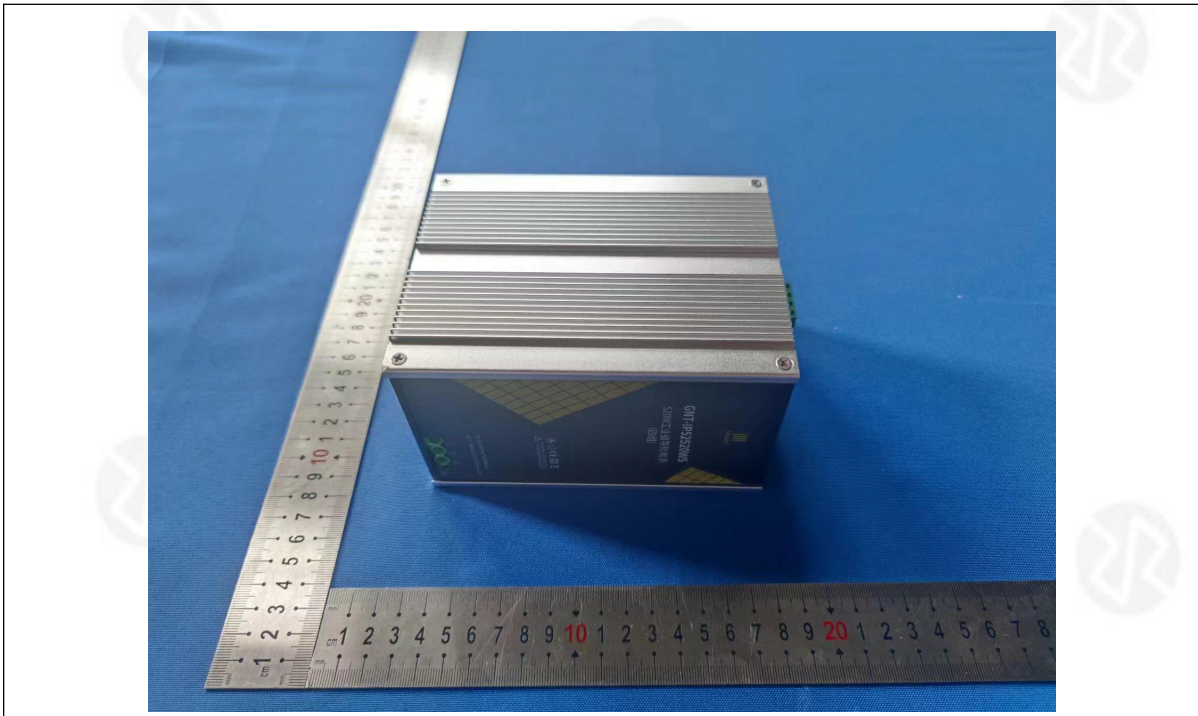


Photo 1: outside view drawing

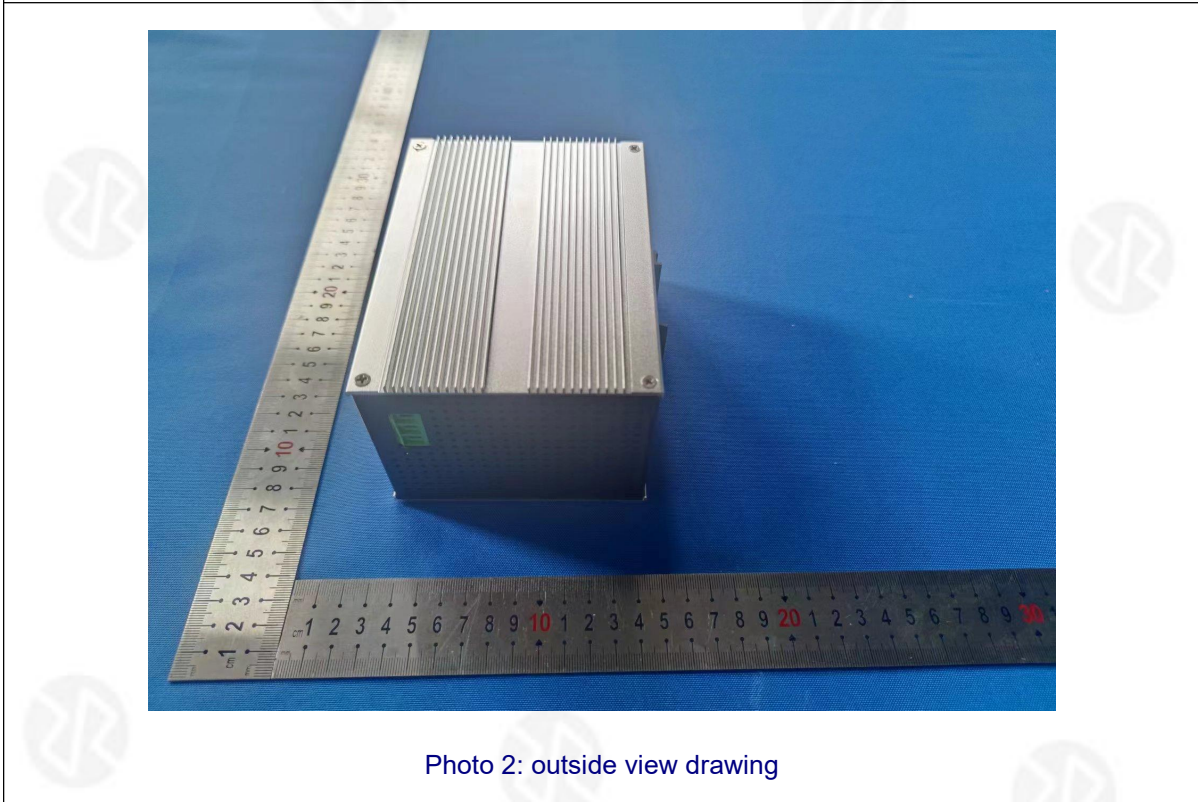


Photo 2: outside view drawing

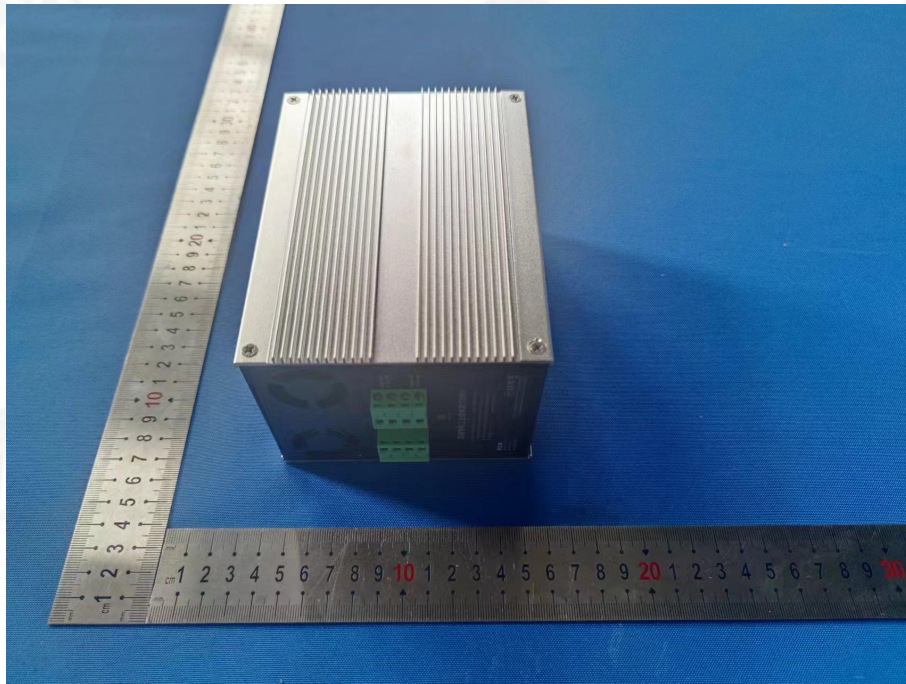


Photo 3: outside view drawing

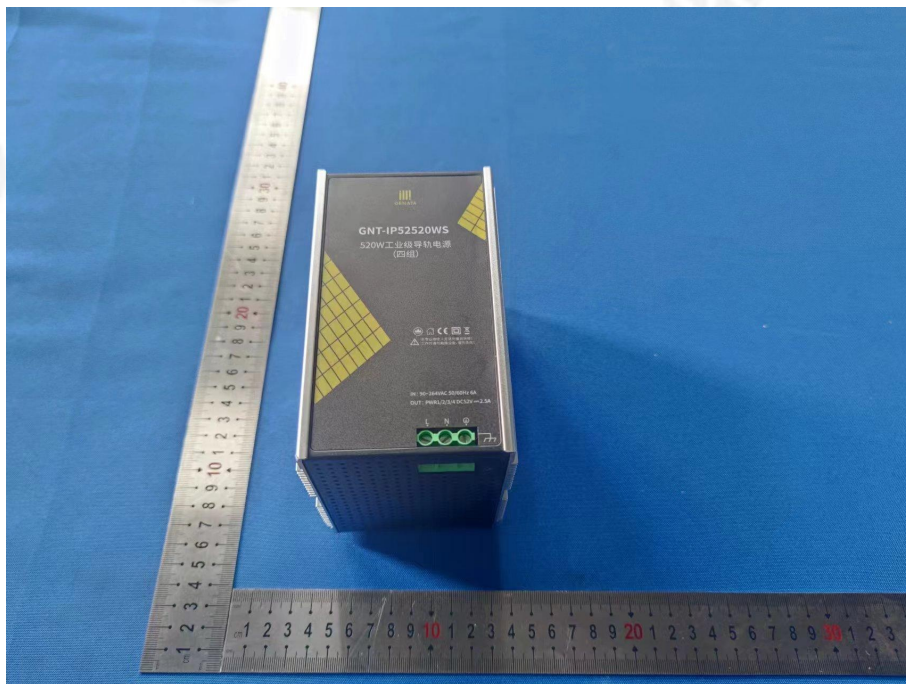


Photo 4: outside view drawing

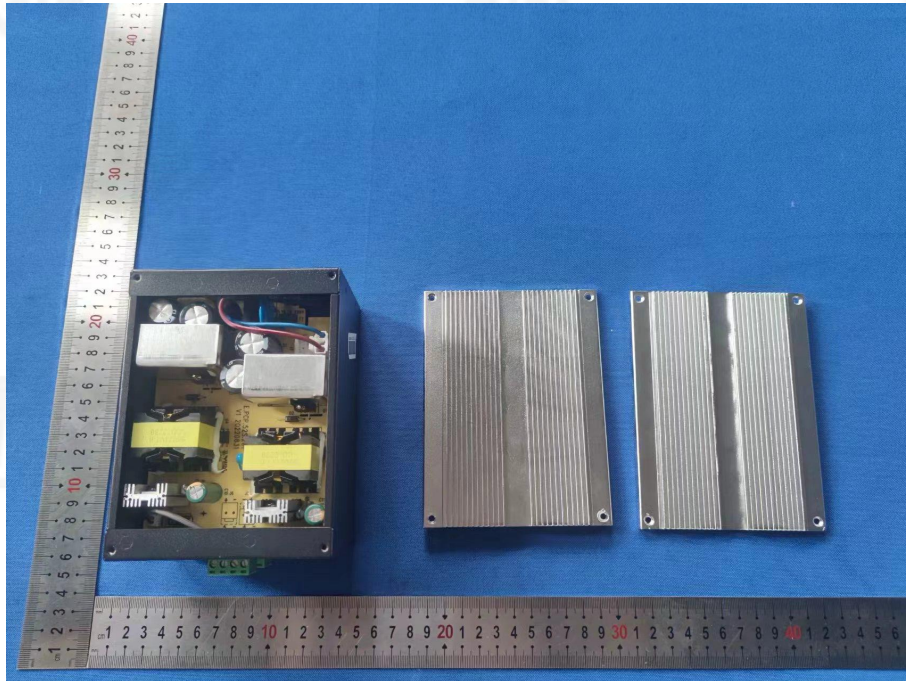


Photo 5: Internal view

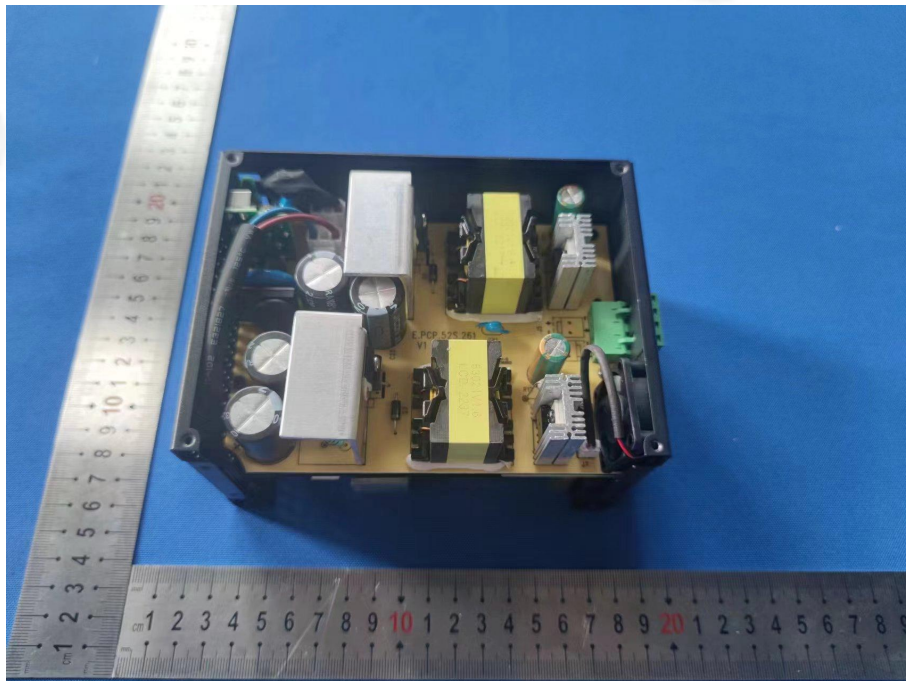


Photo 6: Internal view

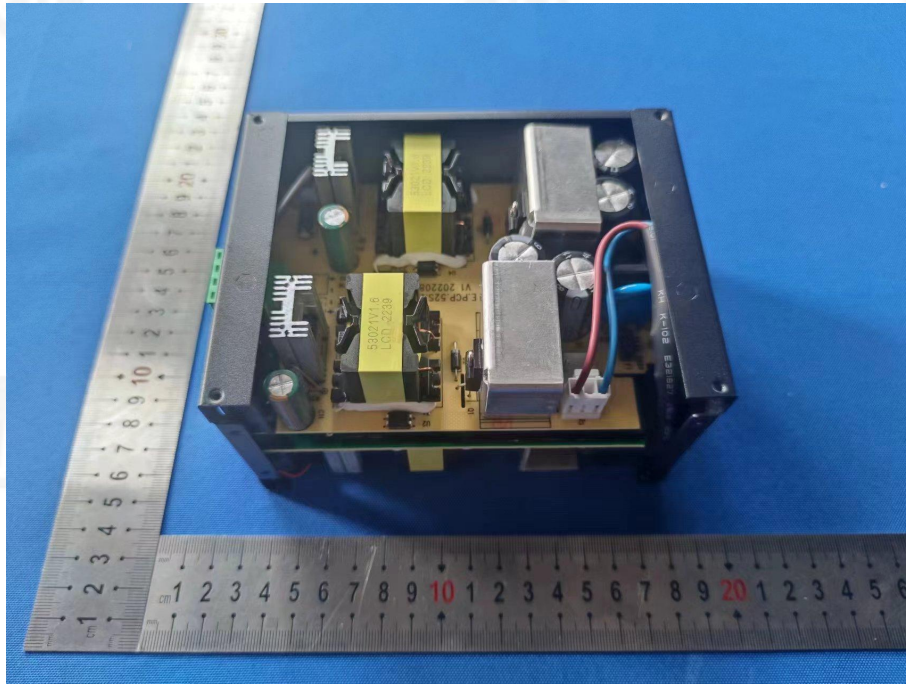


Photo 7: Internal view

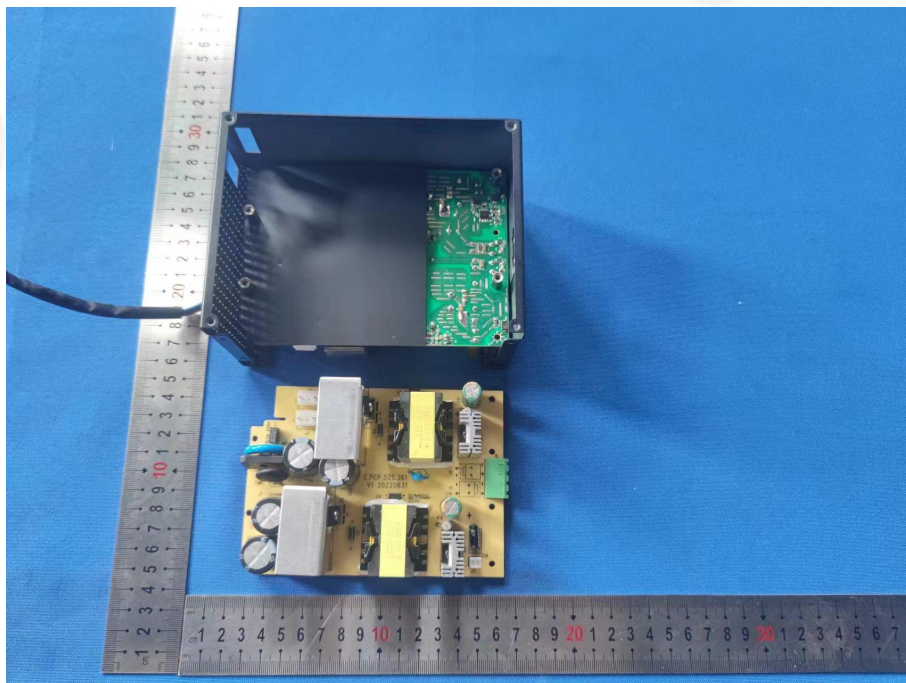


Photo 8: Internal view

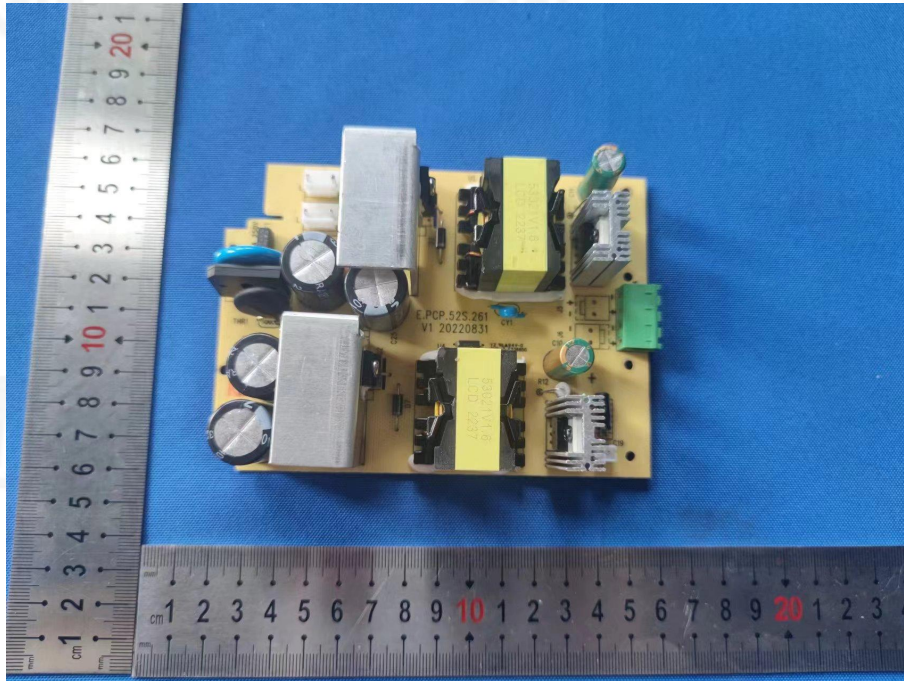


Photo 9: Internal view

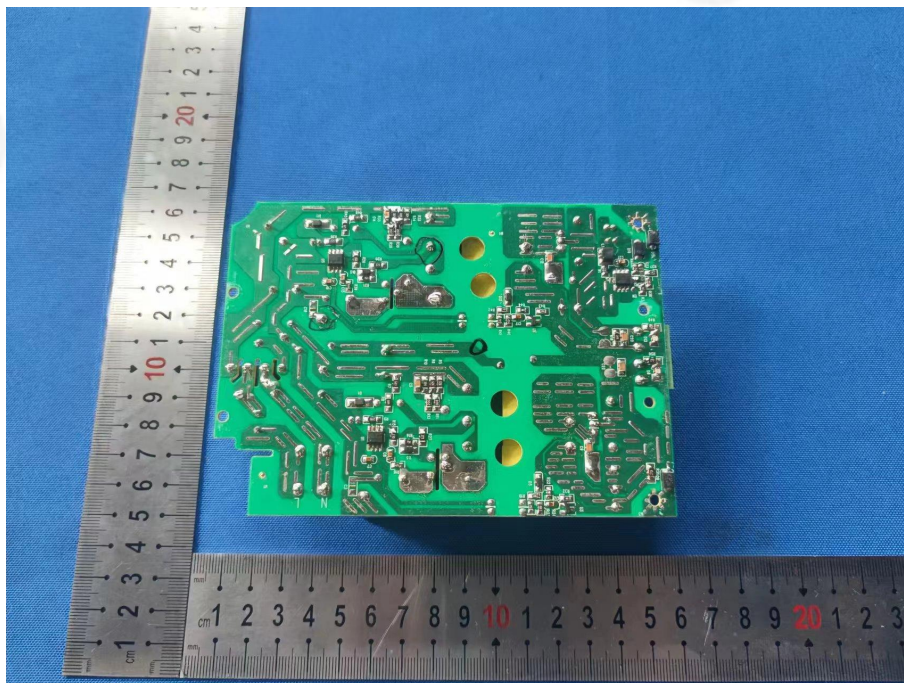


Photo 10: Internal view

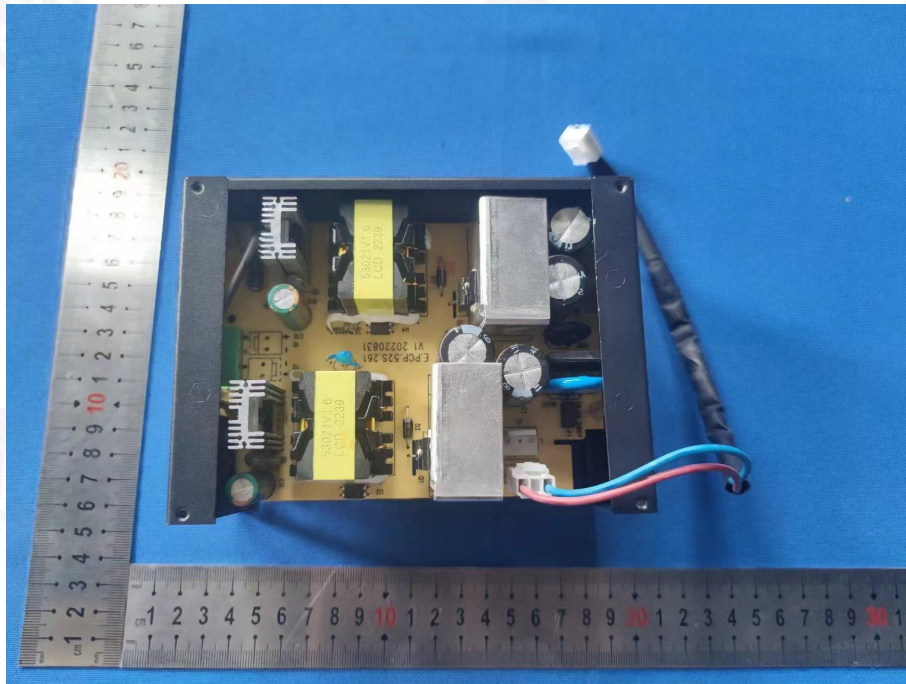


Photo 11: Internal view

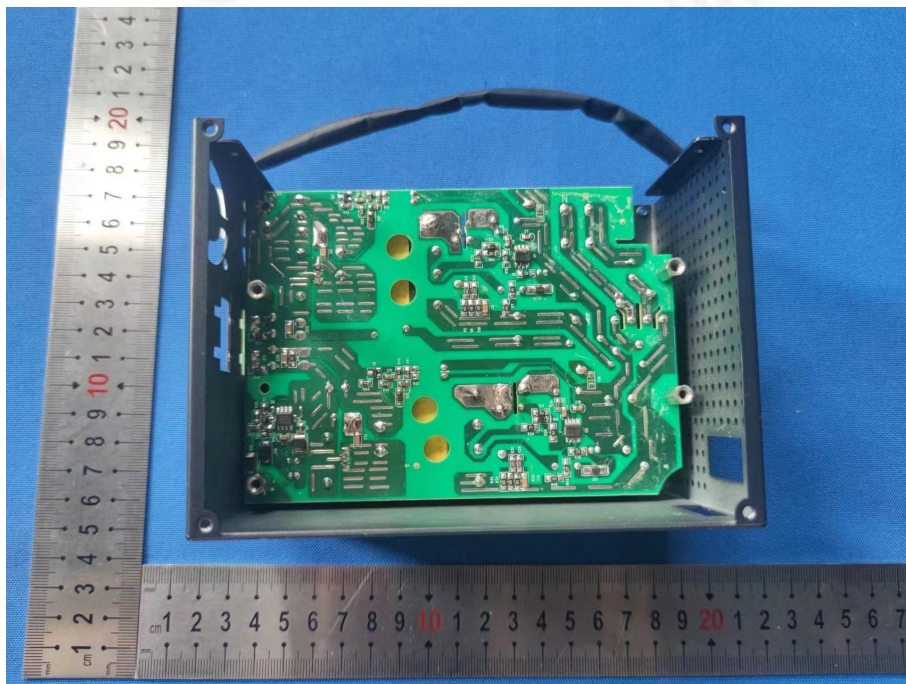


Photo 12: Internal view

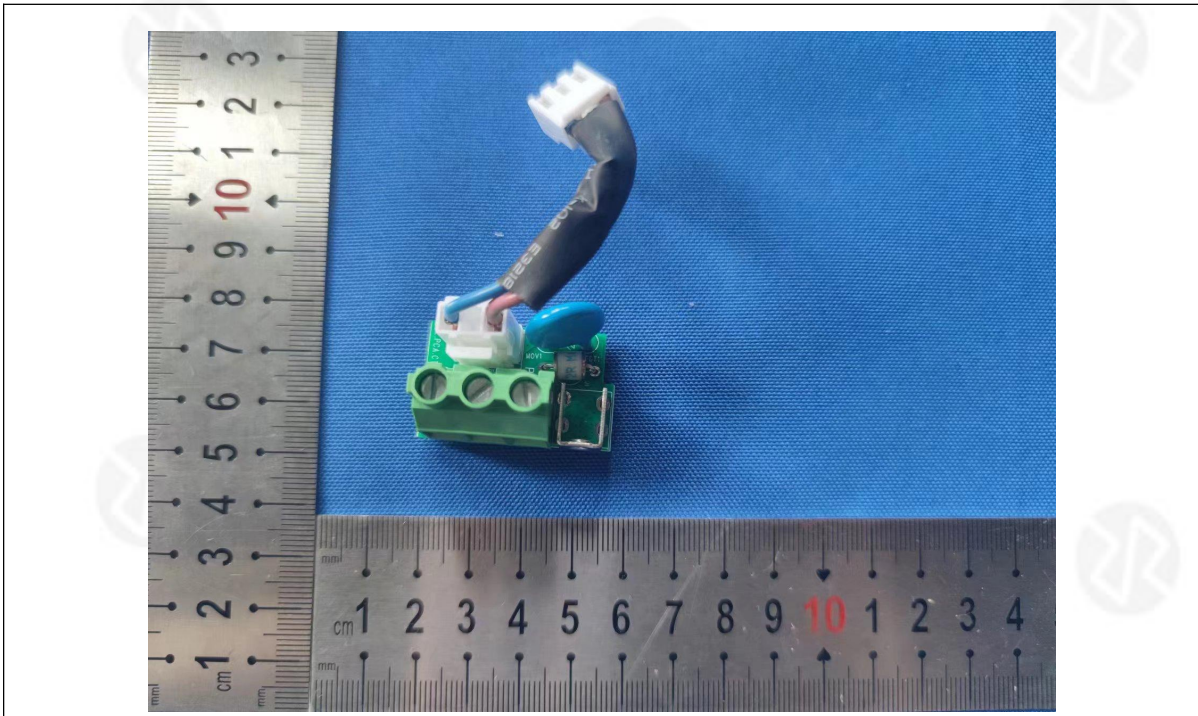


Photo 13: Internal view

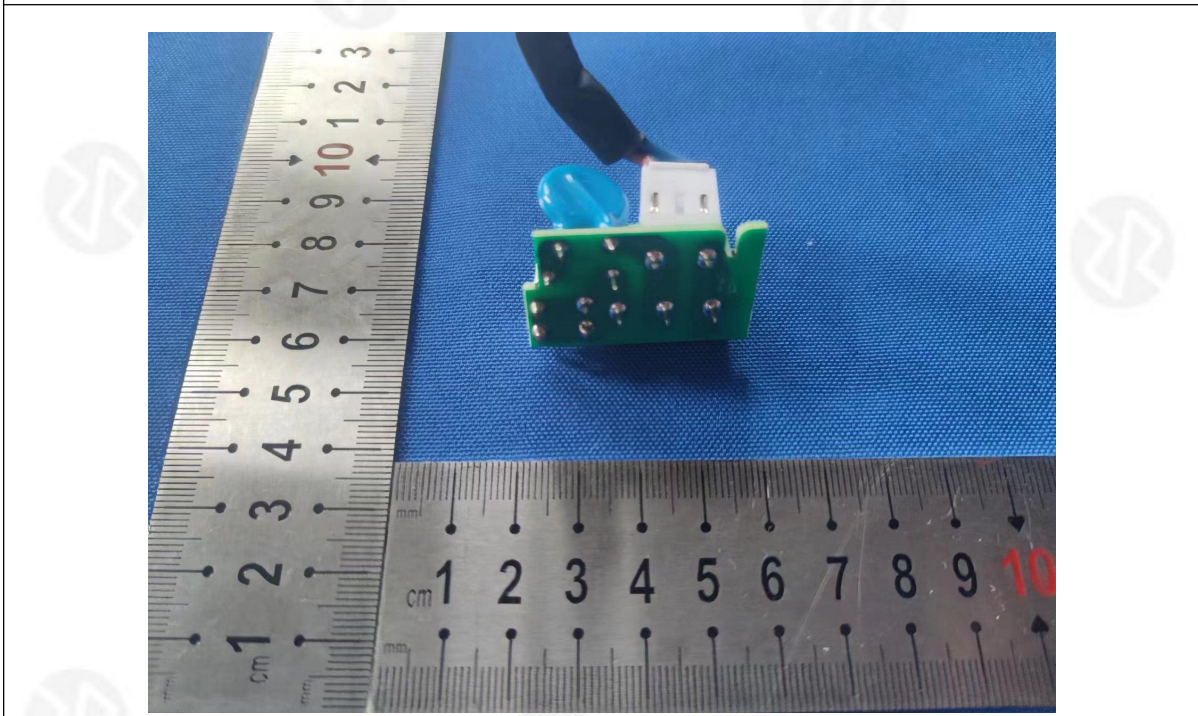


Photo 14: Internal view

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