



Test Report issued under the responsibility of:



TEST REPORT

IEC 62368-1

Audio/video, information and communication technology equipment

Part 1: Safety requirements

Report Number : SHES231102090801

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Name of Testing Laboratory preparing the Report : SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Applicant's name : Hangzhou Hikvision Digital Technology Co., Ltd.

Address : No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China.

Test specification:

Standard : IEC 62368-1:2014

Test procedure : CB Scheme

Non-standard test method : N/A

TRF template used : IECEE OD-2020-F1:2021, Ed.1.4

Test Report Form No. : IEC62368_1D

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

Master TRF : Dated 2022-04-14

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General disclaimer:

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

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Test Item description		AX HYBRID PRO
Trade Mark(s)		HIKVISION
Manufacturer.....		Same as applicant
Model/Type reference		See page 8
Ratings		See page 8
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	CB Testing Laboratory:	SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing location/ address		588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China.
Tested by (name, function, signature)		Emilien Li <i>Emilien Li</i> Project Engineer
Approved by (name, function, signature)		Leo Wang <i>Leo Wang</i> Reviewer
☐	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature)		
☐	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature).....		
Approved by (name, function, signature)		
☐	Testing procedure: CTF Stage 3 :	
☐	Testing procedure: CTF Stage 4:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature).....		
Approved by (name, function, signature)		
Supervised by (name, function, signature)		

List of Attachments (including a total number of pages in each attachment): Attachment 1 – 45 pages of Photos documents; Attachment 2 – 2 pages of Transformer; Attachment 3 – 5 pages of Circuit diagram and PCB layout; Attachment 4 – 10 pages of European group differences and national differences; Attachment 5 – 1 page of Safety information.	
Summary of testing: The sample(s) tested complies with the requirements of IEC 62368-1: 2014 (Second Edition), and EN 62368-1:2014+A11:2017. Unless otherwise specified, the EUT with model DS-PHA64-LP was selected as representative model for full testing. DS-PHA64-LP/NP was selected as representative model for Clause 5.4.1.4, 6.3.2, 9.0, B.2.6, B.2.5, B.3, B.4, M.3, Q.1 testing. Normal load: The speaker under maximum non-clipped condition and AUX “+” and “-” loaded with 1 A. Heating test: Tma = 40°C (declared by manufacturer) K-type thermocouple used for temperature measurement.	
Tests performed (name of test and test clause): ☒ 4. General requirements ☒ 5. Electrically-caused injury ☒ 6. Electrically-caused fire ☒ 7. Injury caused by hazardous substances ☒ 8. Mechanically-caused injury ☒ 9. Thermal burn injury ☒ 10. Radiation ☒ Annex B. Normal operating condition tests, abnormal operating condition tests and single fault condition tests ☒ Annex F.3.9. Performance of Marking test ☒ Annex M Equipment containing batteries and their protection circuits ☒ Annex Q. Limited Power Source ☒ Annex T. Mechanical strength tests ☒ Annex V. Determination of accessible parts	Testing location: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Summary of compliance with National Differences (List of countries addressed): 1. EU Group Differences (EN 62368-1:2014+A11:2017) 2. EU Special National Conditions, EU A-deviations: DE, DK, FI, GB, IE, NO, SE Explanation of used codes: DE=Germany, DK=Denmark, FI=Finland, GB= United Kingdom, IE=Ireland, NO=Norway, SE=Sweden ☒ The product fulfils the above requirements.	

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 use of certification marks on a product must be authorized by the respective National Certification Body that own these marks.

Marking for model DS-PHA64-LP**Marking for model DS-PHA64-LP/NP****Remark:**

- 1) The Height of CE logo shall not be less than 5 mm; Height of WEEE logo shall not be less than 7 mm.
- 2) The marking plates for Class II models are of the same pattern except for model name and Class III models are of the same pattern except for model name.
- 3) As declared by the applicant, the importer (and manufacturer, if it is different)'s name, registered trade name or registered trade mark and the postal address will be marked on the products before being placed on the market. The contact details shall be in a language easily understood by end-users and market surveillance authorities.

TEST ITEM PARTICULARS:	
Classification of use by	☒ Ordinary person ☒ Instructed person ☒ Skilled person ☒ Children likely to be present
Supply Connection	☒ AC Mains(DS-PHA64-LP) ☐ DC Mains ☒ External Circuit – not Mains connected - ☒ ES1(DS-PHA64-LP/NP) ☐ ES2 ☐ ES3
Supply % Tolerance	☒ +10%/-10% (DS-PHA64-LP) ☐ +20%/-15% ☐ + ____ %/ - ____ % ☒ None(DS-PHA64-LP/NP)
Supply Connection – Type	☒ pluggable equipment type A -(DS-PHA64-LP) ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☒ other: Not directly connected to mains(DS-PHA64-LP/NP)
Considered current rating of protective device as part of building or equipment installation.....	____ A; () Installation location: ☐ building; ☐ equipment
Equipment mobility.....	☐ movable ☐ hand-held ☐ transportable ☐ stationary ☐ for building-in ☐ direct plug-in ☐ rack-mounting ☒ wall-mounted
Over voltage category (OVC)	☐ OVC I ☒ OVC II(DS-PHA64-LP) ☐ OVC III ☐ OVC IV ☒ other: Not directly connected to mains(DS-PHA64-LP/NP)
Class of equipment	☐ Class I ☒ Class II(DS-PHA64-LP) ☒ Class III(DS-PHA64-LP/NP)
Access location	☐ restricted access location ☒ N/A
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maximum operating ambient	40°C
IP protection class	☒ IPX0 ☐ IP ____
Power Systems	☒ TN ☒ TT ☐ IT - ____ V _{L-L}
Altitude during operation (m)	☒ 2000 m or less ☐
Altitude of test laboratory (m)	☐ 2000 m or less ☒ 100 m
Mass of equipment (kg)	☒ DS-PHA64-LP :997 g DS-PHA64-LP/NP: 960 g

Possible test case verdicts:	
- test case does not apply to the test object: N/A	
- test object does meet the requirement: P (Pass)	
- test object does not meet the requirement: F (Fail)	
Testing	
Date of receipt of test item.....: 2023-11-07	
Date (s) of performance of tests: 2023-11-07 to 2023-11-22	
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 ☒ comma / ☐ point is used as the decimal separator. This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only. GAC is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing reports.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC62368-1:	
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.....:	☒ Yes ☐ Not applicable Factory declaration letter, pdf, dated on 2023-11-22
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies).....:	1. Hangzhou Hikvision Technology Co., Ltd. No.700, Dongliu Road, Binjiang District, Hangzhou City, Zhejiang, 310052, China. 2. Hangzhou Hikvision Electronics Co., Ltd. No.299, Qiushi Road, Tonglu Economic Development Zone, Tonglu County, Hangzhou, Zhejiang, 311500, China. 3. Chongqing Hikvision technology Co., Ltd. No. 118, Haikang Road, Area C, Jianqiao Industrial Park, Dadukou District, Chongqing, 401325, China.
General product information and other remarks:	

Product Description –

Functions(DS-PHA64-LP)	The equipment under test is Class II AX HYBRID PRO which is powered by built-in power supply or external battery, the external battery not considered in this report.
Functions(DS-PHA64-LP/NP)	The equipment under test is Class III AX HYBRID PRO which is powered by DC 14,3-15V or external battery, the external battery not considered in this report.
Material of enclosure	Plastic
Others	Indoor use only

Model/Type reference:

DS-PHA64-LP	DS-PHA64-LPUHK	DS-PHA64-LPCKV	Rating: 100 - 240 VAC, 50/60 Hz, 3 A Max; Class II All the models are identical except for model name.
DS-PHA64-LPUVS	DS-PHA64-LPKVO	DS-PHA64-LPHUN	
DS-PHA48-EP	DS-PHA48-EPUHK	DS-PHA48-EPCKV	
DS-PHA48-EPUVS	DS-PHA48-EPKVO	DS-PHA48-EPHUN	
DS-PHA32-P/LA	--	--	
DS-PHA64-LP/NP	DS-PHA64-LP/NPUHK	DS-PHA64-LP/NPCKV	Rating: 14,3-15Vd.c.; 2,5A; Class III All the models are identical except for model name.
DS-PHA64-LP/NPUVS	DS-PHA64-LP/NPKVO	DS-PHA64-LP/NPHUN	

Model Differences –

Additional application considerations – (Considerations used to test a component or sub-assembly) –
N/A

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)
DS-PHA64-LP	
Power input and primary circuit	ES3
Internal circuit except primary circuit	ES3
All accessible parts	ES1
DS-PHA64-LP/NP	
Internal circuit	ES1
Enclosure	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)
DS-PHA64-LP	
Power input	PS3
All internal circuits	PS3
Output	PS1
DS-PHA64-LP/NP	
Internal circuits	PS3
Output	PS1
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
Lithium coin battery	Lithium-ion
Source of kinetic/mechanical energy Corresponding classification (MS)	
Sharp edges and corners	MS1
Equipment mass	MS1
Wall/ceiling mount	MS3
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)

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

All accessible parts

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)**

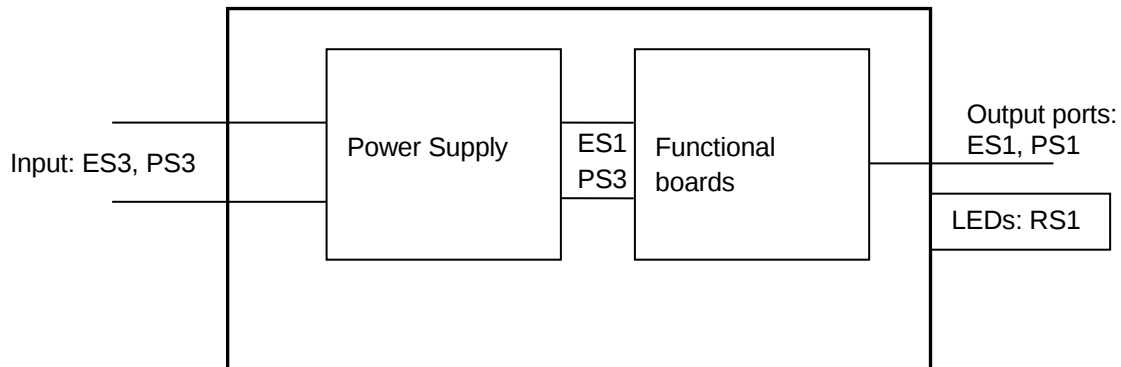
LEDs as indicator

RS1

ENERGY SOURCE DIAGRAM

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

DS-PHA64-LP

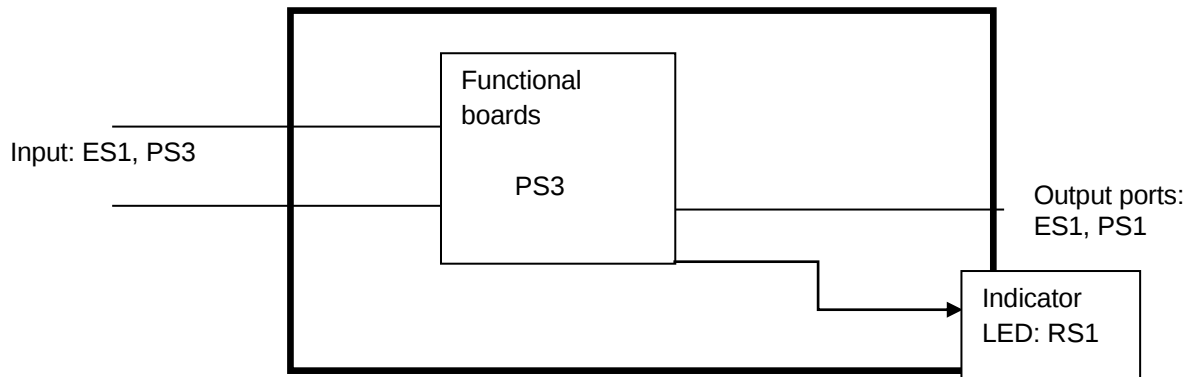


Enclosure: ES1, MS1, TS1

Mass: MS1; Wall mounted: MS3

☒ ES ☒ PS ☒ MS ☒ TS ☒ RS

DS-PHA64-LP/NP



Enclosure: ES1, MS1, TS1

Mass: MS1; Wall-mounted: MS3

☒ ES ☒ PS ☒ MS ☒ TS ☒ RS

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)
DS-PHA64-LP				
Ordinary person	ES3: Power input and primary circuit	Basic Insulation	Protective Earthing	Enclosure Transformers, optocouplers
Ordinary person	ES3: Internal circuit except primary circuit	N/A	N/A	N/A
Ordinary person	ES1: All accessible parts	N/A	N/A	N/A
DS-PHA64-LP/NP				
Ordinary person	ES1: Internal circuit	N/A	N/A	N/A
Ordinary person	ES1: All accessible parts	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
Internal combustible materials	PS3: Internal circuits	1. No ignition occurred. 2. No parts exceeding 90% of its spontaneous ignition temperature. 3. combustible material outside fire enclosure is of min HB	1. PCB is of min V-1 material 2. All other components were mounted on min V-1 PCB or of min V-2 or small parts of combustible material less than 4g. 3. Fire enclosure provided	N/A
Output	PS1	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	Lithium coin battery	N/A	N/A	Comply with Annex M

8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary person	MS1: Sharp edges and corners	N/A	N/A	N/A
Ordinary person	MS1: Equipment mass	N/A	N/A	N/A
Ordinary person	MS3: Wall/ceiling mount	N/A	N/A	Comply with clause 8.7.2
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary person	TS1: Accessible parts	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	RS1: LEDs as indicator	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				

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

4	GENERAL REQUIREMENTS		P
4.1.1	Acceptance of materials, components and subassemblies		P
4.1.2	Use of components		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.3, T.4, T.5)	P
4.4.4.3	Drop tests		N/A
4.4.4.4	Impact tests	(See Annex T.6)	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests.....:		N/A
4.4.4.6	Glass Impact tests		N/A
4.4.4.7	Thermoplastic material tests.....:	(See Annex T.8)	P
4.4.4.8	Air comprising a safeguard.....:	(See Annex T)	P
4.4.4.9	Accessibility and safeguard effectiveness		P
4.5	Explosion		N/A
4.6	Fixing of conductors		P
4.6.1	Fix conductors not to defeat a safeguard		P
4.6.2	10 N force test applied to	All conductors that may defeat a safeguard.	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		N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery		—
4.8.4	Battery Compartment Mechanical Tests		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object.....:	(See Annex P)	P

5	ELECTRICALLY-CAUSED INJURY		P
5.2.1	Electrical energy source classifications.....:	(See appended table 5.2)	P
5.2.2	ES1, ES2 and ES3 limits		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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 :		P
	b) Electric strength test potential (V) :		N/A
	c) Air gap (mm) :	More than 2mm.	P
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		P
5.4.1.2	Properties of insulating material	(For model DS-PHA64-LP)	P
5.4.1.3	Humidity conditioning :	(See sub-clause 5.4.8)	P
5.4.1.4	Maximum operating temperature for insulating materials :	(See appended table 5.4.1.4)	P
5.4.1.5	Pollution degree :	PD 2	—
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage		P
5.4.1.9	Insulating surfaces		P
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		P
5.4.1.10.2	Vicat softening temperature..... :		N/A
5.4.1.10.3	Ball pressure :	(See appended table 5.4.1.10.3)	P
5.4.2	Clearances		P
5.4.2.2	Determining clearance using peak working voltage	(See appended table 5.4.2.2)	P
5.4.2.3	Determining clearance using required withstand voltage :	(See appended table 5.4.2.3)	P
	a) a.c. mains transient voltage :	2500	—
	b) d.c. mains transient voltage :		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	c) external circuit transient voltage :		—
	d) transient voltage determined by measurement :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages :		N/A
5.4.3	Creepage distances :	(See appended table 5.4.3)	P
5.4.3.1	General		P
5.4.3.3	Material Group :	IIIb	—
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		P
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material		P
5.4.4.6.1	General requirements		P
5.4.4.6.2	Separable thin sheet material		P
	Number of layers (pcs) :	2	P
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material..... :	(See appended Table 5.4.9)	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		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ)..... :		—
5.4.6	Insulation of internal wire as part of supplementary safeguard :	(See appended table 5.4.4.2)	N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		P
	Relative humidity (%)..... :	90-96%	—
	Temperature (°C) :	38-42°C	—
	Duration (h) :	120h	—
5.4.9	Electric strength test..... :	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between 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		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		P
5.5.1	General		P
5.5.2	Capacitors and RC units		P
5.5.2.1	General requirement		P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector.....	(See appended table 5.5.2.2)	P
5.5.3	Transformers		P
5.5.4	Optocouplers		P
5.5.5	Relays		N/A
5.5.6	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		N/A
5.6.2	Requirement for protective conductors	Class II equipment.	N/A
5.6.2.1	General requirements		N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective earthing conductor size (mm ²)		—
5.6.4	Requirement for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm ²).		—
	Protective current rating (A)		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Requirement		N/A
	Conductor size (mm ²), nominal thread diameter (mm).		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω).....		N/A
5.6.7	Reliable earthing		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current		P
5.7.2.2	Measurement of prospective touch voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P
	System of interconnected equipment (separate connections/single connection)		—
	Multiple connections to mains (one connection at a time/simultaneous connections)		—
5.7.4	Earthed conductive accessible parts		N/A
5.7.5	Protective conductor current		N/A
	Supply Voltage (V).....		—
	Measured current (Ma)		—
	Instructional Safeguard.....		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (Ma)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 :		P
6.2.2.5	PS2 :		N/A
6.2.2.6	PS3 :	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS :	(See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS :	(See appended table 6.2.3.2)	P
6.3	Safeguards against fire under normal operating and abnormal operating conditions		P
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials :	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure		P
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method	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		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions :		N/A
	Special conditions for temperature limited by fuse		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		P
6.4.7	Separation of combustible materials from a PIS		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.7.1	General..... :		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		P
6.4.8.1	Fire enclosure and fire barrier material properties		P
6.4.8.2.1	Requirements for a fire barrier		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		P
6.4.8.3.1	Fire enclosure and fire barrier openings		P
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm)	Rear side: The bottom openings will be covered during normal use. Other sides: No openings.	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)	No openings.	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)	No door or cover.	N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating.....:	V-0 plastic enclosure.	P
6.5	Internal and external wiring		P
6.5.1	Requirements		P
6.5.2	Cross-sectional area (mm ²)	Acceptance of components and component requirements from IEC 60065 and 60950-1.	—
6.5.3	Requirements for interconnection to building wiring	(See Annex Q.)	N/A
6.6	Safeguards against fire due to connection to additional equipment		P
	External port limited to PS2 or complies with Clause Q.1		P

7	INJURY CAUSED BY HAZARDOUS SUBSTANCES		P
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions		—
7.5	Use of instructional safeguards and instructions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners	No sharp edges or corners, MS1	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	Not such equipment.	N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks	(See Annex F.4 and Annex K)	N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N)		N/A
8.5.5	High Pressure Lamps	No such part.	N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test.....	(See appended table 8.5.5.2)	N/A
8.6	Stability	Equipment mass: MS1	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

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Clause	Requirement + Test	Result - Remark	Verdict
8.6.5	Horizontal force test (Applied Force).....:		N/A
	Position of feet or movable parts.....:		—
8.7	Equipment mounted to wall or ceiling	Mounted > 2m MS3	N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)	Mounting means provided with the equipment.	P
8.7.2	Direction and applied force	Test 1: additional downwards force of 30N is applied to the gravity centre for 1 min; additional horizontal force of 50N is applied laterally for 1 min.	P
8.8	Handles strength	No such part.	N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements	No such part.	N/A
8.9.1	Classification		N/A
8.9.2	Applied force		—
8.10	Carts, stands and similar carriers	No such part.	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	No such part.	N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable N		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas.....	No such part.	N/A
	Button/Ball diameter (mm)		—
9	THERMAL BURN INJURY		P
9.2	Thermal energy source classifications	TS1 for accessible parts.	P

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Clause	Requirement + Test	Result - Remark	Verdict
9.3	Safeguard against thermal energy sources	Enclosure safeguard	P
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard		N/A
9.4.2	Instructional safeguard	Not used.	N/A

10	RADIATION		P
10.2	Radiation energy source classification		P
10.2.1	General classification	RS1 for LEDs as indicator.	P
10.3	Protection against laser radiation	No such part.	N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault..... :		N/A
	Instructional safeguard		—
	Tool..... :		—
10.4	Protection against visible, infrared, and UV radiation	RS1 for LEDs as indicator.	P
10.4.1	General		P
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 . :	RS1 for LEDs as indicator.	P
10.4.1.d)	Normal, abnormal, single-fault conditions		P
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..... :		P
10.4.2	Instructional safeguard		N/A
10.5	Protection against x-radiation	No such 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

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum radiation (Pa/kg)..... :		N/A
10.6	Protection against acoustic energy sources	No such radiation.	N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, Db(A)..... :		N/A
	Output voltage, unweighted r.m.s..... :		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards :		N/A
	Equipment safeguard prevent ordinary person to RS2..... :		—
	Means to actively inform user of increase sound pressure..... :		—
	Equipment safeguard prevent ordinary person to RS2..... :		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 Db(A) L_{Aeq} acoustic pressure output..... :		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum Db(A)..... :		—
10.6.5.3	Cordless listening device		N/A
	Maximum Db(A)..... :		—

B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		P
B.2	Normal Operating Conditions		P
B.2.1	General requirements..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :	(See Annex E)	N/A
B.2.3	Supply voltage and tolerances		P
B.2.5	Input test..... :	(See appended table B.2.5)	P
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		N/A
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector :		N/A
B.3.5	Maximum load at output terminals :	(See appended table B.3)	P

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Clause	Requirement + Test	Result - Remark	Verdict
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		P
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited		N/A
B.4.3	Motor tests		N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature		N/A
B.4.4	Short circuit of functional insulation		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 disconnect of passive components		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 Annex M)	P
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 apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		P
E.1	Audio amplifier normal operating conditions		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Audio signal voltage (V) :	8	—
	Rated load impedance (Ω) :	15W	—
E.2	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		P
F.1	General requirements		P
	Instructions – Language :	English	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1		P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		P
F.3	Equipment markings		P
F.3.1	Equipment marking locations	Exterior of equipment.	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	—
F.3.3	Equipment rating markings	See copy of marking plate	P
F.3.3.1	Equipment with direct connection to mains	For model DS-PHA64-LP	P
F.3.3.2	Equipment without direct connection to mains	For model DS-PHA64-LP/NP	P
F.3.3.3	Nature of supply voltage..... :	See copy of marking plate	—
F.3.3.4	Rated voltage :	See copy of marking plate	—
F.3.3.4	Rated frequency :	See copy of marking plate	—
F.3.3.6	Rated current or rated power :	See copy of marking plate	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device	No such part.	N/A
F.3.5	Terminals and operating devices		N/A
F.3.5.1	Mains appliance outlet and socket-outlet markings :		N/A
F.3.5.2	Switch position identification marking :		N/A
F.3.5.3	Replacement fuse identification and rating markings :	For model DS-PHA64-LP	P
F.3.5.4	Replacement battery identification marking :		N/A
F.3.5.5	Terminal marking location	No such marking.	N/A
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I Equipment		N/A
F.3.6.1.1	Protective earthing conductor terminal		N/A
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.6.2	Class II equipment (IEC60417-5172)	For model DS-PHA64-LP	P
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 :		—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	The label was subject to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 sec. And then again for 15 sec. with cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was no curling and lifting of the label edge.	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)	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards		N/A
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
G	COMPONENTS		P
G.1	Switches		N/A
G.1.1	General requirements		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.2.1	General requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	Protection Devices		P
G.3.1	Thermal cut-offs		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		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		P
G.3.4	Overcurrent protection devices	For model DS-PHA64-LP	P
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions.....:		P
G.4	Connectors		P
G.4.1	Spacings	(For model DS-PHA64-LP)	P
G.4.2	Mains connector configuration	See table 4.1.2.	P
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	Wound Components		P
G.5.1	Wire insulation in wound components.....	Used in the transformer. (For model DS-PHA64-LP)	P
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°	Insulation tube used in the transformer as mechanical protection.	P
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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).....	IEC62368-1	P
	Position.....	See critical components table	—
	Method of protection	Regulating network	—
G.5.3.2	Insulation		P
	Protection from displacement of windings.....		—
G.5.3.3	Overload test	(See appended table B.3)	P
G.5.3.3.1	Test conditions		P
G.5.3.3.2	Winding Temperatures testing in the unit		P
G.5.3.3.3	Winding Temperatures – Alternative test method		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
	Position		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days)		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V)		—
G.5.4.5.3	Tested on the Bench – Alternative test method; test time (h)		N/A
	Electric strength test (V)		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature		N/A
	Electric strength test (V)		N/A
G.5.4.6.3	Tested on the bench – Alternative test method; test time (h)		N/A
	Electric strength test (V)		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.9	Series motors		N/A
	Operating voltage		—
G.6	Wire Insulation		P
G.6.1	General		P
G.6.2	Solvent-based enamel wiring insulation		P
G.7	Mains supply cords		P
G.7.1	General requirements		P
	Type.....	See table 4.1.2.	—
	Rated current (A)	See table 4.1.2.	—
	Cross-sectional area (mm ²), (AWG).....		—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm).....		—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
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	Approval varistor used, see table 4.1.2 for details.	P
G.8.2	Safeguard against shock		P
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		P
G.9.1 a)	Manufacturer defines limit at max. 5A.	Certified IC current limiter	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	Capacitor and RC units		P
G.11.1	General requirements	See table 4.1.2.	P
G.11.2	Conditioning of capacitors and RC units		N/A
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)	See table 4.1.2.	P
	Type test voltage Vini	See table 4.1.2.	—
	Routine test voltage, Vini,b	See table 4.1.2.	—
G.13	Printed boards		P
G.13.1	General requirements	No such insulation on PCB.	P
G.13.2	Uncoated printed boards		P
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction)		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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	No such part.	N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with $U_c =$ to transient voltage :		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage :		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
D2)	Capacitance :		—
D3)	Resistance :		—
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General	No ringing signal.	N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz) :		—
H.3.1.2	Voltage (V) :		—
H.3.1.3	Cadence; time (s) and voltage (V) :		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
H.3.1.4	Single fault current (Ma):		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)		—
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		P
	General requirements	(See separate test report)	P
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism	(See Annex G)	N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance	(See appended table B.4)	N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location)		N/A
K.7.2	Overload test, Current (A)		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		P
L.1	General requirements	Appliance coupler used as disconnect devices(For model DS-PHA64-LP)	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		P
L.8	Multiple power sources		N/A
M	EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS		P
M.1	General requirements		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.2	Safety of batteries and their cells		P
M.2.1	Requirements	Certified coin battery.	P
M.2.2	Compliance and test method (identify method) ... :		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 appended Tables and Annex M and M.4)	P
M.4	Additional safeguards for equipment containing secondary lithium battery	[] The battery is not rechargeable [x] The average resistance of the lithium coin battery is larger than 3Ω according to IEC 62133-2 Annex D.	N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature :		—
M.4.2.2 b)	Single faults in charging circuitry :		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying	Coin battery soldered on PCB.	N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		P
M.6.1	Short circuits	Certified coin battery.	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.6.1.1	General requirements		P
M.6.1.2	Test method to simulate an internal fault	Certified coin battery.	N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method)		P
M.6.2	Leakage current (Ma)		N/A
M.7	Risk of explosion from lead acid and NiCd batteries	Not lead acid or NiCd battery.	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	Not such battery.	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	Pollution degree considered	—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		P
	Figures O.1 to O.20 of this Annex applied	(For model DS-PHA64-LP)	—
P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS		P
P.1	General requirements		P
P.2.2	Safeguards against entry of foreign object		P
	Location and Dimensions (mm)	Rear side: The bottom openings will be covered during normal use. Other sides: No openings.	—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Transportable equipment with metalized plastic parts		N/A
P.2.3.2	Openings in transportable equipment in relation to metalized 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	Metalized 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		P
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		P
	- Regulating network limited output under normal operating and simulated single fault condition		N/A
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		P
Q.1.2	Compliance and test method		P
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A)		—
	Current limiting method		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)).		N/A
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		P
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	Not used.	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	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		P
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (test condition), (°C)		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
T	MECHANICAL STRENGTH TESTS		P
T.1	General requirements		P
T.2	Steady force test, 10 N	(For model DS-PHA64-LP)	P
T.3	Steady force test, 30 N		N/A
T.4	Steady force test, 100 N		P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T.5	Steady force test, 250 N	(See appended table T.2, T.3, T.4, T.5)	P
T.6	Enclosure impact test	(See appended table T.6)	P
	Fall test	(See appended table T.5)	P
	Swing test		N/A
T.7	Drop test		N/A
T.8	Stress relief test	(See appended table T.8)	P
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J).....		—
	Height (m)		—
T.10	Glass fragmentation test		N/A
T.11	Test for telescoping or rod antennas	No such part.	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 such part.	N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen.....		N/A
V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		P
V.1	Accessible parts of equipment		P
V.2	Accessible part criterion		P

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

4.1.2	TABLE: List of critical components					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹	
For model DS-PHA64-LP						
AC inlet	HCR Electronics Co., Ltd.	SK02XXX	2,5A, 250V~	EN60320-1:2015	Nemko Cert No.: ENEC NO4024	
Built-in power supply	MOSO Power Supply Technology Co., Ltd.	MS-P2500A143-036A0-CN	Input: 100-240VAC, Max 1 A, 50-60Hz; Output: 14,3VDC, 2,5A	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance	
Appliance Inlet (CON1)	YUEQING JIAXIN TECHNOLOGY CO LTD	DB-8, DB-8-01, DB-8-02, DB-8-03, DB-8-04, DB-8-05, DB-8-06, DB-8-07	2,5A, 250VAC	IEC 60320-1 UL60320-1 UL498	TUV R 50462175 UL E514838	
Alternative	YUEQING YANHUI ELECTRONIC CO LTD	DB-14-T series	2,5A, 250VAC	IEC 60320-1 UL60320-1 UL498	VDE 40035411 UL E334847	
Alternative	Zhe Jiang Bei Er Jia Electronic Co., Ltd.	ST-A03-002 ST-A03-004 ST-A03-005	2,5A, 250VAC	IEC 60320-1 UL60320-1 UL498	VDE 40014833 UL E225980	
Alternative	HCR Electronics Co Ltd	SK02 Series	2,5A, 250VAC	EN 60320-1 UL60320-1 UL498	ENEC NO4024 UL E344254	
Alternative	INALWAYS CORP	0721 Series	2,5A, 250VAC	EN 60320-1 UL60320-1 UL498	ENEC16/FI/21/01019 UL E94191	
PCB	SHENZHEN ZHONG LUO ELECTRONICS CO LTD	ZL-03A	V-0, 130°C	UL 796 UL 94	UL E255554	
Alternative	Interchangeable	Interchangeable	V-1 or better, 130°C	UL 796 UL 94	UL	

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Fuse (F1)	Ever Island Electric Co., Ltd. and Walter Electric	2010 Serie(s)	T3.15AL or T6.3AL Min250Vac	IEC/EN 60127-1, IEC/EN 60127-3 UL 248	VDE 40018781 UL E220181
Alternative	Shenzhen Lanson Electronics Co. Ltd.	SMT	T3.15AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40012592 UL E221465
Alternative	Shenzhen Lanson Electronics Co. Ltd.	SMT	T6.3AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40013102 UL E221465
Alternative	Conquer Electronics Co., Ltd.	MST	T3.15AL or T6.3AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40017118 UL E82636
Alternative	Dongguan Better Electronic Technology Co., Ltd.	932	T3.15AL or T6.3AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40033369 E300003
Alternative	XC ELECTRONICS (SHENZHEN) CORP LTD	5TE	T3.15AL or T6.3AL Min250Vac	IEC/EN 60127-1, IEC/EN 60127-3 UL 248	VDE 40029550 UL E249609
Fuse (F2) (Optional)	Ever Island Electric Co., Ltd. and Walter Electric	2010 Serie(s)	T6.3AL or T5AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40018781 UL E220181
Alternative	Shenzhen Lanson Electronics Co. Ltd.	SMT	T6.3AL or T5AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40013102 UL E221465
Alternative	Conquer Electronics Co., Ltd.	MST	T6.3AL or T5AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE 40017118 UL E82636
Alternative	Dongguan Better Electronic Technology Co., Ltd.	932	T6.3AL or T5AL Min250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL248	VDE40033369 E300003
Alternative	XC ELECTRONICS (SHENZHEN) CORP LTD	5TE	T6.3AL or T5AL Min250Vac	IEC/EN 60127-1, IEC/EN 60127-3 UL 248	VDE40029550 UL E249609

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Line Choke (LF2)	Moso Power Supply Technology Co., Ltd.	IN1212	Min 130°C	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Bleeder resistor (R8.R9.R10.R11)	Yageo Corporation Thick Film Factory	RC1206	Each Max. 2MΩ, Min.1/4W	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Alternative	Interchangeable	Interchangeable	Each Max. 2MΩ, Min.1/4W	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Varistor (VR1) (Optional)	Thinking Electric Industrial Co., Ltd.	TVR10471-V, TVR10511-V, TVR10561-V, TVR10621-V, TVR10681-V, TVR10471-B, TVR10511-B, TVR10561-B, TVR10621-B, TVR10681-B, TVR14471, TVR14511, TVR14561, TVR14621, TVR14681, TVR10471, TVR10511, TVR10561, TVR10621, TVR10681	Min. 300VAC, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 005944 UL E314979
Alternative	Thinking Electric Industrial Co Ltd	TVR10471-D, TVR10511-D, TVR10561-D, TVR10621-D, TVR10681-D, TVR14471-D, TVR14511-D, TVR14561-D, TVR14621-D, TVR14681-D	Min. 300V, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40021243 UL E314979

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Cerglass MFG Inc.	10D471K, 10D511K, 10D561K, 10D621K, 10D681K, 14D471K, 14D511K, 14D561K, 14D621K, 14D681K	Min. 300VAC, 40/85/21, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40028836 UL E317616
Alternative	Centra Science Corp.	CNR-10D471K, CNR-10D511K, CNR-10D561K, CNR-10D621K, CNR-10D681K, CNR-14D471K, CNR-14D511K, CNR-14D561K, CNR-14D621K, CNR-14D681K	Min. 300VAC, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40008220 UL E316325
Alternative	Brightking (Shenzhen) Co., Ltd.	10D471K, 10D511K, 10D561K, 10D621K, 10D681K, 14D471K, 14D511K, 14D561K, 14D621K, 14D681K, 471KD10, 511KD10, 561KD10, 621KD10, 681KD10, 471KD14, 511KD14, 561KD14, 621KD14, 681KD14	Min. 300VAC, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40027827 UL E327997

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Joyin Co., Ltd.	10S471K, 10S511K, 10S561K, 10S621K, 10S681K, 14S471K, 14S511K, 14S561K, 14S621K, 14S681K	Min. 300VAC, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40004658 UL E325508
Alternative	Joyin Co., Ltd.	10N471K, 10N511K, 10N561K, 10N621K, 10N681K 14N471K, 14N511K, 14N561K, 14N621K, 14N681K	Min. 300VAC, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 005937 UL E325508
Alternative	Shantou High- New Technology Dev. Zone Songtian Enterprise Co., Ltd.	10D471K, 10D511K, 10D561K, 10D621K, 10D681K, 14D471K, 14D511K, 14D561K, 14D621K, 14D681K	Min. 300VAC, 40/85/56, V-0 coating (Tested for 6KV/3KA combination pulse)	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40023049 UL E330837

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Shaanxi Huaxing electronic group Co.,Ltd.	MYG20G10K4 71 MYG20G10K5 11 MYG20G10K5 61, MYG20G10K6 21, MYG20G10K6 81, MYG20G14K4 71 MYG20G14K5 11 MYG20G14K5 61, MYG20G14K6 21, MYG20G14K6 81	Min. 300VAC, 40/85/21, Comply with Annex Q of IEC 60950-1	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40018747 UL E329651
Alternative	GUANGDONG SOUTH HONGMING ELECTRONIC SCIENCE AND TECHNOLOGY CO.,LTD.	ZVR10D471 ZVR10D511 ZVR10D561 ZVR10D621 ZVR10D681 ZVR14D471 ZVR14D511 ZVR14D561 ZVR14D621 ZVR14D681	Min. 300VAC, 40/85/21, Comply with Annex Q of IEC 60950-1	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40027789 UL E321851

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	XIAN XIWUER ELECTRONIC & INFORMATION CO LTD	MYG3-10K300, MYG3-10K325, MYG3-10K360, MYG3-10K385, MYG3-10K420, MYG3-14K300, MYG3-14K325, MYG3-14K360, MYG3-14K385, MYG3-14K420, MYD-10K471, MYD-10K511, MYD-10K561, MYD-10K621, MYD-10K681, MYD-14K471, MYD-14K511, MYD-14K561, MYD-14K621, MYD-14K681	Min. 300VAC, 40/85/21, Comply with Annex Q of IEC 60950-1	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40008528 UL E321175

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	THERMISTOR-MOV ELECTRONICS CO LTD	HVR10D471 HVR10D511 HVR10D561 HVR10D621 HVR10D681 HVR10D471-H HVR10D511-H HVR10D561-H HVR10D621-H HVR10D681-H HVR10D471-HJ, HVR10D511-HJ, HVR10D561-HJ, HVR10D621-HJ, HVR10D681-HJ, HVR10D471-J, HVR10D511-J, HVR10D561-J, HVR10D621-J, HVR10D681-J,	Min. 300Vac, V-0 coating, SPD type 1, 2 or 3.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	J50420593 UL E479221

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	THERMISTOR-MOV ELECTRONICS CO LTD	HVR14D471 HVR14D511 HVR14D561 HVR14D621 HVR14D681 HVR14D471-H HVR14D511-H HVR14D561-H HVR14D621-H, HVR14D681-H, HVR14D471-HJ, HVR14D511-HJ, HVR14D561-HJ, HVR14D621-HJ, HVR14D681-HJ, HVR14D471-J, HVR14D511-J, HVR14D561-J, HVR14D621-J, HVR14D681-J,	Min. 300Vac, V-0 coating, SPD type 1, 2 or 3.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	J50420597 UL E479221
Alternative	THERMISTOR-MOV ELECTRONICS CO LTD	HVR10D471, HVR10D511, HVR10D561, HVR10D621, HVR10D681 HVR14D471, HVR14D511, HVR14D561, HVR14D621, HVR14D681	Min. 300Vac, V-0 coating, SPD type 1, 2 or 3.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40044174 UL E479221
Alternative	DONGGUAN CITY DAFU ELECTRONICS CO LTD	10D471K, 10D511K, 10D561K, 10D621K, 10D681K,	Min. 300Vac, V-0 coating, SPD type 1, 2 or 3.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40050909

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	DONGGUAN CITY DAFU ELECTRONICS CO LTD	NDF10D471K NDF10D511K NDF10D561K NDF10D621K NDF10D681K NDF14D471K NDF14D511K NDF14D561K NDF14D621K NDF14D681K	Min. 300Vac, V-0 coating, SPD type 1, 2 or 3, 125°C	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q IEC 62368 G.8 UL 1449	VDE 40050909 UL E502211
Y1 Capacitor (CY1)	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	CD-Series	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40025754 UL E208107
Alternative	Hsuan Tai Electronic Co. Ltd.	CY	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40008912 UL E199069

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	Shenzhen Haotian Electronic Co., Ltd.	HT	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40029300 UL E326483
Alternative	Haohua Electronic Co.	CT 7	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40003902 UL E233106
Alternative	Kunshan Wansheng Electronics Co., Ltd.	CT7	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40012143 UL E249006

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	XIAMEN WANMING ELECTRONICS CO LTD	HJ/CK/UK	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384- 14/A1 (VDE 0565-1- 1/A1):2017-04; EN 60384- 14:2013/A1:2016 IEC 60384-14:2013 IEC 60384- 14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1- 1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40034438 UL E221839
Alternative	GCE (DONGGUAN) ELECTRONICS CO LTD	GY1 Series	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384- 14/A1 (VDE 0565-1- 1/A1):2017-04; EN 60384- 14:2013/A1:2016 IEC 60384-14:2013 IEC 60384- 14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1- 1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40040844 UL E464834
Alternative	DONGGUAN CITY DAFU ELECTRONICS CO LTD	CT7 Y1 Series	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384- 14/A1 (VDE 0565-1- 1/A1):2017-04; EN 60384- 14:2013/A1:2016 IEC 60384-14:2013 IEC 60384- 14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1- 1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40041523 UL E465278

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Shaanxi Huaxing Electronic Development Co.,Ltd.	CT7 Y1	Min. 250Vac Max. 1000pF, 25/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40015542 UL E217400
Alternative	Guangdong South Hongming Electronic Science and Technology Co.,Ltd.	F	Min. 250Vac Max. 1000pF, 40/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40036393 UL E154899
Alternative	Murata Mfg. Co., Ltd.	KX	Min. 250Vac Max. 1000pF, 40/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40002831 UL E37921

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	TDK-EPC Corporation	CD	Min. 250Vac Max. 1000pF, 55/125/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40017931 UL E37861
X2 Capacitor (CX1)	Shenzhen Surong Capacitors Co., Ltd	MPX/MKP	X2 Max. 0,47uF, Min.250Vac 40/100/21°C	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40008924 UL E314875
Alternative	Jimson Electronics (Xiamen) Co., Ltd.	MKP	X2 Max. 0,47uF, Min. 250Vac 40/100/21°C	IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 EN 60384-14:2013/A1:2016 UL 60384-14	VDE 40000463 UL E152288
Alternative	Acewin Electric Industrial Co Ltd.	MEX	X2 Max. 0,47uF, Min. 250Vac 40/100/21°C	IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 EN 60384-14:2013/A1:2016 UL 60384-14	ENEC/FI 2015019 UL E309172

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	MPX	X2 Max. 0,47uF, Min. 250Vac 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40034679 TUV RH R50136379 UL E208107
Alternative	SHENZHEN SINCERITY TECHNOLOGY CO LTD	MKP/MPX	X2 Max. 0,47uF, Min. 275Vac 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40028812 UL E319615
Alternative	Xiamen Faratronic Co. Ltd.	MKP62	X2 Max. 0,47uF, Min. 250Vac 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40000358 UL E186600

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	Guangdong Fengming Electronic Tech. Co., Ltd.	MKP-X2	X2 Max. 0,47uF, Min. 250Vac 110°C	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40025702 UL E345487
Alternative	HSUAN TAI ELECTRONICS CO LTD	MCY	X2 Max. 0,47uF, Min. 275Vac 110°C	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 125205 UL E199069
Alternative	FOSHAN SHUNDE BEIJIAO HUA DA ELECTRIC INDUSTRIAL CO LTD	HD/HD-MKP Series	X2 Max. 0.47uF Min. 250Vac 40/105/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE40027182 UL E227157

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	NISTRONICS (JIANGXI) CO LTD	MPR	X2 Max. 0,47uF, Min. 275V 100°C	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE40032056 UL E338685
Alternative	HONGZHI ENTERPRISES LTD	MPX	X2 Max. 0,47uF, Min. 250V 40/100/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE40023936 UL E192572
Alternative	WINDAY ELECTRONIC INDUSTRIAL CO LTD	MPX series	X2 Max. 0,47uF, Min. 250V 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE40030283 UL E302125

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	Shenzhen Yimanfeng Science And Technology Co.,Ltd.	MPX/MKP	X2 Max. 0,47uF, Min. 250V 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE40028516 UL E315567
Alternative	DONGGUAN CITY DAFU ELECTRONICS CO LTD	MPX Series	X2 Max. 0,47uF, Min. 250V 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40044620 UL E465278
Alternative	SHANTOU XINCHENG ELECTRONIC TECHNOLOGY CO LTD	MEX, MKP	X2 Max. 0,47uF, Min. 275V 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40045943 UL E479227

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	GUANGDONG JURCC ELECTRONICS CO LTD	MPX/MKP	X2 Max.0,47uF, Min. 275V 40/110/56	DIN EN 60384- 14/A1 (VDE 0565-1- 1/A1):2017-04; EN 60384- 14:2013/A1:2016 IEC 60384- 14:2013IEC 60384- 14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1- 1):2014-04; EN 60384-14:2013- 08 UL 60384-14	VDE40034920 UL E343072
Alternative	Dong Guan Hongfarad Electronics Co.,Ltd	HMKP	X2 Max.0,47uF, Min. 250V 40/110/56	DIN EN 60384- 14/A1 (VDE 0565-1- 1/A1):2017-04; EN 60384- 14:2013/A1:2016 IEC 60384- 14:2013IEC 60384- 14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1- 1):2014-04; EN 60384-14:2013- 08 UL 60384-14	VDE40044173 E484578
Alternative	Shen zhen Coretong Electronic Technology Co.,Ltd	MPX	X2 Max.0,47uF, Min. 250V 40/110/56	DIN EN 60384- 14/A1 (VDE 0565-1- 1/A1):2017-04; EN 60384- 14:2013/A1:2016 IEC 60384- 14:2013IEC 60384- 14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1- 1):2014-04; EN 60384-14:2013- 08 UL 60384-14	VDE40047783 UL E498264

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	Shenzhen Weidy Industrial	MKP	X2 Max.0,47uF, Min. 250V 40/110/56	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	VDE 40041066 UL E334332
Alternative	CHENG TUNG INDUSTRIAL CO LTD	CTX	X2 Max.0,47uF, Min. 250V 40/110/21	DIN EN 60384-14/A1 (VDE 0565-1-1/A1):2017-04; EN 60384-14:2013/A1:2016 IEC 60384-14:2013 IEC 60384-14:2013/AMD1:2016 DIN EN 60384-14 (VDE 0565-1-1):2014-04; EN 60384-14:2013-08 UL 60384-14	ENEC-02671 UL E193049
Optocoupler (U2)	Everlight Electronics Co., Ltd.	EL101(0;1;2;3;4;5;6;7;8;9) V (for VDE) EL10XX% (for UL)	Dti.≥0,4mm, ext.cl.=ext.cr. ≥8,1mm, 110°C Double protection optical isolators, providing 5000 vac isolation	IEC/EN 60747-5-5, UL 1577	VDE 40028391 UL E214129

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Lite-On Technology Corporation	LTV-10XX	Dti.≥0,4mm, ext.cl.=ext.cr. ≥8,0mm, 115°C Double protection optical isolators having an isolation voltage of 5000 V ac	IEC/EN 60747-5-5, UL 1577	VDE 138213 UL E113898
Alternative	CT Micro International Corporation	CT1(X1)1(X2)(X3) V (Y)(Z)-(H)(G) (for VDE) CT101X @ (for UL)	Dti.≥0,4mm, ext.cl.=ext.cr. ≥8,0mm, 110°C Double protection optical isolators rated for 5000 vac	IEC/EN 60747-5-5, UL 1577	VDE 40039590 UL E364000
Alternative	Shenzhen Orient Components Co. Ltd.	OR-10XXXX (for VDE) OR10xx@ (for UL)	Dti.≥0,4mm, ext.cl.=ext.cr. ≥8,0mm, 110°C Double protection optical isolator, providing 5000 V ac isolation	IEC/EN 60747-5-5, UL 1577	VDE 40029733 UL E323844
Alternative	NingBo Qunxin Microelectronics Co., LTD	QX101(0-9) ZVWY (for VDE) QX1010, QX1011, QX1012, QX1013, QX1014, QX1015, QX1016, QX1017, QX1018, QX1019 (for UL)	Dti.≥0,4mm, ext.cl.=ext.cr. ≥8,0mm, 110°C Single protection optical isolators, having an isolation rating up to 5000 Vac	IEC/EN 60747-5-5, UL 1577	VDE 40051490 UL E509768

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Transformer (T1)	MOSO POWER SUPPLY TECHNOLOGY CO LTD	MSA-EE26L-A163	Class B	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
-Insulation system	MOSO POWER SUPPLY TECHNOLOGY CO LTD	XDB7635-54, XKG-B88	Class B	UL1446	UL E250236
-Bobbin	SUMITOMO BAKELITE CO., LTD	PM-9820	V-0, 150°C. Minimum thickness: 0,45mm	UL 94	UL E41429
-Magnet Wire	SHANGHAI ASIA PACIFIC ELECTRIC CO LTD	UEW-U	130°C	UL1446	UL E214423
-Alternative	Interchangeable	Interchangeable	130°C	UL1446	UL
-Triple insulated wire	Furukawa Electric Co., Ltd.	TEX-E	130°C	IEC62368-1	VDE 006735 UL E206440
--Insulating Tape	P LEO & CO (B C) LTD	1P801	130°C	UL 510	UL E126174
- Interleaved insulation tape on TIW	P LEO & CO (B C) LTD	1P801	130°C	UL 510	UL E126174
-Varnish	Meiden Chemical Co. Ltd	880	130°C	--	UL E202574
-Alternative	Hitachi Chemical Co Ltd	WP-2952F-2G	130°C	--	UL E72979
Alternative Built-in power supply	SHENZHEN HONOR ELECTRONIC CO., LTD	ADO-40W1 15	Input: 100-240VAC, Max 0,15 A, 50-60Hz; Output: 14,3VDC, 2,5A	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Appliance Inlet (CON1)	Zhe Jiang Bei Er Jia Electronic Co Ltd	ST-A03-005	AC 250 V, 2,5A, C8 type	IEC/EN 60320-1 UL 498	VDE 40014833 UL E225980
Alternative	Steady Electronics Corporation	2123	AC 250 V, 2,5A, C8 type	IEC/EN 60320-1 UL 498	VDE 40036613 UL E217193

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
Alternative	Le Ci Electronics Co.,Ltd.	DB-8Series	AC 250 V, 2,5A, C8 type	IEC/EN 60320-1 UL 498	VDE 40032028 UL E302229
Alternative	DongGuan Yuankai Plastic CO., Ltd.	XHL-052C13	AC 250 V, 2,5A, C8 type	IEC/EN 60320-1 UL 498	ENEC NO.U6 001899 0002 Rev.04 UL E496145
Fuse (F101)	Conquer Electronic.,Ltd.	MST	T3.15AL, 250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL 248-1 UL 248-14	VDE 40017118 UL E82636
Alternative	Shenzhen Lanson Electronics Co Ltd	SMT	T3.15AL, 250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL 248-1 UL 248-14	VDE 40012592 UL E221465
Alternative	Suzhou Walter Electronic Co. Ltd.	2010	T3.15AL, 250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL 248-1 UL 248-14	VDE 40018781 UL E56092
Alternative	HonghuBluelight Electronic Co., Ltd	6ET	T3.15AL, 250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL 248-1 UL 248-14	VDE 40034107 UL E324232
Alternative	XC Electronics (Shen Zhen) Corp. Ltd.	5TE	T3.15AL, 250Vac	IEC/EN 60127-1 IEC/EN 60127-3 UL 248-1 UL 248-14	VDE 40029550 UL E249609
Line chock (LF101)	SHENZHEN LIKEWEI TECHNOLOGY CO LTD	SQ1212-019045	130°C	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Alternative	HUIZHOU DE LI ELECTRONICS CO., LTD	SQ1212-019045	130°C	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Alternative	HUIZHOU SHI BANQIAO ELECTRONICS CO LTD	SQ1212-019045	130°C	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
PCB	Interchangeable	Interchangeable	V-1 or better, 130°C	UL796 UL94	UL

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Varistor (MOV101) (Optional)	Thinking Electronic Industrial Co., Ltd	TVR10561-V, TVR10681-V, TVR10471-V, TVR10621-V, TVR14561-V TVR14621-V TVR14681-V TVR14511-V TVR10561, TVR10621, TVR10471, TVR14561, TVR14681, TVR14621. TVR14511	Min. 300Vac, Min. 85°C, (tested by UL for 6KV/3KA combination pulse), Coating rated V-0.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 005944 UL E314979
Alternative	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	14D471K, 14D511K, 14D561K, 14D621K, 14D681K, 10D471K, 10D511K, 10D561K, 10D621K, 10D681K	Min. 300Vac, Min. 85°C, (tested by UL for 6KV/3KA combination pulse), Coating rated V-0.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40023049 UL E330837
Alternative	XIAN XIWUER ELECTRONIC & INFORMATION CO LTD	MYG3-14K325, MYG3-14K360, MYG3-14K385, MYG3-14K420, MYG3-14K460, MYG3-10K325, MYG3-10K360, MYG3-10K385, MYG3-10K420, MYG3-10K460	Min. 300Vac, Min. 85°C, (tested by UL for 6KV/3KA combination pulse), Coating rated V-0.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40008528 UL E321175
Alternative	CERGLASS MFG INC	14D471K, 14D511K, 14D561K, 14D621K, 14D681K, 10D471K, 10D511K, 10D561K, 10D621K, 10D681K.	Min. 300Vac, Min. 85°C, (tested by UL for 6KV/3KA combination pulse), Coating rated V-0.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40028836 UL E317616

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	THERMISTOR-MOV ELECTRONICS CO LTD	HVR14D471-HJ HVR14D511-HJ HVR14D561-HJ, HVR14D621-HJ, HVR14D681-HJ, HVR10D471-HJ, HVR10D511-HJ, HVR10D561-HJ, HVR10D621-HJ, HVR10D681-HJ.	Min. 300Vac, Min. 85°C, (tested by UL for 6KV/3KA combination pulse), Coating rated V-0.	IEC/EN61051-1 IEC/EN61051-2 IEC 60950-1 annex Q UL 1449	VDE 40044174 UL E479221
Bridge Rectifier (BD101)	Interchangeable	Interchangeable	Min. 4A, Min. 600Vac	IEC 62368-1: 2014 (Second Edition) and EN 62368- 1:2014+A11:2017	Test with appliance
Electrolytic Capacitor (C101)	Interchangeable	Interchangeable	47-82 μ F, Min. 400V, 105°C	IEC 62368-1: 2014 (Second Edition) and EN 62368- 1:2014+A11:2017	Test with appliance
Transistor (Q101)	Interchangeable	Interchangeable	Min. 600V, Min. 4A	IEC 62368-1: 2014 (Second Edition) and EN 62368- 1:2014+A11:2017	Test with appliance
X-Capacitor (CX101)	Dongguan Easy-Gather Electronic Co Ltd	MKP-X2	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac, 105°C, X2 type	IEC/EN/UL 60384- 14	VDE 40022258 UL E252221
Alternative	SHENZHEN SURONG CAPACITORS CO LTD	MPX,MKP	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac, 110°C, X2 type	IEC/EN/UL 60384- 14	VDE 40008924 UL E314875
Alternative	Shenzhen Jinghao Capacitor Co., Ltd.	CBB62B	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac, 110°C, X2 type	IEC/EN/UL 60384- 14	VDE 40018690 UL E252286

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Nanjing Tengen Rongguangda Electronics (Group) Co., Ltd.	MKP	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac, 100°C, X2 type	IEC/EN/UL 60384-14	VDE 40028680 UL E200596
Alternative	NANJING TENGGEN RONG GUANG DA ELECTRONIC SALES CO LTD	MKP	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac, 100°C, X2 type	IEC/EN/UL 60384-14	VDE 40049725 UL E502081
Alternative	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	MPX	Max. 0,47 μ F $\pm$ 10%, Min. 275Vac, 100°C, X2 type	IEC/EN/UL 60384-14	UL E208107 VDE40034679
Alternative	ZHUHAI SUNG HO ELECTRONICS CO LTD	CMPP	Max. 0,47 μ F $\pm$ 10%, Min. 275Vac, 105°C, X2 type	IEC/EN/UL 60384-14	VDE 40026078 UL E327138
Alternative	Europtronic (SuZhou) Co. Ltd.	MPX2	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac, 110°C, X2 type	IEC/EN/UL 60384-14	VDE40025981 UL E521918
Alternative	Europtronic (SuZhou) Co. Ltd.	MPX	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac,105°C , X2 type	IEC/EN/UL 60384-14	VDE40018238 UL E521918
Alternative	ANHUI FEIDA ELECTRICAL TECHNOLOGY CO LTD	MKP	Max. 0,47 μ F $\pm$ 10%, Min. 250Vac,110°C , X2 type	IEC/EN/UL 60384-14	VDE40045744 UL E483325
Bleeder resistor (R101, R102)	Interchangeable	Interchangeable	Each Max.1,2Mohm , min.1/4W	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Output wire (Optional)	Interchangeable	Interchangeable	VW-1, Min.300V, Min.80°C, Min.22AWG	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
Y-Capacitor (CY101)	Guangdong South Hongming Electronic Science & Technology Co., Ltd	F	Max.2200pF, Min. 250Vac, 125°C, Y1 type.	IEC/EN/UL 60384-14	VDE 40036393 UL E154899
Alternative	SHANTOU HIGH-NEW TECHNOLOGY DEVELOPMNT ZONE SONGTIAN ENTERPRISE CO LTD	CD	Max.2200pF, Min. 250Vac, 125°C, Y1 type.	IEC/EN/UL 60384-14	VDE 40025754 UL E208107
Alternative	DONGGUAN EASY-GATHER ELECTRONIC CO LTD	DCF	Max.2200pF, Min. 250Vac, 125°C, Y1 type.	IEC/EN/UL 60384-14	VDE 40022942 UL E25222
Alternative	SUCCESS ELECTRONICS CO LTD	SE	Max.2200pF, Min. 250Vac, 125°C, Y1 type.	IEC/EN/UL 60384-14	VDE 40020002 UL E114280
Alternative	YINAN DON'S ELECTRONIC COMPONENT CO., LTD	CT81	Max.2200pF, Min. 250Vac, 125°C, Y1 type.	IEC/EN/UL 60384-14	VDE 135256 UL E145038
Alternative	HAOHUA ELECTRONIC CO LTD	CT7	Max.2200pF, Min. 250Vac, 125°C, Y1 type.	IEC/EN/UL 60384-14	VDE 40003902 UL E233106
Optocoupler (U102)	CT Micro International Corporation	CT1018	Dti ≥ 0,4mm, Ext. dcr ≥ 8,0mm, 110°C	IEC/EN 60747-5-5	VDE 40039590
Alternative	Everlight Electronics Co., Ltd.	EL1018	Dti ≥ 0,4mm, Ext. dcr ≥ 8,1mm, 110°C	IEC/EN 60747-5-5	VDE 40028391

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Alternative	Lite-On Technology Corporation	LTV-1008	Dti ≥ 0,4mm, Ext. dcr ≥ 8,0mm, 115°C	IEC/EN 60747-5-5	VDE 40015248
Alternative	CRM ICBG (Wuxi) Co., Ltd.	HK1018	Dti ≥ 0,4mm, Ext. dcr ≥ 8,0mm, 110°C	IEC/EN 60747-5-5	VDE 40042139
Alternative	FUJIAN LIGHTNING OPTOELECTRONIC CO., LTD	TD1018	Dti ≥ 0,4mm, Ext. dcr ≥ 8,0mm, 110°C	IEC/EN 60747-5-5	VDE 40048885
Transformer (T101)	SHENZHEN HONOR ELECTRONIC CO., LTD	EE25-014040	Class B	IEC 62368-1: 2014 (Second Edition) and EN 62368-1:2014+A11:2017	Test with appliance
-Insulation system	Shenzhen Honor Electronic Co Ltd	H20, HEL-B82, HEL-B88	Class B	UL1446	UL E227338
Alternative	Tanghe Yaohao Electronics Co Ltd	SBI4.2	Class B	UL1446	UL E469985
Alternative	SHENZHEN LIKEWEI TECHNOLOGY CO LTD	like wei 01	Class B	UL1446	UL E481122
- Bobbin	Sumitomo Bakelite Co Ltd	PM-9823 PM-9825 PM-9630	Phenolic, V-0, 150°C, min. 0,51mm thickness	UL746	UL E41429
-Triple Insulated Wire	GUANGZHOU WANBAO ENAMELLED WIRE CO LTD	DTM-B DTM-BLZ	130°C	IEC/EN 60950-1	VDE 40044801
Alternative	Furukawa Electric Co Ltd	TEX-E	130°C	IEC/EN 60950-1	VDE 006735
- Magnet wire	Interchangeable	Interchangeable	130 °C	UL 1446	UL
- Insulation Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD.	CT*(b)(g), CT*(c)(g)	130 °C	UL 510	UL E165111

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
- Varnish	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD	T-4260(a)	130°C	UL 1446	UL E228349
Alternative	John C Dolph Co	BC-346A, BC- 346-A	130 °C	UL 1446	UL E317427
Plastic power protection cover	Covestro Deutschland AG [PC Resins]	6487 +ML414H (z)(f1)	V-0, Min. thickness 1,5mm, 115°C	UL746 UL94	UL E41613
Plastic front/back cover	Covestro Deutschland AG [PC Resins]	6487 + (z)(f1)	V-0/5VA, Min. thickness 3,0mm, 115°C	UL746 UL94	UL E41613
PCB	GUANGDONG HETONG TECHNOLOGY CO LTD	JX02	V-0, 130°C	UL796 UL94	UL E305654
Alternative	SUNTAK MULTILAYER PCB CO LTD	STM-5	V-0, 130°C	UL796 UL94	UL E207844
Alternative	Interchangeable	Interchangeabl e	V-1 or bettery, 130°C	UL796 UL94	UL
RTC battery	SEIKO INSTRUMENTS INC MICRO- ENERGY DIV	ML414H	3V d. c., 1mAh, Max charging current 300mA, Max charging voltage 3,4V, Internal Impedance: 3000ohm	UL1642	UL MH15628
Power plug	Phino Electric Co., Ltd.	PHP-205	AC 250 V, 2,5A	DIN VDE 0620 Teil 101:1992-05; EN 50075:1990	VDE 40013374
Power connector	Phino Electric Co., Ltd.	PHS-204	AC 250V, 2,5A	IEC 60320-1:2015 DIN EN 60320-1 (VDE 0625-1):2016- 04; EN 60320- 1:2015 + AC:2016	VDE 40004754
Power cord	Phino Electric Co., Ltd.	H05VV-F	3 x 0,75 mm ²	DIN EN 50525-2-11 (VDE 0285-525-2- 11):2012-01; EN 50525-2-11:2011	VDE 113841

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
PTC (for terminals)	SG Micro Corp	SGM2521/SG M2521A SGM2522/SG M2522A	4,5V to 24V, 2A Max, 85°C	UL 60950-1	UL E506506
Alternative	Dongguan Linoya Intelligent Technology Co., Ltd.	XYP-04	250V~, 10A Max	AS/NZS 3112: 2017 AS/NZS 3100:2017	SAA-192723-EA
Power Connector	Phino Electric Co., Ltd.	HS-204	250V~, 2,5A	AS/NZS 60320.1	NSW23756
Alternative	Shenzhen Linoya Electronic Co Ltd	XYC-07	250V~, 2,5A	AS/NZS 60320.1	NSW21730
Power cord	Phino Electric Co., Ltd.	GTSA-3	3x1,0mm ²	AS/NZS 60227.5:2003 A1	NSW18895
Alternative	Linoya Electronic Technology Co Ltd	H05VV-F	3G 0,75mm ²	AS/NZS 60227.5:2003 A1	NSW25761
For model DS-PHA64-LP/NP					
Plastic power protection cover	Covestro Deutschland AG [PC Resins]	6487 +ML414H (z)(f1)	V-0, Min. thickness 1,5mm, 115°C	UL746 UL94	UL E41613
PCB	GUANGDONG HETONG TECHNOLOGY CO LTD	JX02	V-0, 130°C	UL796 UL94	UL E305654
Alternative	SUNTAK MULTILAYER PCB CO LTD	STM-5	V-0, 130°C	UL796 UL94	UL E207844
Alternative	WENZHO GALAXY ELECTRONICS CO LTD	01V0	V-0, 130°C	UL796 UL94	UL E157634
Alternative	Interchangeable	Interchangeabl e	V-1 or bettery, 130°C	UL796 UL94	UL
Plastic power protection cover	Covestro Deutschland AG [PC Resins]	6487 +ML414H (z)(f1)	V-0, Min. thickness 1,5mm, 115°C	UL746 UL94	UL E41613
Plastic front/back cover	Covestro Deutschland AG [PC Resins]	6487 + (z)(f1)	V-0/5VA, Min. thickness 3,0mm, 115°C	UL746 UL94	UL E41613

IEC 62368-1					
Clause	Requirement + Test			Result - Remark	Verdict
PPTC	Shenzhen Jinke Special Materials Co., Ltd	JK16-300	3A,16V	EN 60738-1:2006+A1 EN 60738-1-1:2008	TUV R50108769 0003
IC current limiter (UV1, UV2)	SG MICRO CORP	SGM2584AYN 5G/TR	Input: 2,5-5,5 V d.c.; Output: 2,5-5,5 V d.c.; Maximum 1100mA	IEC 62368-1:2018	SGS CB Cert No.: BE-39069; Report No.: SHES21030049 4201
Varistor	Brightking (Shenzhen) Co., Ltd.	220KD07	22V	DIN EN 61051-1:2009-04 IEC 61051-1:2007-04 IEC 61051-2:1991-01 IEC 61051-2:1991-01 IEC 61051-2(ed.1);am1:2009-05	VDE 40027827
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. ²⁾ Description line content is optional. Main line description needs to clearly detail the component used for testing					

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

4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N/A
(The following mechanical tests are conducted in the sequence noted.)				
4.8.4.2	TABLE: Stress Relief test			—
Part		Material	Oven Temperature (°C)	Comments
4.8.4.3	TABLE: Battery replacement test			—
Battery part no.:			—	
Battery Installation/withdrawal		Battery Installation/Removal Cycle		Comments
		1		
		2		
		3		
		4		
		5		
		6		
		8		
		9		
		10		
4.8.4.4	TABLE: Drop test			—
Impact Area		Drop Distance	Drop No.	Observations
			1	
			2	
			3	
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
4.8.4.6	TABLE: Crush test			—
Test position		Surface tested	Crushing Force (N)	Duration force applied (s)
Supplementary information:				

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

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

5.2		Table: Classification of electrical energy sources					P
5.2.2.2 – Steady State Voltage and Current conditions							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)							
1	264 V a.c.	T1 pin8 to pin GND after U3	Normal	14,3Vpk	--	60Hz	ES1
			Abnormal -T1 overload	14,3Vpk	--	60Hz	
			Single fault – T1 pin8 to pin GND Sc	0 Vpk	--	--	
			Single fault – C6 Sc	14,3Vpk	--	60Hz	
			Single fault – C8 Sc	14,3Vpk	--	60Hz	
			Single fault – R33 Sc	14,3Vpk	--	60Hz	
			Single fault –U3 pin2-8 Sc	0 Vpk	--	--	
			Single fault –U2 pin1 Oc	17,2Vpk	--	60Hz	
			Single fault –U2 pin2 Oc	14,3Vpk	--	60Hz	
			Single fault –U2 pin3 Oc	14,3Vpk	--	60Hz	
			Single fault –U2 pin4 Oc	15,4Vpk	--	60Hz	
			Single fault –U2 pin1-2 Sc	14,3Vpk	--	60Hz	
			Single fault –U2 pin3-4 Sc	14,3Vpk	--	60Hz	

IEC 62368-1			
Clause	Requirement + Test		Verdict

5.2	Table: Classification of electrical energy sources						P
2	264 V a.c.	“V+” to neutral	Normal	--	0,351mApk	60Hz	ES1
			Abnormal -T1 overload	--	0,351mApk	60Hz	
			Single fault – Fuse open	--	0,01mApk	60Hz	
3	264 V a.c.	“V-” to neutral	Normal	--	0,329mApk	60Hz	ES1
			Abnormal -T1 overload	--	0,329mApk	60Hz	
			Single fault – Fuse open	--	0,01mApk	60Hz	
4	264 V a.c.	Enclosure to neutral	Normal	--	0,006mApk	60Hz	ES1
			Abnormal -T1 overload	--	0,006mApk	60Hz	
			Single fault – Fuse open	--	0,006mApk	60Hz	
5	264 V a.c.	“V+”/”V-“ to enclosure	Normal	--	0,01mApk	60Hz	ES1
			Abnormal -T1 overload	--	0,01mApk	60Hz	
			Single fault – Fuse open	--	0,01mApk	60Hz	
Powered by built-in power supply (model: ADO-40W1 15)							
6	264 V a.c.	T101 pin6/7 to pin 8/9 after C203	Normal	15,2Vpk	--	60Hz	ES1
			Abnormal – T101 overload	15,2Vpk	--	60Hz	
			Single fault – T101 pin6-pin 8 SC	0 Vpk	--	--	
			Single fault – C203 Sc	15,2Vpk	--	60Hz	
			Single fault – R209 Sc	15,2Vpk	--	60Hz	
			Single fault – R201 Sc	15,2Vpk	--	60Hz	
			Single fault – U202 pin1-8Sc	0 Vpk	--	--	
			Single fault – U102 pin1 Oc	16,9Vpk	--	60Hz	
			Single fault – U102 pin2 Oc	15,2Vpk	--	60Hz	
			Single fault – U102 pin3 Oc	15,2Vpk	--	60Hz	

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

5.2	Table: Classification of electrical energy sources						P
			Single fault – U102 pin4 Oc	15,2Vpk	--	60Hz	
			Single fault – U102 pin1-2 Sc	15,2Vpk	--	60Hz	
			Single fault – U102 pin3-4 Sc	15,2Vpk	--	60Hz	
7	264 V a.c.	"V+" to neutral	Normal	--	0,355mApk	60Hz	ES1
			Abnormal -T101 overload	--	0,355mApk	60Hz	
			Single fault – Fuse open	--	0,01mApk	60Hz	
8	264 V a.c.	"V-" to neutral	Normal	--	0,329mApk	60Hz	ES1
			Abnormal -T101 overload	--	0,329mApk	60Hz	
			Single fault – Fuse open	--	0,01mApk	60Hz	
9	264 V a.c.	Enclosure to neutral	Normal	--	0,006mApk	60Hz	ES1
			Abnormal -T1 overload	--	0,006mApk	60Hz	
			Single fault – Fuse open	--	0,006mApk	60Hz	
10	264 V a.c.	"V+"/"V-" to enclosure	Normal	--	0,01mApk	60Hz	ES1
			Abnormal -T1 overload	--	0,01mApk	60Hz	
			Single fault – Fuse open	--	0,01mApk	60Hz	

5.2.2.3 - Capacitance Limits						
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)						
1	264 V a.c.	CX1 pin 1 to pin 2	Normal	0,47μF	370	ES3
			Abnormal	--	--	
			Single fault – SC/OC	--	--	
Powered by built-in power supply (model: ADO-40W1 15)						
2	264 V a.c.	CX1 pin 1 to pin 2	Normal	0,47μF±10%	370	ES3
			Abnormal	--	--	

IEC 62368-1							
Clause		Requirement + Test			Result - Remark		Verdict
			Single fault – SC/OC	--	--		
5.2.2.4 - Single Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				
5.2.2.5 - Repetitive Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				
Test Conditions: Normal – Abnormal - Supplementary information: SC=Short Circuit, OC=Short Circuit							
Test with model DS-PHA64-LP							

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

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements							P		
	Supply voltage (V) :		90V/60Hz		264V/50Hz		Powerd by battery	—		
	Ambient T _{min} (°C) :		23,9		23,7		23,2	—		
	Ambient T _{max} (°C) :		24,6		24,7		23,5	—		
	Tma (°C) :		40,0		40,0		40,0	—		
Maximum measured temperature T of part/at:			T (°C)					Allowed T _{max} (°C)		
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)										
CON1			41,6		41,8		40,8	70		
VR1			67,5		67,6		46,7	85		
CY1			73,8		75,6		49,6	125		
LF2			69,6		69,7		46,9	130		
CX1			67,3		67,5		47,3	100		
EC3			74,0		74,2		48,7	105		
Q1			75,9		85,8		50,3	130		
T1 coil			80,5		84,8		52,3	110		
T1 core			77,8		80,4		51,3	110		
PWB near T1 and Q1			78,9		86,0		51,7	130		
U2			53,9		75,0		52,6	110		
PWB near EC3			62,1		62,2		47,9	130		
PCB (19192) near power board			55,5		56,1		49,9	130		
RTC battery			50,7		51,3		48,3	Ref		
Enclosure of power board			69,8		74,3		40,2	94		
Internal plastic enclosure			50,1		50,6		40,6	115		
Plastic external enclosure*			29,6		29,9		26,5	94		
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

Supplementary information:

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

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

* The test results of touchable surface temperature were considered base on ambient temperature 25°C.

Other temperature point list in this table has shifted to Tma.

Test with model DS-PHA64-LP

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements							P	
	Supply voltage (V) :		90V/60Hz		264V/50Hz		Powerd by battery	—	
	Ambient T _{min} (°C) :		24,2		23,9		24,2	—	
	Ambient T _{max} (°C) :		24,7		24,5		24,5	—	
	Tma (°C) :		40,0		40,0		40,0	—	
Maximum measured temperature T of part/at:			T (°C)					Allowed T _{max} (°C)	
Powered by built-in power supply (model: ADO-40W1 15)									
LF101			72,7		66,5		48,7	130	
CX101			69,7		67,0		45,7	100	
MOV101			68,1		66,5		44,1	85	
CY101			69,0		68,5		45,0	125	
C101			76,1		72,5		46,1	105	
U102			76,2		74,0		46,2	110	
T101 coil			87,0		87,5		46,0	110	
T101 core			80,7		80,6		44,7	110	
PWB between C101 and Q101			79,3		77,5		50,3	130	
PWB between CY101 and C106			75,7		75,0		46,7	130	
PCB(195N5) near L1			69,4		69,9		69,4	130	
PCB (195N8) near SIM1			55,7		55,6		55,7	130	
PCB (19192) near power board			54,4		54,0		54,4	130	
RTC battery			52,3		52,2		52,3	Ref	
Enclosure of power board			69,9		69,8		69,9	94	
Internal plastic enclosure			46,0		45,7		46,0	115	
Plastic external enclosure*			27,2		27,1		27,2	94	
Temperature T of winding:			t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class

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

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Supplementary information:

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

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

* The test results of touchable surface temperature were considered base on ambient temperature 25°C.

Other temperature point list in this table has shifted to Tma.

Test with model DS-PHA64-LP

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements							P	
	Supply voltage (V) :		14,3 V d.c.		15 V d.c.		Powerd by battery		—
	Ambient T _{min} (°C) :		25,0		25,0		25,0		—
	Ambient T _{max} (°C) :		25,0		25,0		25,0		—
	Tma (°C) :		40,0		40,0		40,0		—
Maximum measured temperature T of part/at:			T (°C)						Allowed T _{max} (°C)
PCB near C1(DS-195V1)			50,6		55,1		48,6		130
PCB near U1(DS-195N5)			43,5		43,7		42,8		130
PCB near SIM1(DS-195L8)			46,0		46,5		44,6		130
PCB near U1900(DS-19192)			47,3		48,0		46,6		130
Internal plastic enclosure			42,1		42,1		42,1		115
Plastic external enclosure*			27,4		27,7		27,2		94
Temperature T of winding:		t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)	Insulation class	
--		--	--	--	--	--	--	--	
--		--	--	--	--	--	--	--	

Supplementary information:

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

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

* The test results of touchable surface temperature were considered base on ambient temperature 25°C.

Other temperature point list in this table has shifted to Tma.

Test with model DS-PHA64-LP/NP

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Clause	Requirement + Test	Result - Remark	Verdict

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

5.4.1.10.3	TABLE: Ball pressure test of thermoplastics			P
Allowed impression diameter (mm) :			≤ 2 mm	—
Object/Part No./Material	Manufacturer/trademark	Test temperature (°C)	Impression diameter (mm)	
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)				
Appliance Inlet (CON1)	See table 4.1.2	125	1,26	
Powered by built-in power supply (model: ADO-40W1 15)				
Appliance Inlet (CON1)	See table 4.1.2	125	1,26	
Supplementary information:				
Test with model DS-PHA64-LP				

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) ¹	Required cl (mm)	cl (mm) ²	Required ³ cr (mm)	cr (mm)
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)							
L-N (before F1) (BI)	420	250	0,06	1,27	3,39	2,5	3,39
Fuse pin1 -2 (BI)	420	250	0,06	1,27	3,10	2,5	3,10
CY1 Pin1-2 (RI)	340	207	0,06	2,54	6,30	5,0	6,30
T1 primary to secondary (RI)	468	241	54,5	2,54	5,97	5,0	8,47
T1 core to secondary Pin (RI)	468	241	54,5	2,54	5,97	5,0	8,47
T1 Pin1-7 (RI)	468	241	54,5	2,54	23,35	5,0	23,35
PCB trace (primary to secondary) (RI)	420	250	0,06	2,54	6,30	5,0	6,30
U2 primary to secondary (RI)	364	227	0,06	2,54	8,14	5,0	8,14
Powered by built-in power supply (model: ADO-40W1 15)							

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Clause	Requirement + Test			Result - Remark			Verdict

Distance between Line and neutral (before F101) (BI)	340	240	0,06	1,27	3,47	2,5	3,47
Fuse pin 1 to pin2 (BI)	340	240	0,06	1,27	3,20	2,5	3,20
Distance between Primary(BD101) and secondary (RI)	340	240	0,06	2,54	5,30	5,0	> 6,5
CY101 primary pin to secondary pin (RI)	319	212	0,06	2,54	6,49	5,0	6,49
T101 primary to secondary (RI)	456	244	87	2,54	5,50	5,0	6,71
T101 core to secondary (RI)	456	244	87	2,54	5,50	5,0	6,71
Distance between Line and enclosure (RI)	340	240	0,06	2,54	> 5,7	5,0	> 6,5
U102 primary to secondary (RI)	340	240	0,06	2,54	8,61	5,0	8,61

Supplementary information:

Note:

- Only for frequency above 30 kHz
 - See table 5.4.2.4 if this is based on electric strength test
 - Provide Material Group
 - Core of transformer (T1) and (T101) considered as primary.
- Test with model DS-PHA64-LP

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			P
	Overvoltage Category (OV):			II
	Pollution Degree:			2
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)				
L-N (before F1) (BI)		2500Vpk	1,5	3,39
Fuse pin1 -2 (BI)		2500Vpk	1,5	3,10
CY1 Pin1-2 (RI)		2500Vpk	3,0	6,30
T1 primary to secondary (RI)		2500Vpk	3,0	5,97
T1 core to secondary Pin (RI)		2500Vpk	3,0	5,97
T1 Pin1-7 (RI)		2500Vpk	3,0	23,35
PCB trace (primary to secondary) (RI)		2500Vpk	3,0	6,30
U2 primary to secondary (RI)		2500Vpk	3,0	8,14
Powered by built-in power supply (model: ADO-40W1 15)				
Distance between Line and neutral (before F101) (BI)		2500Vpk	1,5	3,47
Fuse pin 1 to pin2 (BI)		2500Vpk	1,5	3,20
Distance between Primary(BD101)		2500Vpk	3,0	5,30

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Clause	Requirement + Test	Result - Remark	Verdict

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			P
	Overvoltage Category (OV):			II
	Pollution Degree:			2
Clearance distanced between:		Required withstand voltage	Required cl (mm)	Measured cl (mm)
and secondary (RI)				
CY101 primary pin to secondary pin (RI)		2500Vpk	3,0	6,49
T101 primary to secondary (RI)		2500Vpk	3,0	5,50
T101 core to secondary (RI)		2500Vpk	3,0	5,50
Distance between Line and enclosure (RI)		2500Vpk	3,0	> 5,7
U102 primary to secondary (RI)		2500Vpk	3,0	8,61
Supplementary information:				
Core of transformer (T1) and (T101) considered as primary. Test with model DS-PHA64-LP				

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:				

5.4.4.2, 5.4.4.5 c) 5.4.4.9	TABLE: Distance through insulation measurements					N/A
Distance through insulation di at/of:		Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)
--		--	--	--	--	--
Supplementary information:						

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

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.9	TABLE: Electric strength tests		P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)
			Breakdown Yes / No
Reinforced:			
L/N to plastic enclosure		DC	4000
			No
L/N to secondary		DC	4000
			No
T1 primary to secondary		DC	4000
			No
T1 core to secondary		DC	4000
			No
Two layers of tape		DC	4000
			No
Routine Tests:			
--		--	--
Supplementary information:			
Powered by built-in power supply (model: MS-P2500A143-036A0-CN).			
Test with model DS-PHA64-LP			

5.4.9	TABLE: Electric strength tests			P
Test voltage applied between:		Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Functional:				
L to N		DC	2500	No
Basic/supplementary:				
--		--	--	--
Reinforced:				
L/N to plastic enclosure		DC	4000	No
L/N to secondary		DC	4000	No
T101 primary to secondary		DC	4000	No
T101 core to secondary		DC	4000	No
Two layers of tape		DC	4000	No
Routine Tests:				
--		--	--	--
Supplementary information:				
Powered by built-in power supply (model: ADO-40W1 15).				
Test with model DS-PHA64-LP				

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	

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Clause	Requirement + Test		Verdict

Powered by built-in power supply (model: MS-P2500A143-036A0-CN)

264V/60Hz	Line to Neutral	N	--	0	ES1
264V/60Hz	Line to Neutral	N (R8 open)	--	0	ES1

Powered by built-in power supply (model: ADO-40W1 15)

264V/60Hz	Line to Neutral	N	--	0	ES1
264V/60Hz	Line to Neutral	N (R105 open)	--	64	ES2
264V/60Hz	Line to Neutral	N (R102 open)	--	0	ES1

Supplementary information:

X-capacitors installed for testing are:

[] bleeding resistor rating:

[] ICX:

Notes:

A. Test Location:

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

B. Operating condition abbreviations:

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

Test with model DS-PHA64-LP

5.6.6.2	TABLE: Resistance of protective conductors and terminations				N/A
Accessible part		Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
--		--	--	--	--
Supplementary information:					

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		N/A
Supply voltage			—
Location		Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (mA)
		1	
		2*	
		3	
		4	
		5	

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Clause	Requirement + Test	Result - Remark	Verdict
		6	
		8	
Supplementary Information:			
Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable. [5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.			

6.2.2	Table: Electrical power sources (PS) measurements for classification					P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s ^{*)}	PS Classification	
All internal circuits	--	Power (W) :	--	--	PS3 without test	
		V _A (V) :	--	--		
		I _A (A) :	--	--		
Supplementary Information:						
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits Output refer to Annex Q.						

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)				P
Location	Open circuit voltage After 3 s (V _p)	Measured r.m.s current (I _{rms})	Calculated value (V _p x I _{rms})	Arcing PIS? Yes / No	
--	--	--	--	--	
Supplementary information:					
1. Primary circuit as Arcing PIS without test. 2. An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V _p) and normal operating condition rms current (I _{rms}) is greater than 15.					

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

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Clause	Requirement + Test	Result - Remark	Verdict

Internal circuit as Resistive PIS without test.

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:			

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Clause	Requirement + Test	Result - Remark	Verdict

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
Powered by built-in power supply (model: MS-P2500A143-036A0-CN)								
90VAC	50	0,48	--	23,65	--	F1	0,48	The speaker under maximum non-clipped condition and AUX "+" and "-" loaded with 1 A.
90VAC	60	0,43	--	23,55	--	F1	0,43	
100VAC	50	0,23	3	23,50	--	F1	0,23	
100VAC	60	0,22	3	23,56	--	F1	0,22	
240VAC	50	0,49	3	23,80	--	F1	0,49	
240VAC	60	0,44	3	23,59	--	F1	0,44	
264VAC	50	0,23	--	23,57	--	F1	0,23	
264VAC	60	0,22	--	23,51	--	F1	0,22	
Powered by battery (with built-in power supply (model: MS-P2500A143-036A0-CN)								
13,8VDC	1,23	--	--	16,79	--	--	--	The speaker under maximum non-clipped condition and AUX "+" and "-" loaded with 1 A.
Powered by built-in power supply (model: ADO-40W1 15)								
90VAC	50	0,493	--	23,76	--	F101	0,493	The speaker under maximum non-clipped condition and AUX "+" and "-" loaded with 1 A.
90VAC	60	0,462	--	23,63	--	F101	0,462	
100VAC	50	0,279	3	23,60	--	F101	0,279	
100VAC	60	0,267	3	23,62	--	F101	0,267	
240VAC	50	0,491	3	23,71	--	F101	0,491	
240VAC	60	0,460	3	23,68	--	F101	0,460	
264VAC	50	0,277	--	23,62	--	F101	0,277	
264VAC	60	0,263	--	23,59	--	F101	0,263	
Powered by battery (with built-in power supply (model: ADO-40W1 15))								
13,8V	--	1,23	--	16,79	--	--	--	Max normal load.
Supplementary information:,								
Equipment may be have rated current or rated power or both. Both should be measured. Test with model DS-PHA64-LP								

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
14,3 V d.c.	--	1,98	2,5	28,31	--	--	--	AUX load 1,0A,

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Clause	Requirement + Test	Result - Remark	Verdict

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
15 V d.c.	--	2,02	2,5	30,30	--	--	--	BELL load 0,5A, BAT charge
Powered by battery								
12 V d.c.	--	1,95	--	23,4	--	--	--	AUX load 1,0A, BELL load 0,5A
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured.								
Test with model DS-PHA64-LP/NP								

B.3	TABLE: Abnormal operating condition tests							P
Ambient temperature (°C)					See below			—
Power source for EUT: Manufacturer, model/type, output rating ...					See table 4.1.2			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Powered by built-in power supply (model: MS-P2500A143-036A0-CN) For model DS-PHA64-LP								
AUX "+" to "-"	Overload	90	2h	F1	0,48-> 0,50-> 0,23	K	Max temperature: T1 coil: 70°C; T1 core: 65,3°C; Plastic external enclosure: 28°C; Ambient: 24,6°C	AUX max. load: 1,12A, then output is decreased to 0A. No damaged, no hazards. All safeguards remain effective.
T1	Overload	90	2h	F1	0,49-> 1,07-> 1,10-> 0,26	K	Max temperature: T1 coil: 135°C; T1 core: 118,1°C; Plastic external enclosure: 25,3°C; Ambient: 21,2°C	Output: 1A-3A-3,2A-0A. No damaged, no hazards. All safeguards remain effective.
DC 15V output	Sc	264	10min	F1	0,12	--	--	EUT shutdown immediately, no damage, no hazard.
Powered by built-in power supply (model: ADO-40W1 15) For model DS-PHA64-LP								

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Clause	Requirement + Test	Result - Remark	Verdict

B.3	TABLE: Abnormal operating condition tests							P
Ambient temperature (°C)					See below			—
Power source for EUT: Manufacturer, model/type, output rating ..					See table 4.1.2			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
AUX "+" to "-"	Overload	90	1h	F101	0,493-> 0,499-> 0,231	K	Max temperature: T101 coil: 71,9°C; T101 core: 66,9°C; Plastic external enclosure: 26,5°C; Ambient: 24,3°C	AUX max. load: 1,12A, then output is decreased to 0A. No damaged, no hazards. All safeguards remain effective.
T101 pin 7 to pin 8	Overload	90	2h	F101	0,485-> 0,705-> 0,731-> 0,217	K	Max temperature: T101 coil: 71,9°C; T101 core: 66,9°C; Plastic external enclosure: 26,5°C; Ambient: 24,3°C	Load: 1A-2,5A-3,4A, then shut down. No damaged, no hazards. All safeguards remain effective.
DC 15V output	Overload	90	2h	F101	0,485-> 0,704-> 0,729-> 0,215	K	Max temperature: T101 coil: 108,1°C; T101 core: 95,8°C; Plastic external enclosure: 29,5°C; Ambient: 25,5°C	Load: 1A-2,5A-3,3A, then shut down. No damaged, no hazards. All safeguards remain effective.
Test with model DS-PHA64-LP/NP								

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Clause	Requirement + Test	Result - Remark	Verdict

B.3	TABLE: Abnormal operating condition tests							P
Ambient temperature (°C)					See below			—
Power source for EUT: Manufacturer, model/type, output rating ..					See table 4.1.2			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
AUX	overload	15	3h	--	2,02→2,37→2,68→0,96	K	Max temperature: PCB near C1(DS-195V1): 54,4°C; PCB near U1(DS-195N5): 34,1°C; Plastic external enclosure: 29,6°C; Ambient: 23,7°C	AUX output load 1,0A→1,40A→1,71A→0A, no damage, no hazard.
AUX	SC	15	10min	--	0,95→0	--	--	AUX shutdown immediately, no damage, no hazard
BELL	overload	15	1h	--	2,02→2,17→2,28→1,46	K	Max temperature: PCB near C1(DS-195V1): 48,4°C; PCB near U1(DS-195N5): 33,0°C; Plastic external enclosure: 27,7°C; Ambient: 24,0°C	BELL output load 0.5A→0.70A→0.81A→0A, no damage, no hazard.
BELL	SC	15	10min	--	1.46→0	--	--	BELL shutdown immediately, no damage, no hazard
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. Sc=Short circuit.								

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Clause	Requirement + Test	Result - Remark	Verdict

B.4	TABLE: Fault condition tests							P
Ambient temperature (°C)					25°C if not specified			—
Power source for EUT: Manufacturer, model/type, output rating ..					See table 4.1.2			—
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Powered by built-in power supply (model: MS-P2500A143-036A0-CN) For model DS-PHA64-LP								
U2 pin 1	Oc	264	1,5h	F1	0,21	K	Max temperature: T1 coil: 53,2°C; T1 core: 50,5°C; Plastic external enclosure: 25,2°C; Ambient: 20,9°C	Output voltage: 17,25V. No damaged, no hazards. All safeguards remain effective.
U2 pin 4	Oc	264	1,5h	F1	0,20	K	Max temperature: T1 coil: 50,5°C; T1 core: 47,9°C; Plastic external enclosure: 25,2°C; Ambient: 25,1°C	Output voltage: 15,36V. No damaged, no hazards. All safeguards remain effective.
T1 Pin 8 to Pin GND	Sc	264	10mins	F1	0,11	--	--	EUT shutdown immediately, no damage, no hazard.
T1 Pin 5 to Pin 6	Sc	264	10mins	F1	0,11	--	--	EUT shutdown immediately, no damage, no hazard.
U1 Pin 1 to Pin 5	Sc	264	10mins	F1	0,11	--	--	EUT shutdown immediately, no damage, no hazard.
EC4	Sc	264	10mins	F1	0,12	--	--	EUT shutdown immediately, no damage, no hazard.
U2 pin 1-2	Sc	264	10mins	F1	0,10	--	--	EUT shutdown immediately, no damage, no hazard.

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
U2 pin 3-4	Sc	264	10mins	F1	0,11	--	--	EUT shutdown immediately, no damage, no hazard.
Q1 pin 1- 2	Sc	264	10mins	F1	0,10	--	--	EUT shutdown immediately,Q1, R23, D4, R20 damage, no hazard.
Q1 pin 2- 3	Sc	264	10mins	F1	0,10	--	--	EUT shutdown immediately,Q1, R23, D4, R20 damage, no hazard.
Q1 pin 1- 3	Sc	264	10mins	F1	0,10	--	--	EUT shutdown immediately,Q1, R23, D4, R20 damage, no hazard.
DB1 pin 2-3	Sc	264	10mins	F1	0	--	--	EUT shutdown immediately, F1 open, no hazard.
AUX “+” to “-”	Sc	264	10mins	F1	0,137	--	--	Output shut down. No damage, no hazard. All safeguards remain effective.
Powered by built-in power supply (model: ADO-40W1 15) For model DS-PHA64-LP								
U102 Pin 1	Oc	264	2h	F101	0,242	K	Max temperature: T101 coil: 59,7°C; T101 core: 54,2°C; Plastic external enclosure: 26,4°C; Ambient: 24,2°C	Output voltage is increased to 16,9V. No damaged, no hazards. All safeguards remain effective.
U102 Pin 2	Oc	264	2h	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.
U102 Pin 3	Oc	264	2h	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
U102 Pin 4	Oc	264	2h	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.
U102 pin 1-2	Sc	264	10min	F101	0,11	--	--	EUT shutdown immediately, no damage, no hazard.
U102 pin 3-4	Sc	264	10min	F101	0,12	--	--	EUT shutdown immediately, no damage, no hazard.
U101 pin 1-5	Sc	264	10min	F101	0,11	--	--	EUT shutdown immediately, no damage, no hazard.
BD1 pin 1-2	Sc	264	10min	F101	0	--	--	EUT shutdown, F101 open no damage, no hazard.
C101	Sc	264	10min	F101	0	--	--	EUT shutdown, F101 open no damage, no hazard.
T101 pin 7-8	Sc	264	10min	F101	0,127	--	--	EUT shutdown immediately, no damage, no hazard.
T101 pin 4-5	Sc	264	10min	F101	0,127	--	--	EUT shutdown immediately, no damage, no hazard.
T101 pin 1-2	Sc	264	10min	F101	0,127	--	--	EUT shutdown immediately, no damage, no hazard.
Q101 pin 1-2	Sc	264	10min	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.
Q101 pin 1-3	Sc	264	10min	F101	0	--	--	EUT shutdown, Q101 damaged, no hazard.

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
Q101 pin 2-3	Sc	264	10min	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.
R1963	Sc	264	10min	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.
U31 pin 5-8	Sc	264	10min	F101	0,263	--	--	EUT work normally. No damaged, no hazards. All safeguards remain effective.
DC 15 output	Sc	264	10min	F101	0,133	--	--	Output decreased to 0A. EUT work normally. No damaged, no hazards. All safeguards remain effective.
Test with model DS-PHA64-LP/NP								
C222	SC	15	10min	--	0,01	--	--	EUT shutdown immediately, no damage, no hazard
CV1	SC	15	10min	--	0,01	--	--	EUT shutdown immediately, no damage, no hazard
C1306	SC	15	10min	--	0,01	--	--	EUT shutdown immediately, no damage, no hazard
Supplementary information:								
Sc=Short circuit, Oc=Open circuit.								

Annex M.3	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?..... :								No		N/A	
	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.		
Test with model DS-PHA64-LP											

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

Annex M.3	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?..... :							No		N/A	
	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.	
Test with model DS-PHA64-LP										
Max. current during normal condition	--	--	--	2,1mA	300mA	0,006mA	--	Prevented	--	
Max. current during fault condition	--	--	--	33mA (RMS 1924 Sc)	300mA	2,7mA (CMS 1942 Sc)	--	Prevented	--	
Test with model DS-PHA64-LP/NP										
Max. current during normal condition	--	--	--	4,56mA	300mA	0,009mA	--	Prevented	--	
Max. current during fault condition	--	--	--	26mA (RMS 1924 Sc)	300mA	3,3mA (CMS 1942 Sc)	--	Prevented	--	
Test results:									Verdict	
- Chemical leaks							No		P	
- Explosion of the battery							No		P	
- Emission of flame or expulsion of molten metal							No		P	
- Electric strength tests of equipment after completion of tests									N/A	
Supplementary information:										
Sc=Short circuit										

Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries					N/A
Battery/Cell No.	Test conditions	Measurements			Observation	
		U	I (A)	Temp (C)		
	Normal					
	Abnormal					
	Single fault –SC/OC					

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
	Normal				
	Abnormal				
	Single fault – SC/OC				
Supplementary Information:					
Battery identification	Charging at T _{lowest} (°C)	Observation	Charging at T _{highest} (°C)	Observation	
Supplementary Information:					

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)					P
Note: Measured UOC (V) with all load circuits disconnected:						
Output Circuit	Components	U _{oc} (V)	I _{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit
Test with model DS-PHA64-LP						
AUX	Normal	13,91	1,12	8	13,81	100
Z1 to COM	Normal	0	0	8	0	100
D+ to D-	Normal	0	0	8	0	100
BELL+ to BELL-	Normal	4,93	0	8	0	100
Test with model DS-PHA64-LP/NP						
AUX	Normal	14,21	1,73	8	21,28	100
BELL	Normal	14,10	0,81	8	10,52	100
Z1-Z8	Normal	13.6	0	8	0	100
C1-C4	Normal	0	0	8	0	100
Supplementary Information:						
Protected by certified IC current limiter						

T.2, T.3, T.4, T.5	TABLE: Steady force test					P
Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation	

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Internal primary components	--	--	10	5	Intact
Enclosure	Plastic (6487 + (z)(f1))	Min. 1,5	250	5	Intact
Supplementary information:					

T.6, T.9	TABLE: Impact tests				P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation	
Enclosure	Plastic (6487 + (z)(f1))	Min. 1,5	1300	Intact	
Supplementary information :					

T.7	TABLE: Drop tests				N/A
Part/Location	Material	Thickness (mm)	Drop Height (mm)	Observation	
Supplementary information:					

T.8	TABLE: Stress relief test					P
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation	
Enclosure	Plastic (6487 + (z)(f1))	Enclosure	70	7	Intact	
Supplementary information:						

---End of Report---

Attachment 1: Photo documentation

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Report No.: SHES231102090801

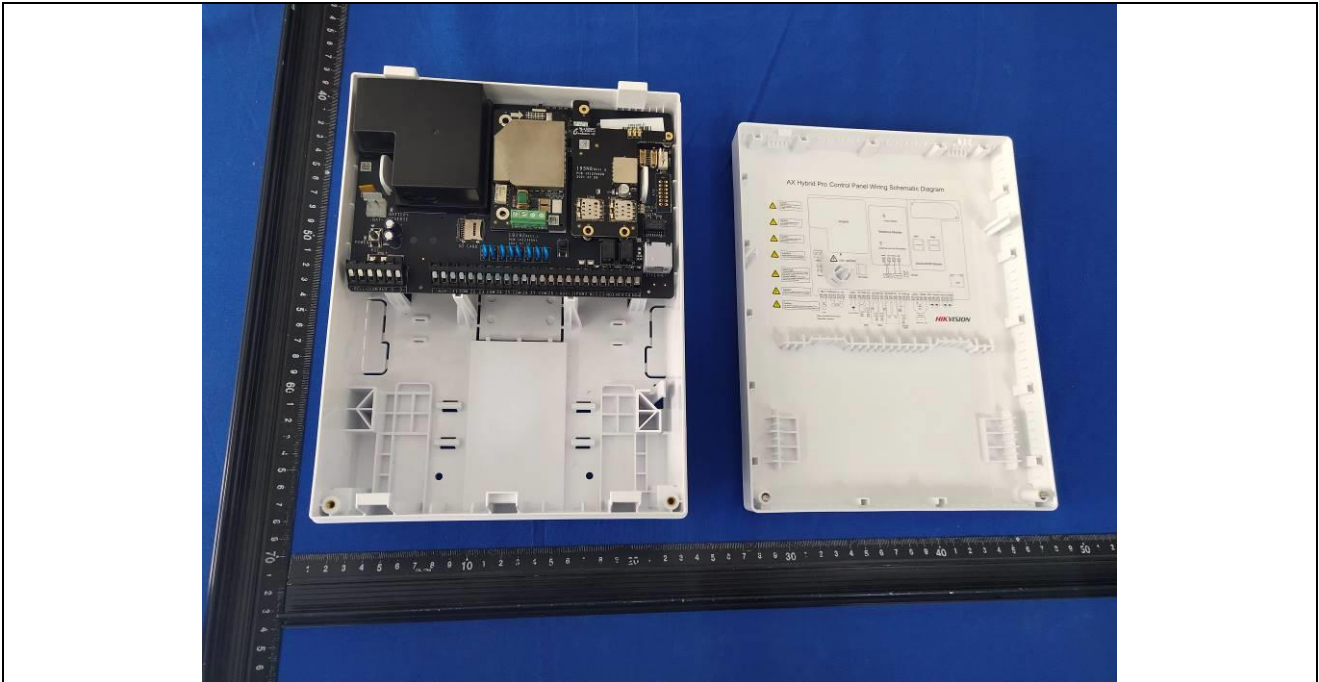
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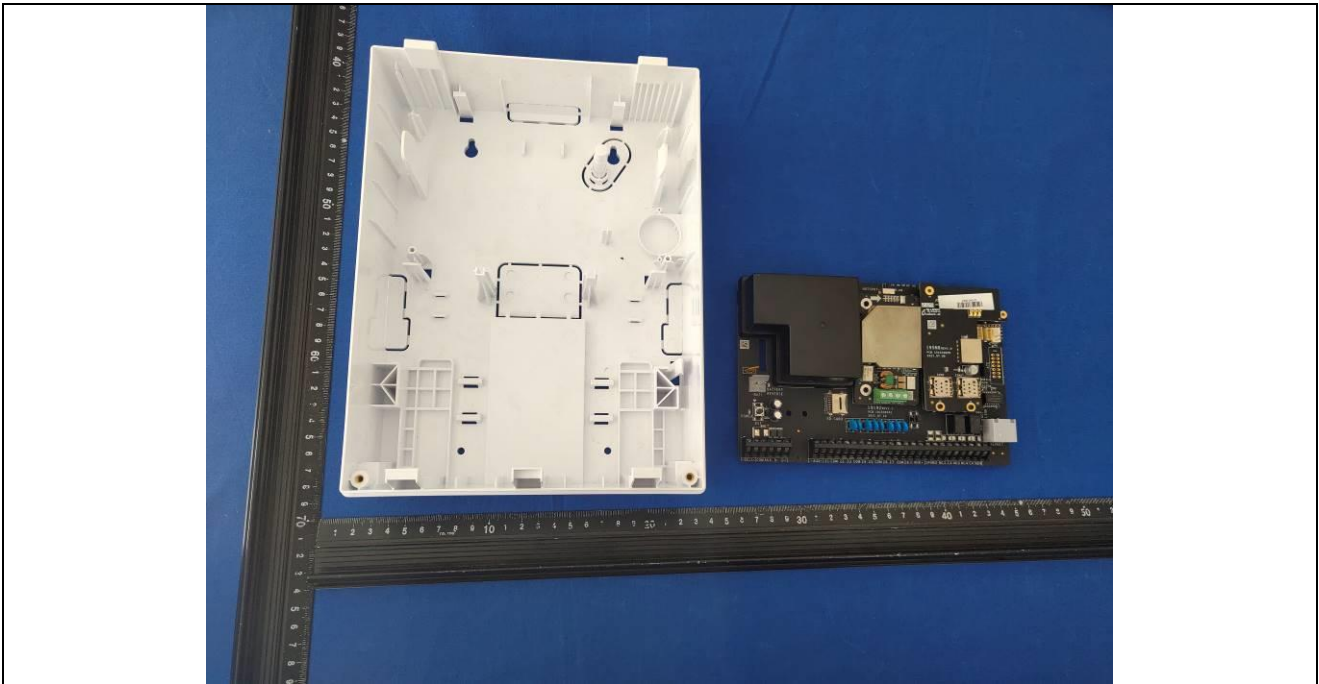
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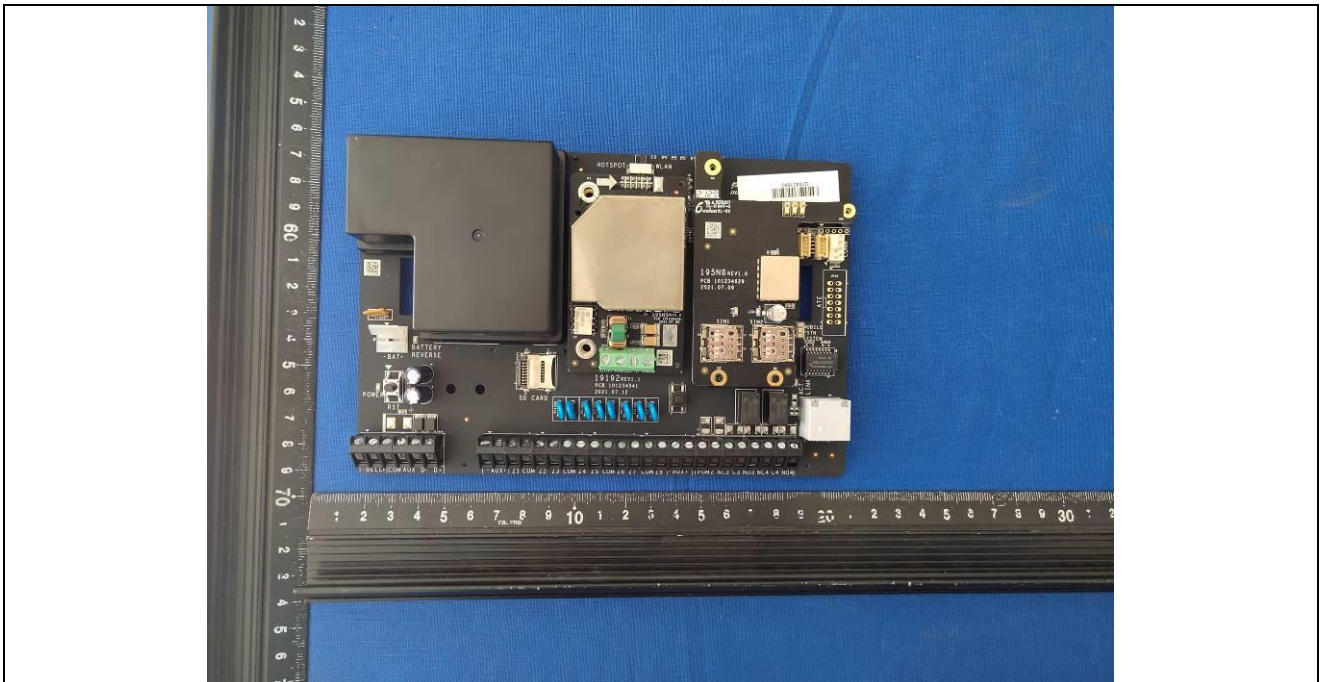
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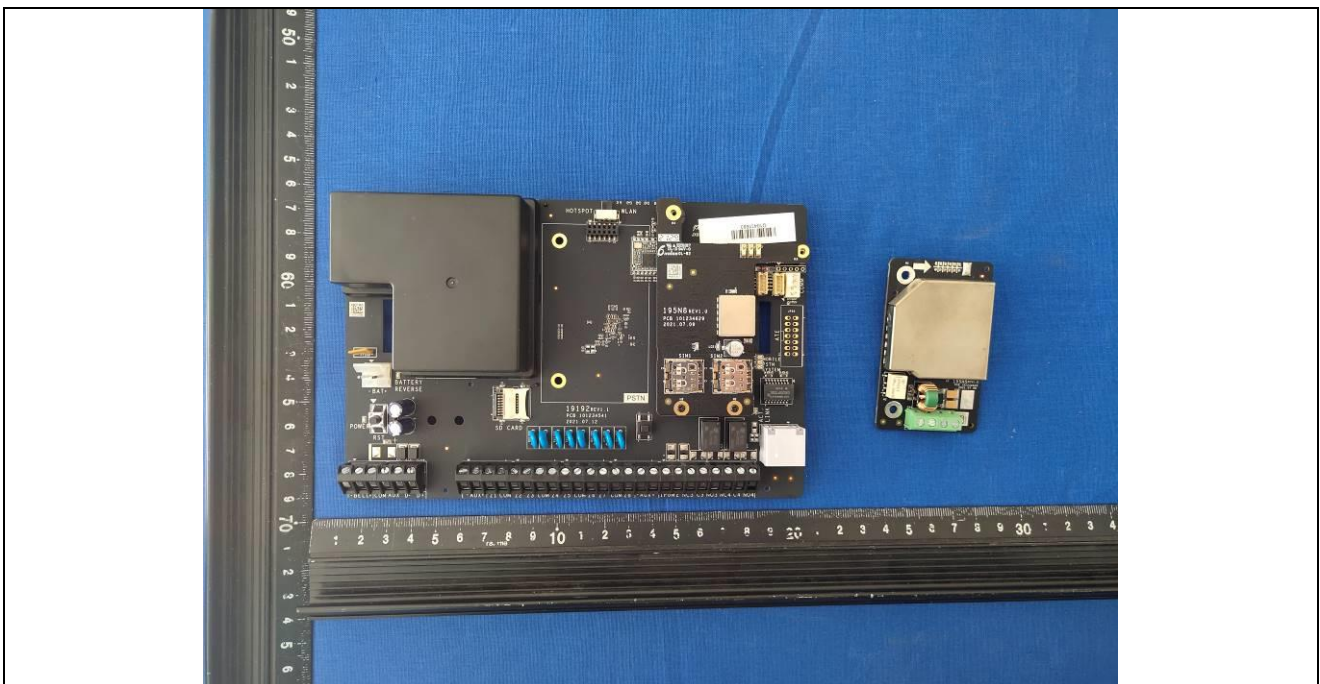
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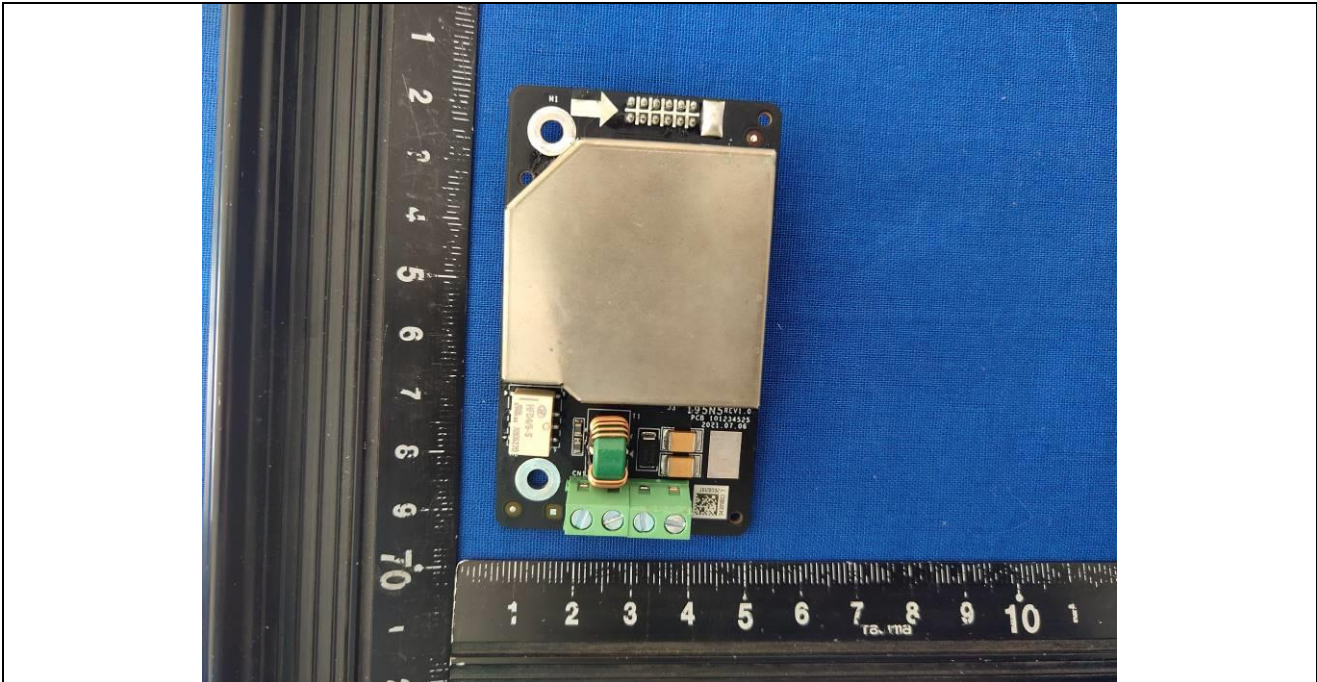
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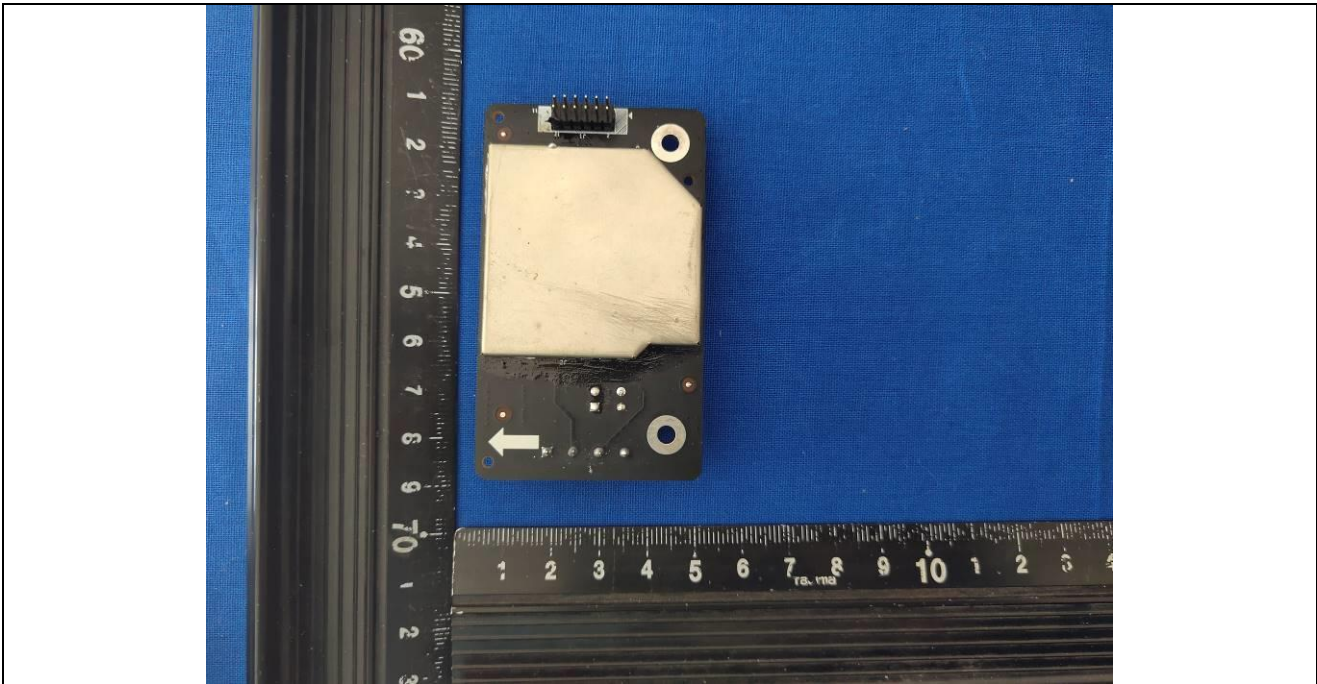
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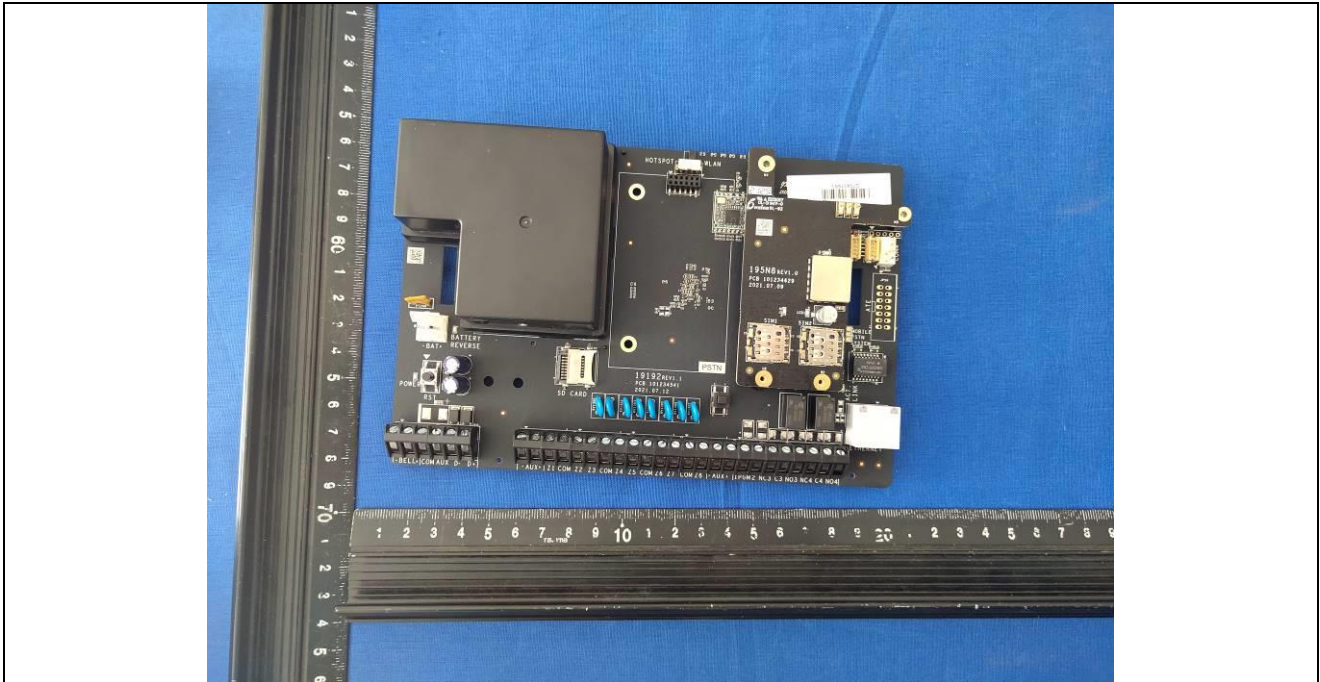
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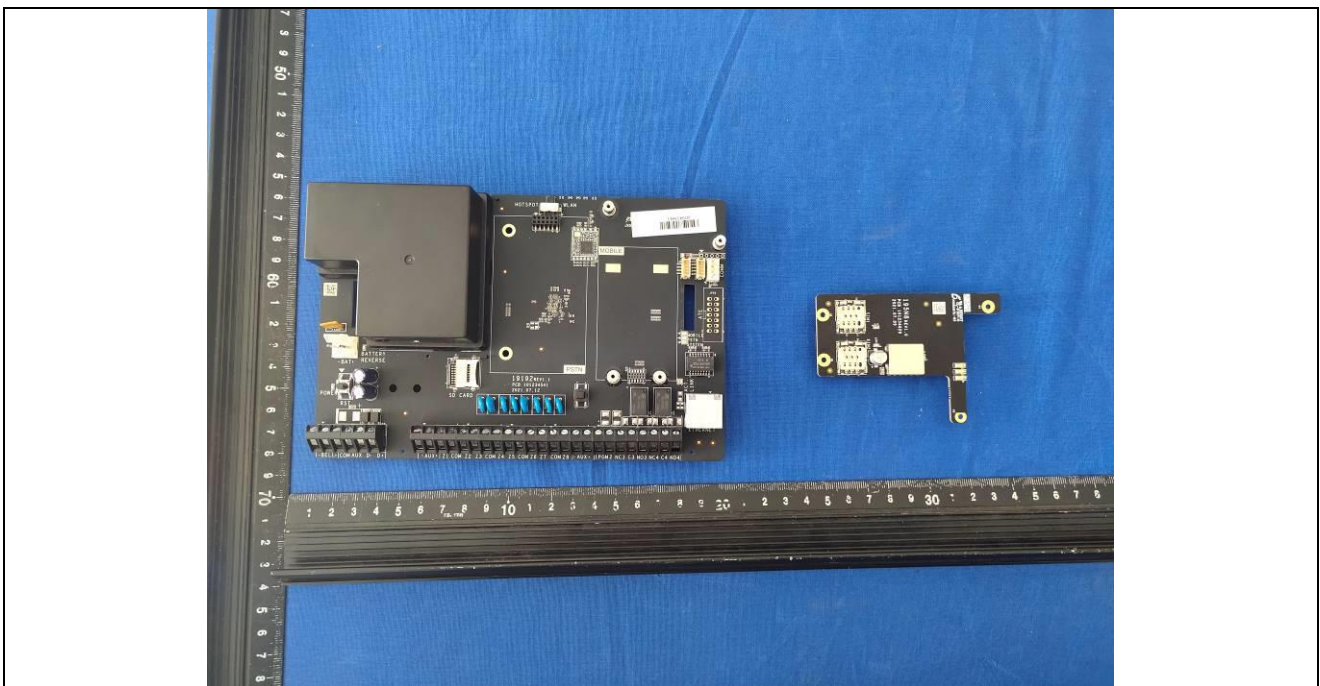
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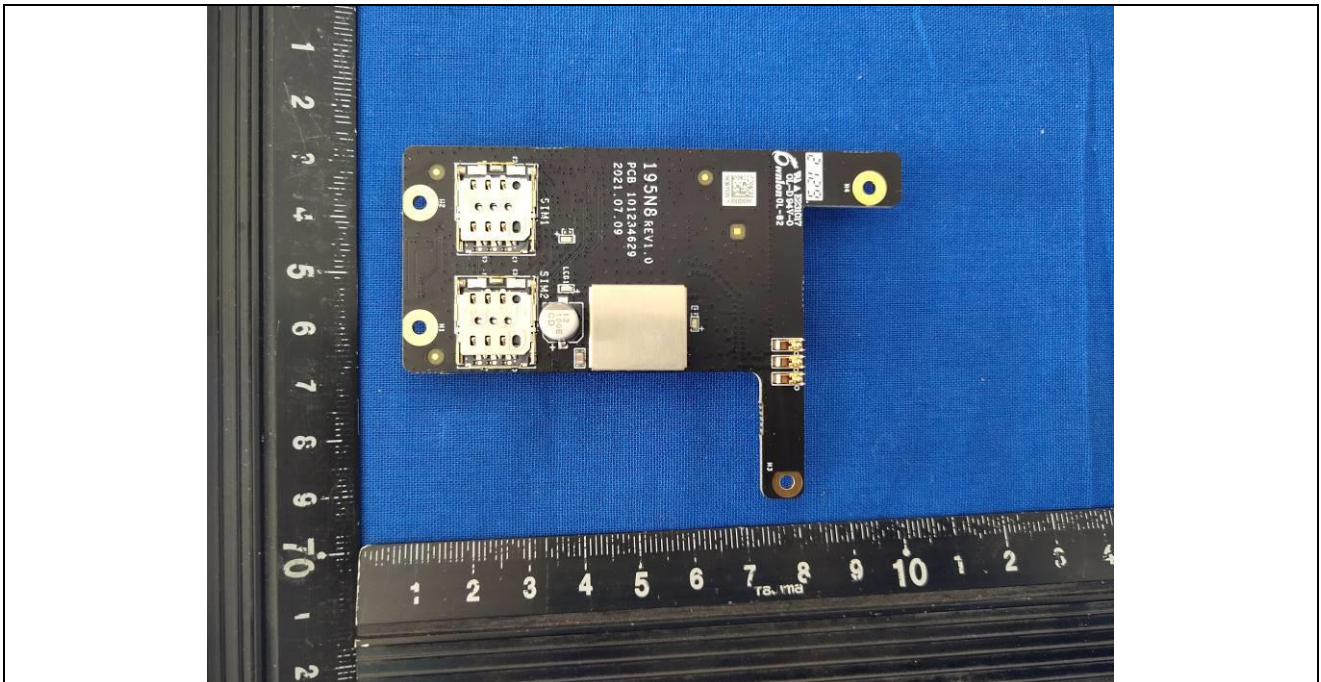
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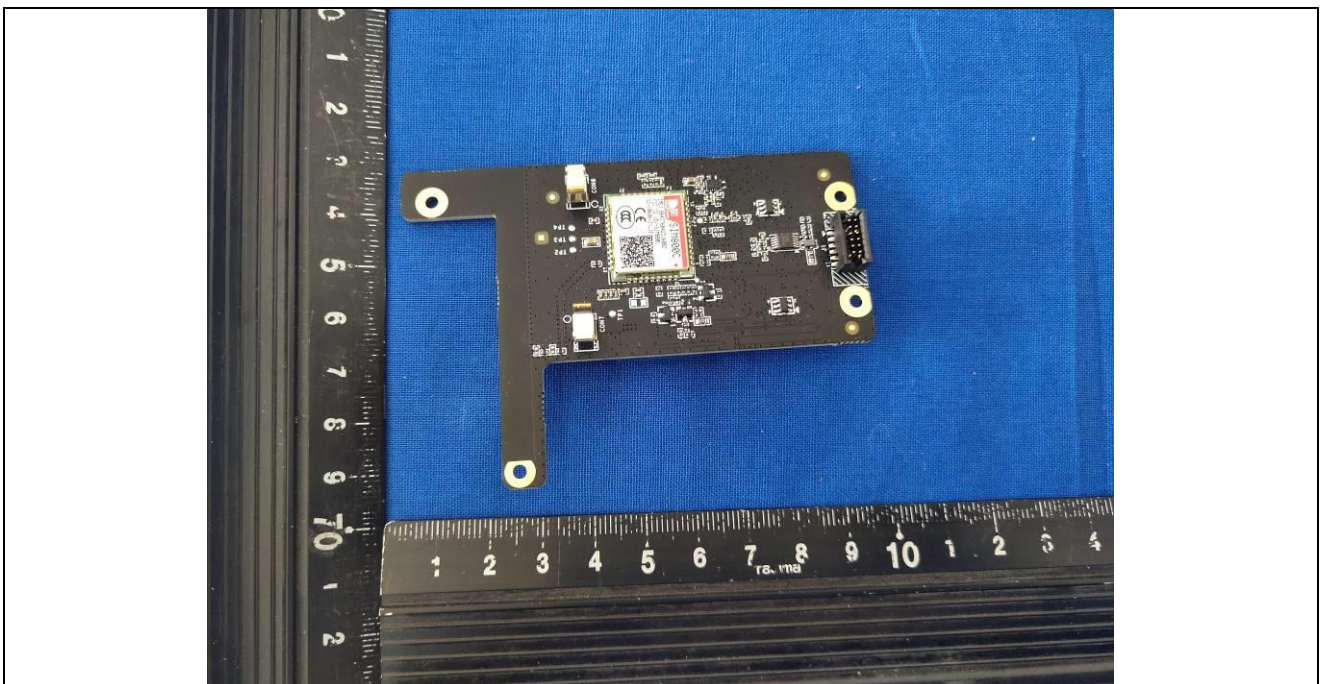
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Details of: PCB



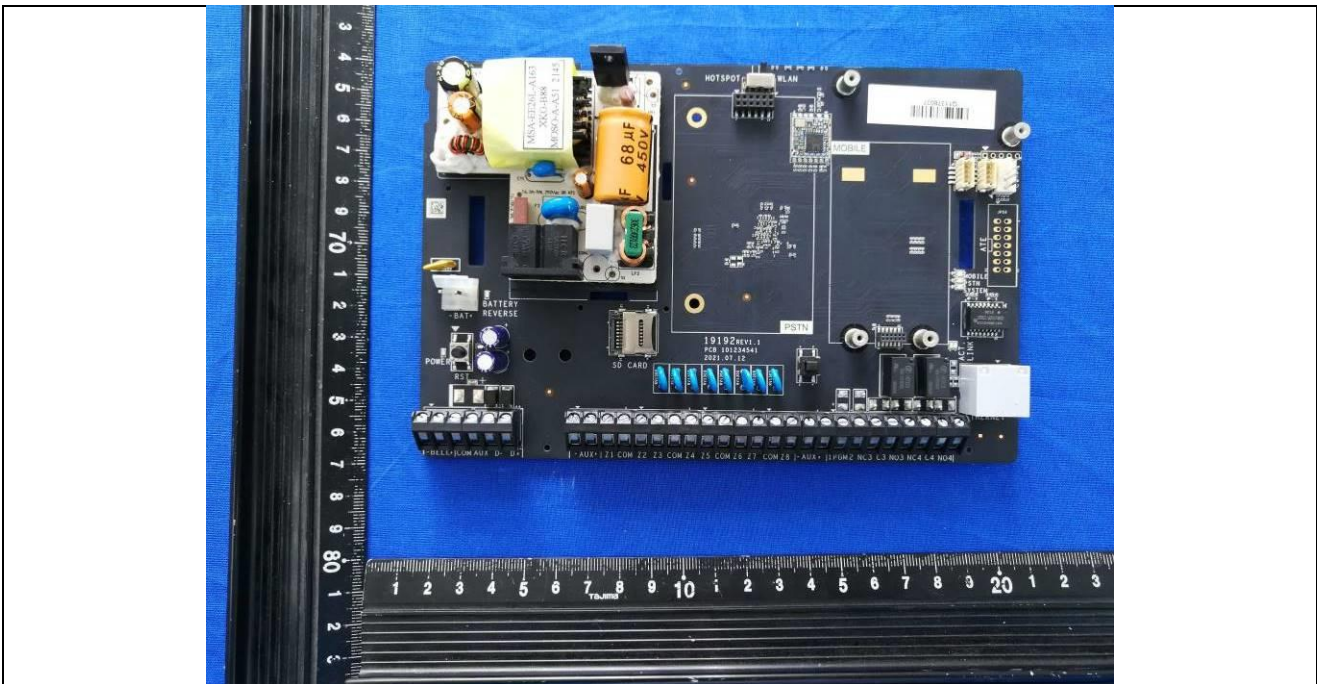
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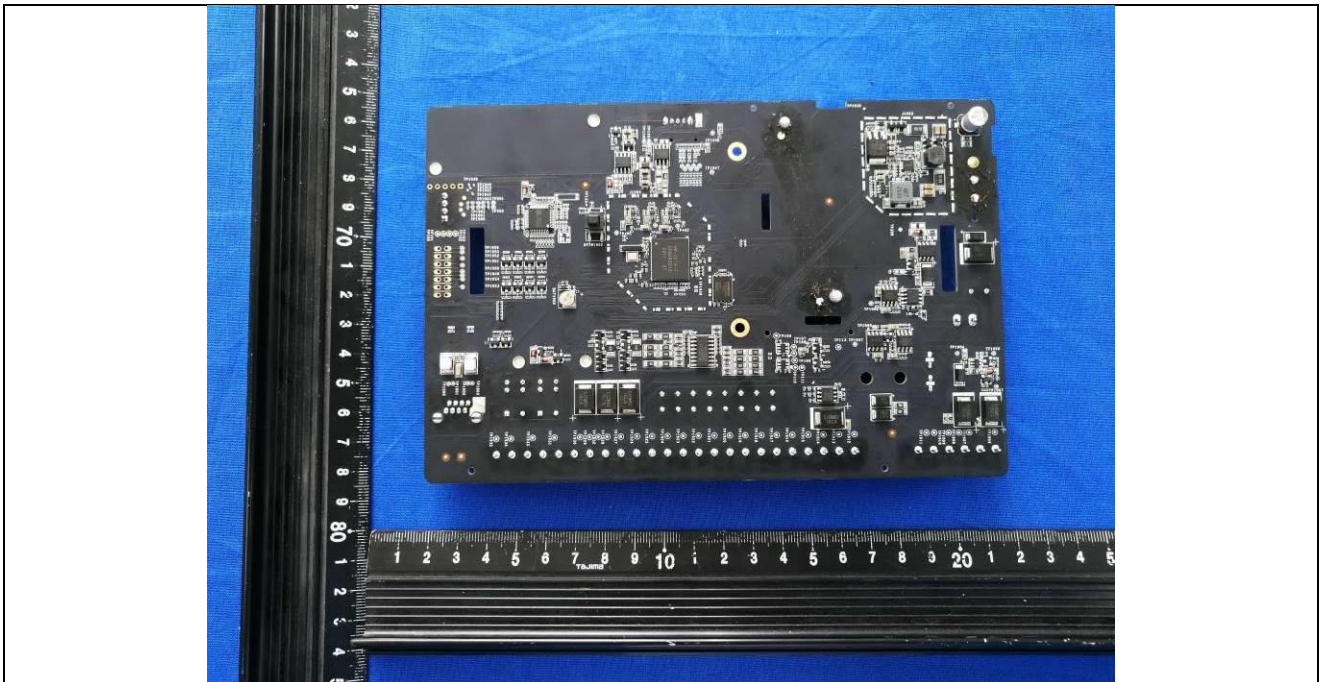
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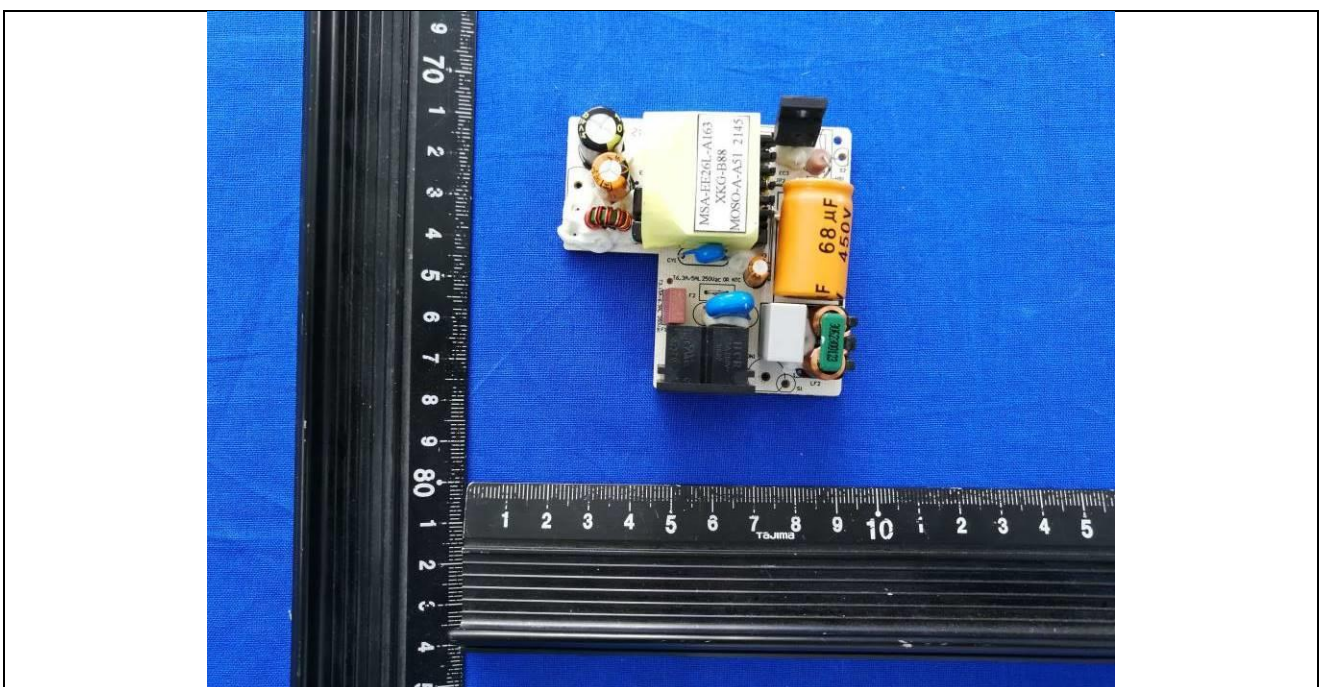
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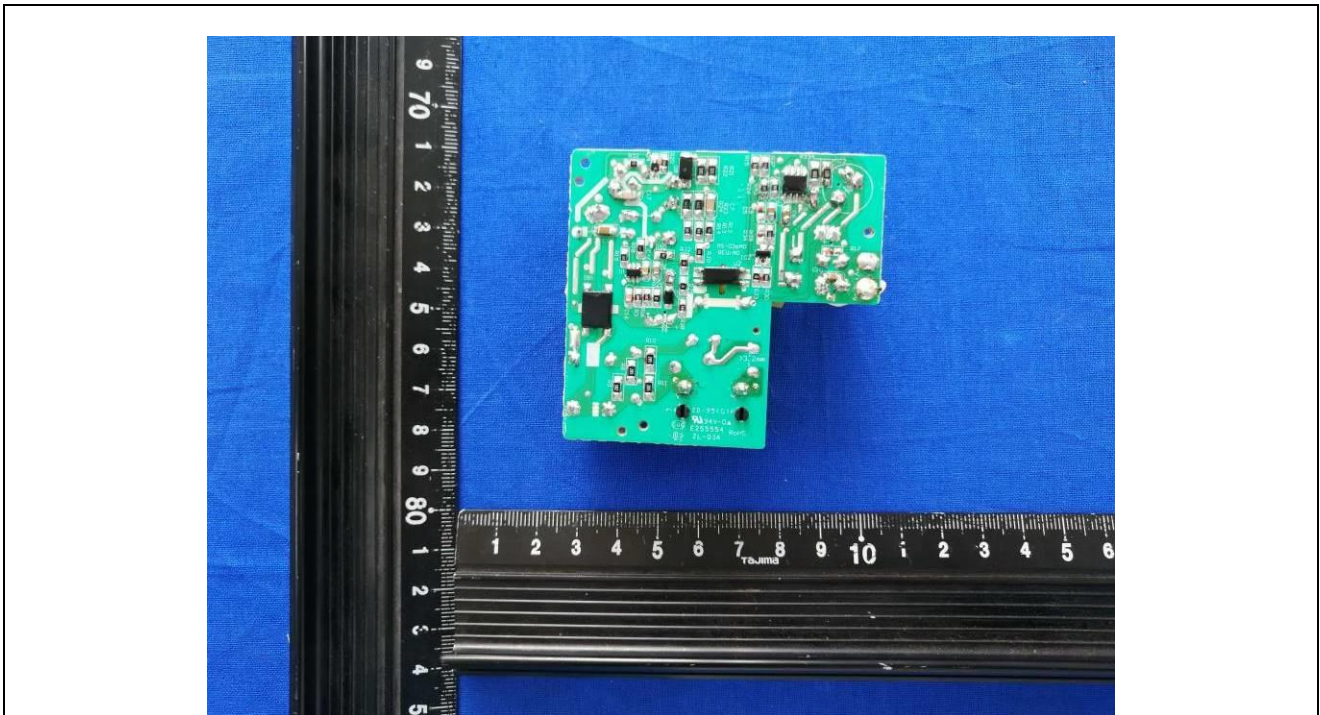
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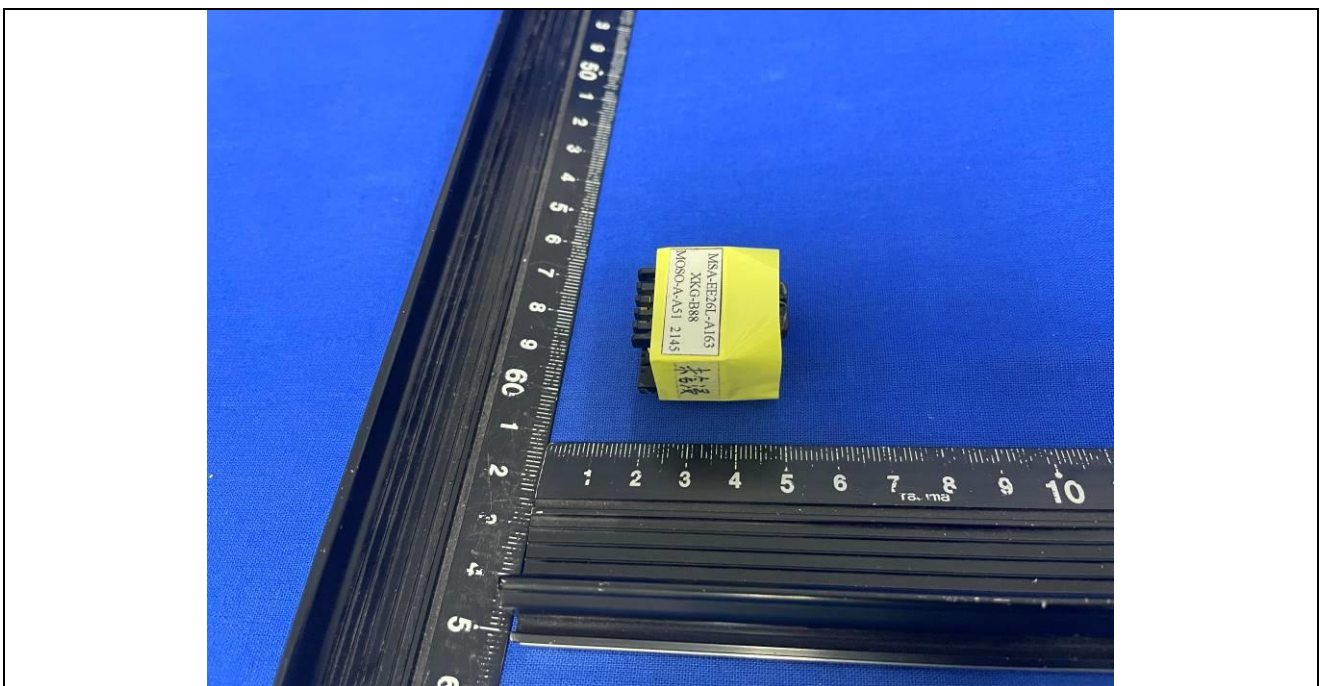
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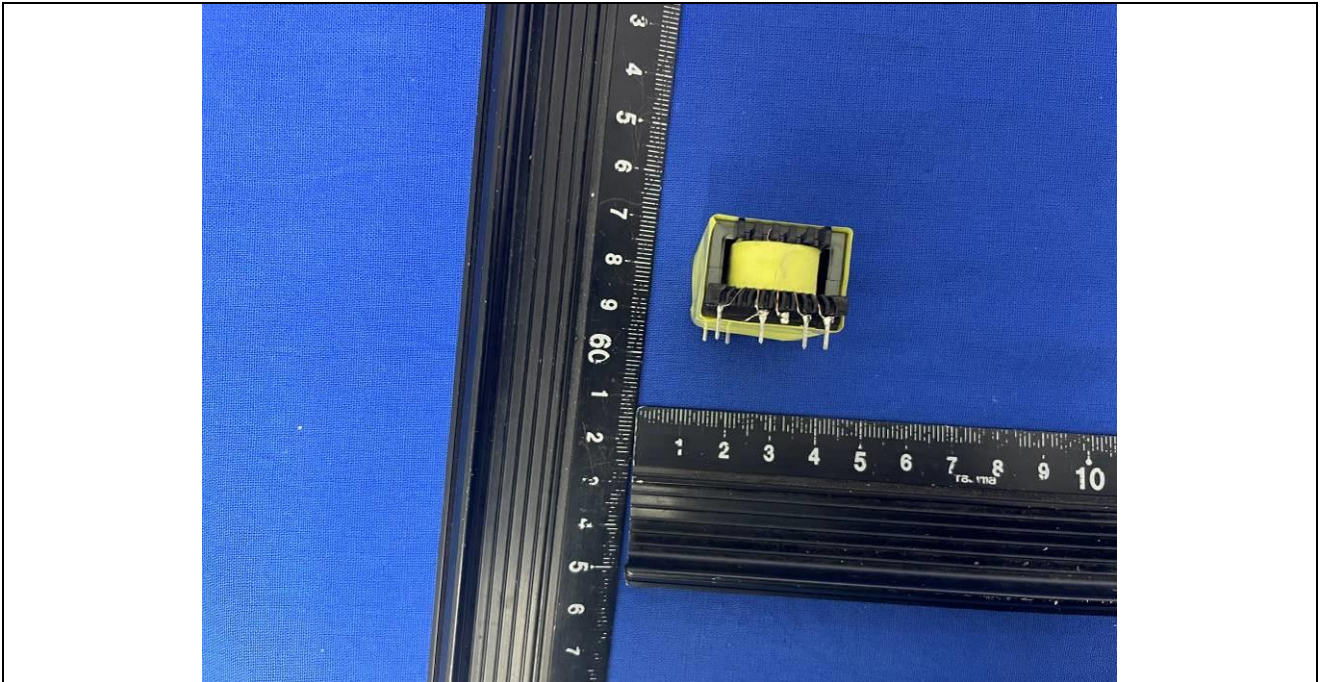
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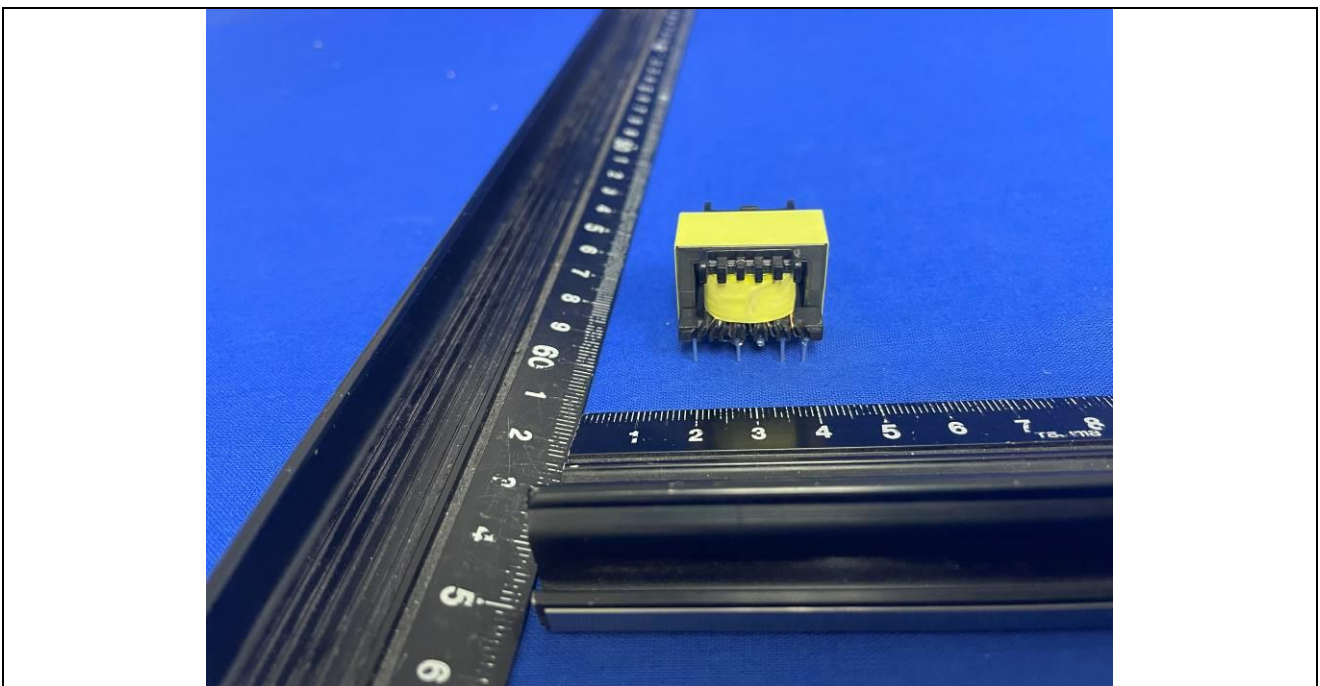
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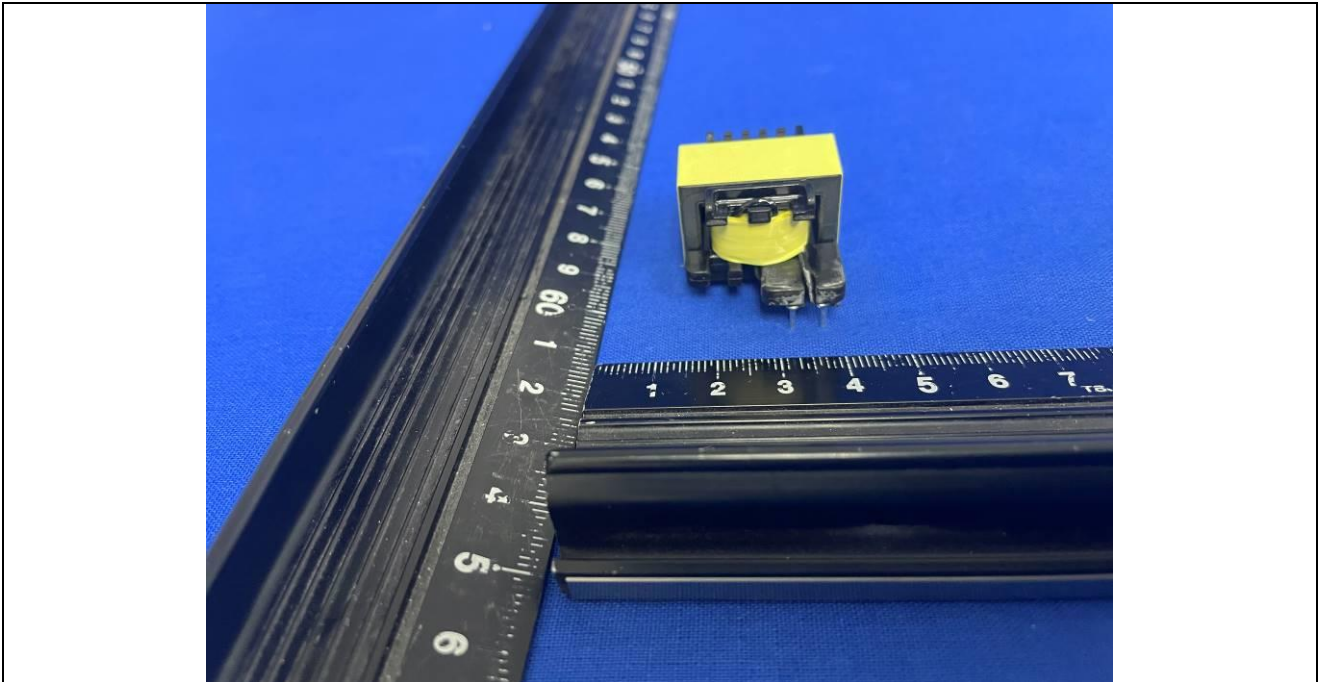
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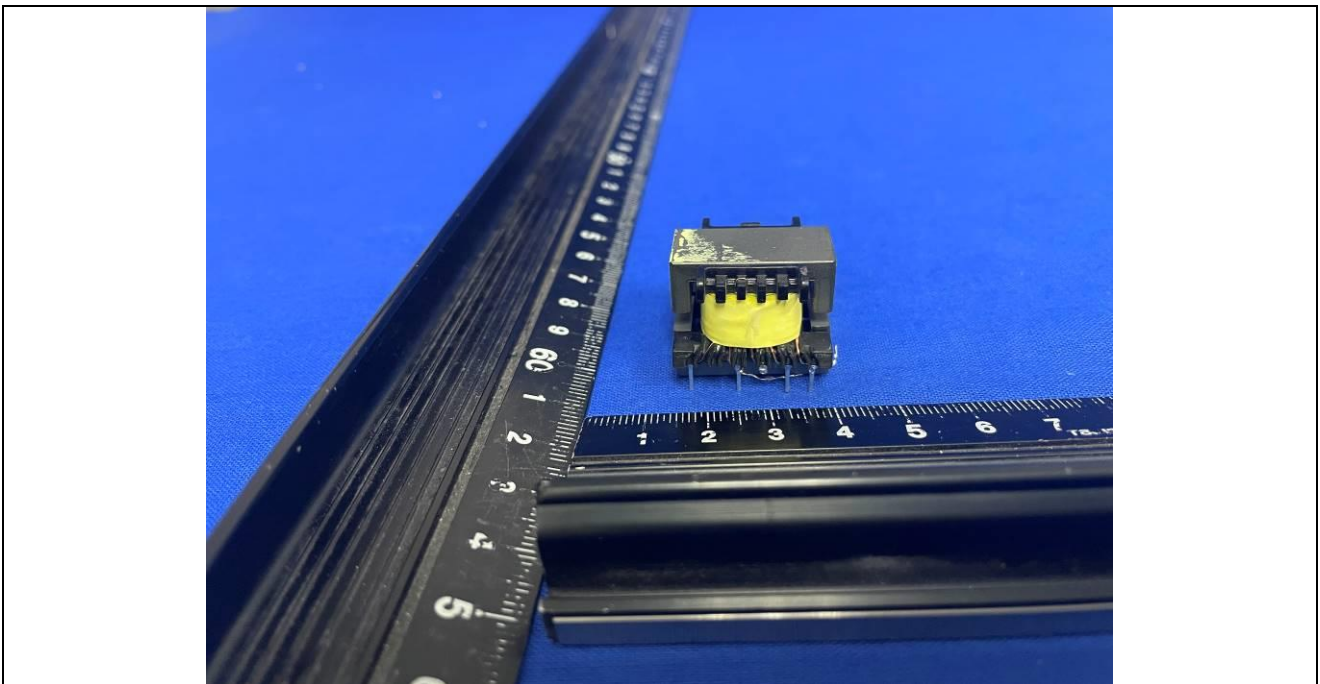
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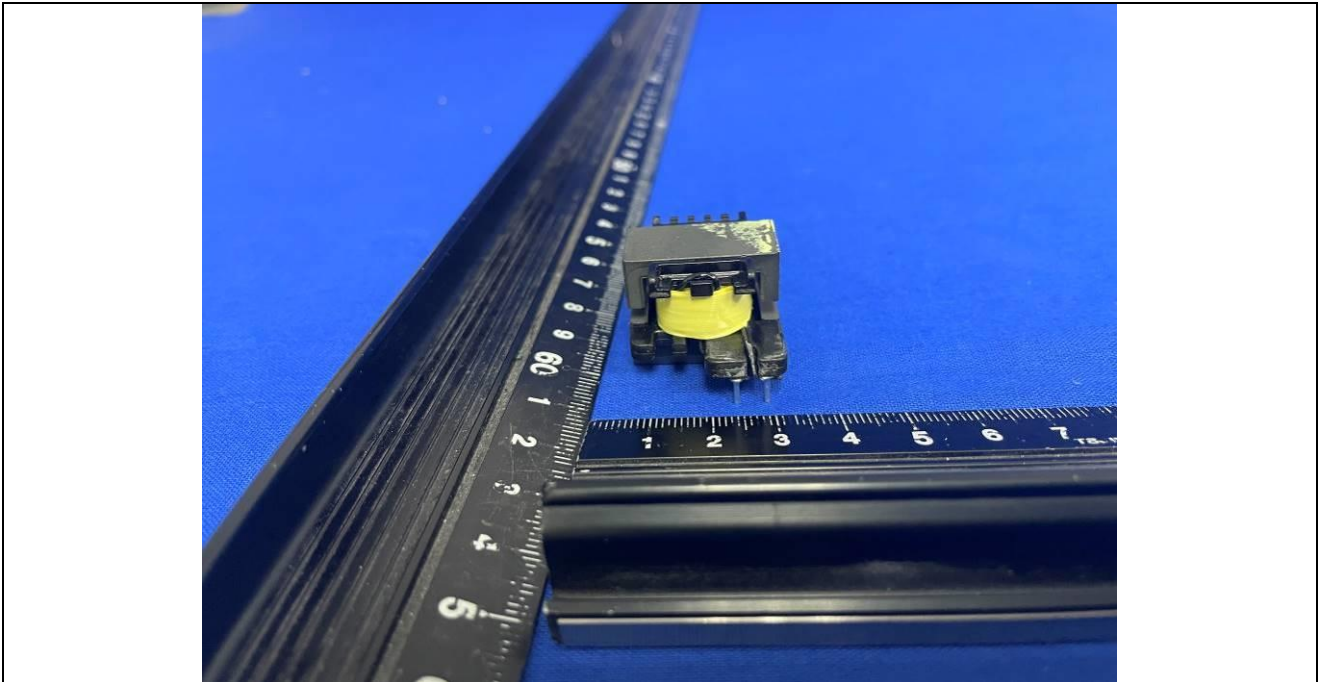
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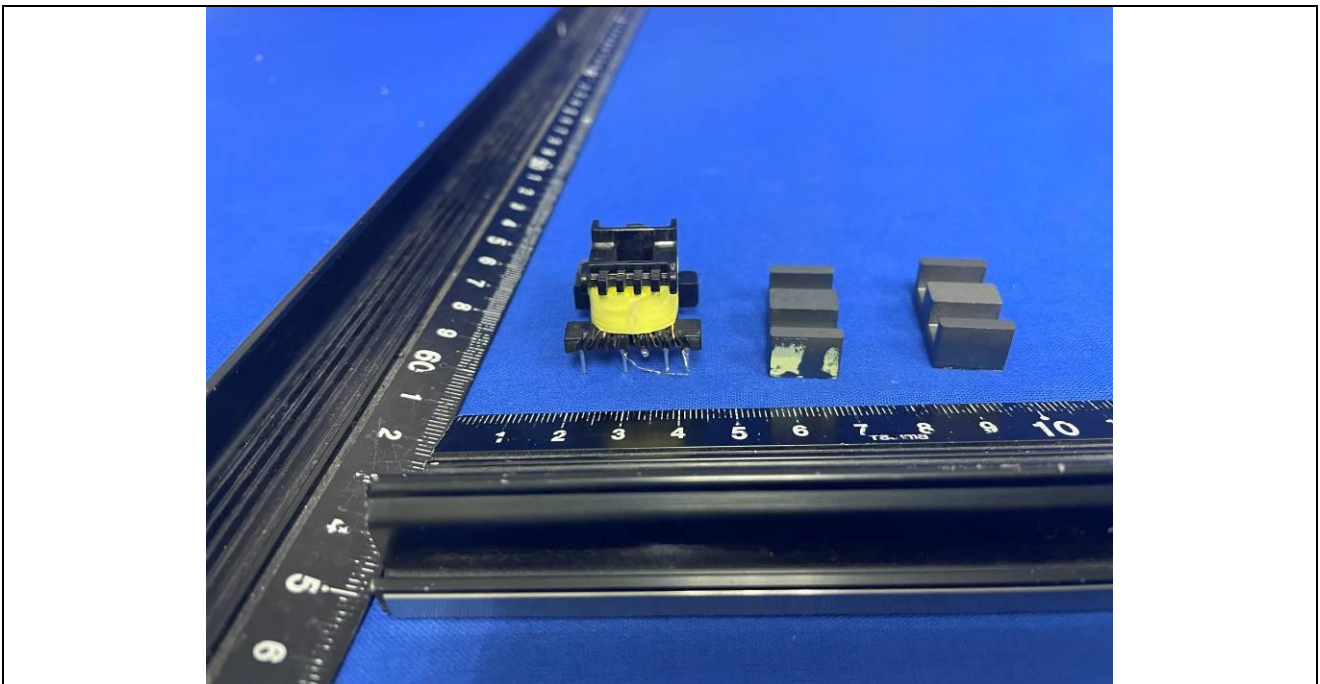
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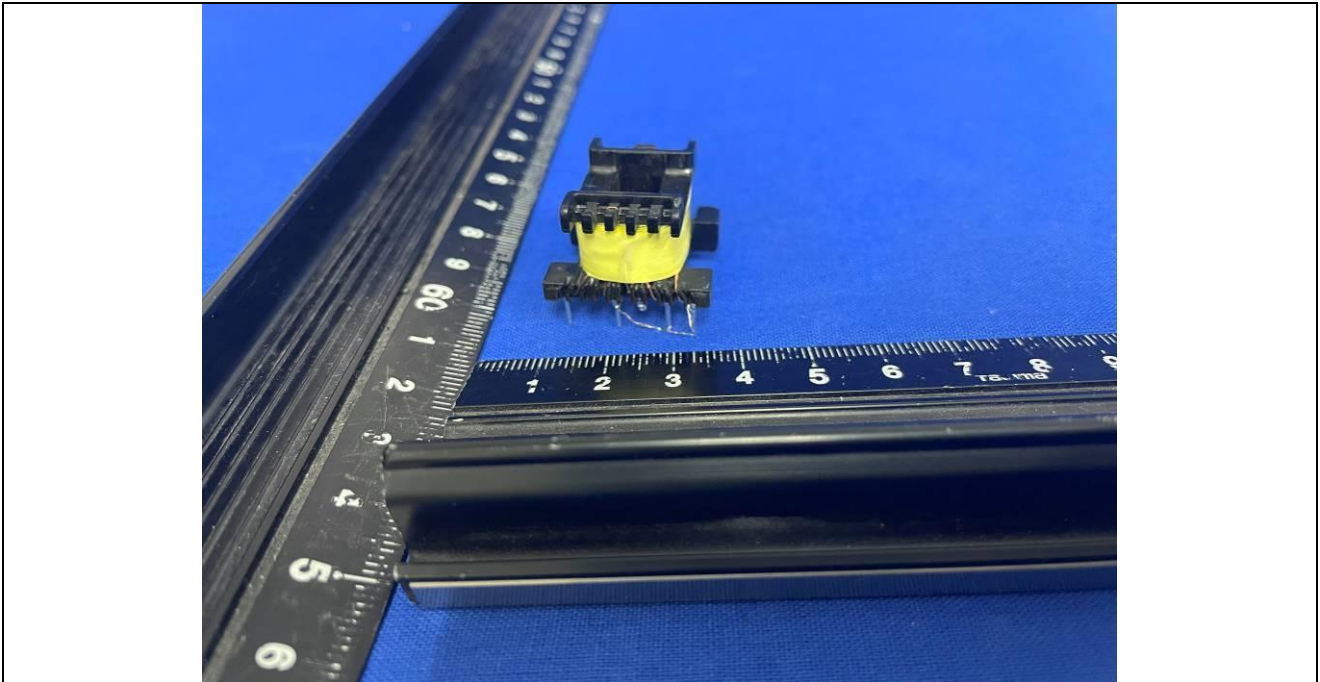
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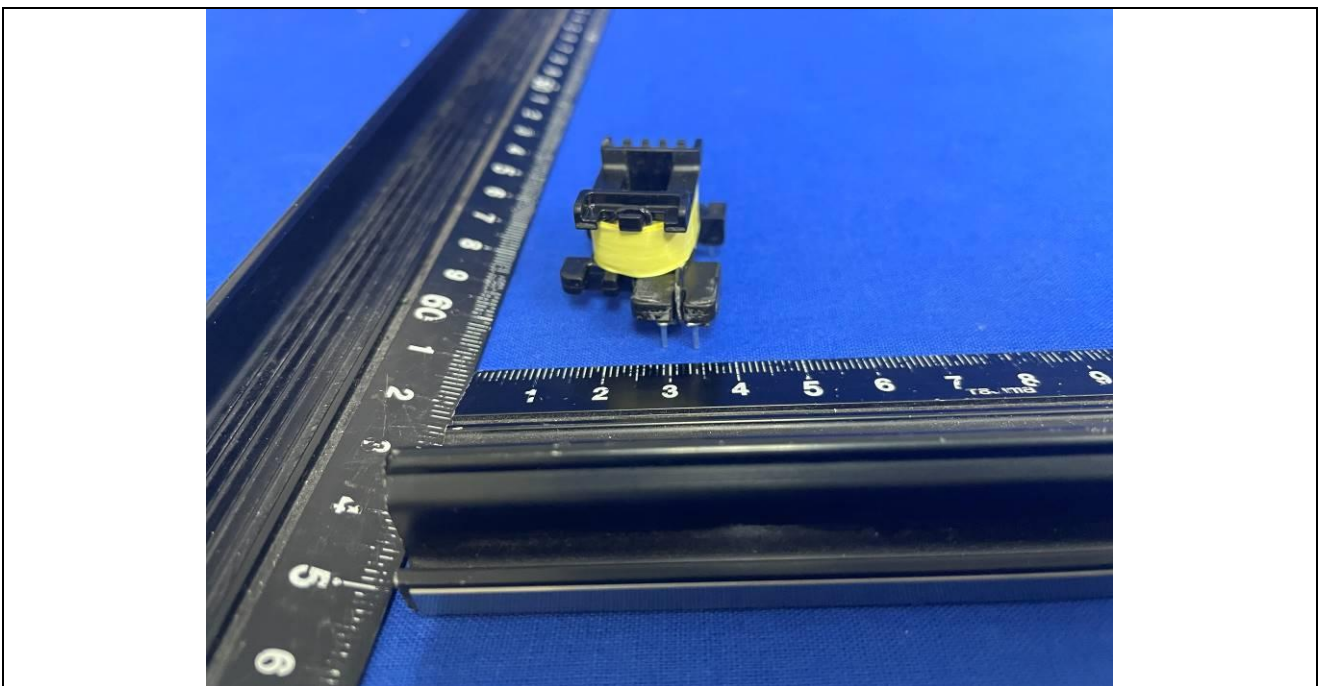
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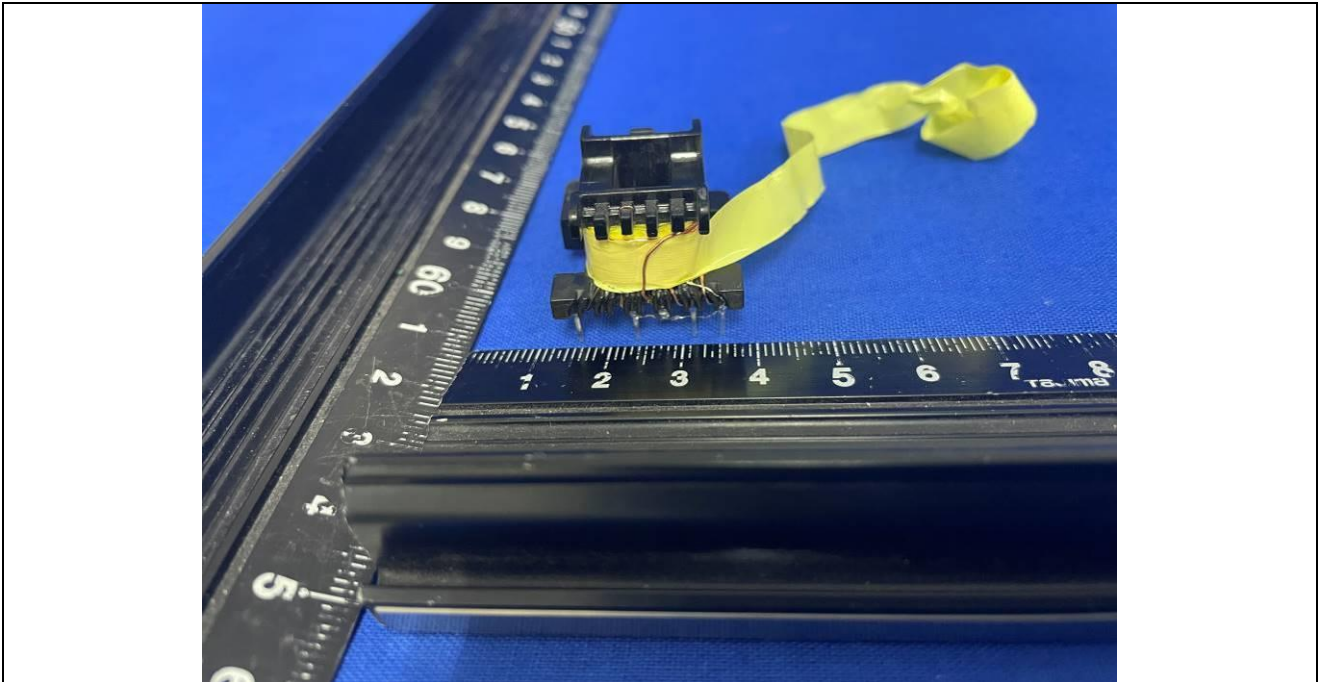
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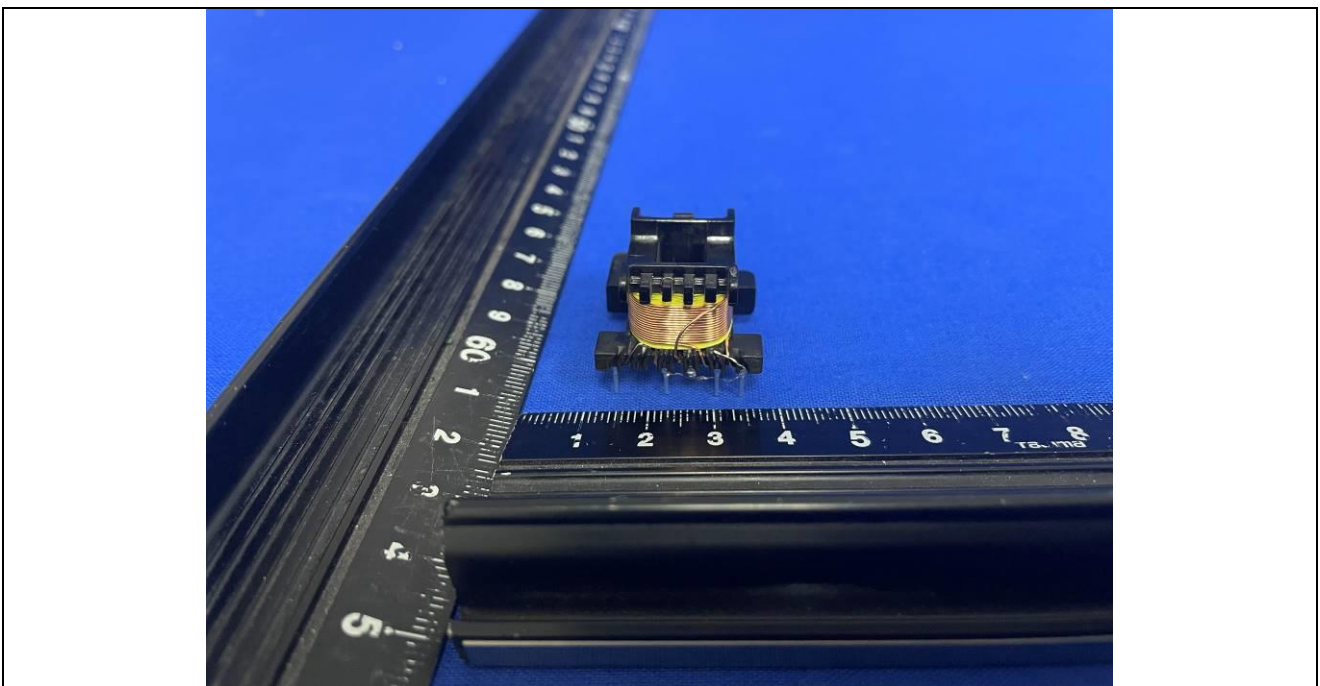
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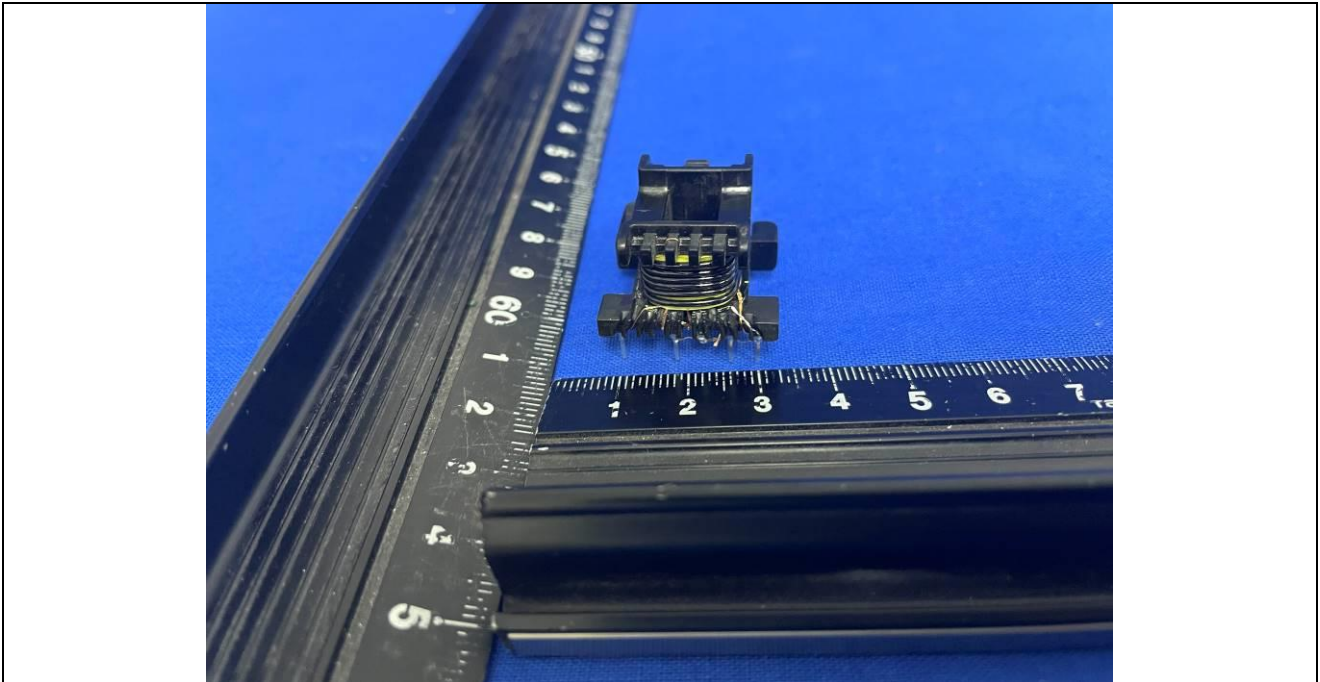
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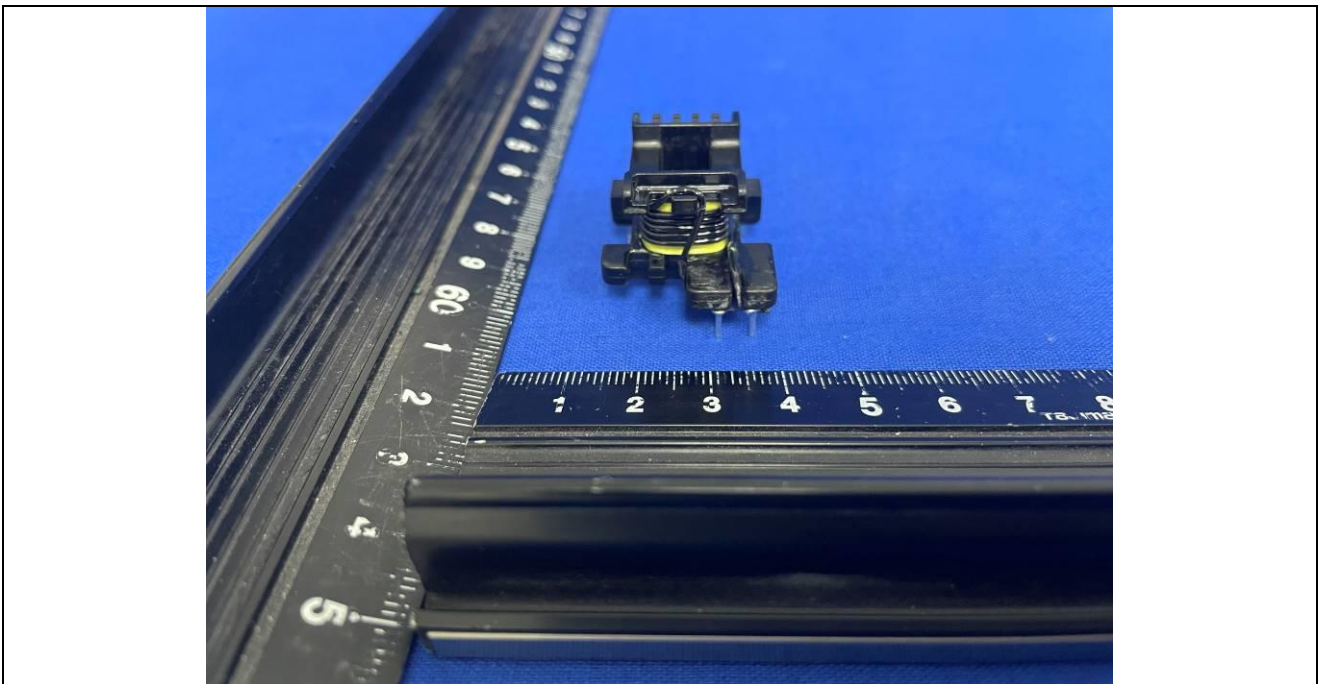
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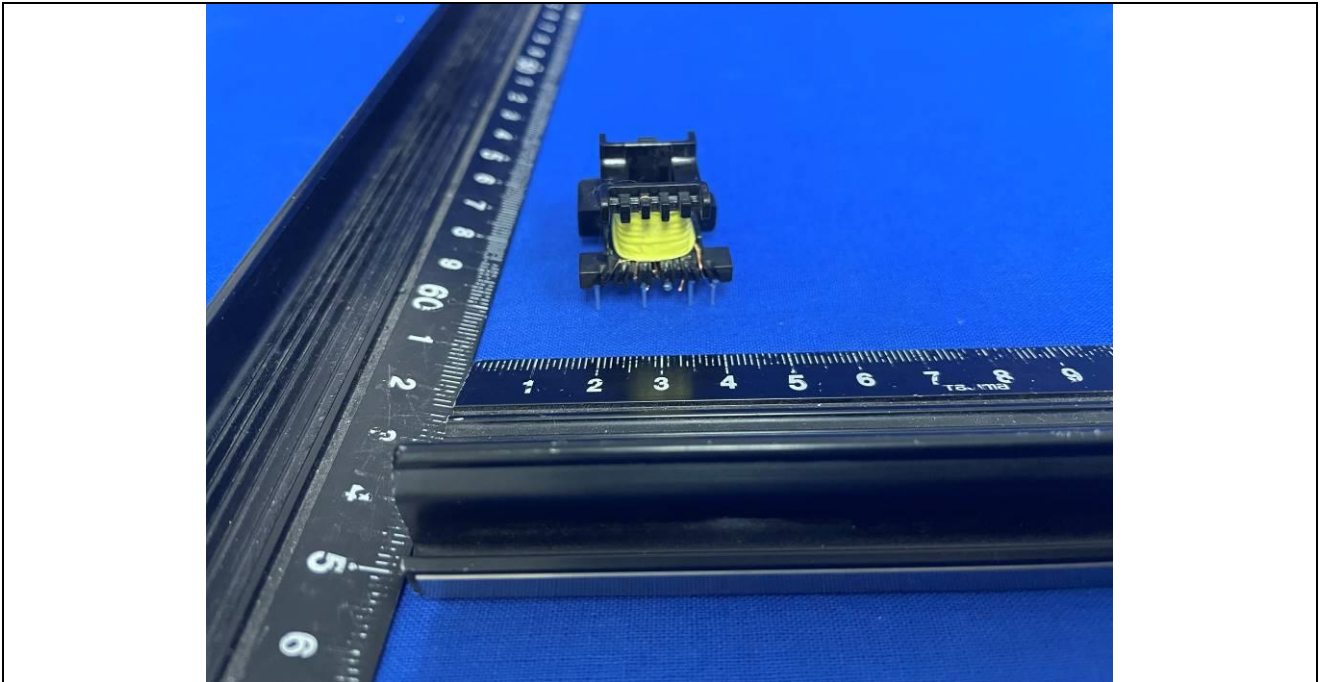
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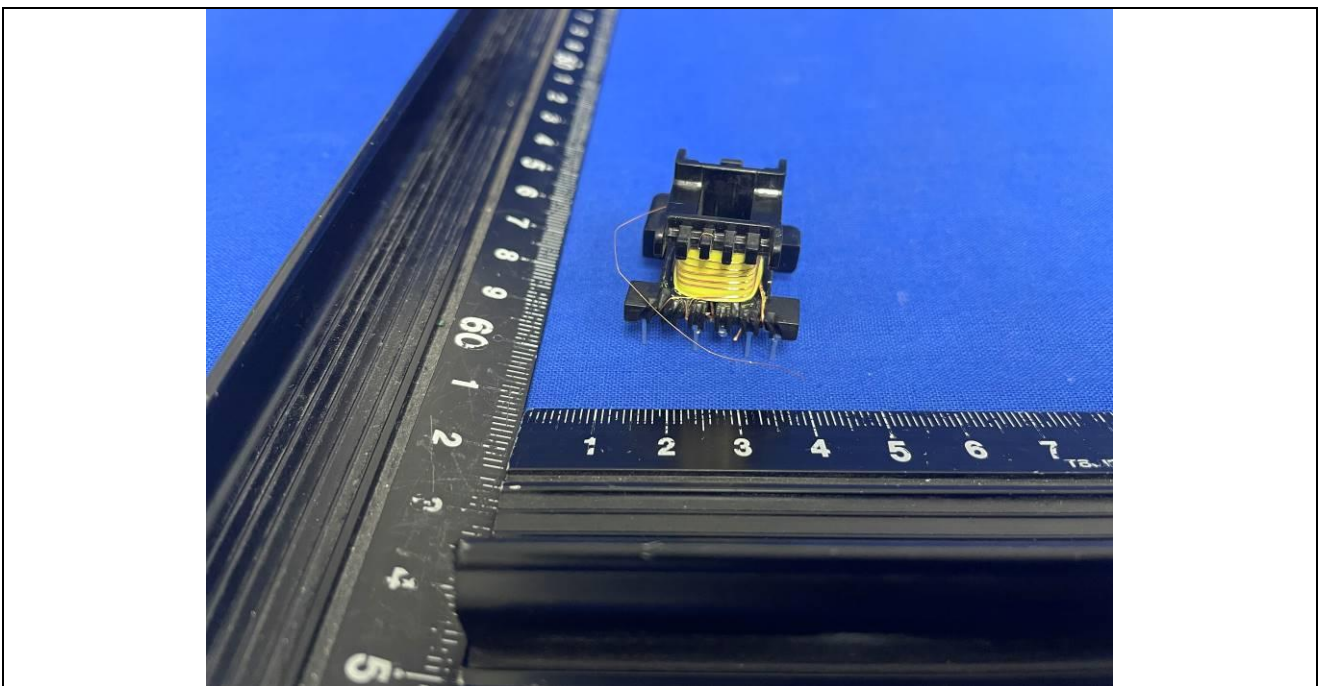
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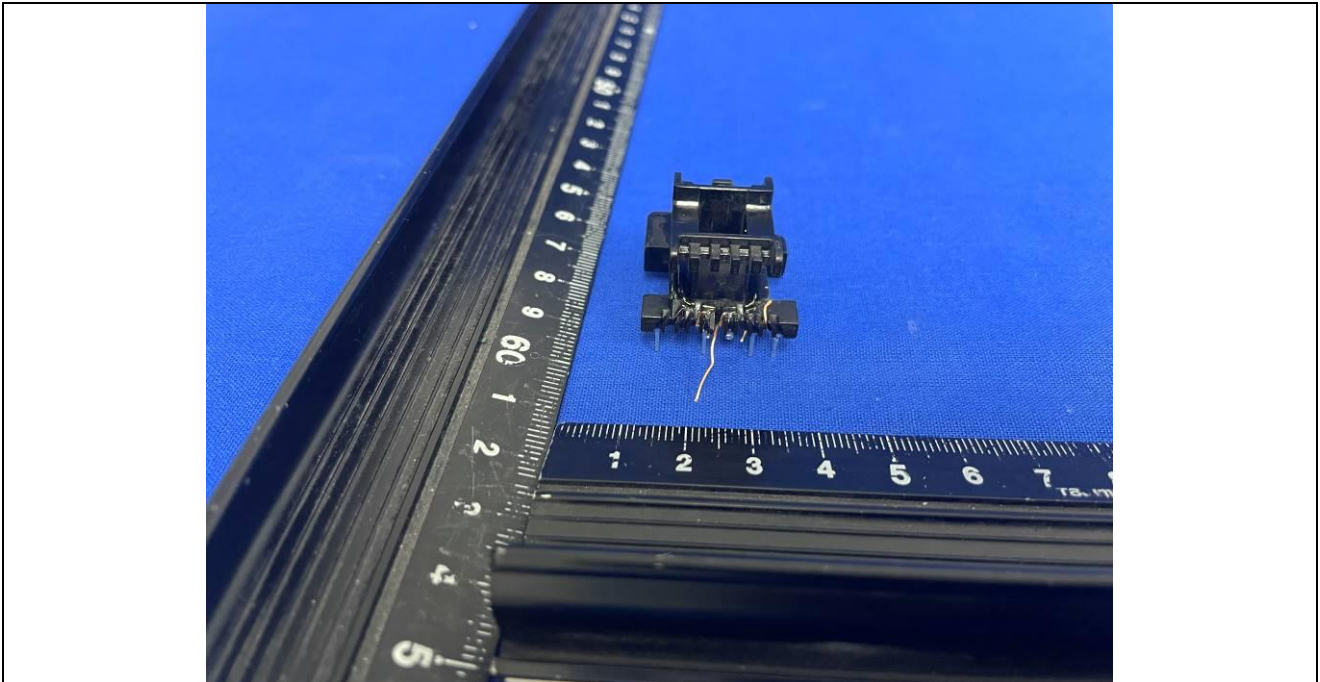
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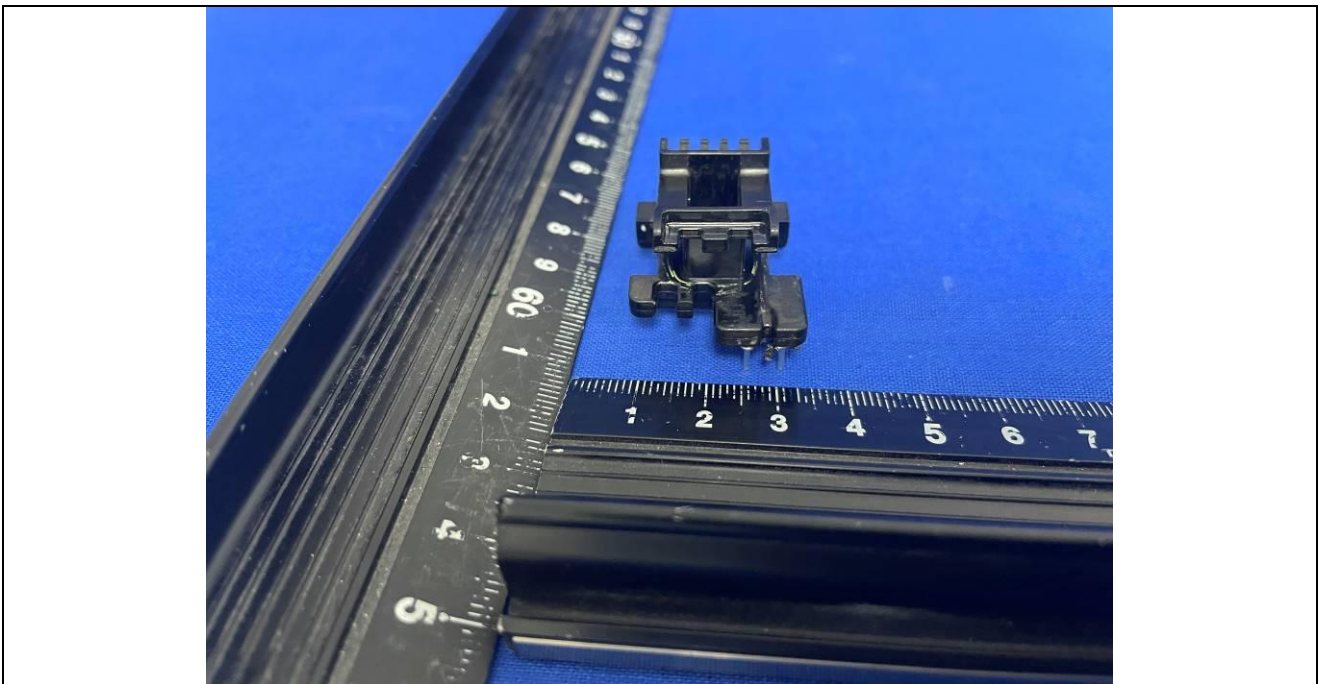
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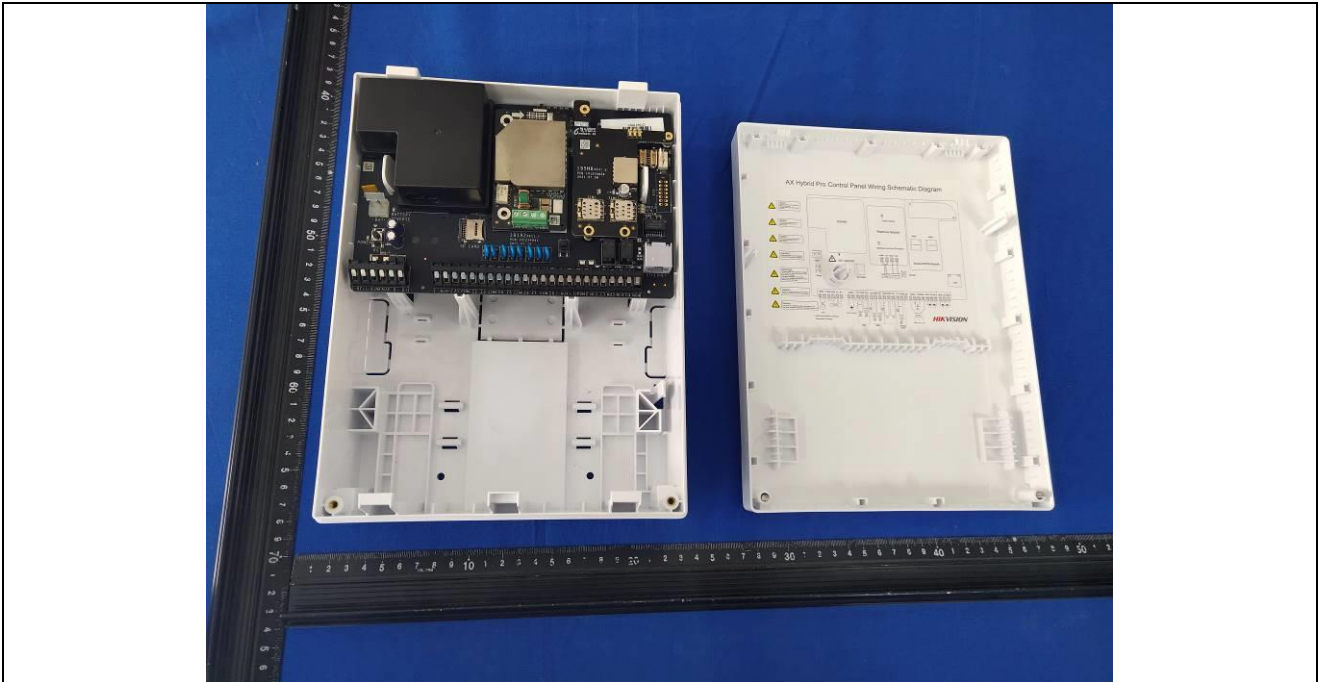
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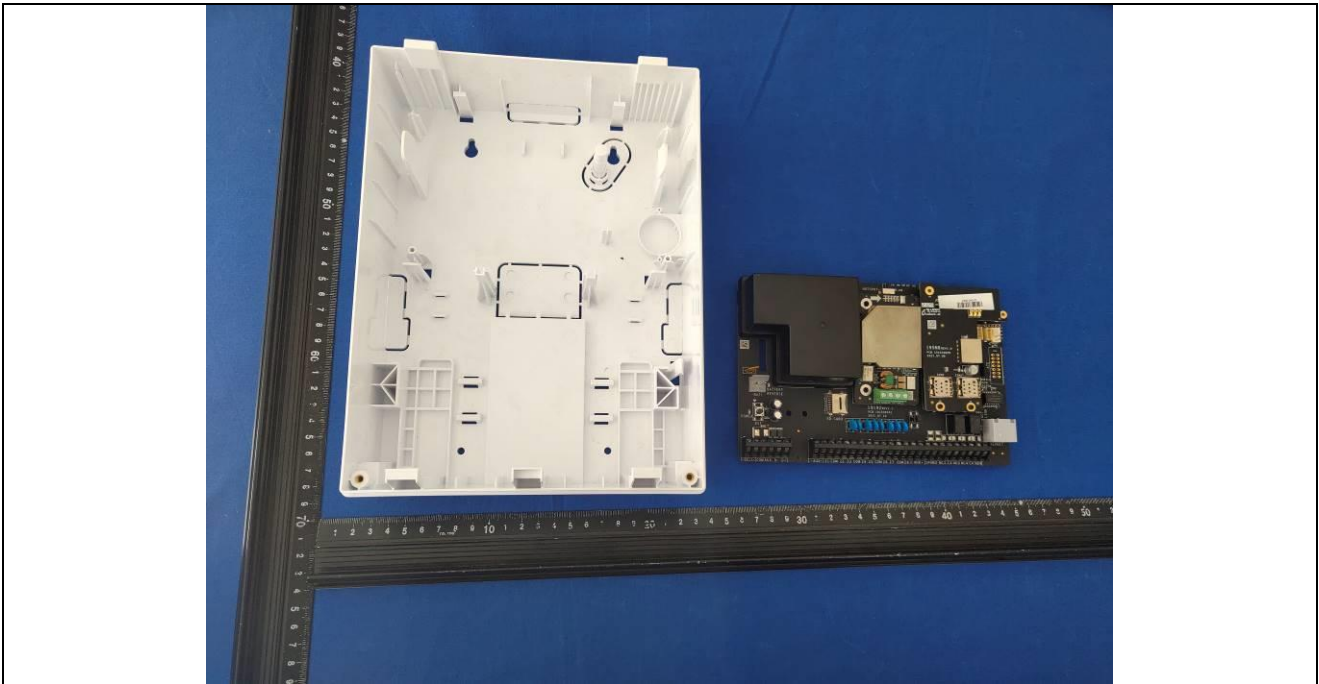
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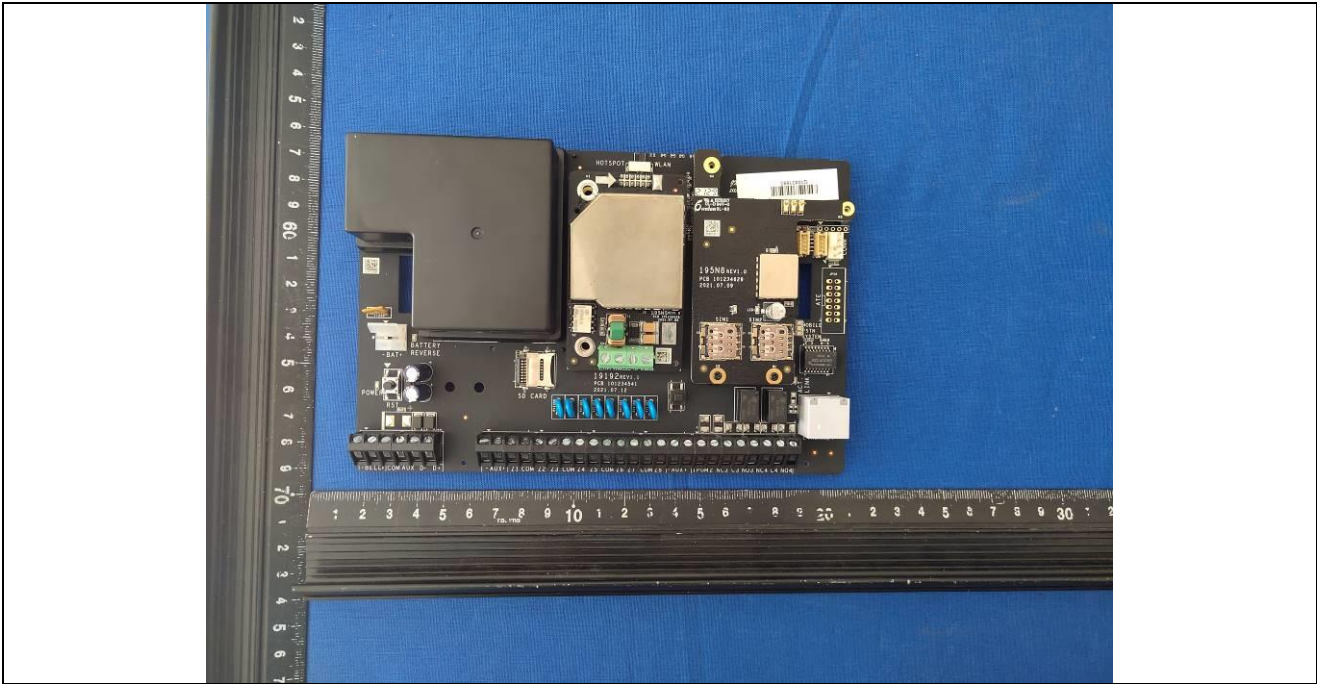
Details of: Internal view (with power supply model: ADO-40W1 12)



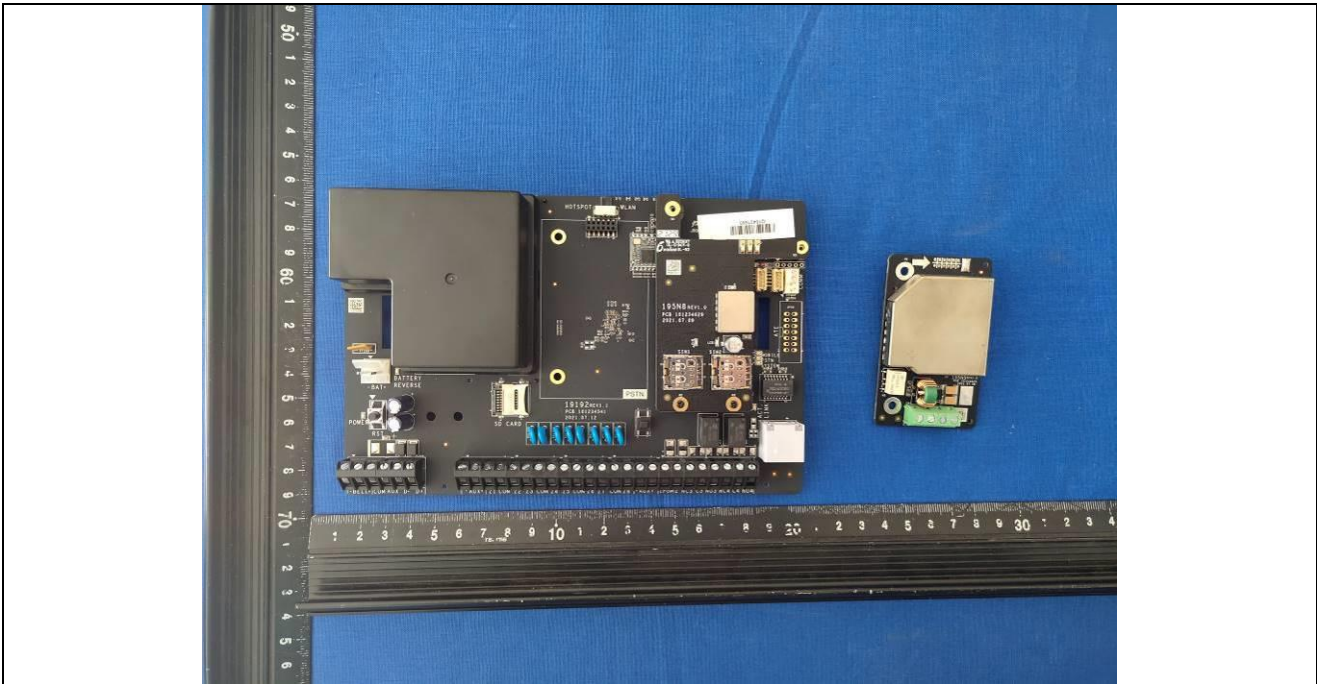
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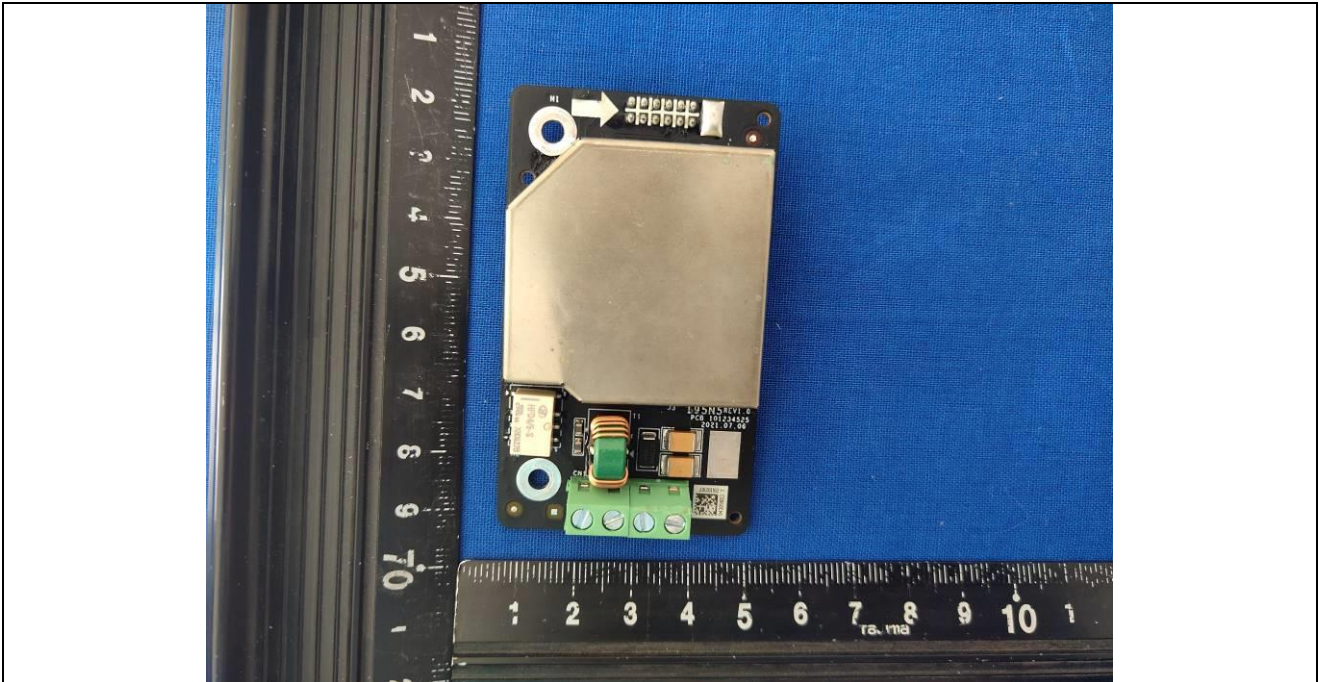
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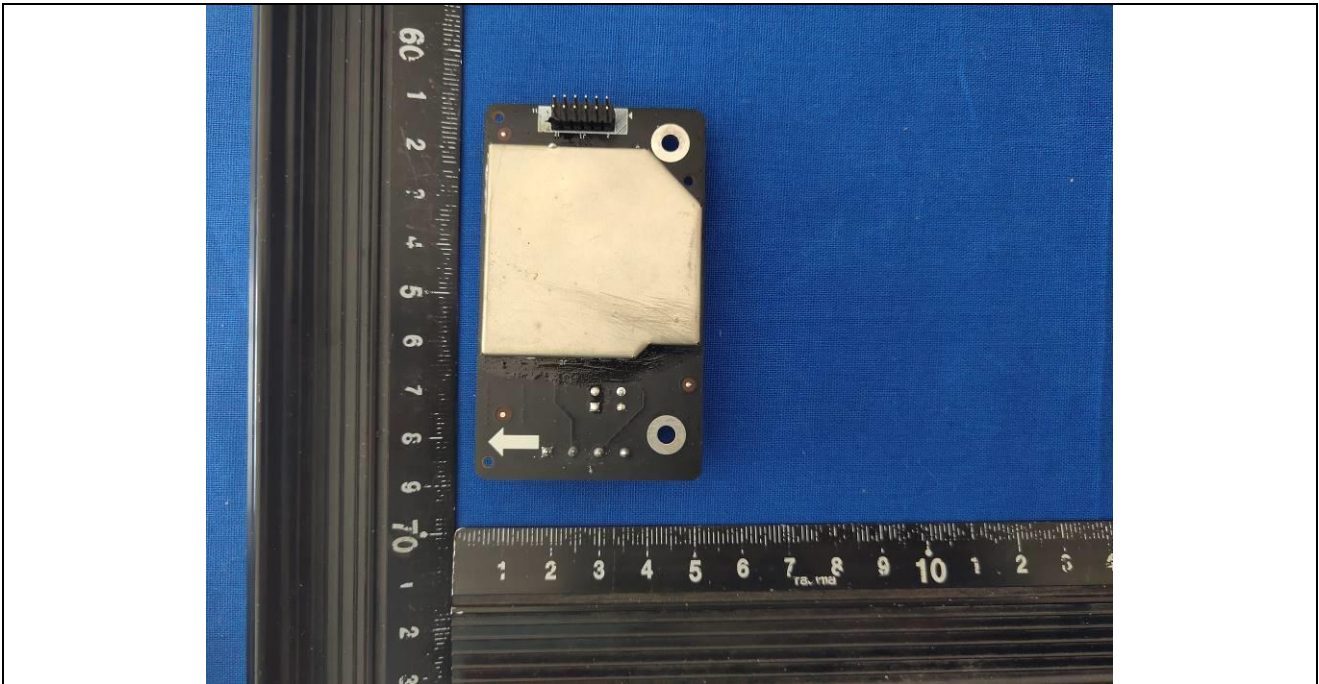
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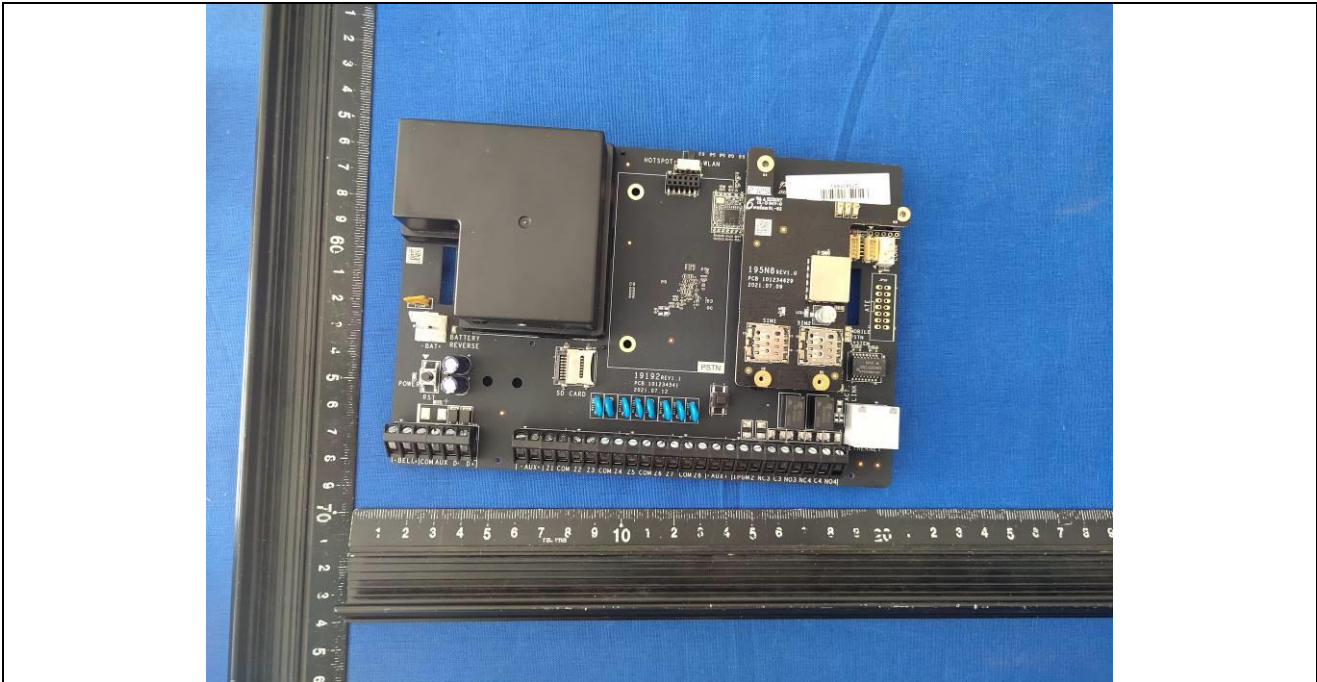
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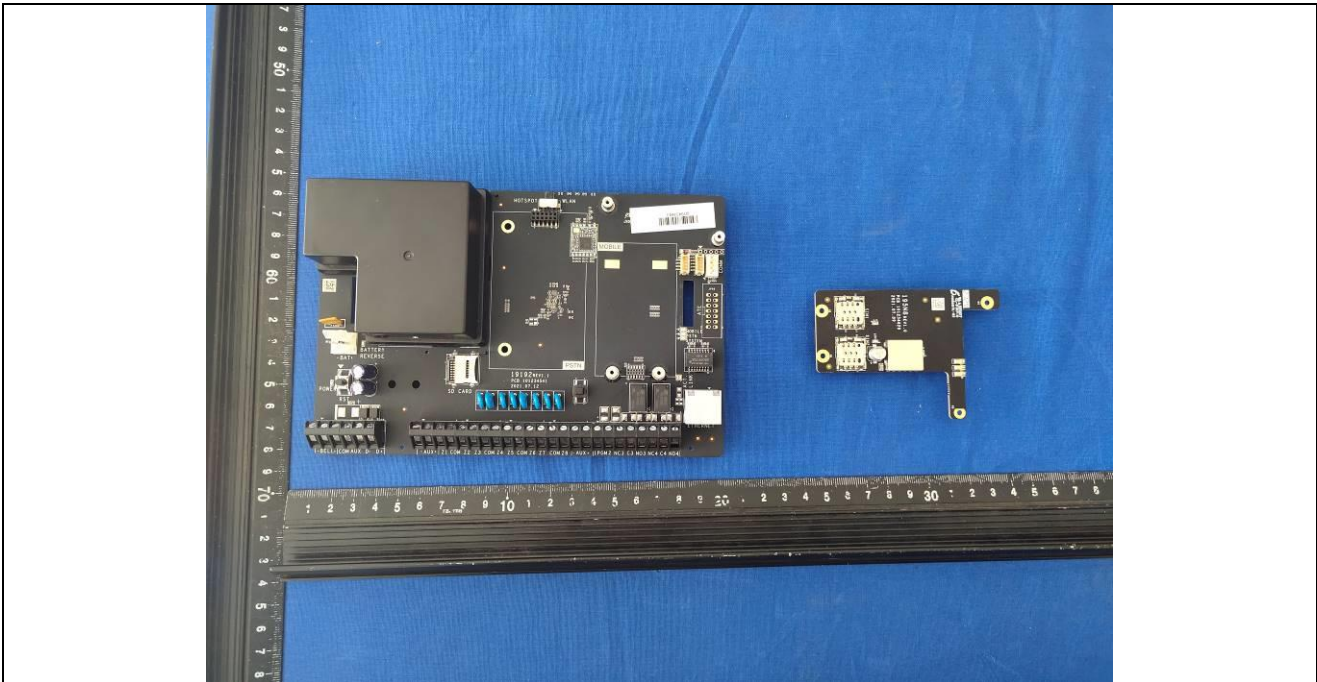
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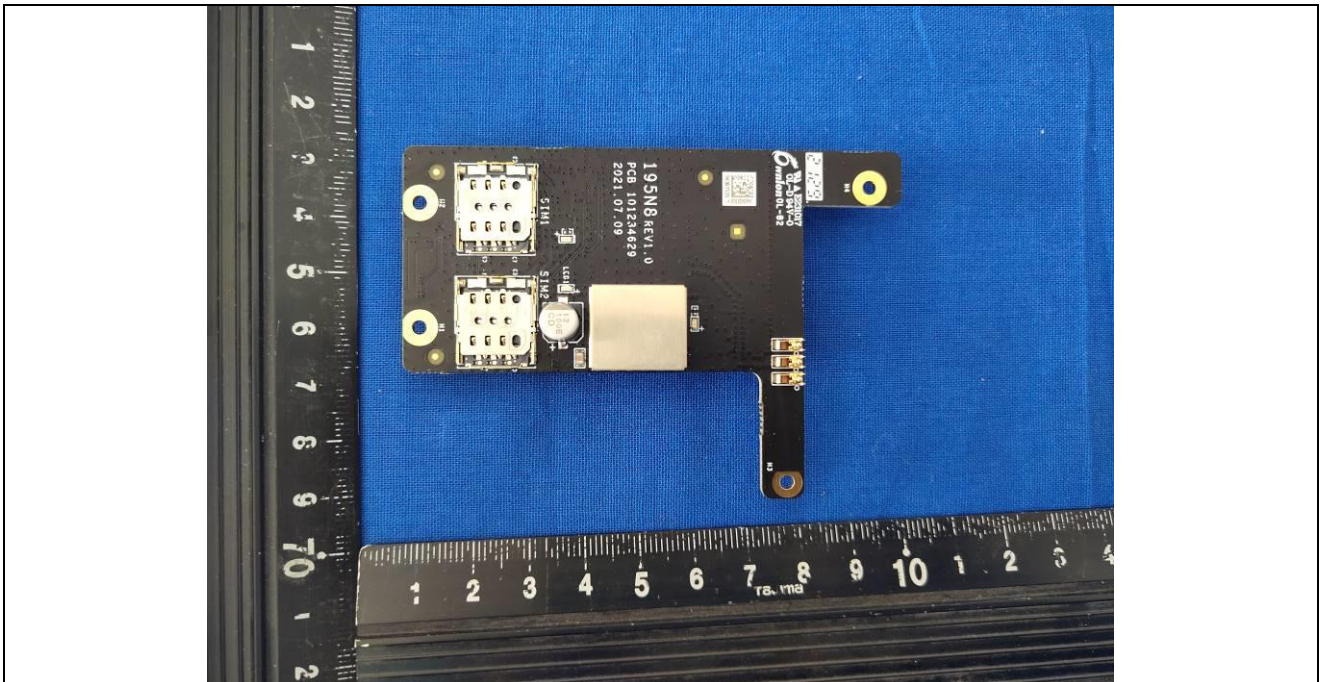
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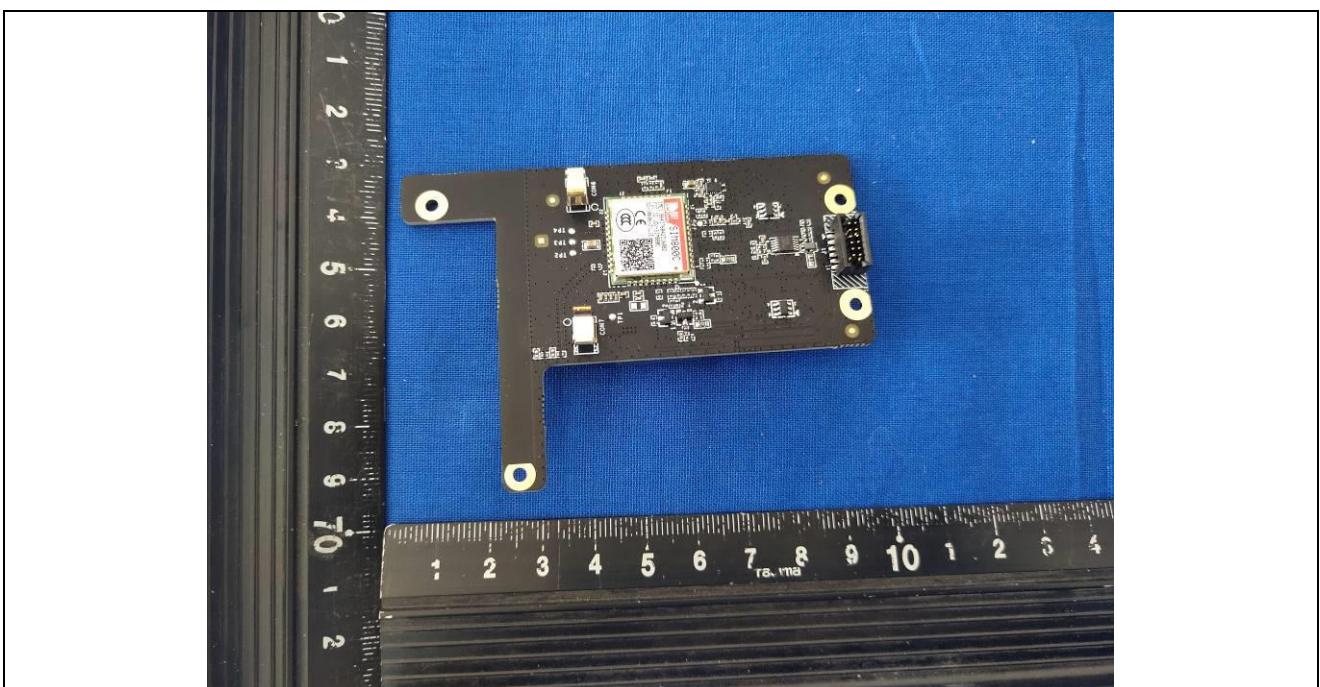
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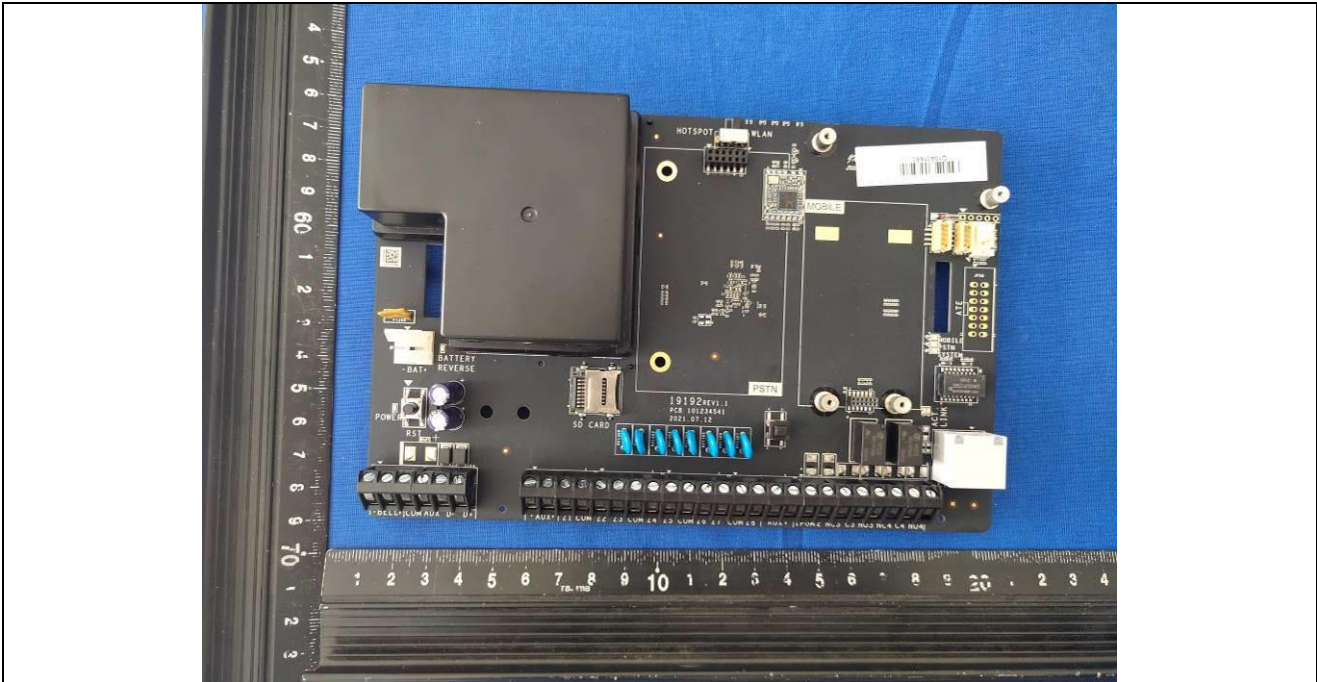
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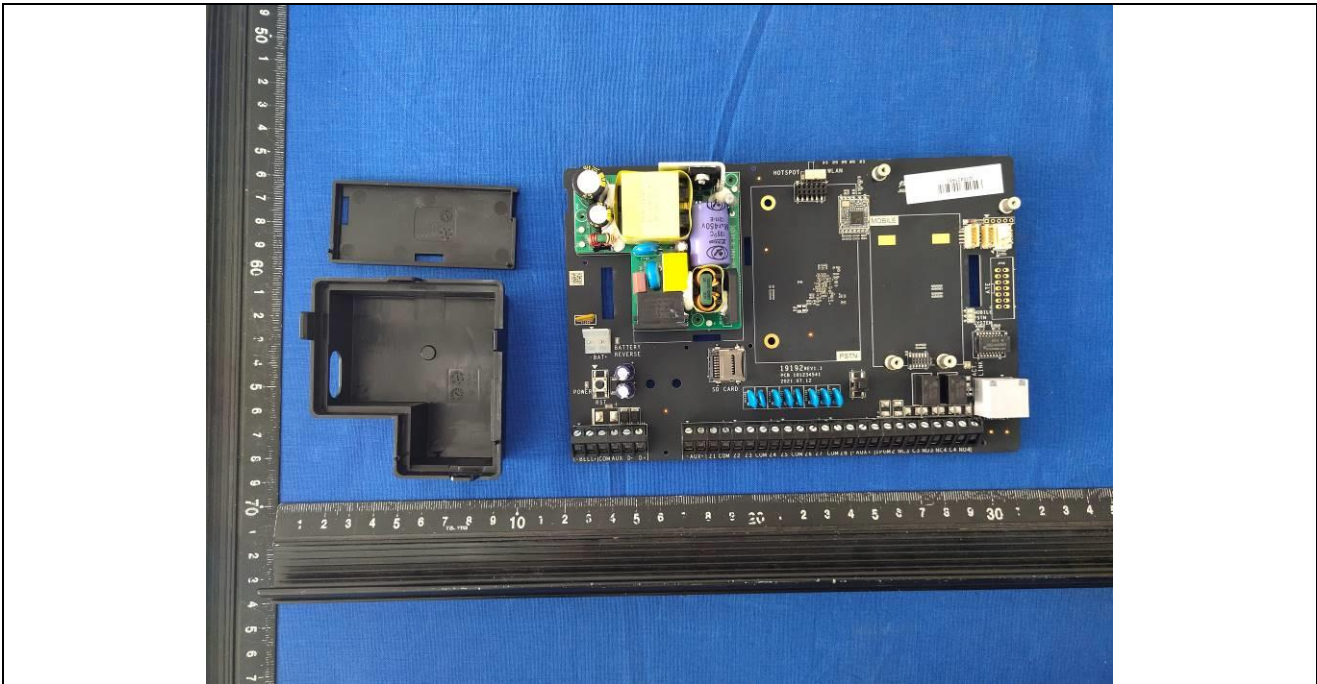
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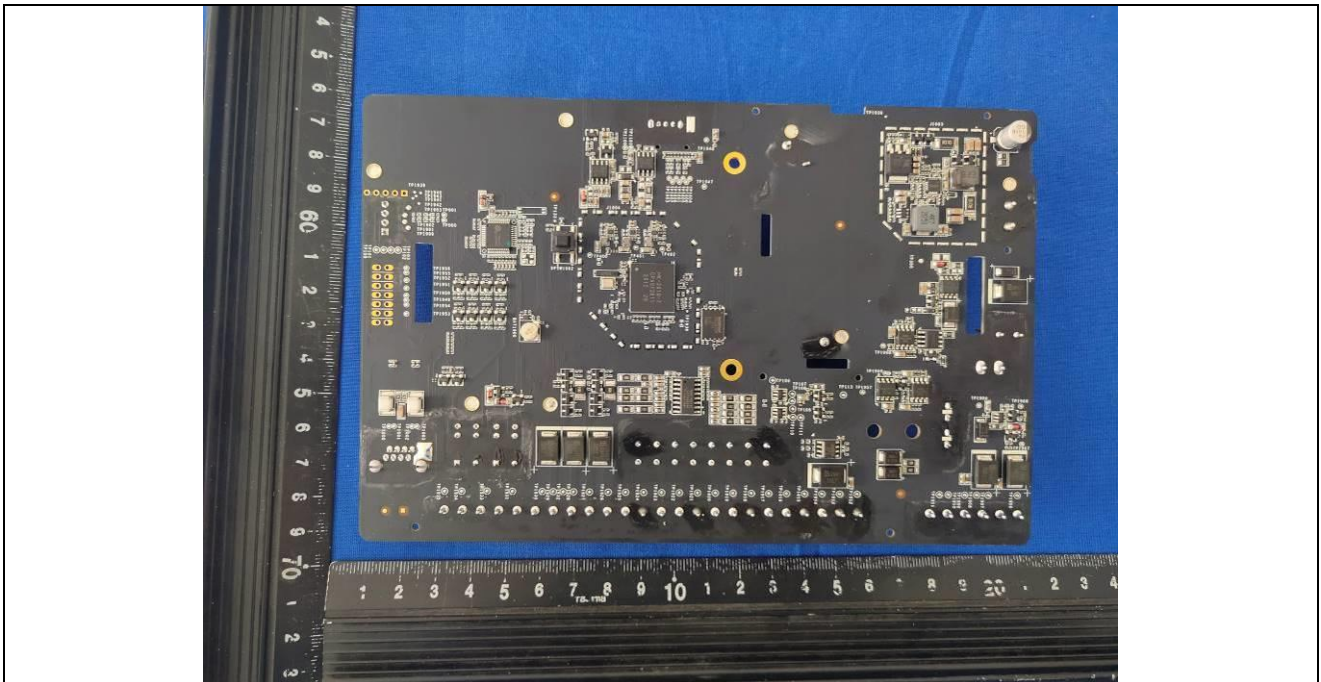
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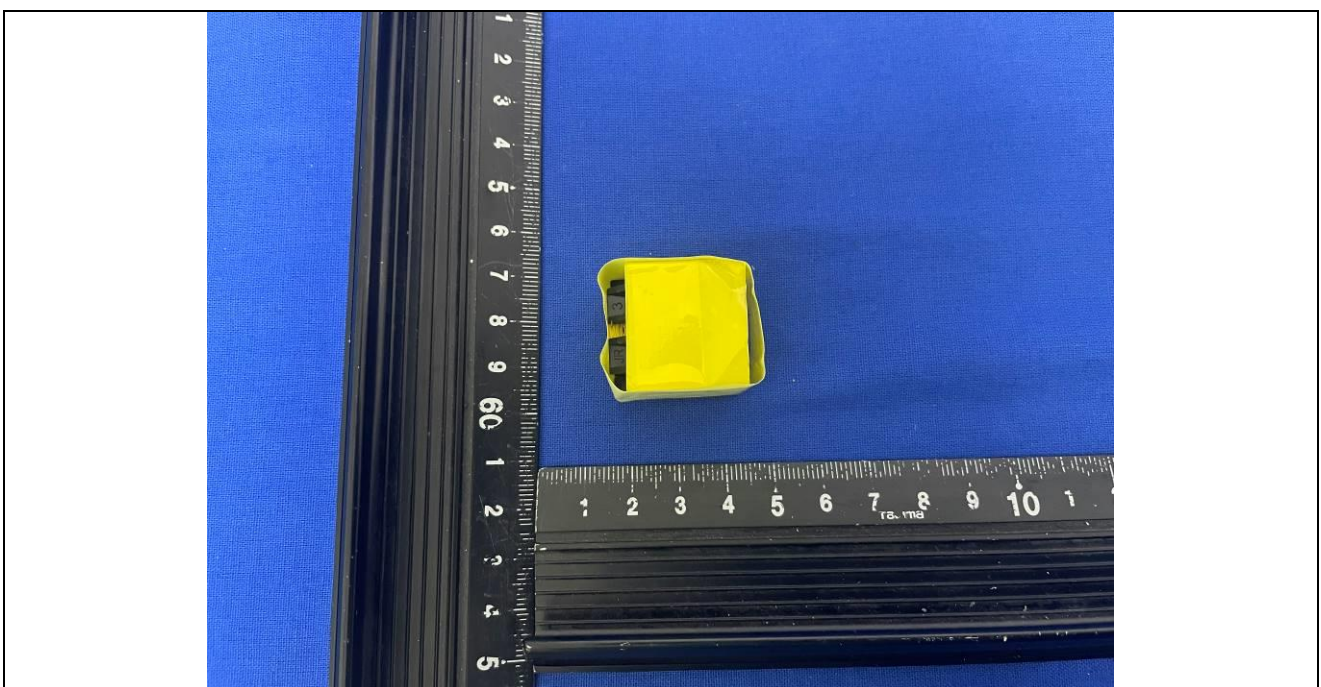
Details of: PCB (with power supply model: ADO-40W1 12)



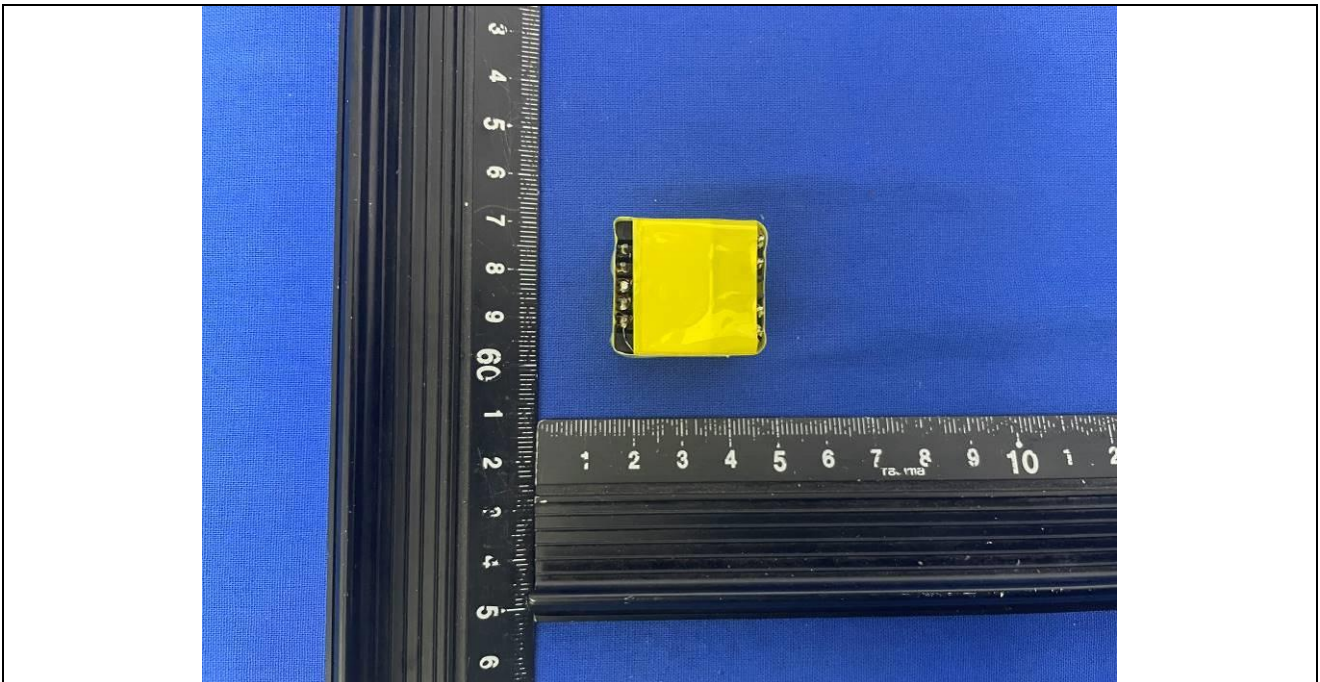
Details of: PCB (with power supply model: ADO-40W1 12)



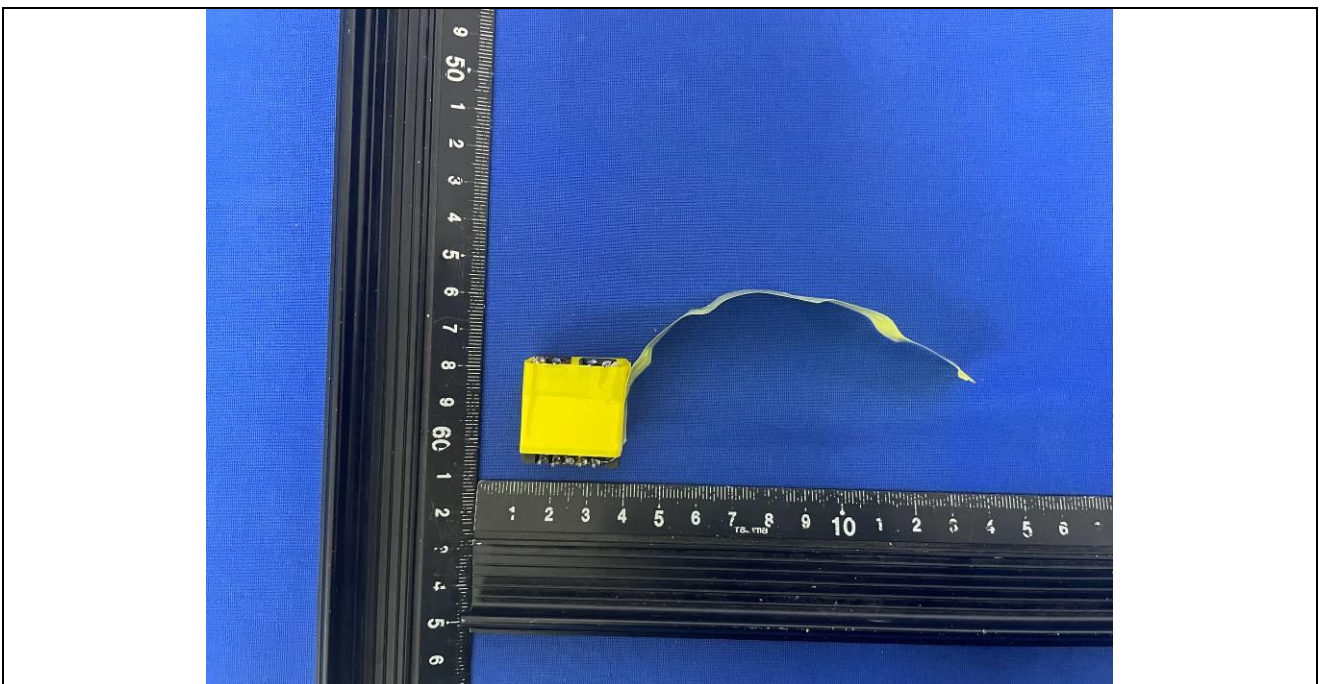
Details of: Transformer (model: EE25-014040)



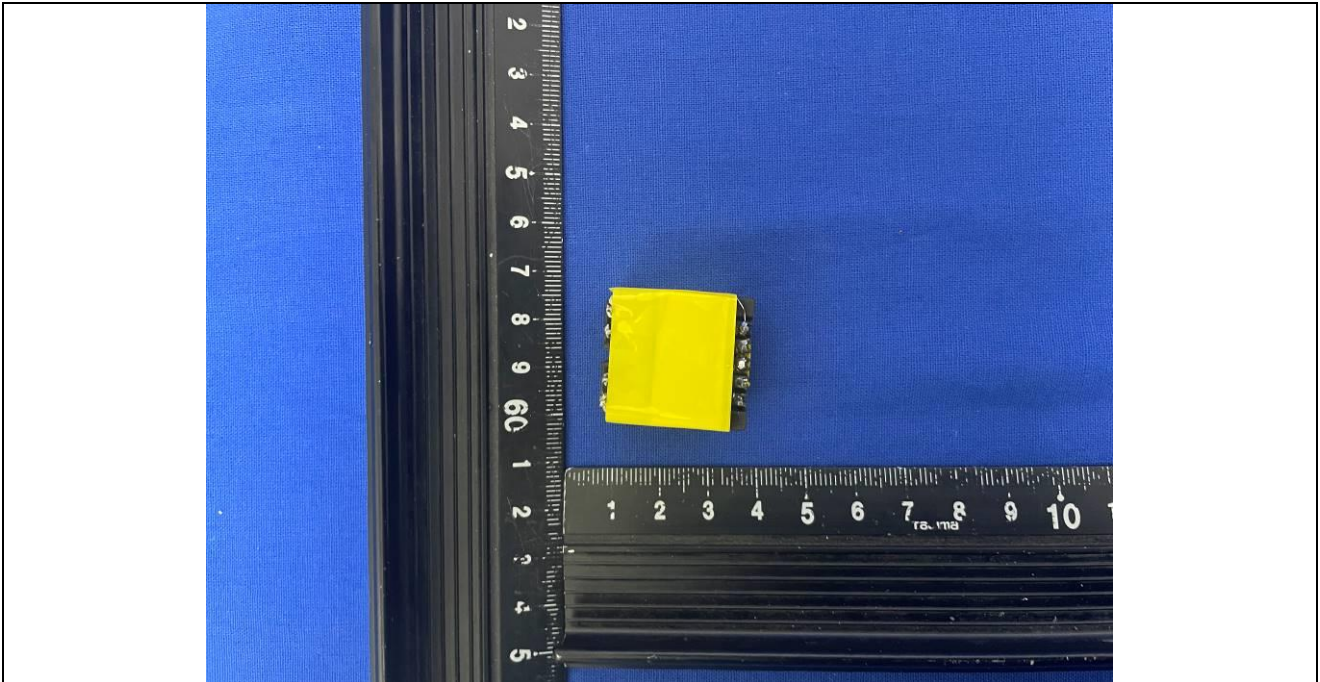
Details of: Transformer (model: EE25-014040)



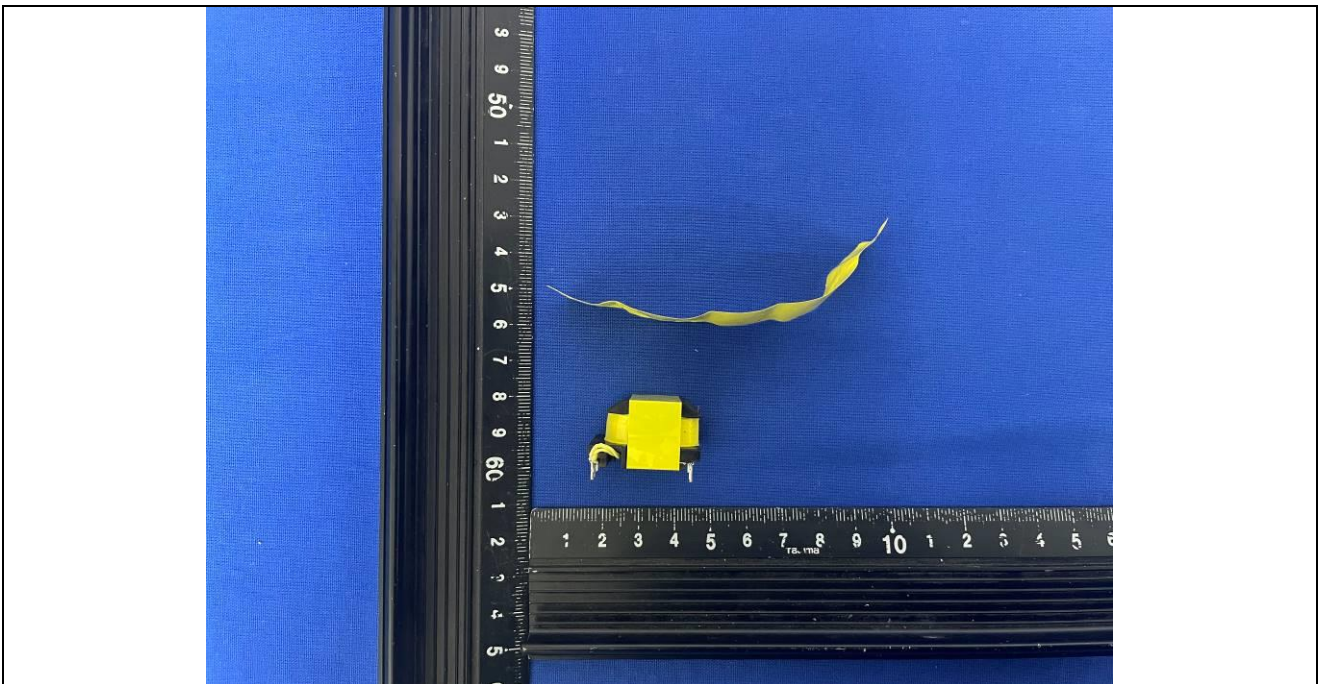
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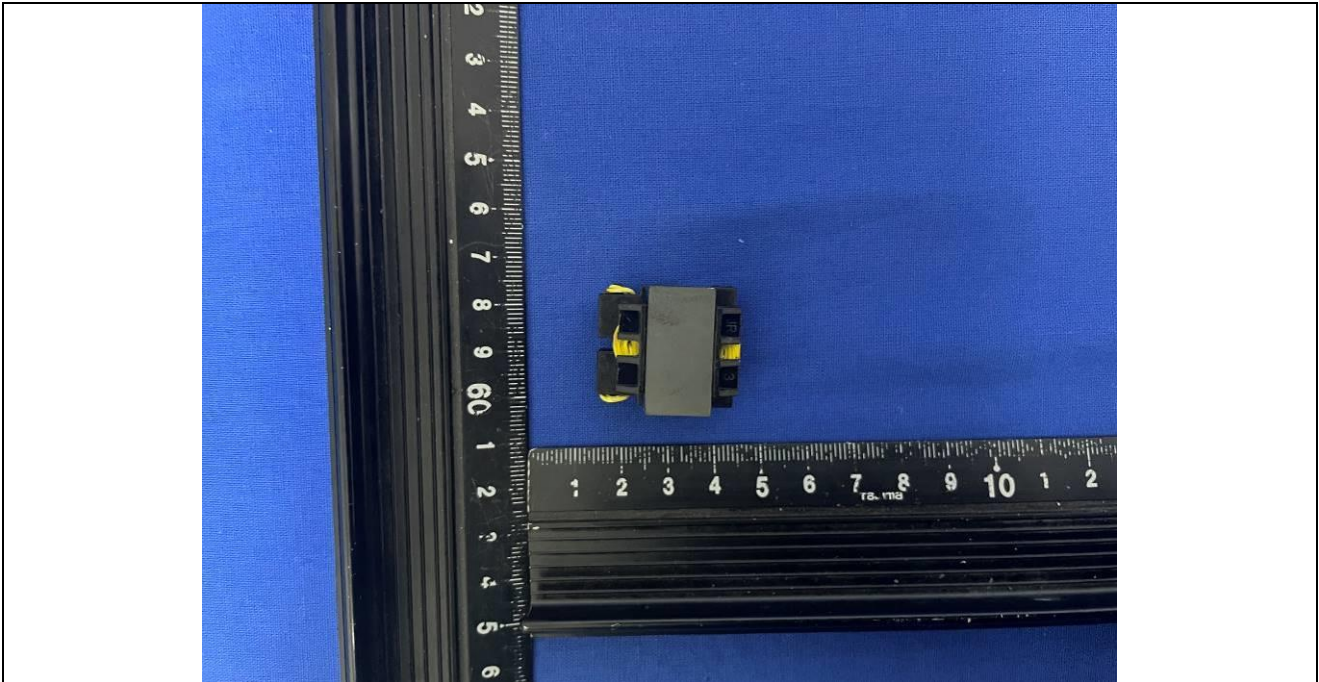
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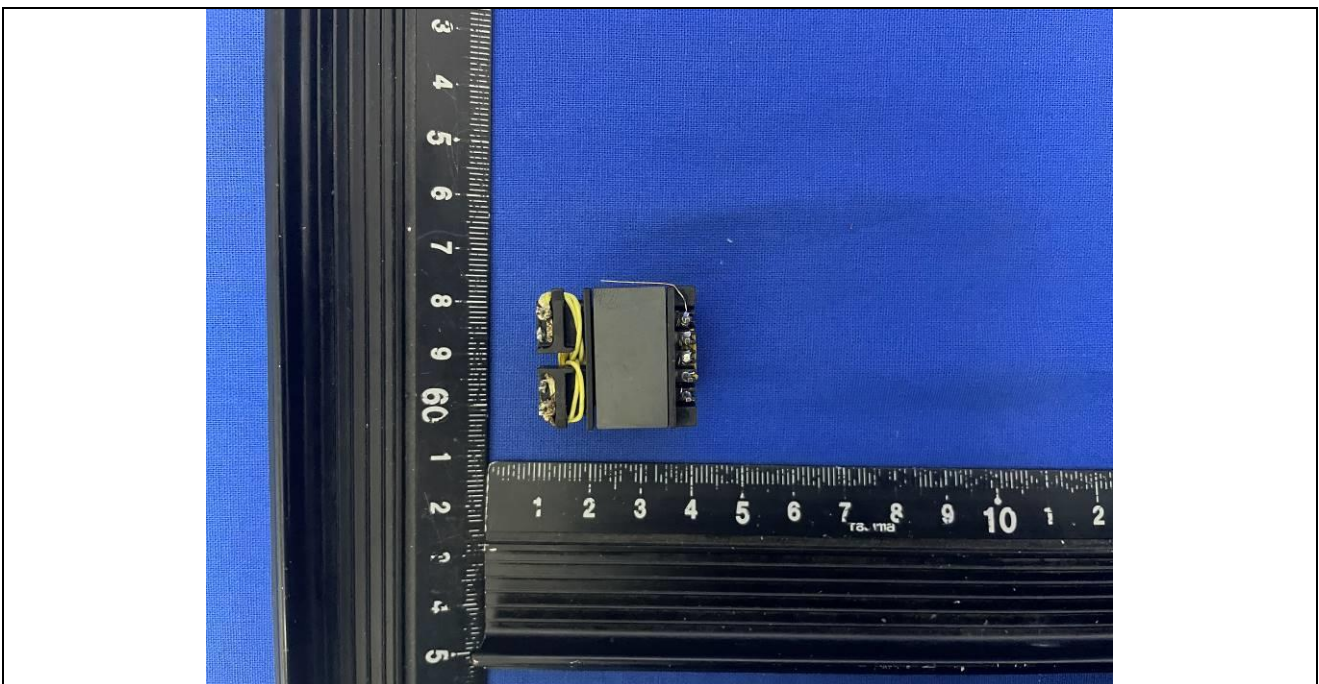
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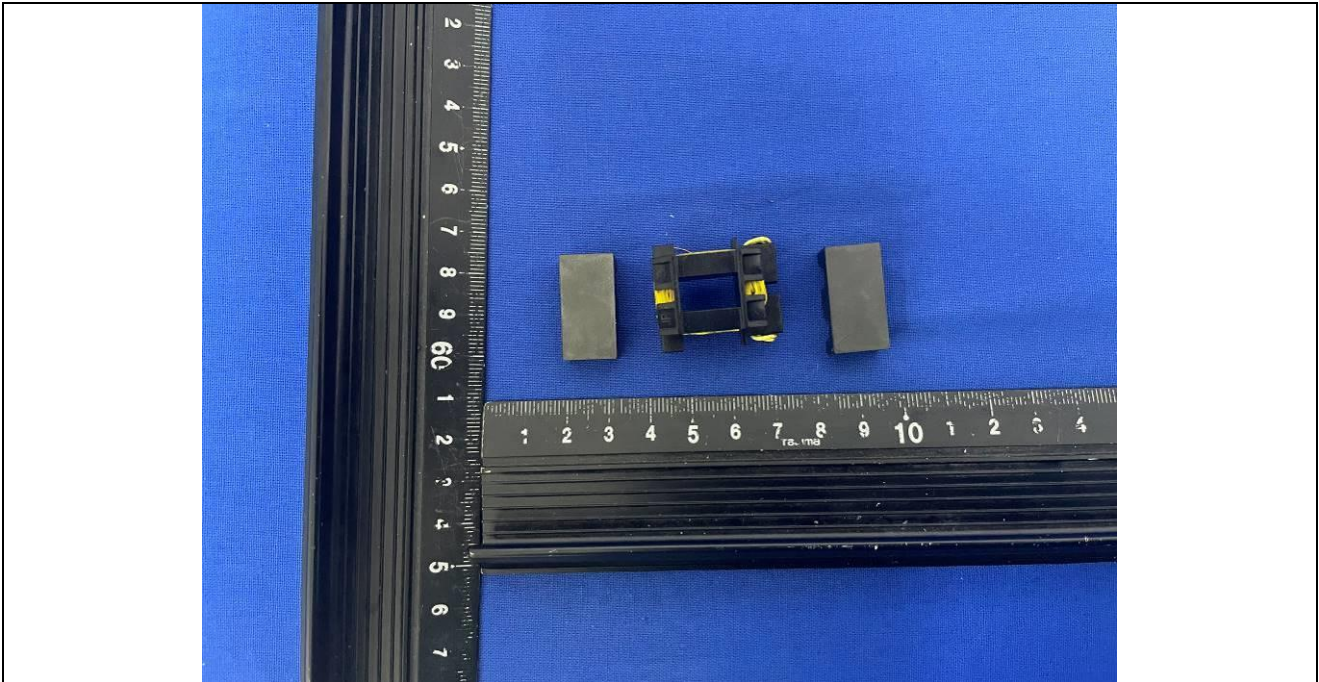
Details of: Transformer (model: EE25-014040)



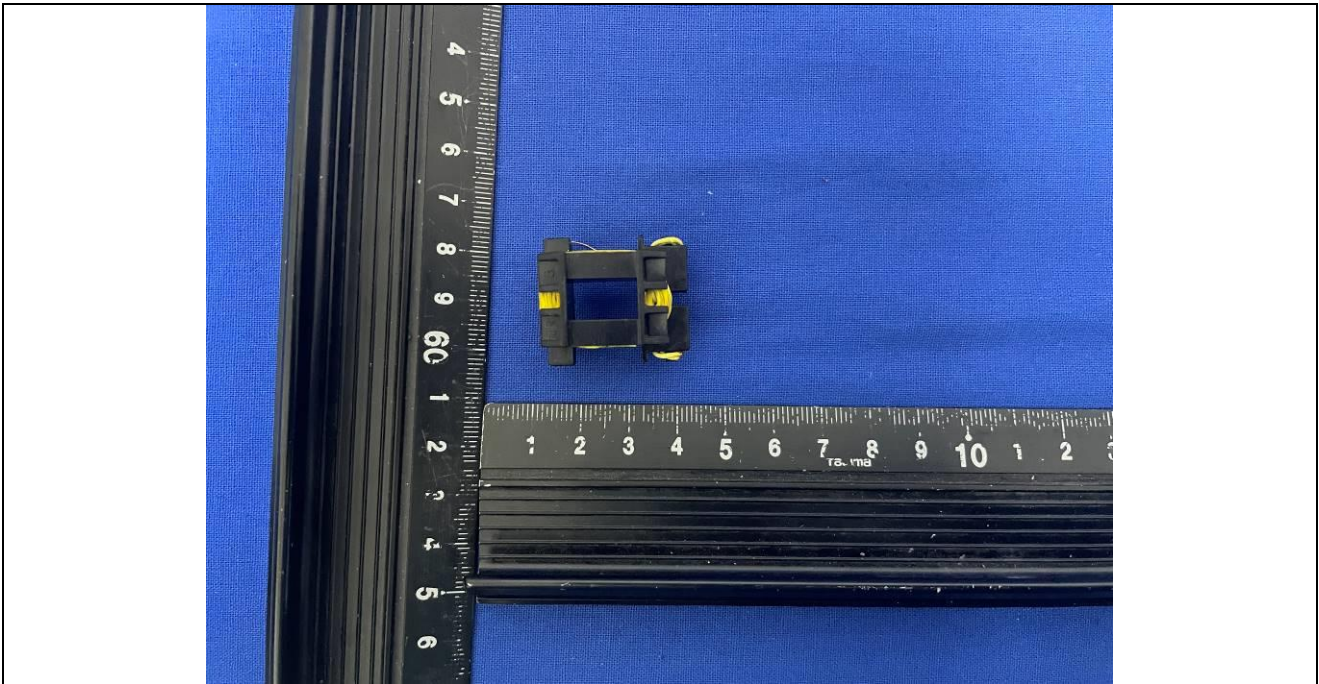
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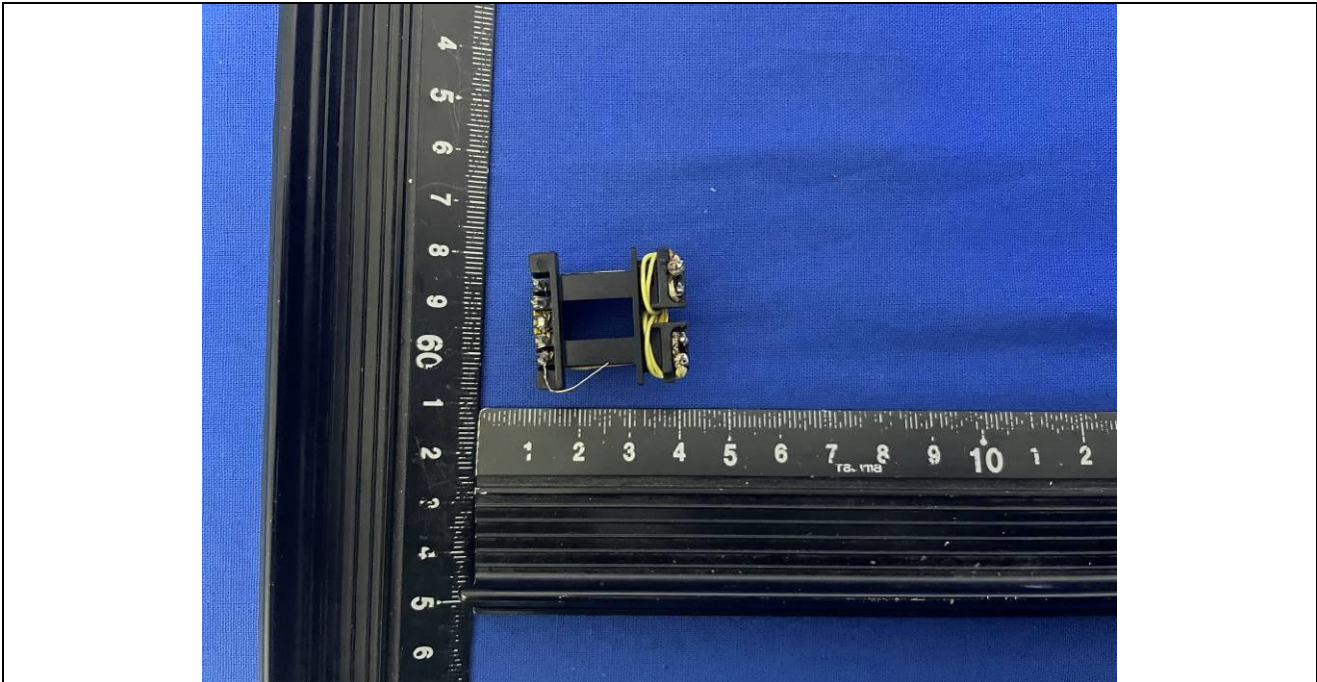
Details of: Transformer (model: EE25-014040)



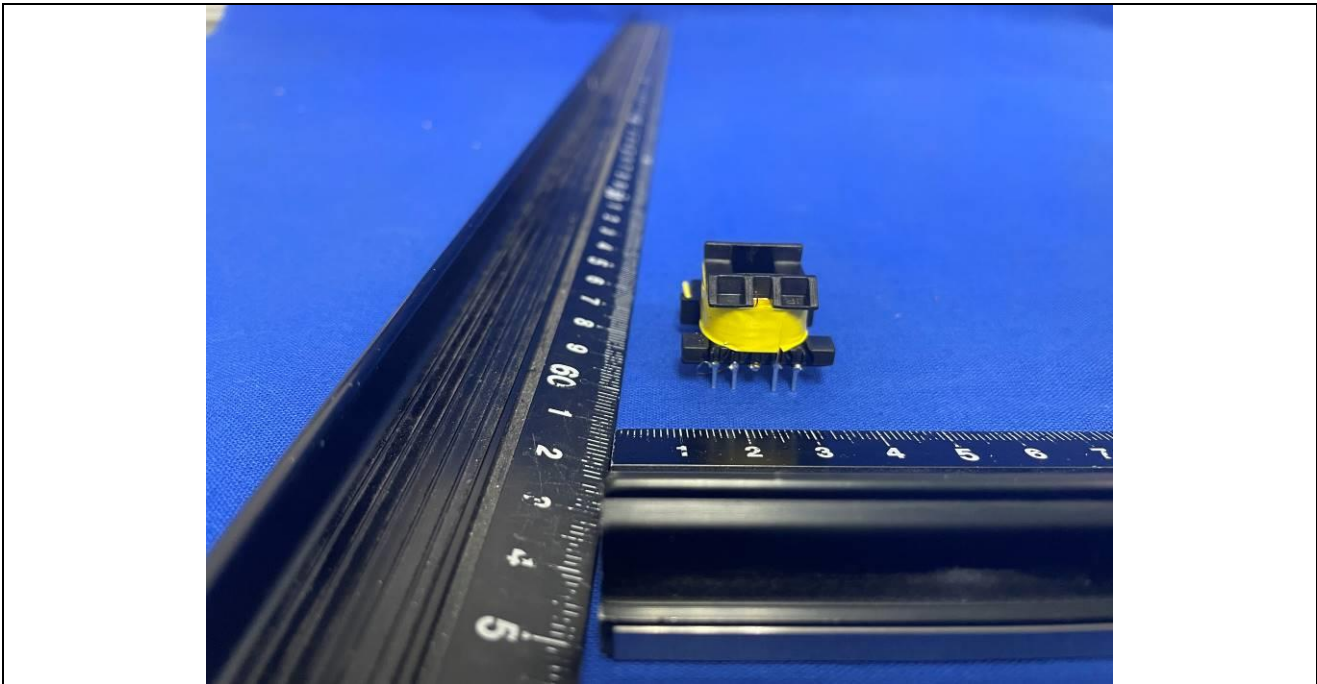
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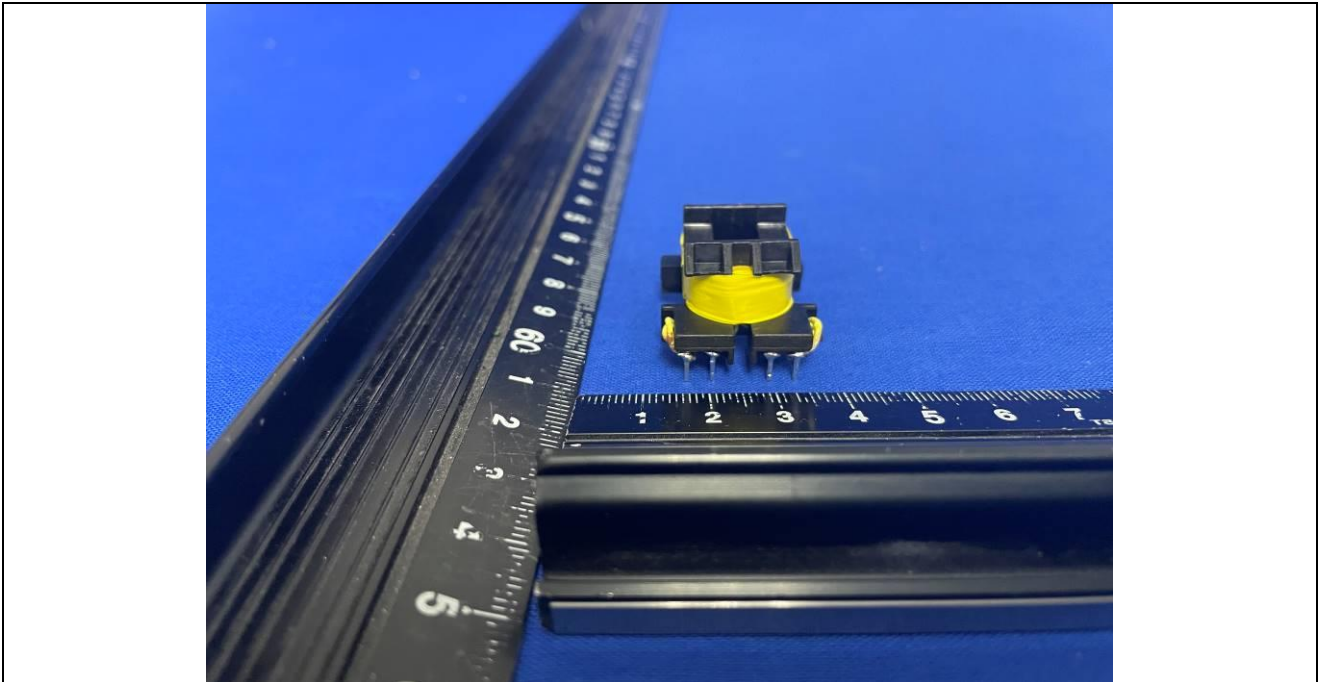
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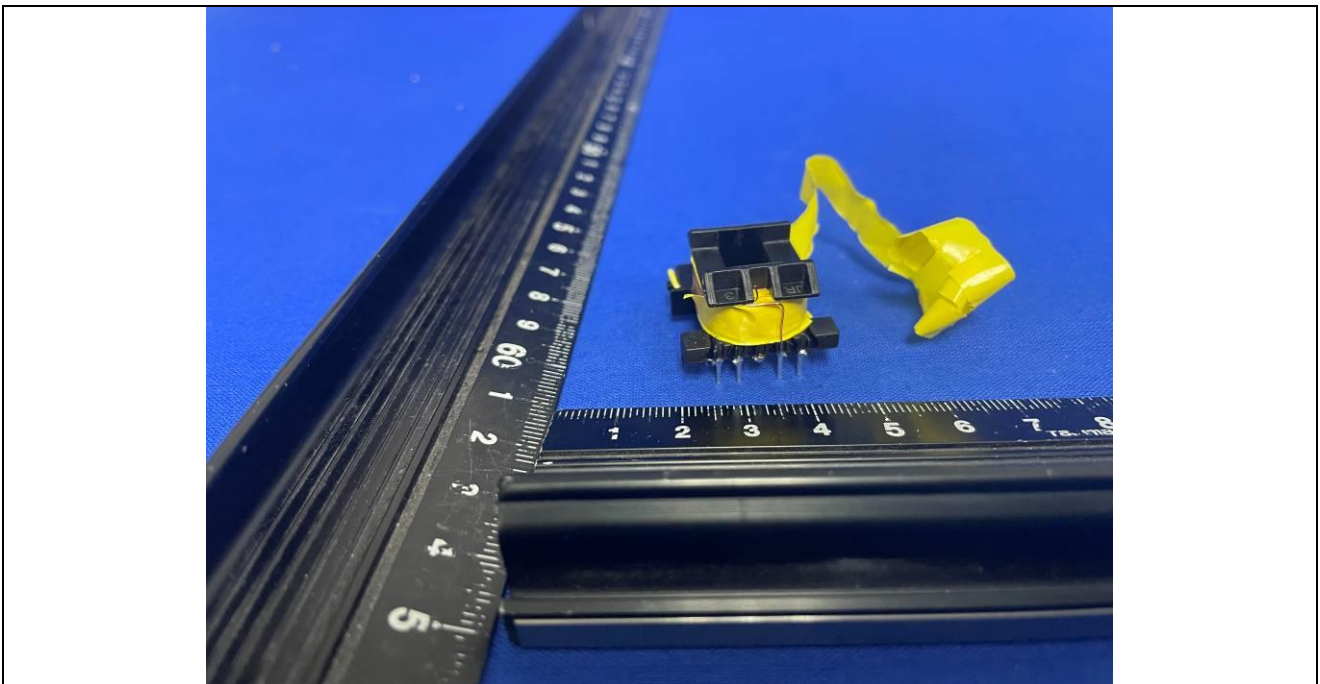
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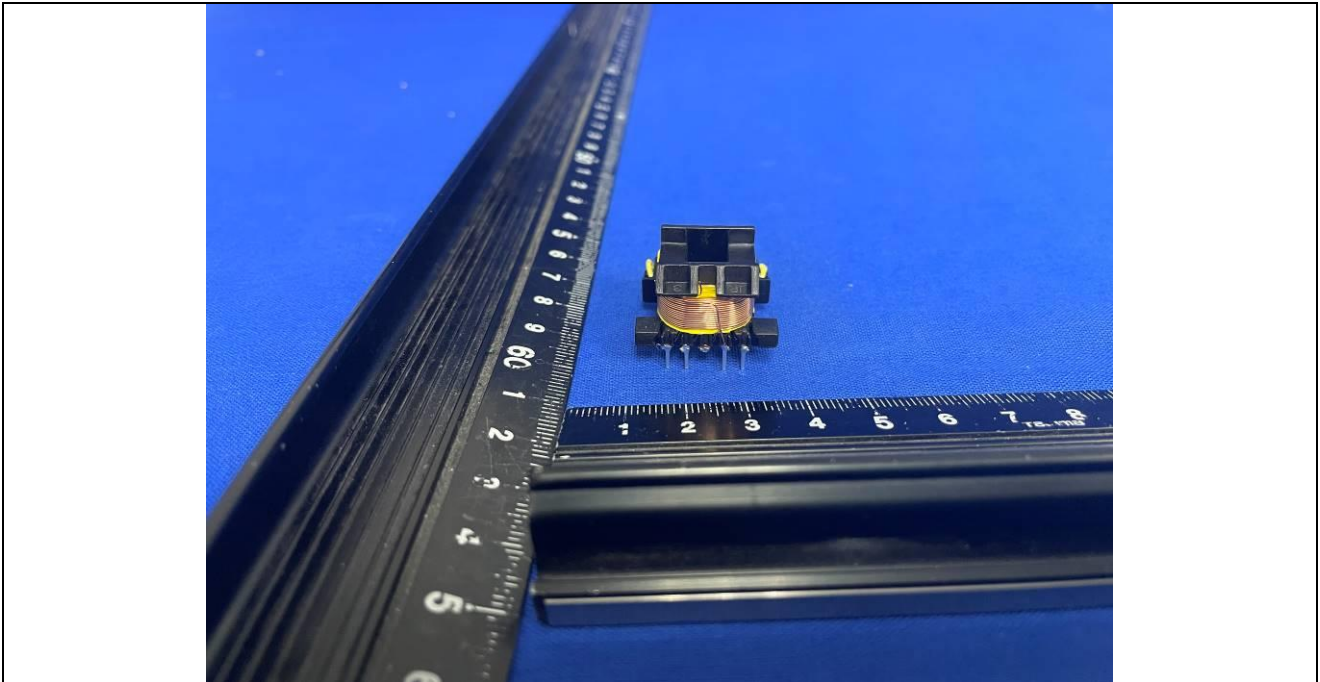
Details of: Transformer (model: EE25-014040)



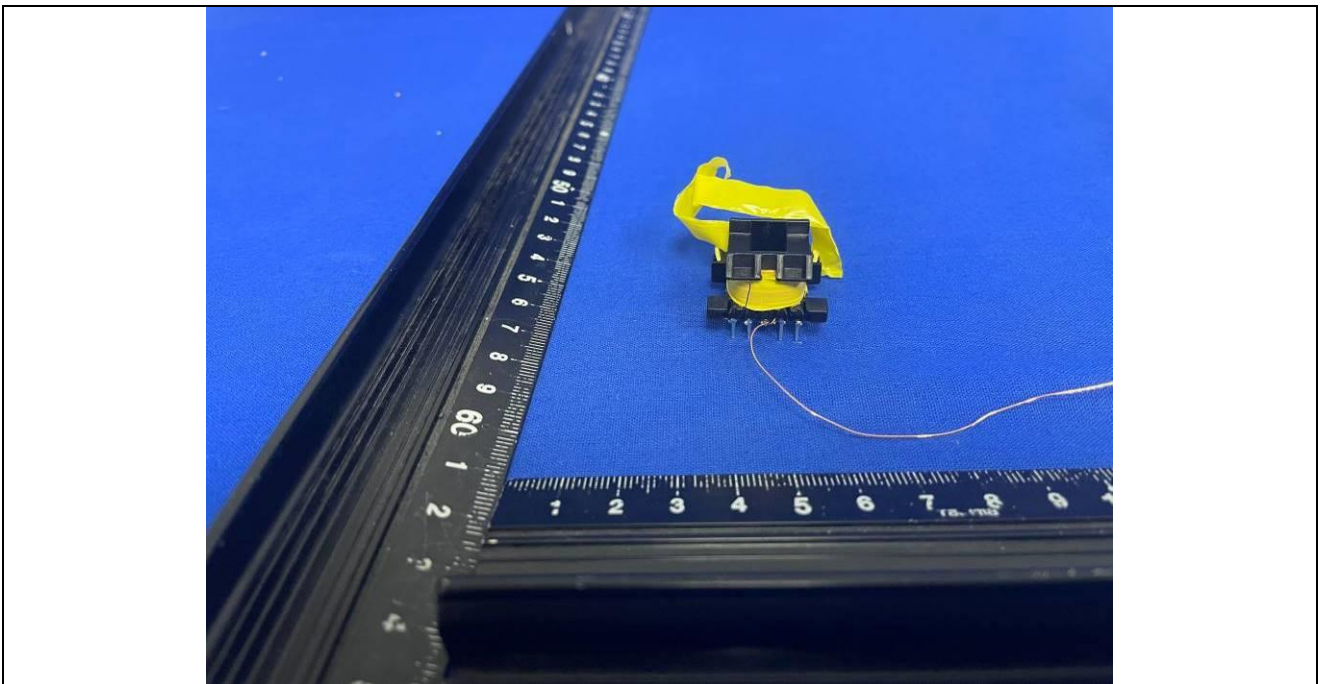
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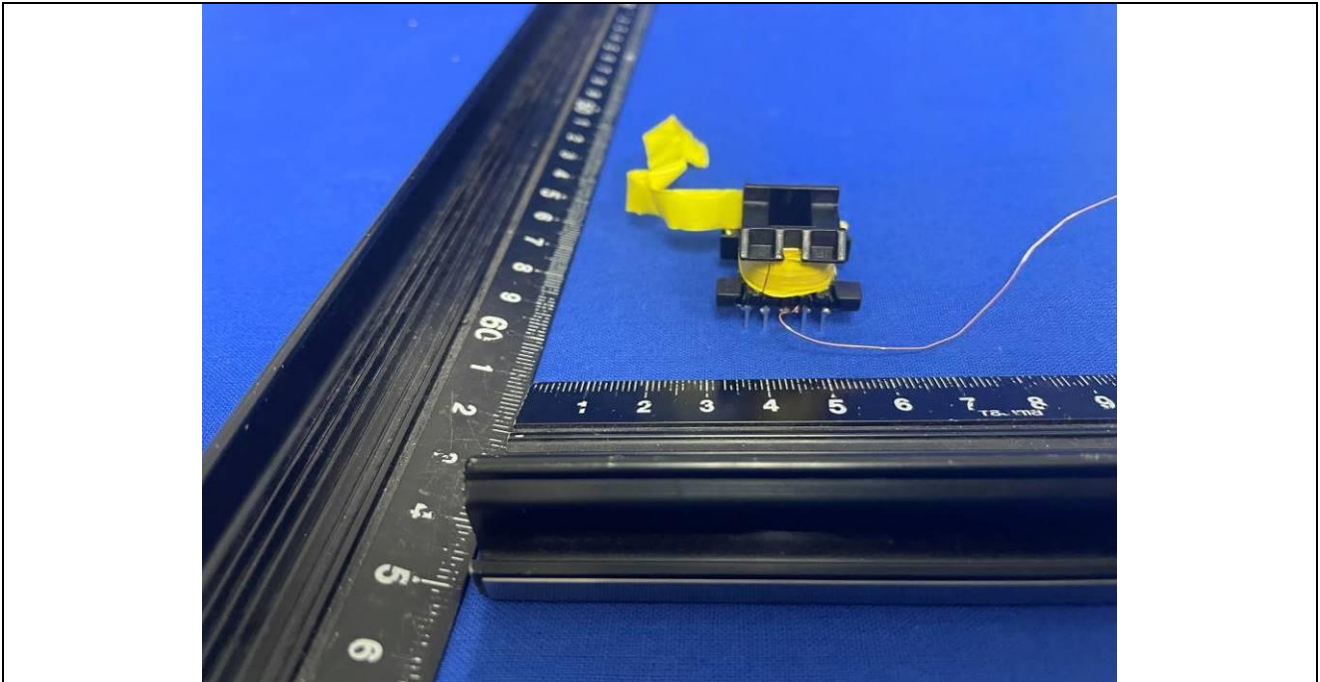
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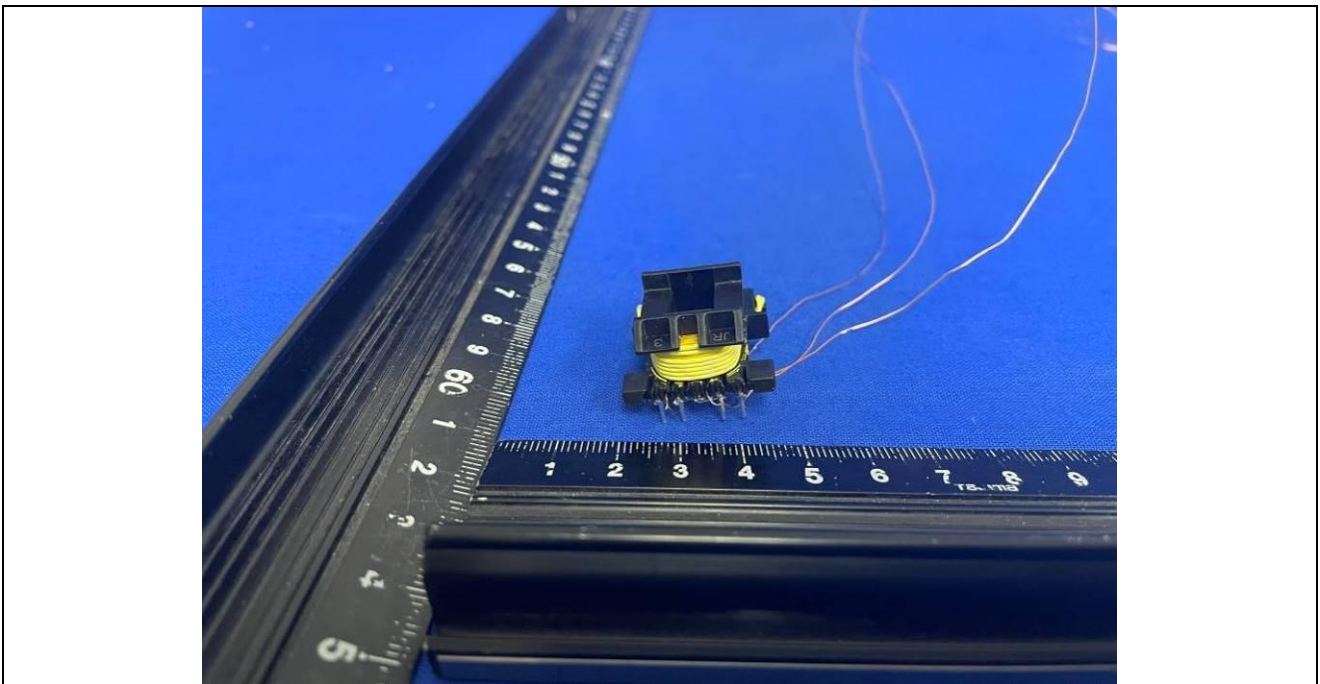
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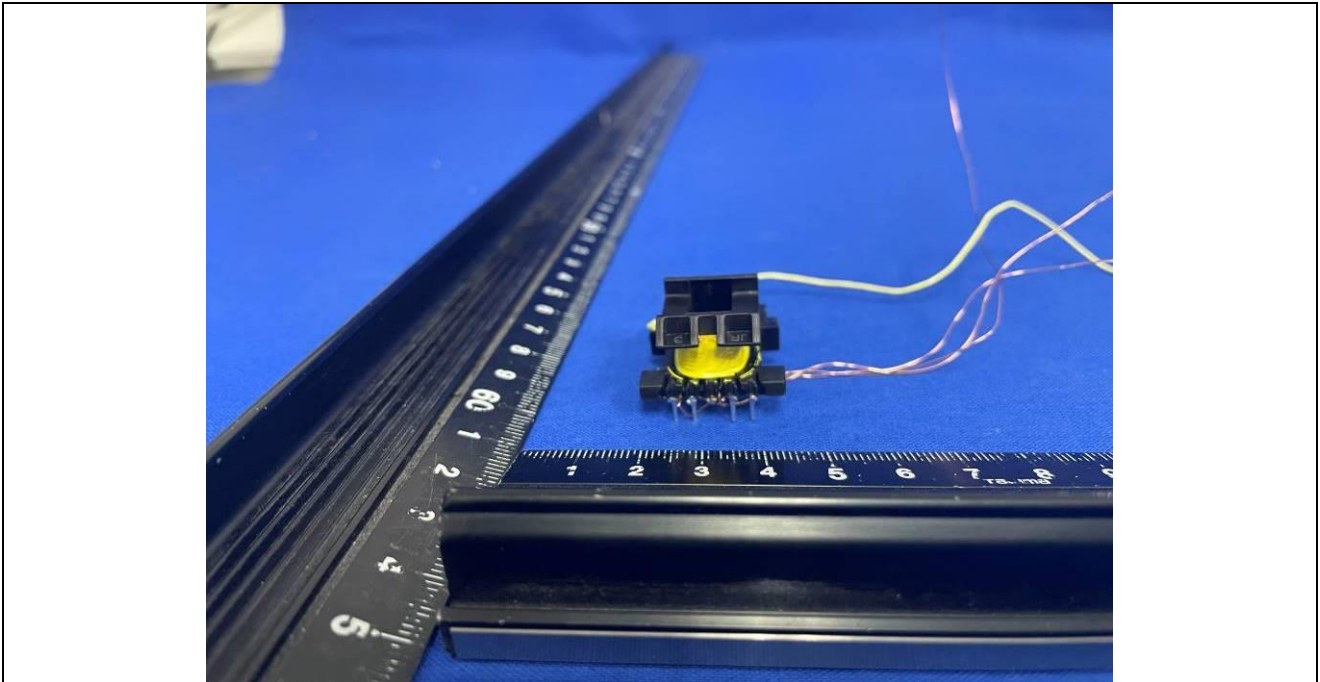
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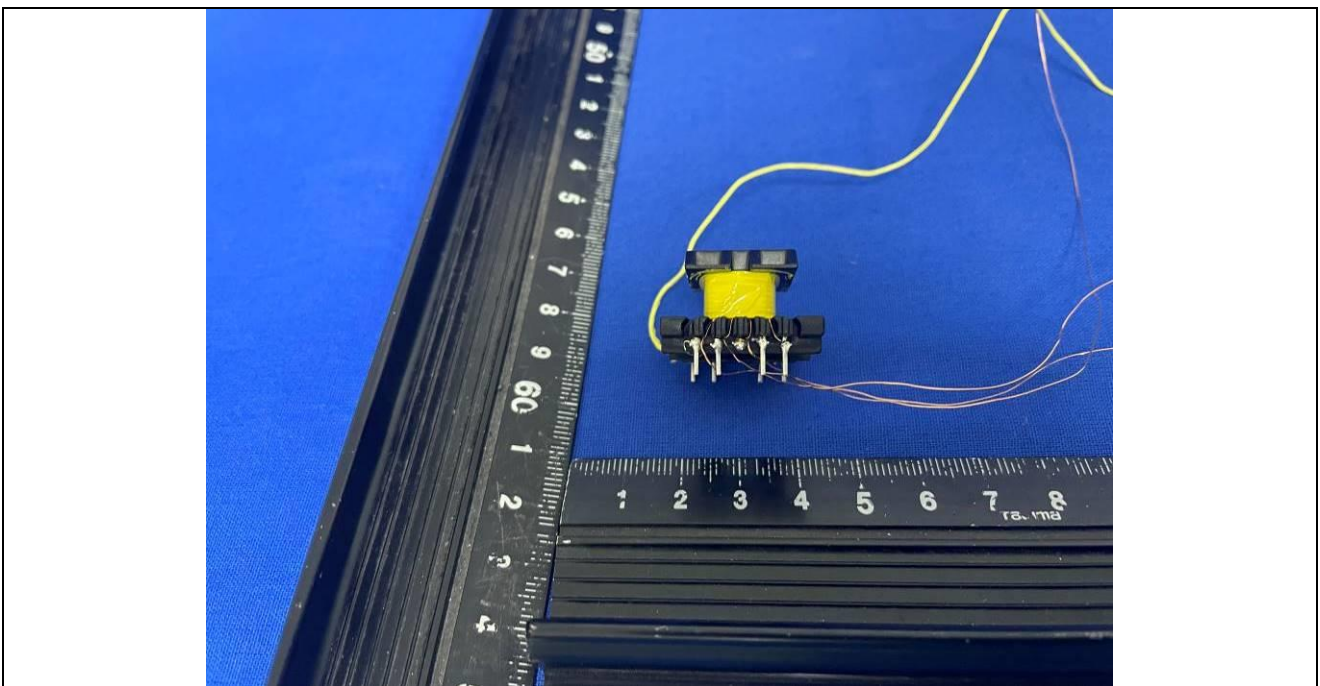
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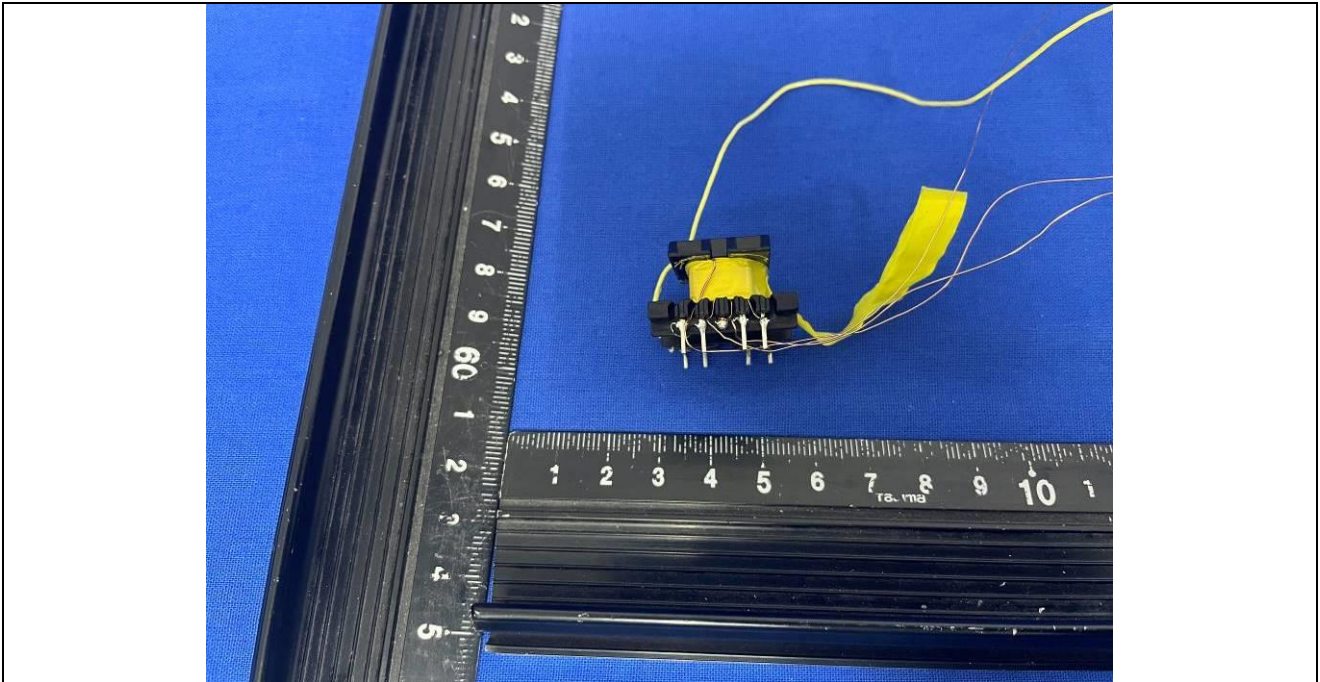
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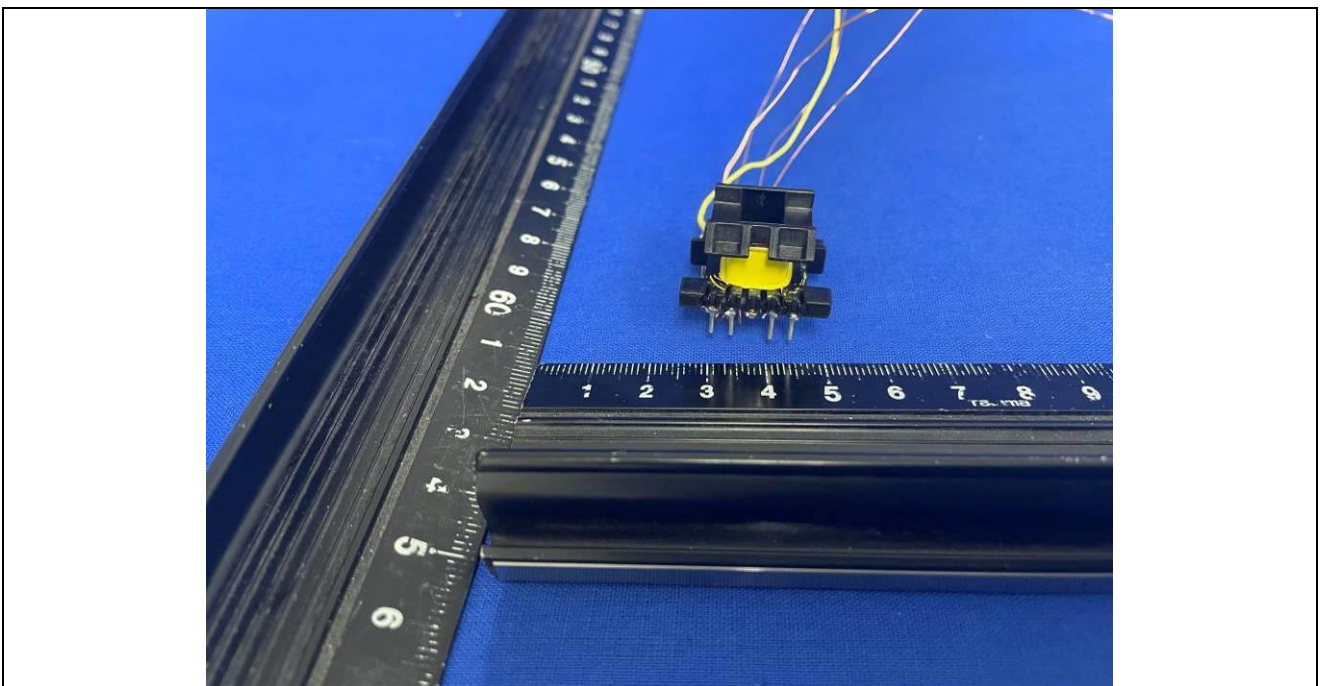
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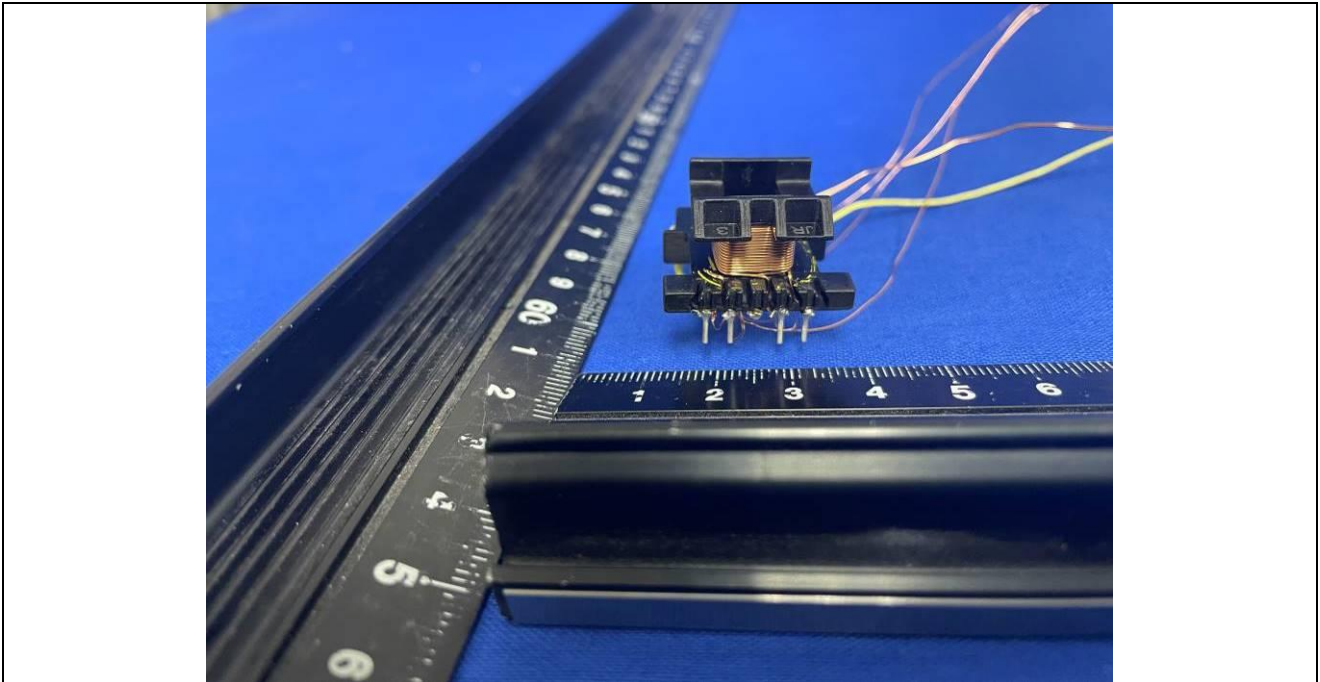
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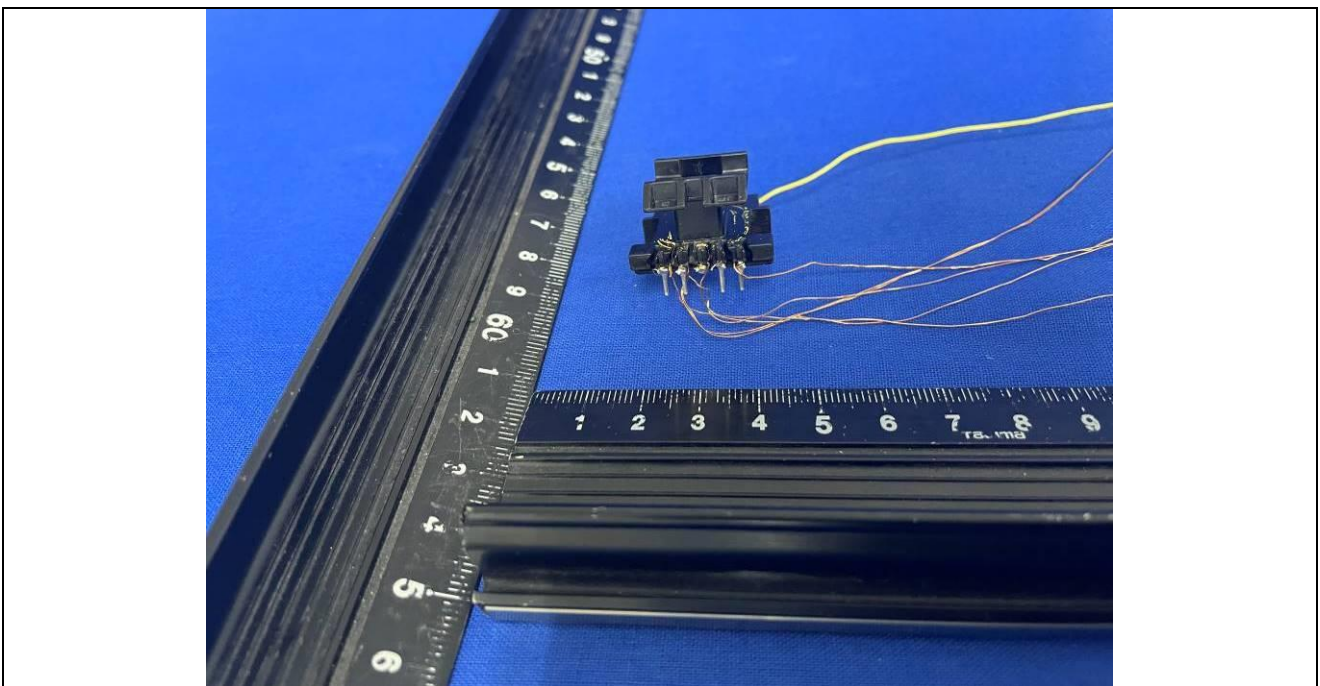
Details of: Transformer (model: EE25-014040)



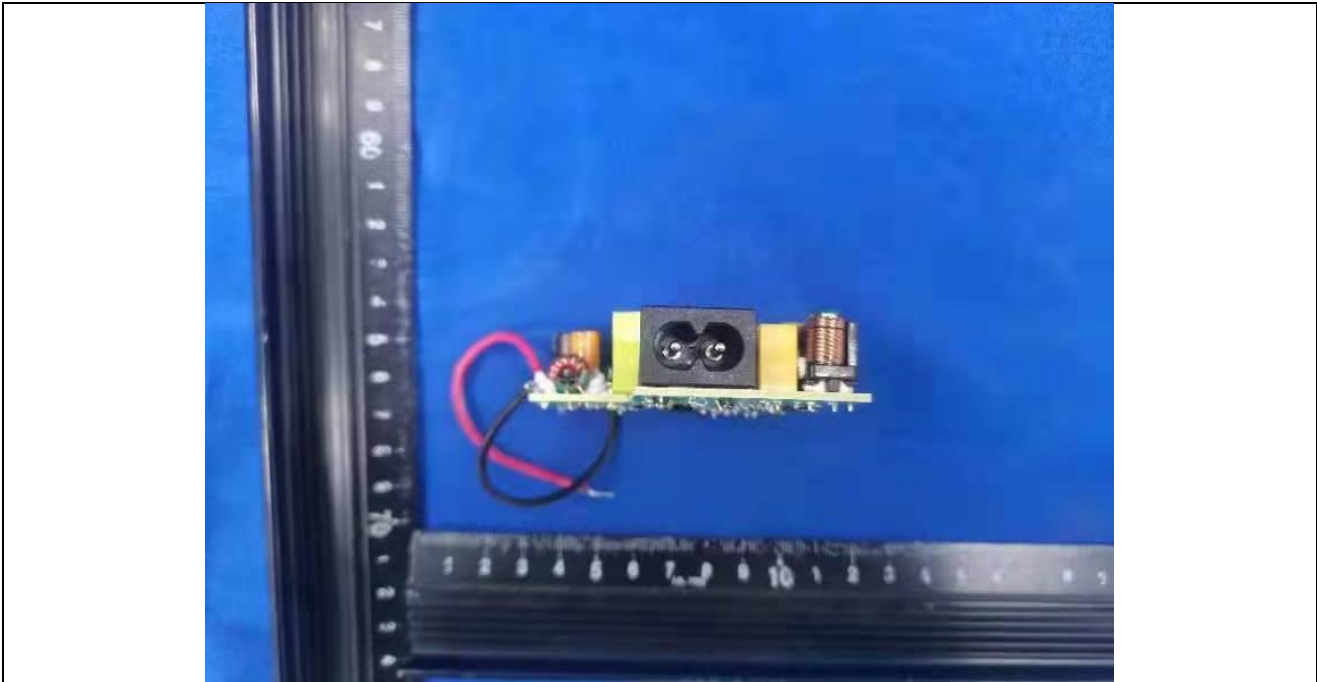
Details of: Transformer (model: EE25-014040)



Details of: Transformer (model: EE25-014040)



Details of: Terminal



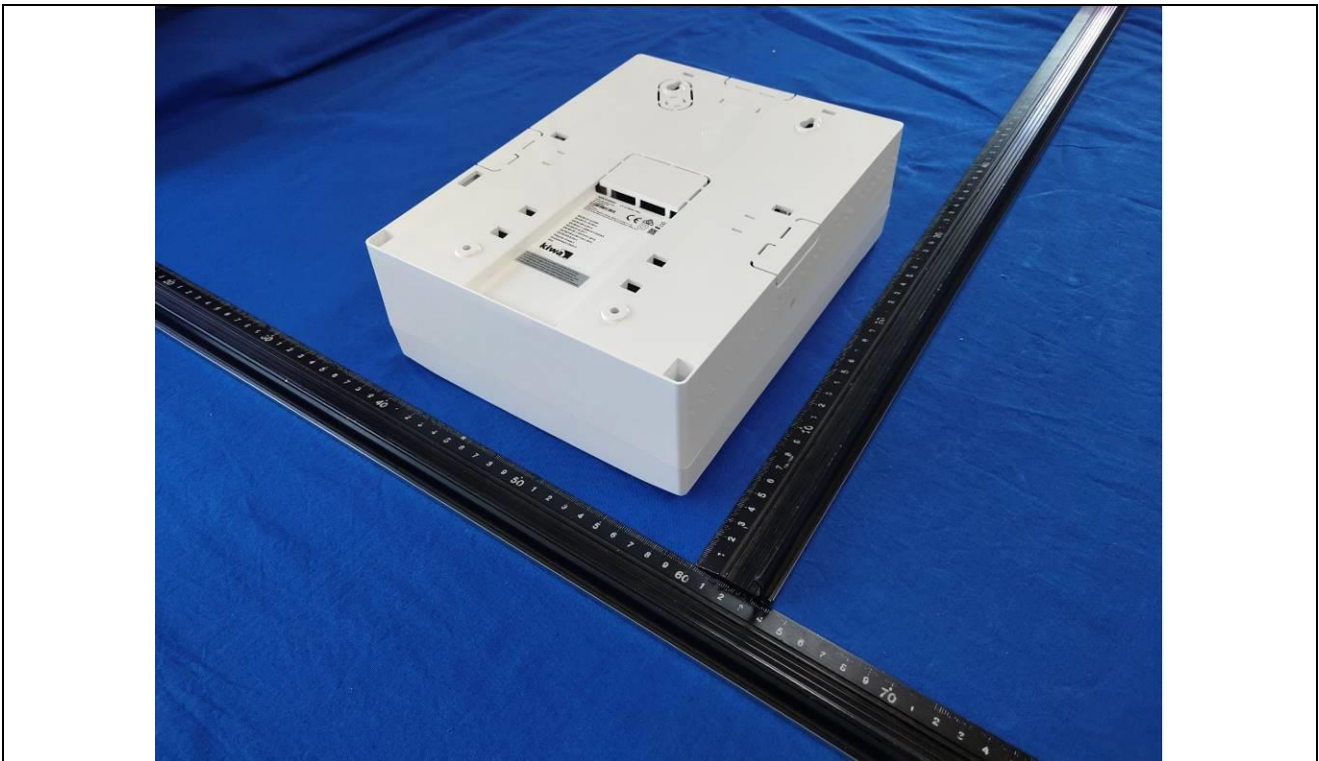
Details of: Power supply cord (EU plug)



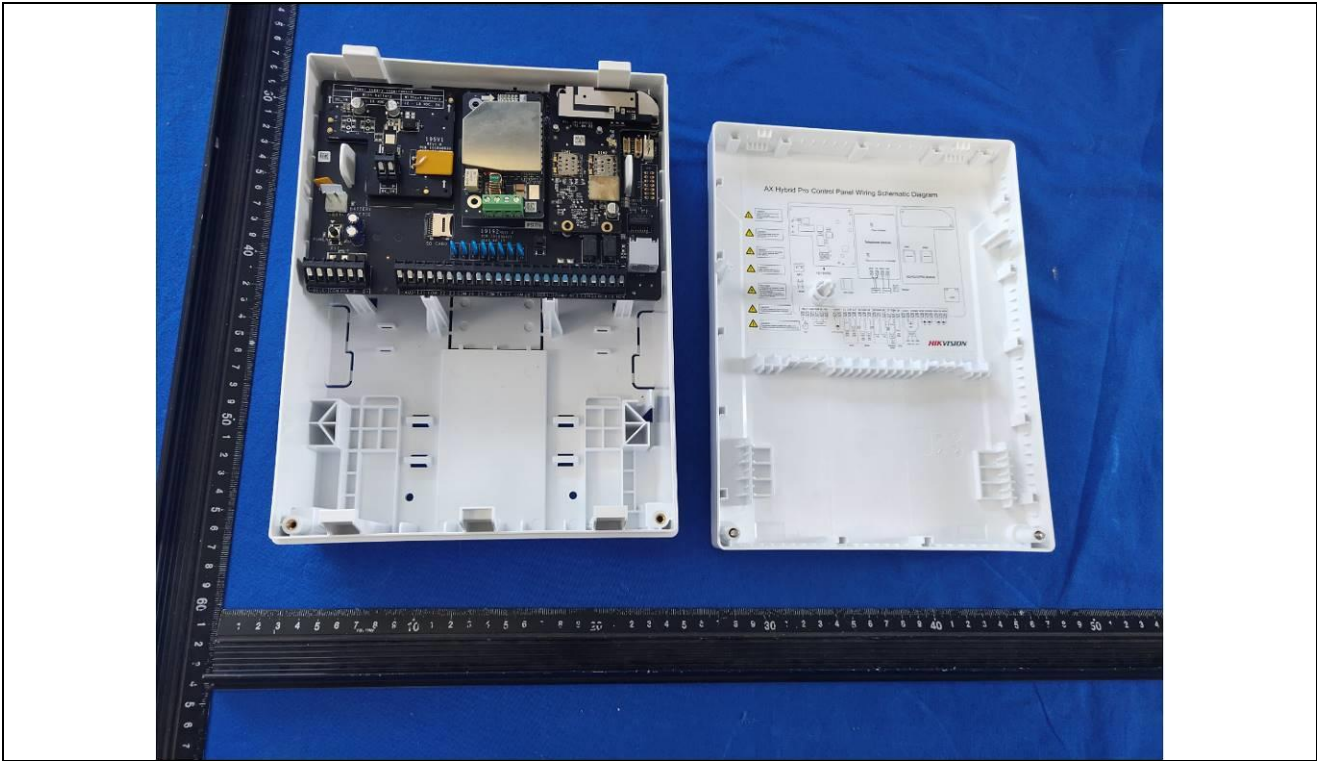
Details of: General view (model: DS-PHA64-LP/NP)



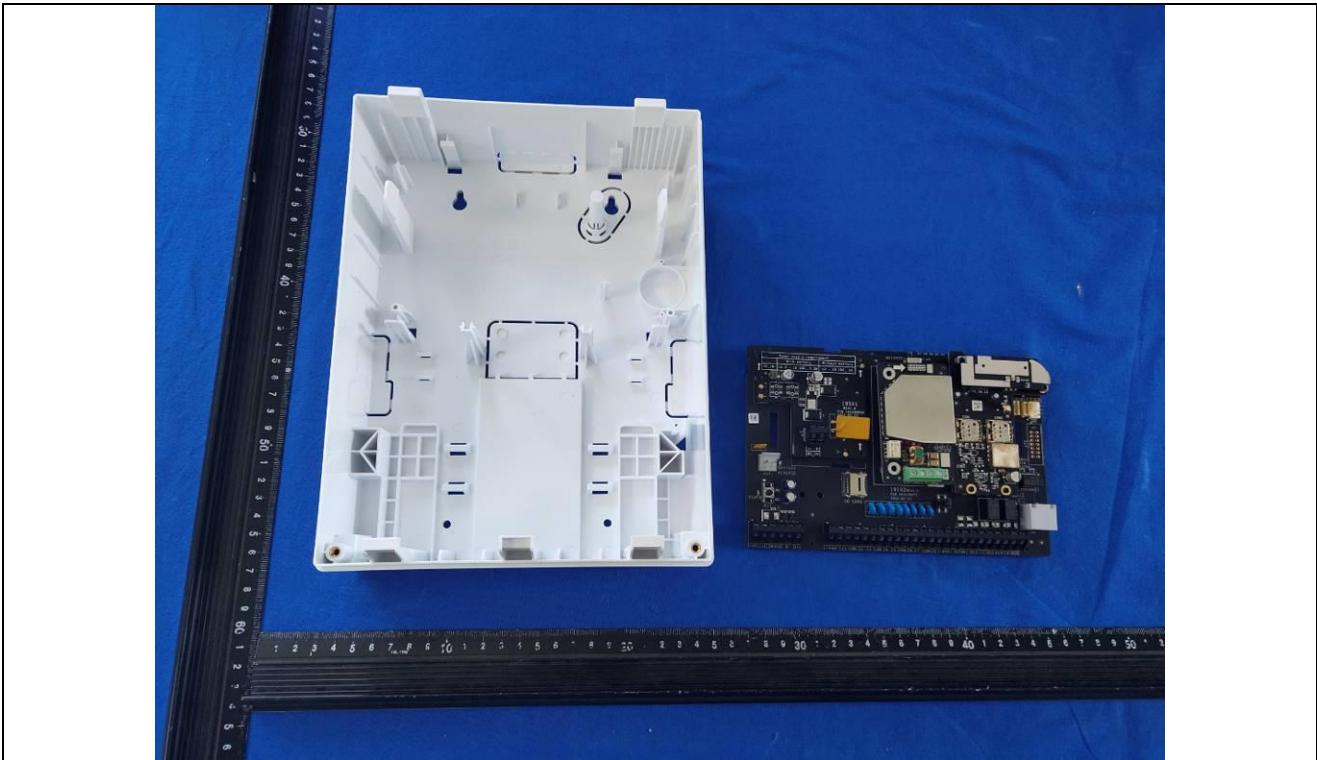
Details of: General view (model: DS-PHA64-LP/NP)



Details of: Internal view (model: DS-PHA64-LP/NP)



Details of: Internal view (model: DS-PHA64-LP/NP)

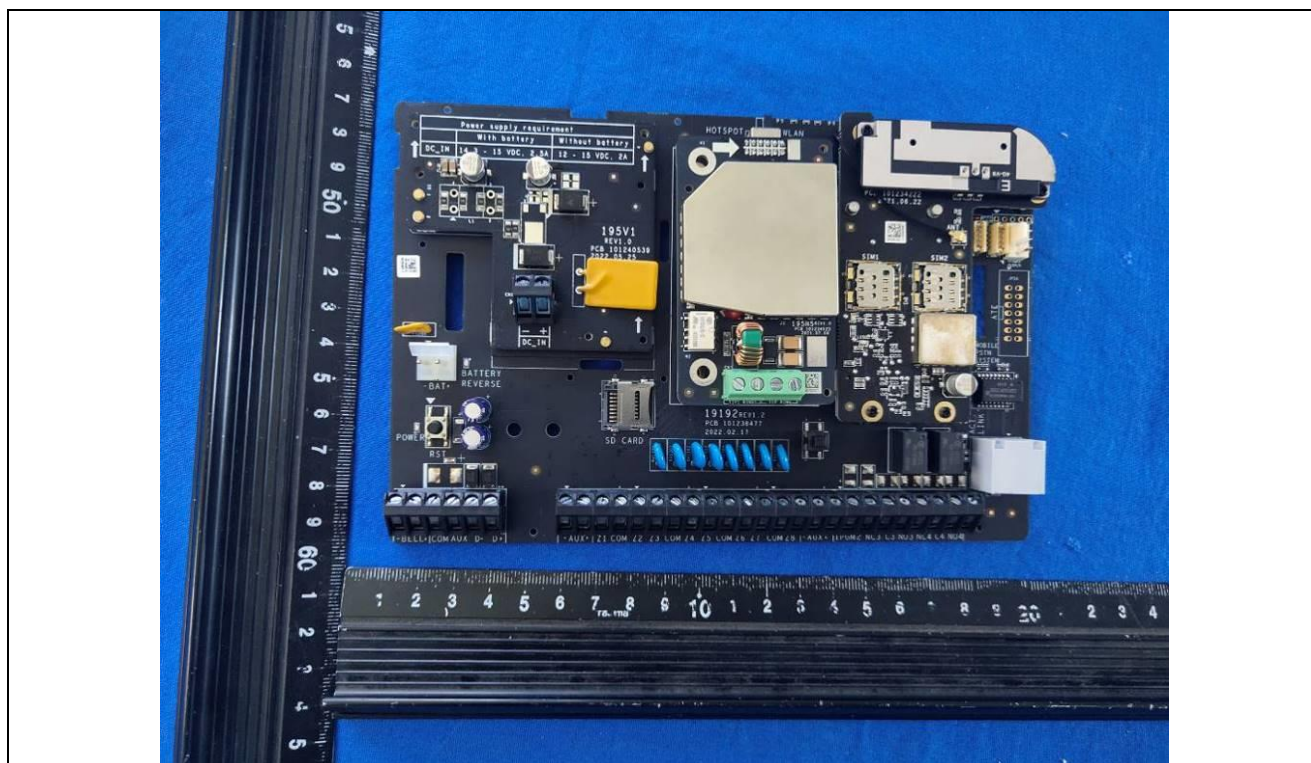


Attachment 1: Photo documentation

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Report No.: SHES231102090801

Details of: Internal view (model: DS-PHA64-LP/NP)

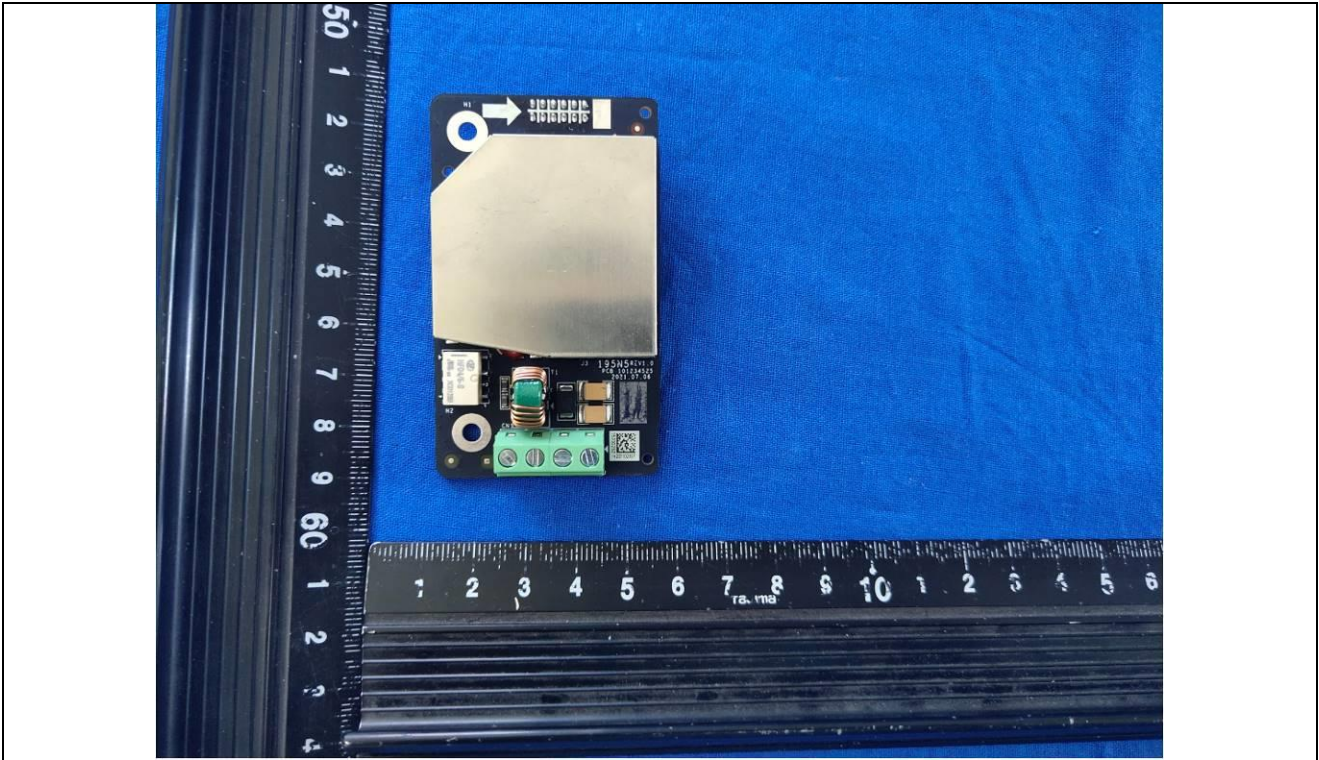


Details of: Internal view (model: DS-PHA64-LP/NP)

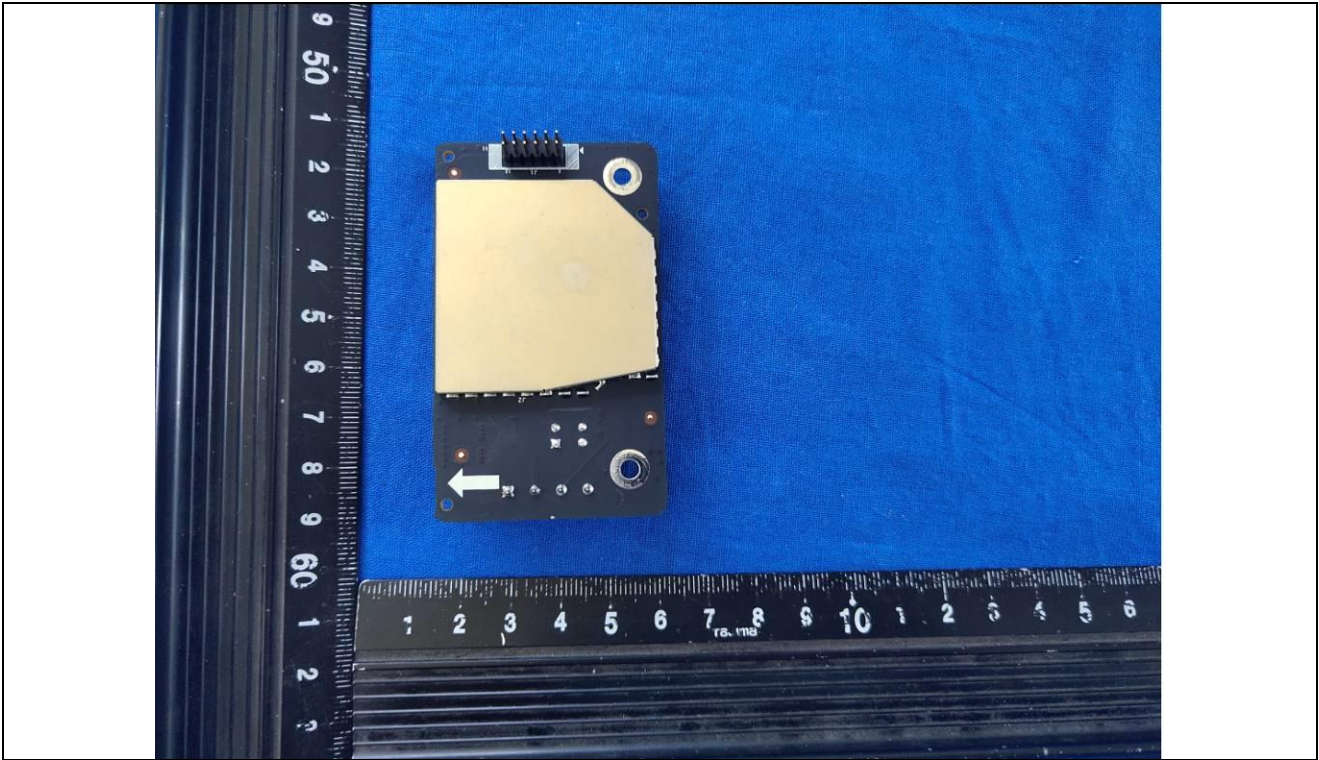


Report No.: SHES231102090801

Details of: PCB-1



Details of: PCB-1



Attachment 1: Photo documentation

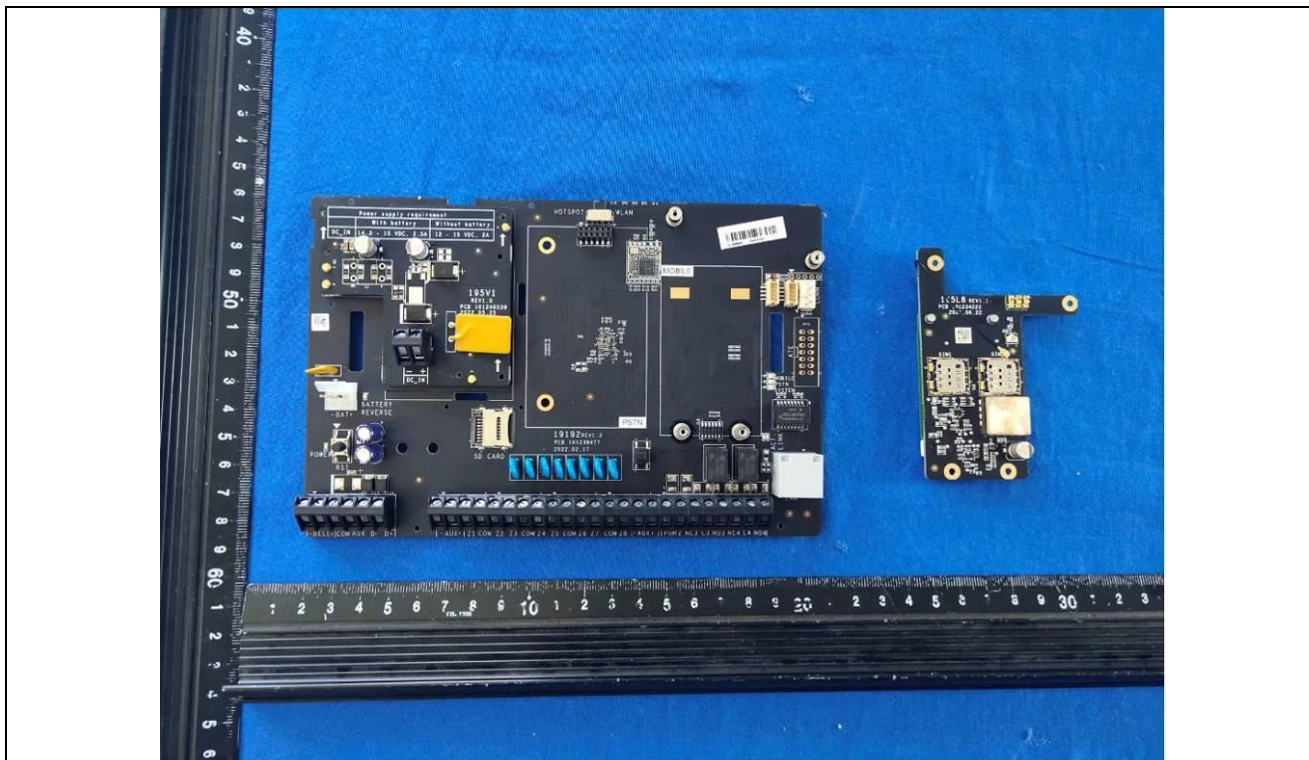
41 of 45

Report No.: SHES231102090801

Details of: Internal view (model: DS-PHA64-LP/NP)



Details of: Internal view (model: DS-PHA64-LP/NP)

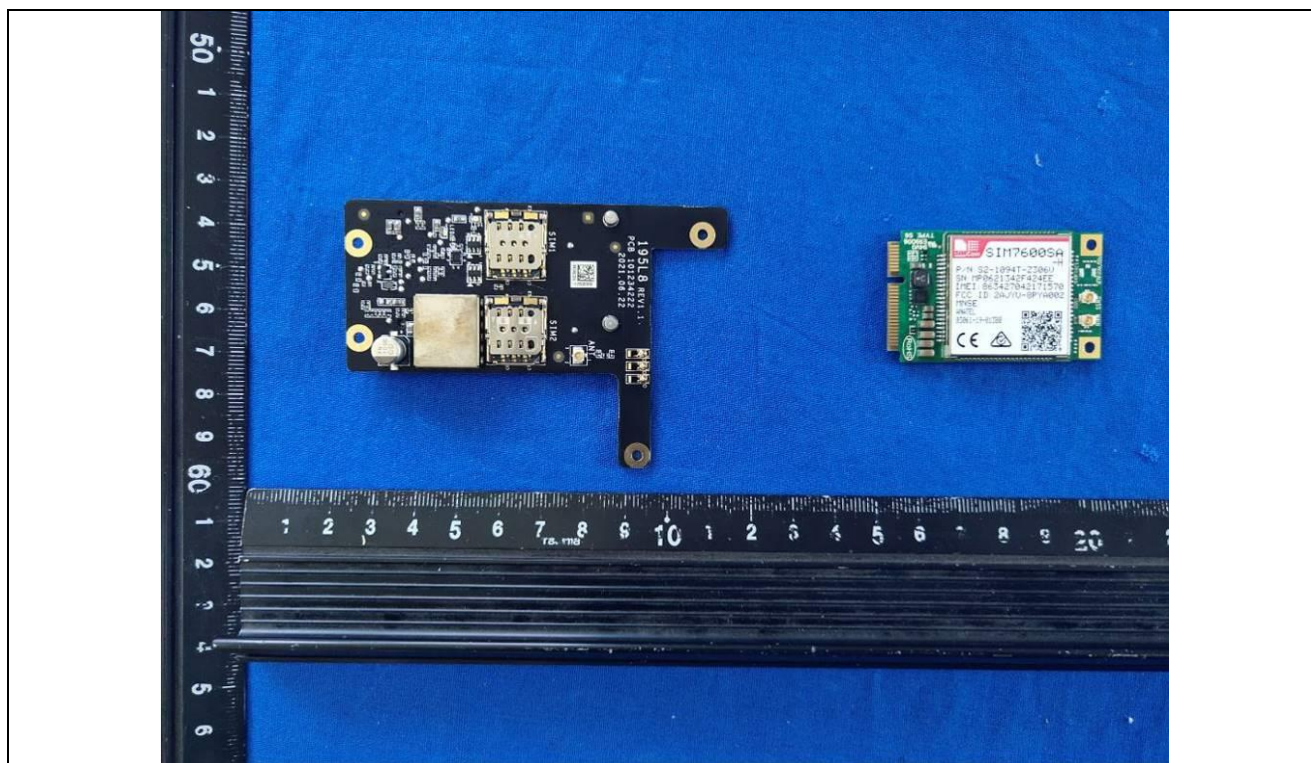


Attachment 1: Photo documentation

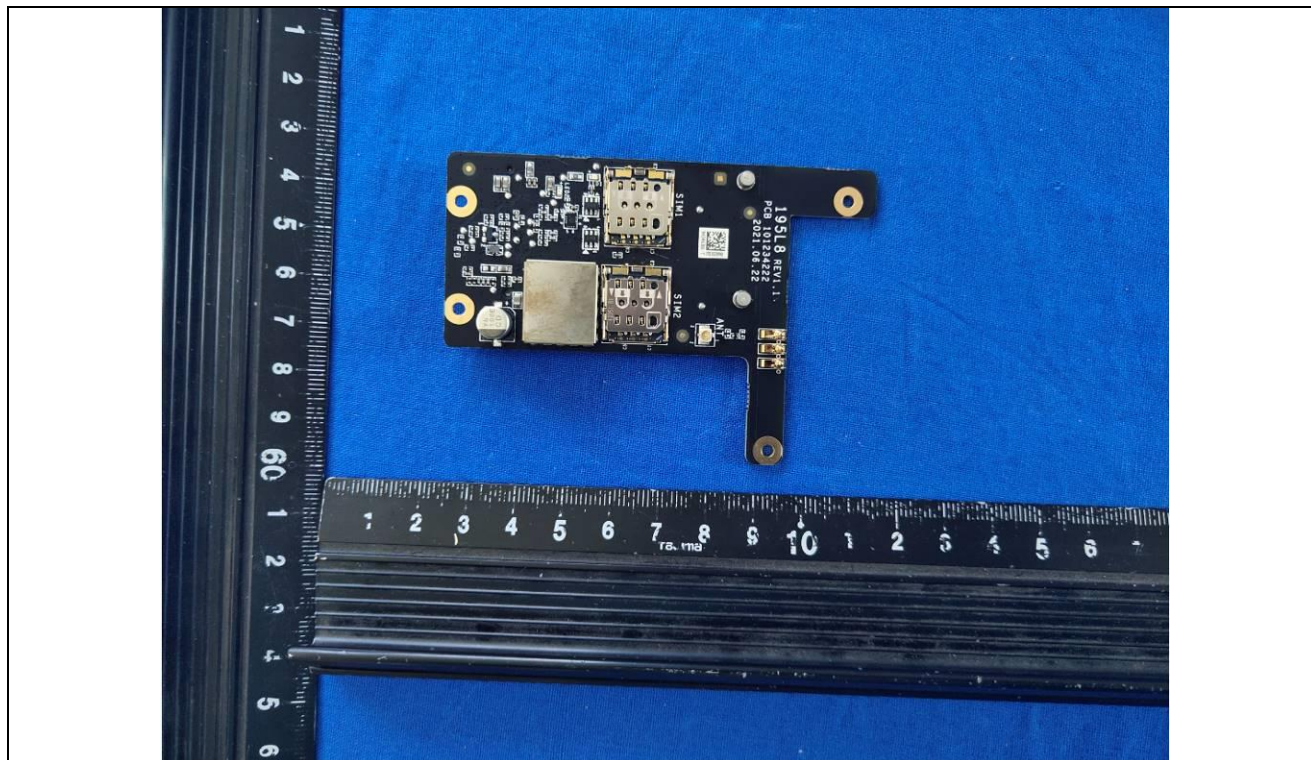
42 of 45

Report No.: SHES231102090801

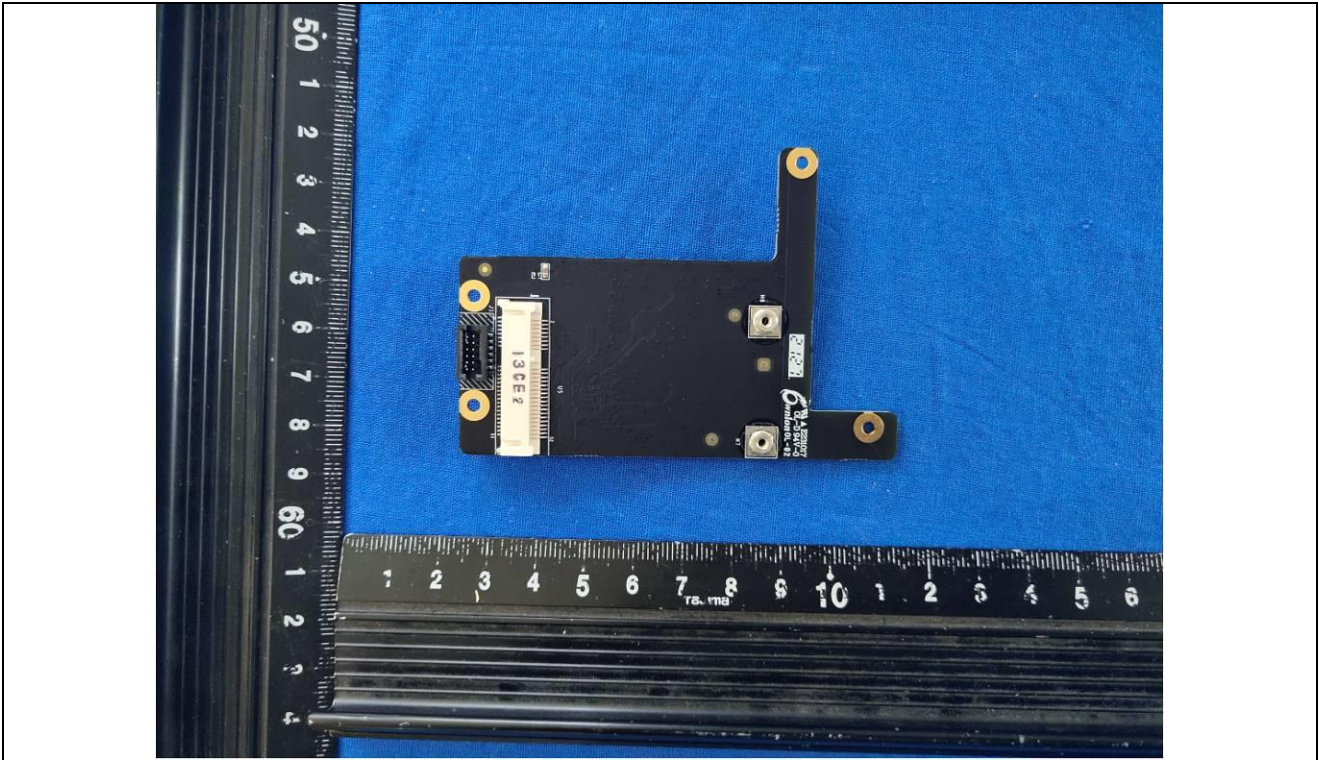
Details of: Internal view (model: DS-PHA64-LP/NP)



Details of: PCB-2



Details of: PCB-2

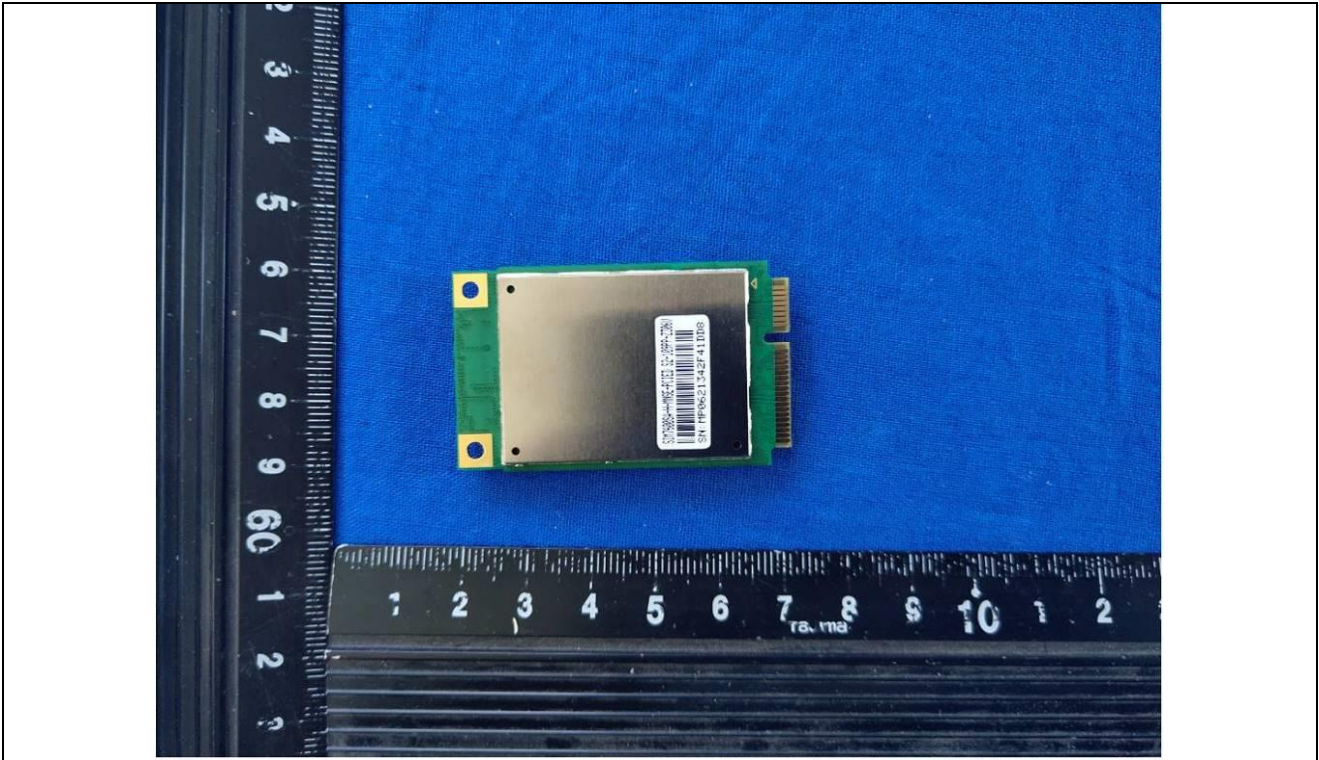


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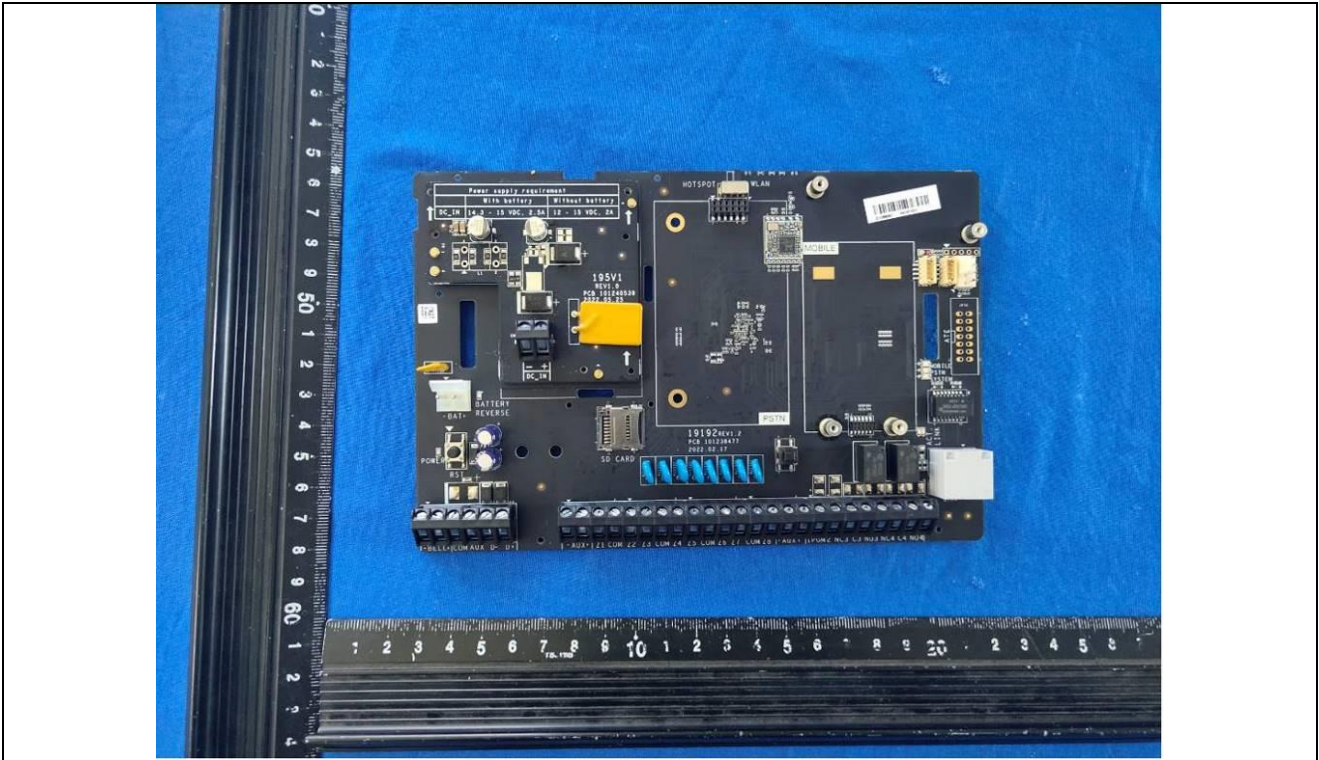


Report No.: SHES231102090801

Details of: PCB-3



Details of: PCB-4

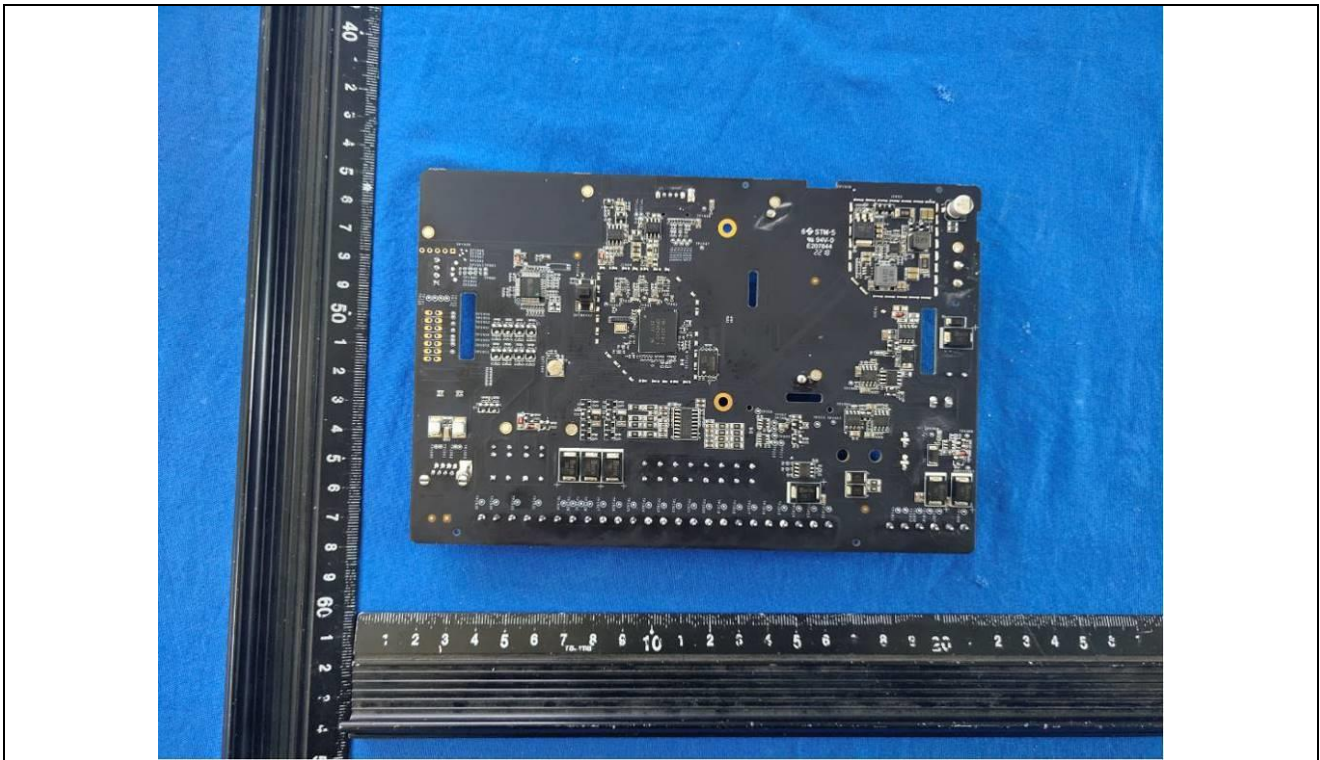


Attachment 1: Photo documentation

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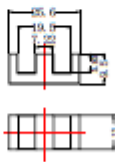
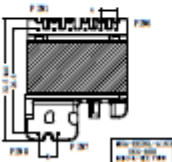
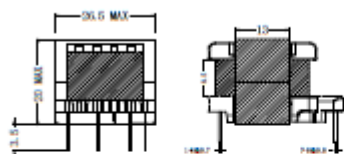
Report No.: SHES231102090801

Details of: PCB-4

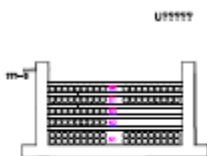


*****End of Attachment 1*****

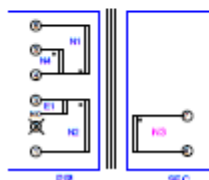
1. 外形尺寸 (单位mm)



3. 结构图



4. 电原理图



6. 电气特性

№	测试项目	测试端	连接要求	测试条件	测试仪器
1	绝缘电阻	0-5	0.75MΩ/kV	绝缘棒 0.20V	LCR电桥
2	耐压	0-5	25 (pH mm)		
3	耐压 1000 1000				
4	弯曲强度	0-5	1.6×10 ⁴ N/m ² (2%)	800±1.5, 1100℃	LCR电桥 0.20V电桥
5	弯曲强度	0-5	3.10×10 ⁴ N/m ² (2%)	2.0℃	YQ电桥
		1-5	3.10×10 ⁴ N/m ² (2%)		
		0-7	3.10×10 ⁴ N/m ² (2%)		
6	电阻率				
7	绝缘与介电			0-2000V 10-10V	CF电桥
8	绝缘电阻	1000-2次 耐压-60s	0.75MΩ/kV 0-5	耐压 0.20V	CF电桥
		1000-2次 耐压-60s	3.10×10 ⁴ N/m ² (2%)	耐压 0.20V	
		1000-2次 耐压-60s	3.10×10 ⁴ N/m ² (2%)	耐压 0.20V	
9	耐压				CF电桥

2 技术要求

1. 5, 6PIN脚, 成型剪除PIN4脚2/3, 绕制时, PIN朝右顺时针绕制;
 2. 先用12mm黄色胶带包3TS固定
 3. 再沿磁芯方向用0.05*2.5mm黄色胶带包裹7, 8脚包3TS;
 4. PIN3脚出线绕圈8mm后与初级磁芯连接 (确保导通)
- 引线接于磁芯背面及底部;
5. 必须符合RoHS及无磷环保要求, 标签贴于PIN1-6则顶部;
 6. 成品真空封装。

5. 绕线表

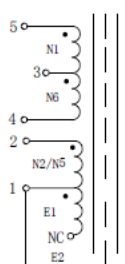
序号	频道	频率	功率	发射方式	发射数量	覆盖范围
1	N1	4-6	2UBS00.40P	3276	单发	2 0.050 5.2T
2	N2	1-3	2UBS00.15P	676	单发	1 0.050 5.2T
3	N3	0-7	1UBS0.20P	676	单发	1 0.050 5.2T
4	E1	3-4	2UBS0.20P	676	单发	1 0.050 5.2T
5	N4	5-4	2UBS0.41P	1676	单发	1 0.050 5.2T

注意：N4使用PIN，烧完线后直接封脚。（不能从顶部飞出）

版次	日期	变更内容	变更者	MOSO [®] 茂硕电源科技股份有限公司									
A.1	20210925	首次制作	郭凯仁										
				物料名称		变压器		适用机种				页次: 1 of 1	
				未注公差±0.2mm									
				核准		胡宗波		审核		陈旭宏		绘图 蒋建亮	
				物料编码				文件编号					

T101 (Model: EE25-014040)

1. Schematic:



2. Winding Sequence:

NO	Winding	Start-Teflon	Stop-Teflon	Winding SPEC	Winding Type	Mylar tape
1	N1	5	3	2UEW $\Phi 0.37 \times 1P \times 33T$	"2+5"	1MIL7.5mm*2T
2	N2	2	1	2UEW $\Phi 0.25 \times 2P \times 9T$	"2+5"	1MIL7.5mm*2T
3	N3	8	7	DTM-B 黄色包膜线 $\Phi 0.5 \times 1P \times 7T$	"2+4"	1MIL7.5mm*1T
4	N4	9	6	DTM-B 黄色包膜线 $\Phi 0.5 \times 1P \times 7T$	"2+4"	1MIL7.5mm*3T
5	N5	2	1	2UEW $\Phi 0.25 \times 1P \times 9T$	"2+5"	1MIL7.5mm*2T
6	N6	3	4	2UEW $\Phi 0.33 \times 1P \times 17T$	"2+5"	1MIL7.5mm*2T
7	E2	1	NC	2UEW $\Phi 0.25 \times 1P$		

1. 自动化机器绕线; 2. PIN4从本身小槽出线, 其余1PIN 1槽出线。
3. E1 NC头结束于初级侧骨架顶部缺口, 但不可超出骨架顶部1/2。

Remark: Winding Type

1	OOOOO	concentrated	Layer Mylar
2	OOOOOO	dense	Layer two Mylar
3	OOOO	sparse	Layer three Mylar
4	Forward winding		Copper foil shield
5	Anti winding		Copper wire shield

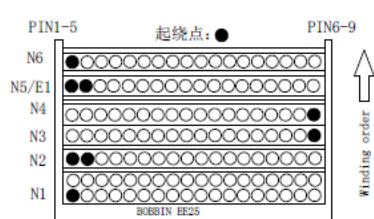
Forward winding



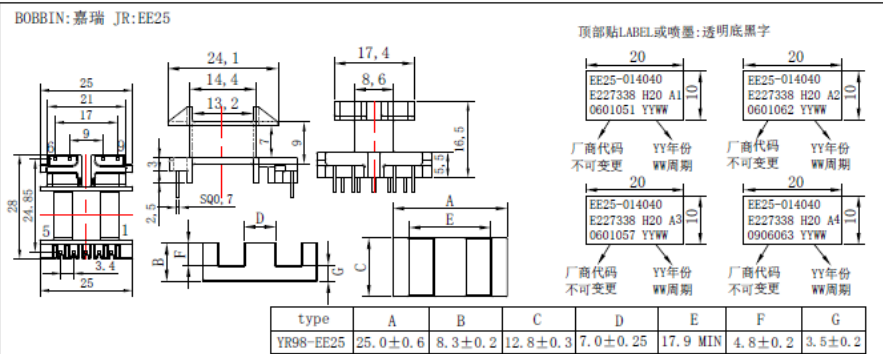
Anti winding



3. Winding section:



4. Configuration & Dimension: unit:mm



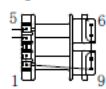
5. Production process requirement:

真空压力	凡立水浓度	循环次数	含浸时间	烘烤时间	烘烤温度
70cmHg	0.92~0.94	2cyc min	10min	2H min	110±10℃
1. 成品后PIN3 CUT 2/3, 所有绕PIN须满 0.8T MIN, 所有PIN焊锡须满1T MIN, 所有PIN端脚镀锡后不可超出BOBBIN凸点。					
2. 磁芯中柱点EPOXY, 填满4/5 MIN, 胶烤干后再含浸, 禁止胶同凡立水一起烘烤。					
3. PIN1端PIN时预留1根接地引线, 引线从PIN1与PIN2之间引到骨架底部折直角90° 弯折到PIN1-9侧面CORE弯折3mm~5mm, 禁止私自变更接地方式;					
4. CORE外包固定TAPE: 1MIL13mm*2T.					
5. 本产品需真空含浸, 含浸后CORE与线包不可有松动之现象。					
6. 紧靠次级PIN脚绕CORE方向包TAPE: 1MIL22mm*2PC重叠*1.1T. 注: TAPE头、尾需结束在CORE两侧; 头、尾须重叠10mm MIN.					
7. 成品后平齐BOBBIN底部绕线包方向包TAPE: 1MIL17mm*2T.					
8. PIN脚需依据PCB实际尺寸成型整脚。					

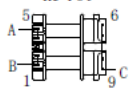
7. Electrical Characteristics:

Test item	Test range	Test conditions	Requirements
Inductance	L(5-4)	40KHz/1.0V	800uH±5%
Leakage Inductance	LK(5-4)	40KHz/1.0V	22uH MAX
Dc Resistance	R(5-4)	At 25℃	700mΩ MAX
	R(2-1)	At 25℃	80mΩ MAX
	R(6-9)	At 25℃	50mΩ MAX
	R(7-8)	At 25℃	55mΩ MAX
	R(PIN1-CORE)	At 25℃	40KΩ MAX
Hi-Pot: ARCING: 6等级	A to C, B to C	3.75KV AC 60Hz	1mA 3 SEC.
	C to Core	3.75KV AC 60Hz	1mA 3 SEC.
	A to B	1.0KV AC 60Hz	1mA 3 SEC.

Leakage Inductance

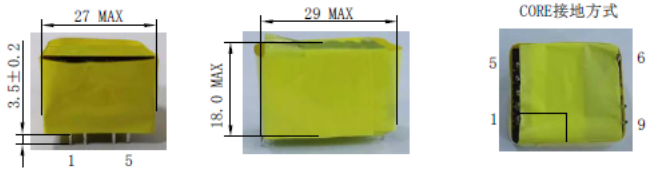


Hi-Pot



A: Main Winding
B: VCC Winding
C: Secondary Winding
D: Magnetic Core

6. 成品外形图: Unit:mm

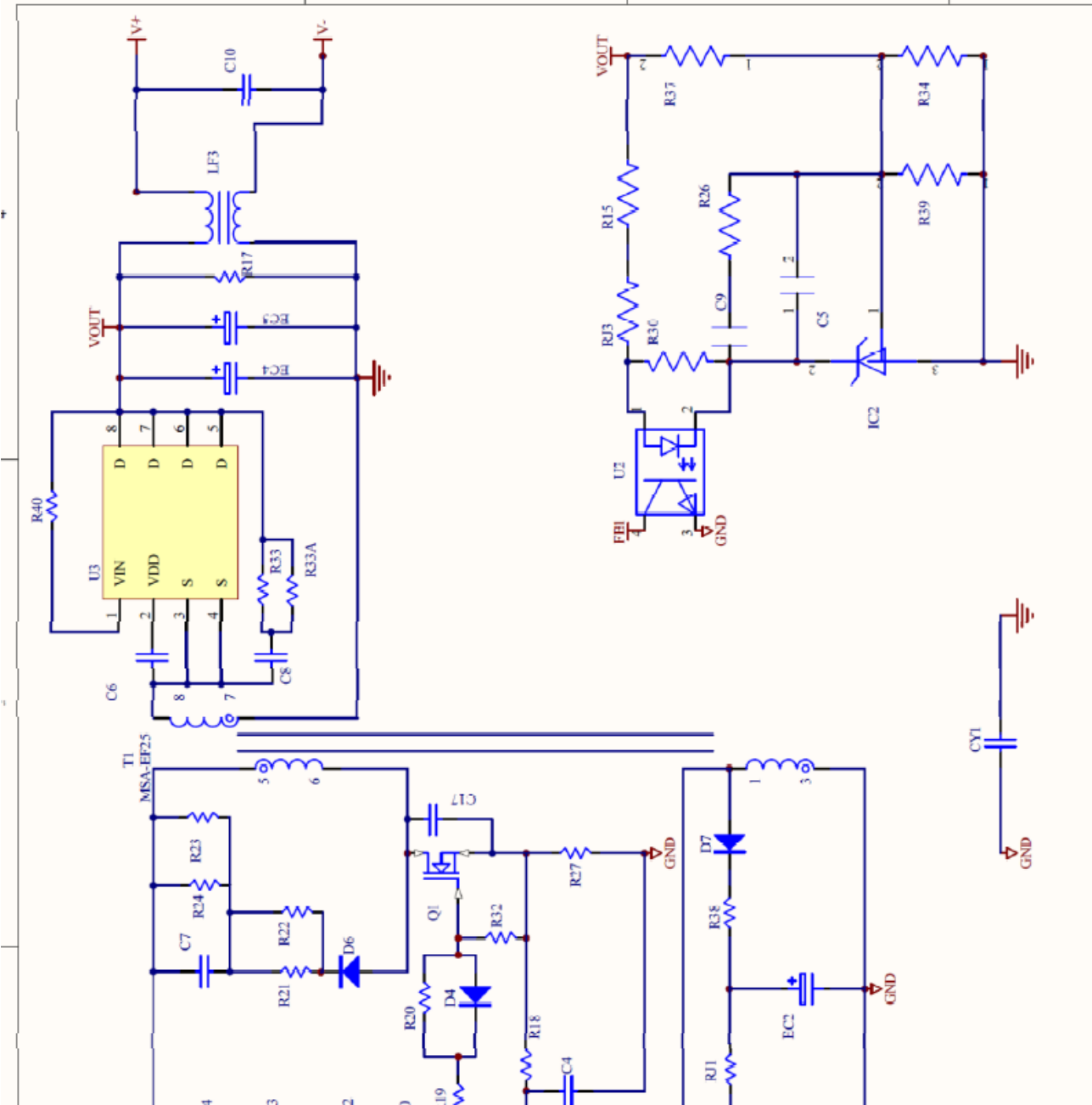


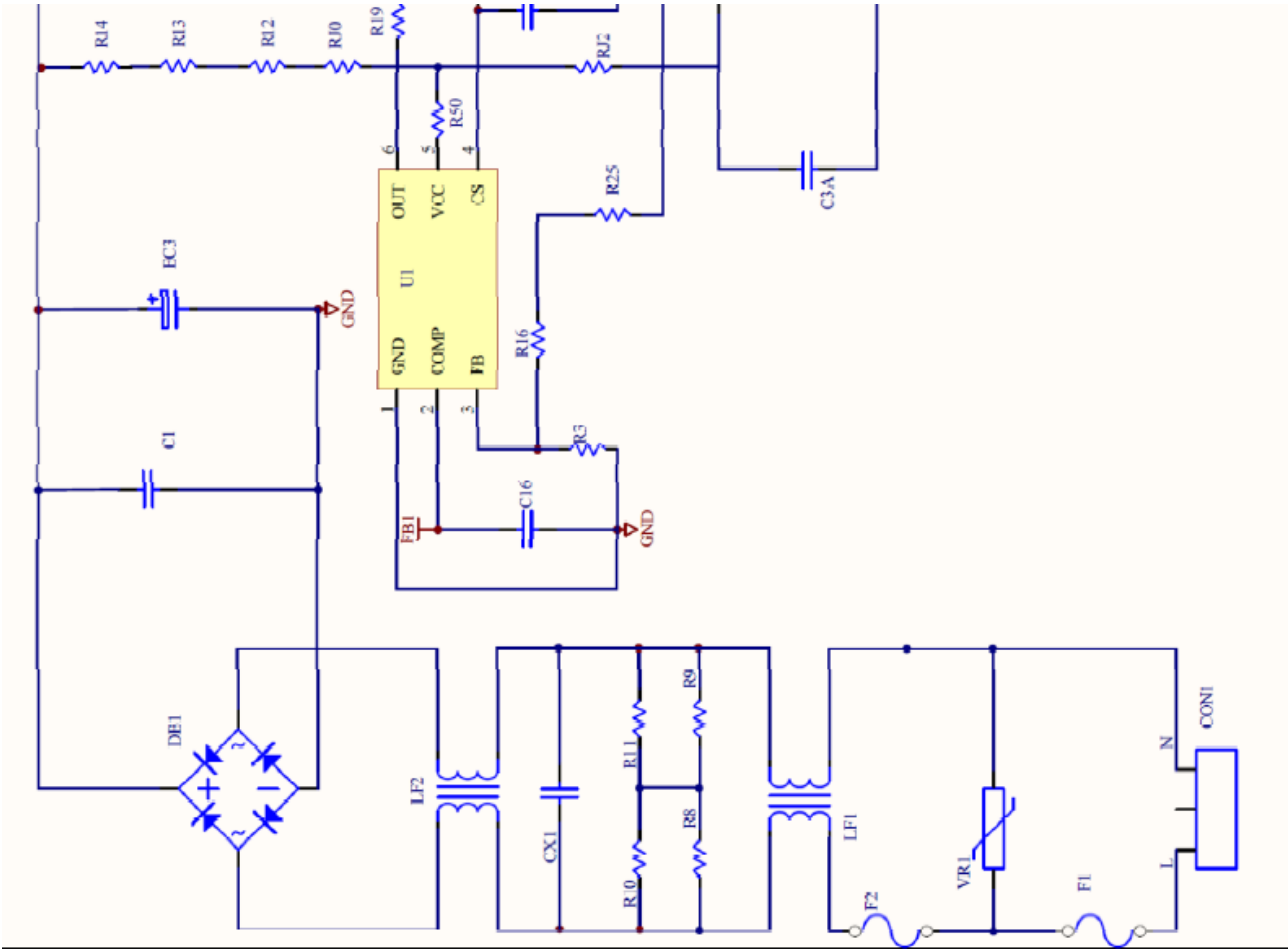
8. Material List:

NO.	COMPONENTS	MODEL	MANUFACTURE	U/L NO.
1	Core	EE25加加厚	YAO RUN YR98 HUA YUE HY96	
2	Bobbin	T200HF	CHANG CHUN PLASTICS CO LTD	E59481
3	Triple insulated wire	FM-9823, FM-9825, FM-9630	SUMITOMO BAKELITE CO LTD	E41429
4	wire	DTM-B DTM-BLZ	Guangzhou Wanbao Electronic Material Co Ltd	E323485
5	Insulation tape	CT*(b) (g) 1350F-1 (b), 1350F-2 (c)	GUANGZHOU WANBAO ENAMELLED WIRE CO LTD 3M COMPANY ELECTRICAL MARKETS DIV (EMD)	E167402 E172395 E227475 E238500 E171082 E165111 E17385
6	Varnish	T-4260 (a) BC-346A, BC-346-A	SUZHOU TAIHU ELECTRIC ADVANCED MATERIAL CO LTD John C Dolph Co	E228349 E317427
7	Epoxy	中柱软胶: H907-HF-D Black 硬度为: 70-75D	DONG GUAN HUA CHUANG ELECTRONIC MATERIAL FACTORY	E304477

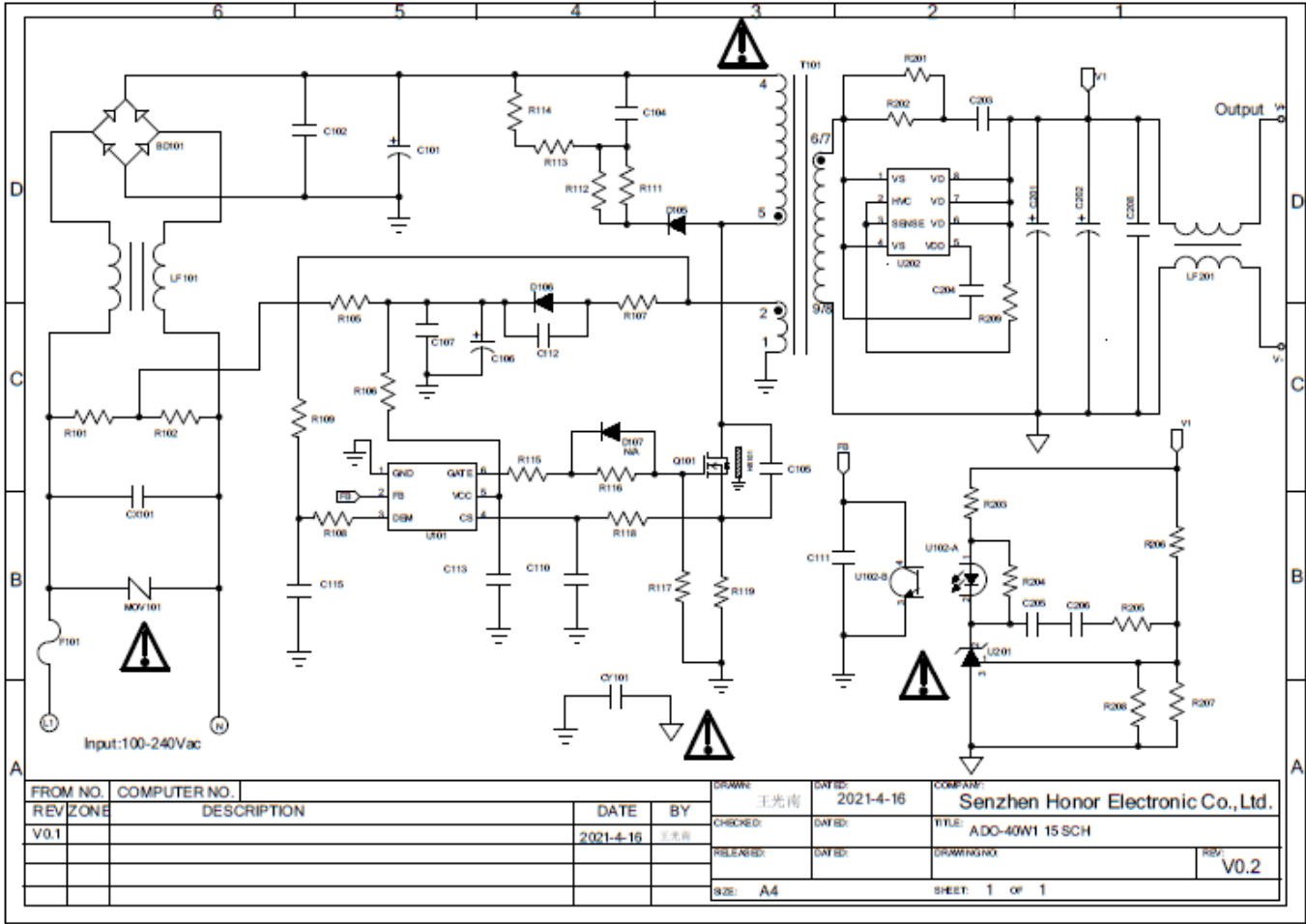
*****End of attachment 2*****

Circuit Diagram
(for power supply model: MS-P2500A143-036A0-CN)

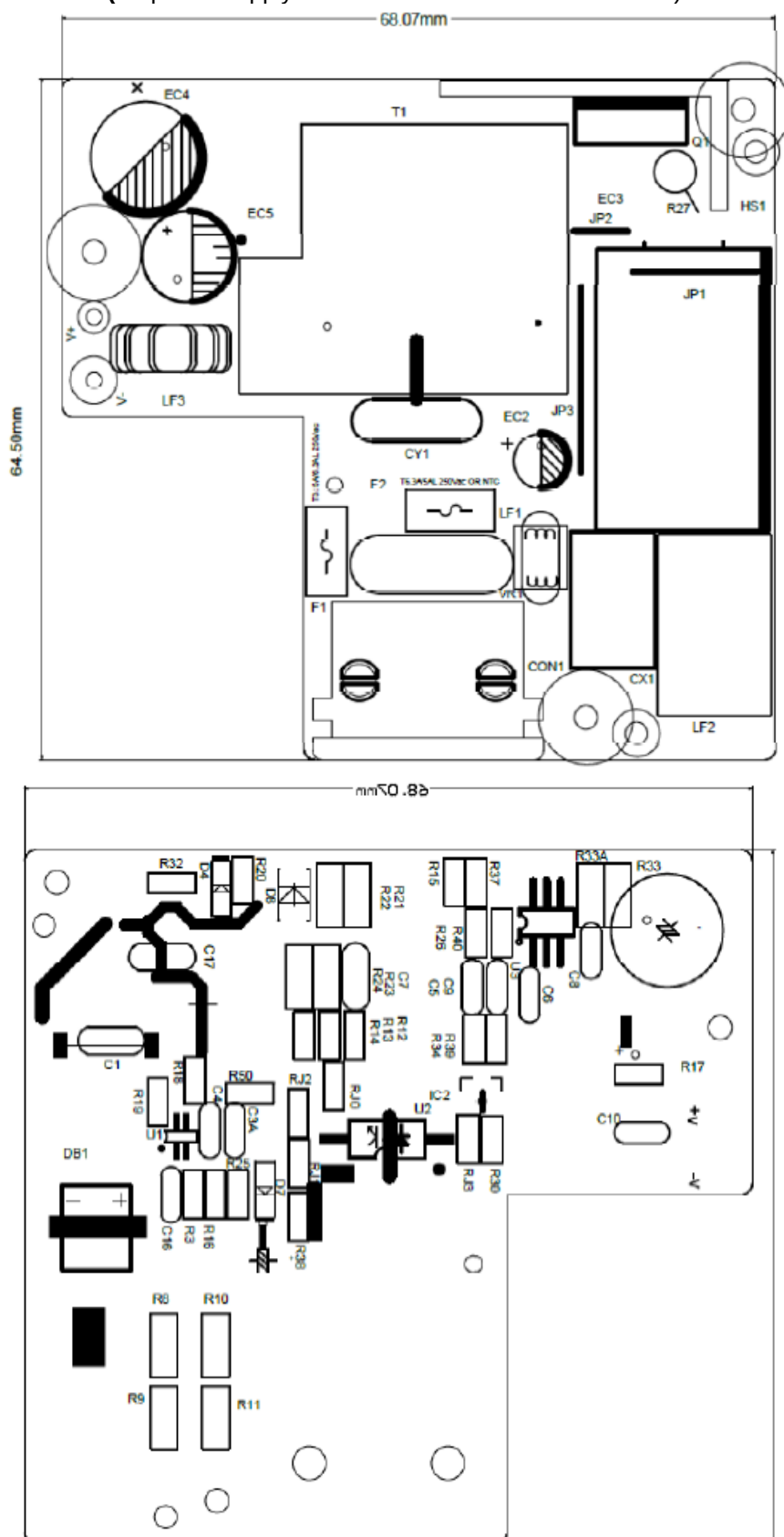


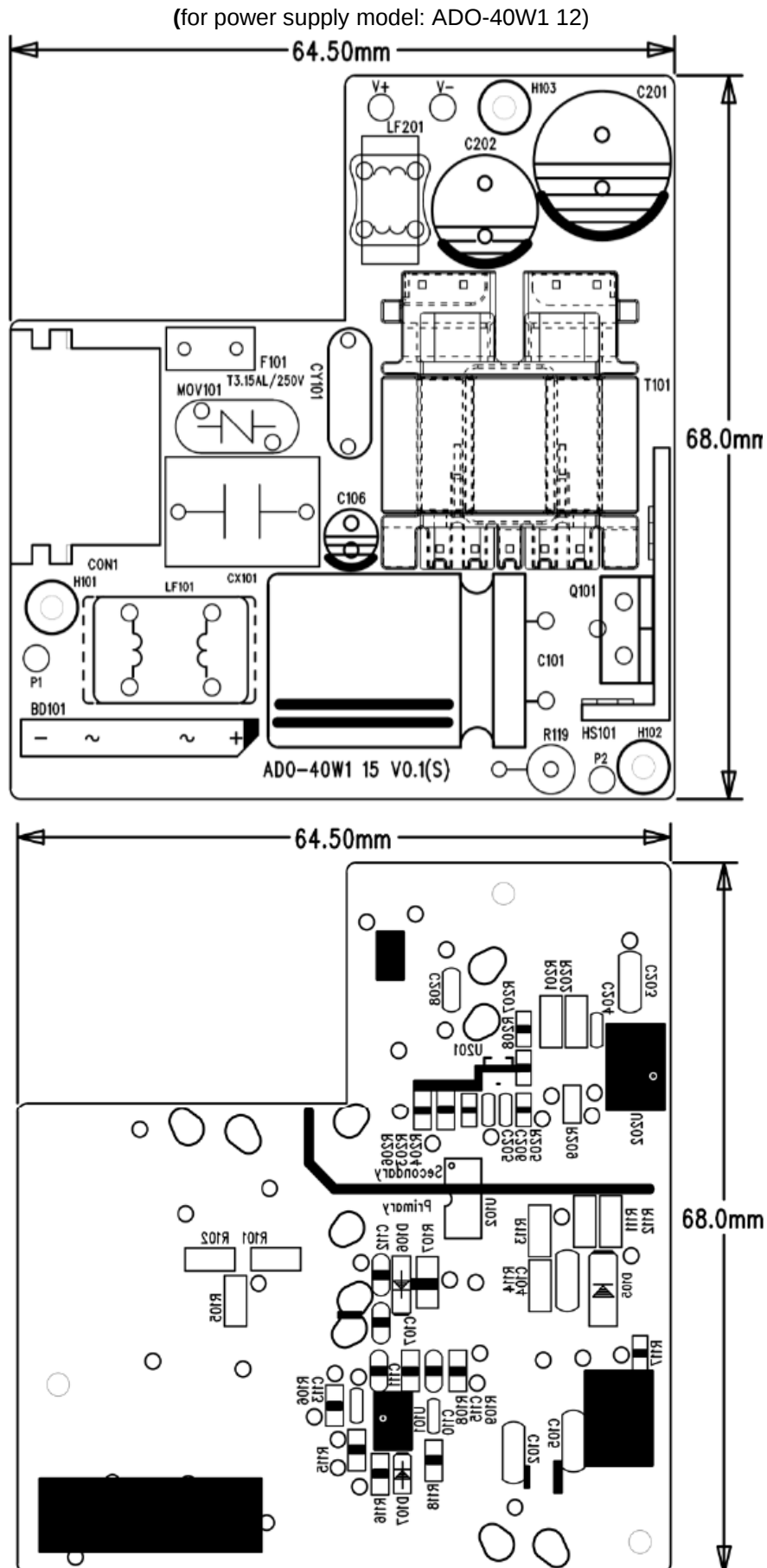


Circuit Diagram
(for power supply model: ADO-40W1 12)



PCB drawing
(for power supply model: MS-P2500A143-036A0-CN)





*****End of attachment 3*****

IEC62368_1D - ATTACHMENT																																										
Clause	Requirement + Test			Result - Remark		Verdict																																				
ATTACHMENT TO TEST REPORT IEC 62368-1 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment - Part 1: Safety requirements)																																										
Differences according to : EN 62368-1:2014+A11:2017																																										
Attachment Form No. : EU_GD_IEC62368_1D_II																																										
Attachment Originator : Nemko AS																																										
Master Attachment..... : Date 2021-02-04																																										
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	CENELEC COMMON MODIFICATIONS (EN)					P																																				
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed "Z".					P																																				
CONTENTS	Add the following annexes: Annex ZA (normative) Annex ZB (normative) Annex ZC (informative) Annex ZD (informative) Normative references to international publications with their corresponding European publications Special national conditions A-deviations 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: <table><tr><td>0.2.1</td><td>Note</td><td>1</td><td>Note 3</td><td>4.1.15</td><td>Note</td></tr><tr><td>4.7.3</td><td>Note 1 and 2</td><td>5.2.2.2</td><td>Note</td><td>5.4.2.3.2.2 Table 13</td><td>Note c</td></tr><tr><td>5.4.2.3.2.4</td><td>Note 1 and 3</td><td>5.4.2.5</td><td>Note 2</td><td>5.4.5.1</td><td>Note</td></tr><tr><td>5.5.2.1</td><td>Note</td><td>5.5.6</td><td>Note</td><td>5.6.4.2.1</td><td>Note 2 and 3</td></tr><tr><td>5.7.5</td><td>Note</td><td>5.7.6.1</td><td>Note 1 and 2</td><td>10.2.1 Table 39</td><td>Note 2, 3 and 4</td></tr><tr><td>10.5.3</td><td>Note 2</td><td>10.6.2.1</td><td>Note 3</td><td>F.3.3.6</td><td>Note 3</td></tr></table>					0.2.1	Note	1	Note 3	4.1.15	Note	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c	5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3	5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4	10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3	P
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	For special national conditions, see Annex ZB.					P																																				
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.			Should be considered during national approval.		P																																				

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.Z1	Add the following new subclause after 4.9: To protect against excessive current, short-circuits and earth faults in circuits connected to an a.c. mains, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c): a) except as detailed in b) and c), protective devices necessary to comply with the requirements of B.3.1 and B.4 shall be included as parts of the equipment; b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation; c) it is permitted for pluggable equipment type B or permanently connected equipment, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions. If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for pluggable equipment type A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.		P
5.4.2.3.2.4	Add the following to the end of this subclause: The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.		N/A
10.2.1	Add the following to ^{c)} and ^{d)} in table 39: For additional requirements, see 10.5.1.		N/A

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	Add the following after the first paragraph: <i>For RS 1 compliance is checked by measurement under the following conditions:</i> <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> NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. <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> <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> <i>For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level.</i> NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		N/A
10.6.1	Add the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		N/A
10.Z1	Add the following new subclause after 10.6.5. 10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz 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). 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		N/A
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		P

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

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	Denmark After the 2nd paragraph add the following: A warning (marking safeguard) for high touch current is required if the touch current exceeds the limits of 3,5 mA a.c. or 10 mA d.c.		N/A
5.4.11.1 and Annex G	Finland and Sweden To the end of the subclause the following is added: For separation of the telecommunication network from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV. It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: • 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
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

IEC62368_1D - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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.		P
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm ² to 1,5 mm ² in cross-sectional area.		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	Norway and Sweden To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. 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. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11)” 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. Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et koaksialbasert kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av apparater til kabel-TV nett installeres en galvanisk isolator mellom apparatet og kabel-TV nettet.” Translation to Swedish: “Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”		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		N/A
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	Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de		N/A

---End of Attachment 4---

CAUTION



In the use of the product, you must be in strict compliance with the electrical safety regulations of the nation and region.
The equipment shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the equipment.
Shock hazard! Disconnect all power sources before maintenance.
The socket-outlet shall be installed near the equipment and shall be easily accessible.
This equipment is suitable for mounting on concrete or other non-combustible surface only.
The serial port of the equipment is used for debugging only.
This equipment is not suitable for use in locations where children are likely to be present.
Install the equipment according to the instructions in this manual.
To prevent injury, this equipment must be securely attached to the floor/wall in accordance with the installation instructions.
Keep vertically down when moving or using the equipment.
The additional force shall be equal to three times the weight of the equipment but not less than 50N. The equipment and its associated mounting means shall remain secure during the installation.
After the installation, the equipment, including any associated mounting plate, shall not be damaged.
The equipment has been designed, when required, modified for connection to an IT power distribution system.

BATTERY CAUTION

1. CAUTION: Risk of explosion if the battery is replaced by an incorrect type.
2. Improper replacement of the battery with an incorrect type may defeat a safeguard (for example, in the case of some lithium battery types).
3. Do not dispose of the battery into fire or a hot oven, or mechanically crush or cut the battery, which may result in an explosion.
4. Do not leave the battery in an extremely high temperature surrounding environment, which may result in an explosion or the leakage of flammable liquid or gas.
5. Do not subject the battery to extremely low air pressure, which may result in an explosion or the leakage of flammable liquid or gas.
6. Dispose of used batteries according to the instructions.
7. + identifies the positive terminal(s) of equipment which is used with, or generates direct current. - identifies the negative terminal(s) of equipment which is used with, or generates direct current.

*******End of attachment 5*******