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 .....:	E132002-A6243-CB-1
Date of issue .....:	2026-01-04
Total number of pages .....:	76
Name of Testing Laboratory preparing the Report .....:	UL International Limited
Applicant's name.....:	**ASTEC INTERNATIONAL LTD**
Address .....:	**16TH FL** **LU PLAZA** **2 WING YIP ST.** **KWUN TONG** **KOWLOON HONG KONG**
Test specification:	
Standard .....:	IEC 62368-1: 2018
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_1E
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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The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test Item Description .....:	DC-DC Converter
Trade Mark(s) .....:	None
Manufacturer.....:	ASTEC INTERNATIONAL LTD 16TH FL LU PLAZA 2 WING YIP ST. KWUN TONG KOWLOON HONG KONG
Model/Type reference .....:	ADH1100380S50XXXXXXXX, ADH1100-380S50XXXXXXXX (X may be represented by any ASCII character code, no safety impact, just for marketing purpose)
Ratings .....:	DC Input: 350-420VDC, 3.6A DC output: 50VDC, 22A Max. output power is 1100W (Optional)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**		
Testing location/ address .....:		UL International Limited 18/F Delta House, 3 On Yiu Street, Shatin, NT, Hong Kong	
Tested by (name, function, signature).....:		Benny Wong / Project Handler	
Approved by (name, function, signature) ..:		KinSang Tang / 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 .....:		Astec International Ltd. Building 1, District No.68 COFCO Industrial Park, Hong Lang North 2nd Road, Xin'an Street Office, Bao'an District , Shenzhen, 518101 China	
Tested by (name, function, signature).....:		Black Xu / Tester	

Witnessed by (name, function, signature) . :	Brian Wong / Project Handler	
Approved by (name, function, signature) .. :	KinSang Tang / Reviewer	
☐ **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):

National Differences (46 pages)
Enclosures (37 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing Location:**
	Unless otherwise noted, test are all conducted in
	CTF Stage 2: Astec International Ltd.
	Building 1, District No.68 COFCO Industrial Park, Hong Lang North 2nd Road, Xin'an Street Office, Bao'an District , Shenzhen, 518101 China
4.4.3.8, T.8 – STRESS RELIEF TEST	
5.2.2.1-5.2.2.6 – CLASSIFICATION OF ELECTRICAL ENERGY SOURCES	
5.4.1.3 – TEST FOR HYGROSCOPIC MATERIALS	
5.4.1.5.2, 5.4.1.5.3 – TEST FOR POLLUTION DEGREE 1 ENVIRONMENT AND FOR AN INSULATING COMPOUND	
5.4.1.8 – DETERMINATION OF WORKING VOLTAGE	
5.4.9.1 – ELECTRIC STRENGTH TEST – TYPE TESTING OF SOLID INSULATION	
5.7.4 – TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT – UNEARTHED ACCESSIBLE PARTS	
5.7.5 – TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON TN OR TT SYSTEM	
B.2.5 – INPUT TEST: SINGLE PHASE	
B.2.6, 5.4.1.4, 6.3, 9.3, B.1.5 – NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT	
B.3 – SIMULATED ABNORMAL OPERATING CONDITIONS	
B.4 – SIMULATED SINGLE FAULT CONDITIONS	

G.5.3.3 – TRANSFORMER OVERLOAD	

Summary of compliance with National Differences (List of countries addressed):

Australia - AU / New Zealand - NZ, China - CN, EU Group Differences, Japan - JP, Republic of Korea - KR, Saudi Arabia - SA, United States of America - US / Canada - CA

United Kingdom (per customer's request shown separately)

China

☒ **The product fulfils the requirements of** EN IEC 62368-1:2020+A11:2020, BS EN IEC 62368-1:2020 + A11:2020, AS/NZS 62368.1:2022, GB4943.1-2022, J62368-1(2023), National standard SASO-IEC 62368-1:2020, CSA/UL 62368-1:2019, KC 62368-1(2021-08)

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 NCBs that own these marks.



Note: The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

Test item particulars:	
Product group ..... :	built-in component
Classification of use by ..... :	Ordinary person Instructed person Skilled person
Supply Connection ..... :	DC Mains
Supply tolerance ..... :	None
Supply connection – type ..... :	Built-in component, considered in end system
Considered current rating of protective device ... :	10 A; Location: building
Equipment mobility ..... :	for building-in
Over voltage category (OVC) ..... :	To be determined in the end product, transient voltage is 2500 V peak considered.
Class of equipment ..... :	Class I
Special installation location ..... :	N/A
Pollution degree (PD) ..... :	PD 2
Manufacturer's specified Tma (°C) ..... :	65
IP protection class ..... :	IPX0
Power systems ..... :	not AC mains
Altitude during operation (m) ..... :	3048 m
Altitude of test laboratory (m) ..... :	2000 m or less
Mass of equipment (kg) ..... :	Approximate 0.18
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 .....:	2025-08-21
Date (s) of performance of tests .....:	2025-08-21 to 2025-11-14
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.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	

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**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	ASTEC POWER PHILIPPINES INC. MAIN ROAD COR. ROAD J CAVITE ECONOMIC ZONE AUTHORITY, TEJEROS CONVENTION, ROSARIO CAVITE, PHILIPPINES 4106 ASTEC POWER PHILIPPINES INC. 104 LAGUNA BLVD., LAGUNA TECHNOPARK, STA. ROSA LAGUNA 4026, PHILIPPINES

General product information and other remarks:

Product Description

1. This product is a class I built-in isolated brick converter, heatsink will be connected to protective earthing in final use.
2. The product provides reinforced insulation between input to output, basic insulation between input to heatsink, suitable enclosure should be considered in the end system.
3. These DC to DC converters have no in-line fuse. For safe operation, an external UL Listed or recognized 10A, 500VDC, fast acting fuse must be employed as input line fuse before installation.
4. For U1(top side) covered with coating material to realized PD1, the bottom side potted with compound to realized PD1, other area is PD2.
5. Maximum ambient temperature around the equipment must not exceed 65°C, full load 5m/s air velocity, air direction from V+ to V-.
6. The operating altitude for the equipment is up to 3048m.
7. This equipment is not suitable for use in locations where children are likely to be present.
8. This equipment was evaluated for tropical conditions.

Model Differences

All models are the same, except for model name.

Additional Information

N/A

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 65°C
- The product is intended for use on the following power systems : DC mains supply
- Considered current rating of protective device as part of the building installation (A) : 10A
- Mains supply tolerance (%) or absolute mains supply : N/A
- The equipment disconnect device is considered to be : Stated in manual, should considered in end system
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standard : EN IEC 62368-1:2020+A11:2020, BS EN IEC 62368-1:2020 + A11:2020

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Electric Strength, Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 451.3 Vrms/639 Vpk, Primary – Earthed Dead Metal: 450.1 Vrms/624 Vpk
- The following output circuits are at ES1 energy levels : Output
- The following output circuits are at PS3 energy levels : Output
- The investigated Pollution Degree is : PD1 for bottom side and IC U1, PD 2 for other parts
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- The power supply was evaluated to be used at altitudes up to : 3048m
- External Forced Air Cooling:
    1. Fan: Full load 5m/s air velocity for baseplate + 1.46'' earthed heatsink.
    2. Fan Distance from Unit: 23cm
    3. Air-flow Direction: Vin "+" to Vin "-"
- An UL listed or recognized external fuse, rated 10A, 500Vdc was used in testing.
- For mains input: The max. voltage should be less than or equal to 250Vrms.

OVERVIEW OF ENERGY SOURCES AND SAFEGUARDS				
Clause	**Possible Hazard**			
5	Electrically-caused injury			
Class and Energy Source (e.g. ES3: Primary circuit)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
ES1: Output circuit	Ordinary, Instructed, Skilled	N/A	N/A	N/A
ES1: metal heatsink	Ordinary, Instructed, Skilled	N/A	N/A	N/A
ES3: all circuits except output circuit	Ordinary, Instructed	Basic insulation provided between input circuit to metal heatsink	Protective earthing	Reinforced insulation between input to output
ES3: all circuits except output circuit	Skilled	N/A	N/A	N/A
ES3: secondary circuits except output circuit	Ordinary, Instructed	Voltage limited component (i.e., MOSFET) provided	Did not exceed ES2 limits of table 4 under Voltage limited component S/C condition	N/A
6	Electrically-caused fire			
Class and Energy Source (e.g. PS2: 100 Watt circuit)	Material part (e.g. Printed board)	Safeguards		
		B	1st S	2nd S
PS3: all circuits	PWB	See 6.3	N/A	V-0
PS3: all circuits	components/materials other than PWB	See 6.3	N/A	- at least V-2/VTM-2/HF-2 except for mounted on min. V-1 material or small parts of combustible material less than 1750mm3 or 4g. - fire enclosure should be provided in end system
7	Injury caused by hazardous substances			

Class and Energy Source (e.g. Ozone)	Body Part (e.g., Skilled)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
8	Mechanically-caused injury			
Class and Energy Source (e.g. MS3: Plastic fan blades)	Body Part (e.g. Ordinary)	Safeguards		
		B	S	R
MS1: sharp edges and corners	Ordinary, Instructed, Skilled	N/A	N/A	N/A
MS1: Equipment mass	Ordinary, Instructed, Skilled	N/A	N/A	N/A
9	Thermal burn			
Class and Energy Source (e.g. TS1: Keyboard caps)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
TS3: Internal components	Ordinary, Instructed, Skilled	N/A	N/A	Considered in end system
10	Radiation			
Class and Energy Source (e.g. RS1: PMP sound output)	Body Part (e.g., Ordinary)	Safeguards		
		B	S	R
N/A	N/A	N/A	N/A	N/A
Supplementary Information:				
“B” – Basic Safeguard; “S” – Supplementary Safeguard; “R” – Reinforced Safeguard				

ENERGY SOURCE DIAGRAM
Optional. Manufacturers are to provide the energy sources diagram identify declared energy sources and identifying the demarcations are between power sources. Recommend diagram be provided included in power supply and multipart systems. Insert diagram below. Example diagram designs are; Block diagrams; image(s) with layered data; mechanical drawings
☐ **ES** ☐ **PS** ☐ **MS** ☐ **TS** ☐ **RS**

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

4	**GENERAL REQUIREMENTS**		Pass
4.1.1	Acceptance of materials, components and subassemblies	(See appended table 4.1.2.)	Pass
4.1.2	Use of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 62368-1.	Pass
4.1.3	Equipment design and construction	Equipment is adequately designed and constructed.	Pass
4.1.4	Specified ambient temperature for outdoor use (°C) .....:	not outdoor equipment	N/A
4.1.5	Constructions and components not specifically covered		N/A
4.1.8	Liquids and liquid filled components (LFC)	No such components	N/A
4.1.15	Markings and instructions	See Annex F.	Pass
4.4.3	Safeguard robustness		Pass
4.4.3.1	General		Pass
4.4.3.2	Steady force tests	See Annex T.2	Pass
4.4.3.3	Drop tests		N/A
4.4.3.4	Impact tests		N/A
4.4.3.5	Internal accessible safeguard tests		N/A
4.4.3.6	Glass impact tests		N/A
4.4.3.7	Glass fixation tests		N/A
	Glass impact test (1J)		N/A
	Push/pull test (10 N)		N/A
4.4.3.8	Thermoplastic material tests	Potting barrier as separator for input circuit to earth stand off	Pass
4.4.3.9	Air comprising a safeguard		Pass
4.4.3.10	Accessibility, glass, safeguard effectiveness	All safeguards remain effective.	Pass
4.4.4	Displacement of a safeguard by an insulating liquid		N/A
4.4.5	Safety interlocks		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.5	**Explosion**		Pass
4.5.1	General		Pass
4.5.2	No explosion during normal/abnormal operating condition	See Clause B.2, B.3.	Pass
	No harm by explosion during single fault conditions	See Clause B.4.	Pass
4.6	**Fixing of conductors**		Pass
	Fix conductors not to defeat a safeguard		Pass
	Compliance is checked by test ..... :	See Annex T.2.	Pass
4.7	**Equipment for direct insertion into mains socket–outlets**		N/A
4.7.2	Mains plug part complies with relevant standard .. :	Not such equipment	N/A
4.7.3	Torque (Nm) ..... :		N/A
4.8	**Equipment containing coin/button cell batteries**		N/A
4.8.1	General		N/A
4.8.2	Instructional safeguard ..... :		N/A
4.8.3	Battery compartment door/cover construction		N/A
	Open torque test		N/A
4.8.4.2	Stress relief test		N/A
4.8.4.3	Battery replacement test		N/A
4.8.4.4	Drop test		N/A
4.8.4.5	Impact test		N/A
4.8.4.6	Crush test		N/A
4.8.5	Compliance		N/A
	30N force test with test probe		N/A
	20N force test with test hook		N/A
4.9	**Likelihood of fire or shock due to entry of conductive object**	Built-in component, considered in end system	N/A
4.10	**Component requirements**		Pass
4.10.1	Disconnect Device		N/A
4.10.2	Switches and relays		N/A
5	**ELECTRICALLY-CAUSED INJURY**		Pass
5.2	**Classification and limits of electrical energy sources**		Pass
5.2.2	ES1, ES2 and ES3 limits		Pass

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.2.2.2	Steady-state voltage and current limits .....:	(See appended table 5.2)	Pass
5.2.2.3	Capacitance limits .....:		N/A
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**		Pass
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		Pass
5.3.1 a)	Accessible ES1/ES2 derived from ES2/ES3 circuits		Pass
5.3.1 b)	Skilled persons not unintentional contact ES3 bare conductors	considered in end system.	N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		Pass
	Accessibility to outdoor equipment bare parts	Not intend to outdoor used.	N/A
5.3.2.2	Contact requirements		N/A
	Test with test probe from Annex V		—
5.3.2.2 a)	Air gap – electric strength test potential (V) .....:		N/A
5.3.2.2 b)	Air gap – distance (mm) .....:		N/A
5.3.2.3	Compliance		N/A
5.3.2.4	Terminals for connecting stripped wire	considered in end system.	N/A
5.4	**Insulation materials and requirements**		Pass
5.4.1.2	Properties of insulating material	Insulating material complied with cl. 5, No hygroscopic material.	Pass
5.4.1.3	Material is non-hygroscopic	Refer to Cl. 5.4.8	Pass
5.4.1.4	Maximum operating temperature for insulating materials .....:	(See appended table 5.4.1.4)	Pass
5.4.1.5	Pollution degrees .....:	PD1 for potting/coating area, PD2 for other area	Pass
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	for potting material, and coating material	Pass
5.4.1.5.3	Thermal cycling test		Pass
5.4.1.6	Insulation in transformers with varying dimensions	No such part.	N/A
5.4.1.7	Insulation in circuits generating starting pulses	No such part.	N/A
5.4.1.8	Determination of working voltage .....:	(See appended table 5.4.1.8)	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat test.....:		N/A
5.4.1.10.3	Ball pressure test .....:		N/A
5.4.2	Clearances	Complied in PSUs	Pass
5.4.2.1	General requirements		Pass
	Clearances in circuits connected to AC Mains, Alternative method		N/A
5.4.2.2	Procedure 1 for determining clearance	Assumed to be 2500Vpeak	Pass
	Temporary overvoltage .....:		—
5.4.2.3	Procedure 2 for determining clearance	Assumed to be 2500Vpeak	Pass
5.4.2.3.2.2	a.c. mains transient voltage.....:		—
5.4.2.3.2.3	d.c. mains transient voltage .....:	Assumed to be 2500Vpeak	—
5.4.2.3.2.4	External circuit transient voltage.....:		—
5.4.2.3.2.5	Transient voltage determined by measurement .....:		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test .....:		N/A
5.4.2.5	Multiplication factors for clearances and test voltages .....:	Factor 1.15 for 3048m altitude	Pass
5.4.2.6	Clearance measurement .....:	(See appended table 5.4.2)	Pass
5.4.3	Creepage distances		Pass
5.4.3.1	General		Pass
5.4.3.3	Material group .....:	Assumed to be IIIb	—
5.4.3.4	Creepage distances measurement .....:	(See appended table 5.4.3)	Pass
5.4.4	Solid insulation		Pass
5.4.4.1	General requirements		Pass
5.4.4.2	Minimum distance through insulation .....:	(See appended table 5.4.4.2)	Pass
5.4.4.3	Insulating compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices	approved isolated IC used	Pass
5.4.4.5	Insulating compound forming cemented joints	for multiple layers PCB	Pass
5.4.4.6	Thin sheet material		Pass
5.4.4.6.1	General requirements		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.4.6.2	Separable thin sheet material		Pass
	Number of layers (pcs) .....:	one layer for basic insulation	Pass
5.4.4.6.3	Non-separable thin sheet material		N/A
	Number of layers (pcs) .....:		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....:		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components	planar transformer	Pass
5.4.4.9	Solid insulation at frequencies >30 kHz, E_P, K_R, d, V_{PW} (V) .....:	(See appended Table 5.4.4.9)	Pass
	Alternative by electric strength test, tested voltage (V), K_R .....:	(See appended Tables 5.4.4.9 and 5.4.9)	Pass
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
5.4.5.3	Insulation resistance (MΩ).....:		N/A
	Electric strength test.....:		N/A
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints	for multiple layers PCB	Pass
5.4.8	Humidity conditioning		Pass
	Relative humidity (%), temperature (°C), duration (h).....:	93%RH, 40°C, 120h	—
5.4.9	Electric strength test	(See appended table 5.4.9)	Pass
5.4.9.1	Test procedure for type test of solid insulation.....:	(See appended table 5.4.9)	Pass
5.4.9.2	Test procedure for routine test		N/A
5.4.10	Safeguards against transient voltages from external circuits	No such external circuits.	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....:		N/A
5.4.10.2.3	Steady-state test.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.10.3	Verification for insulation breakdown for impulse test ..... :		N/A
5.4.11	Separation between external circuits and earth		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	SPDs bridge separation between external circuit and earth		N/A
	Rated operating voltage U_{op} (V) ..... :		—
	Nominal voltage U_{peak} (V) ..... :		—
	Max increase due to variation ΔU_{sp} ..... :		—
	Max increase due to ageing ΔU_{sa} ..... :		—
5.4.11.3	Test method and compliance ..... :		N/A
5.4.12	Insulating liquid	No such parts.	N/A
5.4.12.1	General requirements		N/A
5.4.12.2	Electric strength of an insulating liquid ..... :		N/A
5.4.12.3	Compatibility of an insulating liquid ..... :		N/A
5.4.12.4	Container for insulating liquid ..... :		N/A
5.5	**Components as safeguards**		Pass
5.5.1	General		Pass
5.5.2	Capacitors and RC units		Pass
5.5.2.1	General requirement		Pass
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector ..... :		N/A
5.5.3	Transformers	planar transformer	Pass
5.5.4	Optocouplers	(See sub-clause 5.4 or Clause G.12)	Pass
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPDs		N/A
5.5.8	Insulation between the mains and an external circuit consisting of a coaxial cable ..... :		N/A
5.5.9	Safeguards for socket-outlets in outdoor equipment		N/A
	RCD rated residual operating current (mA) ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
5.6	**Protective conductor**		N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements	Considered in end system	N/A
5.6.2.2	Colour of insulation		N/A
5.6.3	Requirement for protective earthing conductors		N/A
	Protective earthing conductor size (mm^2) ..... :		—
	Protective earthing conductor serving as a reinforced safeguard		N/A
	Protective earthing conductor serving as a double safeguard		N/A
5.6.4	Requirements for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm^2). ..... :		—
5.6.4.2	Protective current rating (A)..... :		N/A
5.6.5	Terminals for protective conductors	just for system connection, not for conductor use terminals	N/A
5.6.5.1	Terminal size for connecting protective earthing conductors (mm)..... :		N/A
	Terminal size for connecting protective bonding conductors (mm) .....:		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective bonding system	considered in end system	N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method..... :		N/A
5.6.6.3	Resistance (Ω) or voltage drop..... :		N/A
5.6.7	Reliable connection of a protective earthing conductor	considered in end system	N/A
5.6.8	Functional earthing		N/A
	Conductor size (mm^2)..... :		N/A
	Class II with functional earthing marking ..... :		N/A
	Appliance inlet cl & cr (mm)..... :		N/A
5.7	**Prospective touch voltage, touch current and protective conductor current**		Pass
5.7.2	Measuring devices and networks		Pass
5.7.2.1	Measurement of touch current		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
5.7.2.2	Measurement of voltage	(See appended table 5.7.5)	Pass
5.7.3	Equipment set-up, supply connections and earth connections		Pass
5.7.4	Unearthed accessible parts ..... :	(See appended table 5.7.4)	Pass
5.7.5	Earthed accessible conductive parts ..... :	(See appended table 5.7.5)	Pass
5.7.6	Requirements when touch current exceeds ES2 limits		N/A
	Protective conductor current (mA)..... :		N/A
	Instructional Safeguard..... :		N/A
5.7.7	Prospective touch voltage and touch current associated with external circuits		N/A
5.7.7.1	Touch current from coaxial cables		N/A
5.7.7.2	Prospective touch voltage and touch current associated with paired conductor cables		N/A
5.7.8	Summation of touch currents from external circuits		N/A
	a) Equipment connected to earthed external circuits, current (mA)..... :		N/A
	b) Equipment connected to unearthed external circuits, current (mA)..... :		N/A
5.8	**Backfeed safeguard in battery backed up supplies**		N/A
	Mains terminal ES .....:		N/A
	Air gap (mm).....:		N/A
6	**ELECTRICALLY- CAUSED FIRE**		Pass
6.2	**Classification of PS and PIS**		Pass
6.2.2	Power source circuit classifications .....:	(See appended table 6.2.2)	Pass
6.2.3	Classification of potential ignition sources		Pass
6.2.3.1	Arcing PIS .....:	(See appended table 6.2.3.1)	Pass
6.2.3.2	Resistive PIS .....:	(See appended table 6.2.3.2)	Pass
6.3	**Safeguards against fire under normal operating and abnormal operating conditions**		Pass
6.3.1	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials..... :	(See appended table B.1.5 and B.3)	Pass
	Combustible materials outside fire enclosure .....:	Built-in component, considered in end system	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4	**Safeguards against fire under single fault conditions**		Pass
6.4.1	Safeguard method	Method 2: Control fire spread considered	Pass
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	Supplementary safeguards		N/A
6.4.3.2	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		Pass
6.4.5.2	Supplementary safeguards	(See appended tables 4.1.2 and Annex G)	Pass
6.4.6	Control of fire spread in PS3 circuits	- V-0 PCB used; - All other components: at least V-2/VTM-2 except for mounted on min. V-1 material or small parts of combustible material. Fire enclosure shall be provided in end system.	Pass
6.4.7	Separation of combustible materials from a PIS		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		N/A
6.4.8.2	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.4	Bottom openings and properties		N/A
	Openings dimensions (mm)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Flammability tests for the bottom of a fire enclosure		N/A
	Instructional Safeguard .....:		N/A
6.4.8.3.5	Side openings and properties		N/A
	Openings dimensions (mm)..... :		N/A
6.4.8.3.6	Integrity of a fire enclosure, condition met: a), b) or c)..... :		N/A
6.4.8.4	Separation of a PIS from a fire enclosure and a fire barrier distance (mm) or flammability rating ..... :		N/A
6.4.9	Flammability of insulating liquid.....:		N/A
6.5	**Internal and external wiring**		N/A
6.5.1	General requirements		N/A
6.5.2	Requirements for interconnection to building wiring ..... :		N/A
6.5.3	Internal wiring size (mm^2) for socket-outlets..... :		N/A
6.6	**Safeguards against fire due to the connection to additional equipment**		N/A
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		N/A
7.2	**Reduction of exposure to hazardous substances**		N/A
7.3	**Ozone exposure**		N/A
7.4	**Use of personal safeguards or personal protective equipment (PPE)**		N/A
	Personal safeguards and instructions ..... :		—
7.5	**Use of instructional safeguards and instructions**		N/A
	Instructional safeguard (ISO 7010)..... :		—
7.6	**Batteries and their protection circuits**		N/A
8	**MECHANICALLY-CAUSED INJURY**		Pass
8.2	**Mechanical energy source classifications**		Pass
8.3	**Safeguards against mechanical energy sources**		N/A
8.4	**Safeguards against parts with sharp edges and corners**		N/A
8.4.1	Safeguards		N/A
	Instructional Safeguard .....:		N/A
8.4.2	Sharp edges or corners		N/A
8.5	**Safeguards against moving parts**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.5.1	Fingers, jewellery, clothing, hair, etc., contact with MS2 or MS3 parts		N/A
	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
	Moving MS3 parts only accessible to skilled person		N/A
8.5.2	Instructional safeguard.....:		N/A
8.5.4	Special categories of equipment containing moving parts		N/A
8.5.4.1	General		N/A
8.5.4.2	Equipment containing work cells with MS3 parts		N/A
8.5.4.2.1	Protection of persons in the work cell		N/A
8.5.4.2.2	Access protection override		N/A
8.5.4.2.2.1	Override system		N/A
8.5.4.2.2.2	Visual indicator		N/A
8.5.4.2.3	Emergency stop system		N/A
	Maximum stopping distance from the point of activation (m).....:		N/A
	Space between end point and nearest fixed mechanical part (mm) .....:		N/A
8.5.4.2.4	Endurance requirements		N/A
	Mechanical system subjected to 100 000 cycles of operation		N/A
	- Mechanical function check and visual inspection		N/A
	- Cable assembly .....:		N/A
8.5.4.3	Equipment having electromechanical device for destruction of media		N/A
8.5.4.3.1	Equipment safeguards		N/A
8.5.4.3.2	Instructional safeguards against moving parts.....:		N/A
8.5.4.3.3	Disconnection from the supply		N/A
8.5.4.3.4	Cut type and test force (N).....:		N/A
8.5.4.3.5	Compliance		N/A
8.5.5	High pressure lamps	No high pressure lamps	N/A
	Explosion test.....:		N/A
8.5.5.3	Glass particles dimensions (mm) .....:		N/A
8.6	**Stability of equipment**		N/A
8.6.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructional safeguard.....:		N/A
8.6.2	Static stability		N/A
8.6.2.2	Static stability test.....:		N/A
8.6.2.3	Downward force test		N/A
8.6.3	Relocation stability		N/A
	Wheels diameter (mm).....:		—
	Tilt test		N/A
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test .....:		N/A
8.7	**Equipment mounted to wall, ceiling or other structure**		N/A
8.7.1	Mount means type.....:		N/A
8.7.2	Test methods		N/A
	Test 1, additional downwards force (N).....:		N/A
	Test 2, number of attachment points and test force (N).....:		N/A
	Test 3 Nominal diameter (mm) and applied torque (Nm).....:		N/A
8.8	**Handles strength**		N/A
8.8.1	General		N/A
8.8.2	Handle strength test		N/A
	Number of handles.....:		—
	Force applied (N) .....:		—
8.9	**Wheels or casters attachment requirements**		N/A
8.9.2	Pull test		N/A
8.10	**Carts, stands and similar carriers**		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions .....:		N/A
8.10.3	Cart, stand or carrier loading test		N/A
	Loading force applied (N) .....:		N/A
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Force applied (N) .....:		—
8.10.6	Thermoplastic temperature stability		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.11	**Mounting means for slide-rail mounted equipment (SRME)**		N/A
8.11.1	General		N/A
8.11.2	Requirements for slide rails		N/A
	Instructional Safeguard.....:		N/A
8.11.3	Mechanical strength test		N/A
8.11.3.1	Downward force test, force (N) applied.....:		N/A
8.11.3.2	Lateral push force test		N/A
8.11.3.3	Integrity of slide rail end stops		N/A
8.11.4	Compliance		N/A
8.12	**Telescoping or rod antennas**		N/A
	Button/ball diameter (mm) .....:		—
9	**THERMAL BURN INJURY**		N/A
9.2	**Thermal energy source classifications**		N/A
9.3	**Touch temperature limits**		N/A
9.3.1	Touch temperatures of accessible parts .....:		N/A
9.3.2	Test method and compliance		N/A
9.4	**Safeguards against thermal energy sources**		N/A
9.5	**Requirements for safeguards**		N/A
9.5.1	Equipment safeguard		N/A
9.5.2	Instructional safeguard.....:		N/A
9.6	**Requirements for wireless power transmitters**		N/A
9.6.1	General		N/A
9.6.2	Specification of the foreign objects		N/A
9.6.3	Test method and compliance .....:		N/A
10	**RADIATION**		N/A
10.2	**Radiation energy source classification**		N/A
10.2.1	General classification		N/A
	Lasers ..... :		—
	Lamps and lamp systems ..... :		—
	Image projectors ..... :		—
	X-Ray ..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Personal music player ..... :		—
10.3	**Safeguards against laser radiation**		N/A
	The standard(s) equipment containing laser(s) comply .....:		N/A
10.4	**Safeguards against optical radiation from lamps and lamp systems (including LED types)**		N/A
10.4.1	General requirements		N/A
	Instructional safeguard provided for accessible radiation level needs to exceed		N/A
	Risk group marking and location .....:		N/A
	Information for safe operation and installation		N/A
10.4.2	Requirements for enclosures		N/A
	UV radiation exposure .....:		N/A
10.4.3	Instructional safeguard ..... :		N/A
10.5	**Safeguards against X-radiation**		N/A
10.5.1	Requirements		N/A
	Instructional safeguard for skilled persons ..... :		—
10.5.3	Maximum radiation (pA/kg)..... :	(See appended tables B.3 & B.4)	—
10.6	**Safeguards against acoustic energy sources**		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output $L_{Aeq,T}$, dB(A).....:		N/A
	Unweighted RMS output voltage (mV).....:		N/A
	Digital output signal (dBFS).....:		N/A
10.6.3	Requirements for dose-based systems		N/A
10.6.3.1	General requirements		N/A
10.6.3.2	Dose-based warning and automatic decrease		N/A
10.6.3.3	Exposure-based warning and requirements		N/A
	30 s integrated exposure level (MEL30) .....:		N/A
	Warning for MEL ≥ 100 dB(A) .....:		N/A
10.6.4	Measurement methods		N/A
10.6.5	Protection of persons		N/A
	Instructional safeguards..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.6	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.6.1	Corded listening devices with analogue input		N/A
	Listening device input voltage (mV)..... :		N/A
10.6.6.2	Corded listening devices with digital input		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) .....:		N/A
10.6.6.3	Cordless listening devices		N/A
	Max. acoustic output $L_{Aeq,T}$, dB(A) .....:		N/A
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		Pass
B.1	**General**		Pass
B.1.5	Temperature measurement conditions	(See appended table B.1.5)	Pass
B.2	**Normal operating conditions**		Pass
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	Pass
	Audio Amplifiers and equipment with audio amplifiers ..... :		N/A
B.2.3	Supply voltage and tolerances	see cover page	Pass
B.2.5	Input test ..... :	(See appended table B.2.5)	Pass
B.3	**Simulated abnormal operating conditions**		Pass
B.3.1	General		Pass
B.3.2	Covering of ventilation openings		N/A
	Instructional safeguard ..... :		N/A
B.3.3	DC mains polarity test		Pass
B.3.4	Setting of voltage selector	No voltage selector.	N/A
B.3.5	Maximum load at output terminals	(See appended table B.3)	Pass
B.3.6	Reverse battery polarity	No battery.	N/A
B.3.7	Audio amplifier abnormal operating conditions	No audio amplifier.	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions..... :	(See appended table B.3)	Pass
B.4	**Simulated single fault conditions**		Pass
B.4.1	General		Pass
B.4.2	Temperature controlling device	No such device.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.3	Blocked motor test		N/A
B.4.4	Functional insulation		Pass
B.4.4.1	Short circuit of clearances for functional insulation	See appended table B.4.	Pass
B.4.4.2	Short circuit of creepage distances for functional insulation		Pass
B.4.4.3	Short circuit of functional insulation on coated printed boards		Pass
B.4.5	Short-circuit and interruption of electrodes in tubes and semiconductors		Pass
B.4.6	Short circuit or disconnection of passive components	(see appended table B.4)	Pass
B.4.7	Continuous operation of components		N/A
B.4.8	Compliance during and after single fault conditions ..... :	(See appended table B.4)	Pass
B.4.9	Battery charging and discharging under single fault conditions	No battery	N/A
C	**UV RADIATION**		N/A
C.1	**Protection of materials in equipment from UV radiation**		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	**UV light conditioning test**		N/A
C.2.1	Test apparatus..... :		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure test		N/A
C.2.4	Xenon-arc light-exposure test		N/A
D	**TEST GENERATORS**		N/A
D.1	**Impulse test generators**		N/A
D.2	**Antenna interface test generator**		N/A
D.3	**Electronic pulse generator**		N/A
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N/A
E.1	**Electrical energy source classification for audio signals**		N/A
	Maximum non-clipped output power (W)..... :		—
	Rated load impedance (Ω) ..... :		—
	Open-circuit output voltage (V)..... :		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Instructional safeguard ..... :		—
E.2	**Audio amplifier normal operating conditions**		N/A
	Audio signal source type..... :		—
	Audio output power (W) ..... :		—
	Audio output voltage (V) ..... :		—
	Rated load impedance (Ω) ..... :		—
	Requirements for temperature measurement		N/A
E.3	Audio amplifier abnormal operating conditions		N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		Pass
F.1	**General**		Pass
	Language ..... :	english	—
F.2	**Letter symbols and graphical symbols**		Pass
F.2.1	Letter symbols according to IEC60027-1	Letter symbols for quantities and units are compliant with IEC 60027-1.	Pass
F.2.2	Graphic symbols according to IEC, ISO or manufacturer specific	Graphic symbols are compliant with IEC 60417 or ISO 3864-2 or ISO 7000.	Pass
F.3	**Equipment markings**		Pass
F.3.1	Equipment marking locations	subassembly	Pass
F.3.2	Equipment identification markings	subassembly	Pass
F.3.2.1	Manufacturer identification ..... :	subassembly	Pass
F.3.2.2	Model identification ..... :	See model label	Pass
F.3.3	Equipment rating markings	provided in instruction manual	Pass
F.3.3.1	Equipment with direct connection to mains		N/A
F.3.3.2	Equipment without direct connection to mains		Pass
F.3.3.3	Nature of the supply voltage..... :	provided in instruction manual	Pass
F.3.3.4	Rated voltage..... :	provided in instruction manual	Pass
F.3.3.5	Rated frequency ..... :	-	N/A
F.3.3.6	Rated current or rated power..... :	provided in instruction manual	Pass
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device	No such device	N/A
F.3.5	Terminals and operating devices		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.5.1	Mains appliance outlet and socket-outlet markings ..... :	No outlet.	N/A
F.3.5.2	Switch position identification marking..... :	No switch.	N/A
F.3.5.3	Replacement fuse identification and rating markings ..... :		N/A
	Instructional safeguards for neutral fuse ..... :		N/A
F.3.5.4	Replacement battery identification marking..... :	No battery.	N/A
F.3.5.5	Neutral conductor terminal		N/A
F.3.5.6	Terminal marking location		N/A
F.3.6	Equipment markings related to equipment classification		Pass
F.3.6.1	Class I equipment	Considered in end system.	Pass
F.3.6.1.1	Protective earthing conductor terminal ..... :		N/A
F.3.6.1.2	Protective bonding conductor terminals ..... :		N/A
F.3.6.2	Equipment class marking..... :		N/A
F.3.6.3	Functional earthing terminal marking ..... :		N/A
F.3.7	Equipment IP rating marking ..... :	IPX0, no marking is needed.	N/A
F.3.8	External power supply output marking ..... :		N/A
F.3.9	Durability, legibility and permanence of marking		N/A
F.3.10	Test for permanence of markings		N/A
F.4	**Instructions**		Pass
	a) Information prior to installation and initial use		Pass
	b) Equipment for use in locations where children not likely to be present		Pass
	c) Instructions for installation and interconnection		Pass
	d) Equipment intended for use only in restricted access area		N/A
	e) Equipment intended to be fastened in place		N/A
	f) Instructions for audio equipment terminals		N/A
	g) Protective earthing used as a safeguard		Pass
	h) Protective conductor current exceeding ES2 limits		N/A
	i) Graphic symbols used on equipment		N/A
	j) Permanently connected equipment not provided with all-pole mains switch		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	k) Replaceable components or modules providing safeguard function		N/A
	l) Equipment containing insulating liquid		N/A
	m) Installation instructions for outdoor equipment		N/A
F.5	Instructional safeguards		N/A
G	**COMPONENTS**		Pass
G.1	**Switches**		N/A
G.1.1	General	No switch	N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.1.3	Test method and compliance		N/A
G.2	**Relays**		N/A
G.2.1	Requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supplying power to other equipment		N/A
G.2.4	Test method and compliance		N/A
G.3	**Protective devices**		N/A
G.3.1	Thermal cut-offs	No thermal cut-offs	N/A
	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Test method and compliance		N/A
G.3.2	Thermal links	No thermal links.	N/A
G.3.2.1	a) Thermal links tested separately according to IEC 60691 with specifics		N/A
	b) Thermal links tested as part of the equipment		N/A
G.3.2.2	Test method and compliance		N/A
G.3.3	PTC thermistors	No PTC thermistor.	N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.4		N/A
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.4	**Connectors**		N/A
G.4.1	Spacings		N/A
G.4.2	Mains connector configuration ..... :		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound components**		Pass
G.5.1	Wire insulation in wound components	(See Annex J)	N/A
G.5.1.2	Protection against mechanical stress		N/A
G.5.2	Endurance test		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Test time (days per cycle) ..... :		—
	Test temperature (°C) ..... :		—
G.5.2.3	Wound components supplied from the mains		N/A
G.5.2.4	No insulation breakdown		N/A
G.5.3	Transformers	planar transformer, similar tests considered	Pass
G.5.3.1	Compliance method ..... :	meet the requirements given in G.5.3.2 and G.5.3.3	Pass
	Position ..... :	Isolation planar transformer	Pass
	Method of protection ..... :	see G.5.3.3	Pass
G.5.3.2	Insulation		Pass
	Protection from displacement of windings ..... :	See Transformer spec	—
G.5.3.3	Transformer overload tests	(See appended table B.3)	Pass
G.5.3.3.1	Test conditions		Pass
G.5.3.3.2	Winding temperatures		Pass
G.5.3.3.3	Winding temperatures - alternative test method		N/A
G.5.3.4	Transformers using FIW	FIW not used.	N/A
G.5.3.4.1	General		N/A
	FIW wire nominal diameter ..... :		—
G.5.3.4.2	Transformers with basic insulation only		N/A
G.5.3.4.3	Transformers with double insulation or reinforced insulation ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.4.4	Transformers with FIW wound on metal or ferrite core		N/A
G.5.3.4.5	Thermal cycling test and compliance		N/A
G.5.3.4.6	Partial discharge test		N/A
G.5.3.4.7	Routine test		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
G.5.4.2	Motor overload test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4.2	Locked-rotor overload test		N/A
	Test duration (days) ..... :		—
G.5.4.5	Running overload test for DC motors		N/A
G.5.4.5.2	Tested in the unit		N/A
G.5.4.5.3	Alternative method		N/A
G.5.4.6	Locked-rotor overload test for DC motors		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature ..... :		N/A
G.5.4.6.3	Alternative method		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage ..... :		—
G.6	**Wire Insulation**		N/A
G.6.1	General	functional insulation only	N/A
G.6.2	Enamelled winding wire insulation		N/A
G.7	**Mains supply cords**		N/A
G.7.1	General requirements	No such cords provided.	N/A
	Type ..... :		—
G.7.2	Cross sectional area (mm^2 or AWG) ..... :		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

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Clause	Requirement + Test	Result - Remark	Verdict
	Strain relief test force (N)..... :		N/A
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ..... :		N/A
G.7.3.2.4	Strain relief and cord anchorage material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Test method and compliance		N/A
	Overall diameter or minor overall dimension, *D* (mm)..... :		—
	Radius of curvature after test (mm) ..... :		—
G.7.6	Supply wiring space		N/A
G.7.6.1	General requirements		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Requirements		N/A
G.7.6.2.2	Test with 8 mm strand		N/A
G.8	**Varistors**		N/A
G.8.1	General requirements		N/A
G.8.2	Safeguards against fire		N/A
G.8.2.1	General		N/A
G.8.2.2	Varistor overload test		N/A
G.8.2.3	Temporary overvoltage test		N/A
G.9	**Integrated circuit (IC) current limiters**		N/A
G.9.1	Requirements	No such parts.	N/A
	IC limiter output current (max. 5A)..... :		—
	Manufacturers' defined drift ..... :		—
G.9.2	Test Program		N/A
G.9.3	Compliance		N/A
G.10	**Resistors**		N/A
G.10.1	General		N/A
G.10.2	Conditioning		N/A
G.10.3	Resistor test		N/A
G.10.4	Voltage surge test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.10.5	Impulse test		N/A
G.10.6	Overload test		N/A
G.11	**Capacitors and RC units**		Pass
G.11.1	General requirements	(See appended table 4.1.2)	Pass
G.11.2	Conditioning of capacitors and RC units		Pass
G.11.3	Rules for selecting capacitors		Pass
G.12	**Optocouplers**		Pass
	Optocouplers comply with IEC 60747-5-5 with specifics	(See appended table 4.1.2)	Pass
	Type test voltage $V_{ini,a}$ ..... :	Complied	—
	Routine test voltage, $V_{ini,b}$ ..... :	Complied	—
G.13	**Printed boards**		Pass
G.13.1	General requirements		Pass
G.13.2	Uncoated printed boards		Pass
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		Pass
G.13.5	Insulation between conductors on different surfaces		Pass
	Distance through insulation ..... :	Complied	Pass
	Number of insulation layers (pcs) ..... :	Min. 3 layers	—
G.13.6	Tests on coated printed boards	PD1 considered	N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2	Test method and compliance		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements ..... :		N/A
G.15	**Pressurized liquid filled components**		N/A
G.15.1	Requirements		N/A
G.15.2	Test methods and compliance		N/A
G.15.2.1	Hydrostatic pressure test		N/A
G.15.2.2	Creep resistance test		N/A
G.15.2.3	Tubing and fittings compatibility test		N/A
G.15.2.4	Vibration test		N/A
G.15.2.5	Thermal cycling test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.15.2.6	Force test		N/A
G.15.3	Compliance		N/A
G.16	**IC including capacitor discharge function (ICX)**		N/A
G.16.1	Condition for fault tested is not required	No such parts.	N/A
	ICX with associated circuitry tested in equipment		N/A
	ICX tested separately		N/A
G.16.2	Tests		N/A
	Smallest capacitance and smallest resistance specified by ICX manufacturer for impulse test ..... :		—
	Mains voltage that impulses to be superimposed on ..... :		—
	Largest capacitance and smallest resistance for ICX tested by itself for 10000 cycles test..... :		—
G.16.3	Capacitor discharge test ..... :		N/A
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N/A
H.1	**General**		N/A
H.2	**Method A**		N/A
H.3	**Method B**		N/A
H.3.1	Ringing signal	No telephone ringing signals.	N/A
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault current (mA): ..... :		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		N/A
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N/A
J.1	**General**		N/A
	Winding wire insulation ..... :		—
	Solid round winding wire, diameter (mm) ..... :		N/A
	Solid square and rectangular (flatwise bending) winding wire, cross-sectional area (mm^2) ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
J.2/J.3	Tests and Manufacturing		—
K	**SAFETY INTERLOCKS**		N/A
K.1	**General requirements**		N/A
	Instructional safeguard ..... :	No such parts.	N/A
K.2	**Components of safety interlock safeguard mechanism**		N/A
K.3	**Inadvertent change of operating mode**		N/A
K.4	**Interlock safeguard override**		N/A
K.5	**Fail-safe**		N/A
K.5.1	Under single fault condition		N/A
K.6	**Mechanically operated safety interlocks**		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Test method and compliance ..... :		N/A
K.7	**Interlock circuit isolation**		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements		N/A
	In circuit connected to mains, separation distance for contact gaps (mm)..... :		N/A
	In circuit isolated from mains, separation distance for contact gaps (mm)..... :		N/A
	Electric strength test before and after the test of K.7.2..... :		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**		N/A
L.1	**General requirements**		N/A
L.2	**Permanently connected equipment**		N/A
L.3	**Parts that remain energized**		N/A
L.4	**Single-phase equipment**		N/A
L.5	**Three-phase equipment**		N/A
L.6	**Switches as disconnect devices**		N/A
L.7	**Plugs as disconnect devices**		N/A
L.8	**Multiple power sources**		N/A
	Instructional safeguard ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		N/A
M.1	**General requirements**		N/A
M.2	**Safety of batteries and their cells**		N/A
M.2.1	Batteries and their cells comply with relevant IEC standards ..... :	No batteries.	N/A
M.3	**Protection circuits for batteries provided within the equipment**		N/A
M.3.1	Requirements		N/A
M.3.2	Test method		N/A
	Overcharging of a rechargeable battery		N/A
	Excessive discharging		N/A
	Unintentional charging of a non-rechargeable battery		N/A
	Reverse charging of a rechargeable battery		N/A
M.3.3	Compliance		N/A
M.4	**Additional safeguards for equipment containing a portable secondary lithium battery**		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Requirements		N/A
M.4.2.2	Compliance ..... :		N/A
M.4.3	Fire enclosure ..... :		N/A
M.4.4	Drop test of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation and procedure for the drop test		N/A
M.4.4.3	Drop, Voltage on reference and dropped batteries (V); voltage difference during 24 h period (%): ..... :		N/A
M.4.4.4	Check of the charge/discharge function		N/A
M.4.4.5	Charge / discharge cycle test		N/A
M.4.4.6	Compliance		N/A
M.5	**Risk of burn due to short-circuit during carrying**		N/A
M.5.1	Requirement		N/A
M.5.2	Test method and compliance		N/A
M.6	**Safeguards against short-circuits**		N/A
M.6.1	External and internal faults		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.6.2	Compliance		N/A
M.7	**Risk of explosion from lead acid and NiCd batteries**		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
	Calculated hydrogen generation rate ..... :		N/A
M.7.2	Test method and compliance		N/A
	Minimum air flow rate, Q (m^3/h) ..... :		N/A
M.7.3	Ventilation tests		N/A
M.7.3.1	General		N/A
M.7.3.2	Ventilation test – alternative 1		N/A
	Hydrogen gas concentration (%) ..... :		N/A
M.7.3.3	Ventilation test – alternative 2		N/A
	Obtained hydrogen generation rate ..... :		N/A
M.7.3.4	Ventilation test – alternative 3		N/A
	Hydrogen gas concentration (%) ..... :		N/A
M.7.4	Marking ..... :		N/A
M.8	**Protection against internal ignition from external spark sources of batteries with aqueous electrolyte**		N/A
M.8.1	General		N/A
M.8.2	Test method		N/A
M.8.2.1	General		N/A
M.8.2.2	Estimation of hypothetical volume V_Z (m^3/s)..... :		—
M.8.2.3	Correction factors ..... :		—
M.8.2.4	Calculation of distance d (mm) ..... :		—
M.9	**Preventing electrolyte spillage**		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse		N/A
	Instructional safeguard ..... :		N/A
N	**ELECTROCHEMICAL POTENTIALS**		Pass
	Material(s) used ..... :	Considered	—

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Clause	Requirement + Test	Result - Remark	Verdict

O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		Pass
	Value of *X* (mm) ..... :	0.25 (for PD1 part), 1 (for PD2 part)	—
P	**SAFEGUARDS AGAINST CONDUCTIVE OBJECTS**		N/A
P.1	**General**		N/A
P.2	**Safeguards against entry or consequences of entry of a foreign object**		N/A
P.2.1	General		N/A
P.2.2	Safeguards against entry of a foreign object		N/A
	Location and Dimensions (mm) ..... :		—
P.2.3	Safeguards against the consequences of entry of a foreign object		N/A
P.2.3.1	Safeguard requirements		N/A
	The ES3 and PS3 keep-out volume in Figure P.3 not applicable to transportable equipment		N/A
	Transportable equipment with metalized plastic parts ..... :		N/A
P.2.3.2	Consequence of entry test ..... :		N/A
P.3	**Safeguards against spillage of internal liquids**		N/A
P.3.1	General	No internal liquids.	N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Compliance		N/A
P.4	**Metallized coatings and adhesives securing parts**		N/A
P.4.1	General		N/A
P.4.2	Tests		N/A
	Conditioning, T_C (°C) ..... :		—
	Duration (weeks) ..... :		—
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		N/A
Q.1	**Limited power sources**		N/A
Q.1.1	Requirements	Not evaluate for LPS.	N/A
	a) Inherently limited output		N/A
	b) Impedance limited output		N/A
	c) Regulating network limited output		N/A
	d) Overcurrent protective device limited output		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	e) IC current limiter complying with G.9		N/A
Q.1.2	Test method and compliance ..... :		N/A
	Current rating of overcurrent protective device (A) ..... :		N/A
Q.2	**Test for external circuits – paired conductor cable**	Not connect to external circuits.	N/A
	Maximum output current (A) ..... :		N/A
	Current limiting method..... :		—
R	**LIMITED SHORT CIRCUIT TEST**		N/A
R.1	**General**		N/A
R.2	**Test setup**		N/A
	Overcurrent protective device for test..... :		—
R.3	**Test method**		N/A
	Cord/cable used for test..... :		—
R.4	**Compliance**		N/A
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
S.1	**Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	**Flammability test for fire enclosure and fire barrier integrity**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
S.3	**Flammability test for the bottom of a fire enclosure**		N/A
S.3.1	Mounting of samples		N/A
S.3.2	Test method and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Mounting of samples ..... :		—
	Wall thickness (mm) ..... :		—
S.4	**Flammability classification of materials**		N/A
S.5	**Flammability test for fire enclosure materials of equipment with a steady state power exceeding 4 000 W**		N/A
	Samples, material ..... :		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
T	**MECHANICAL STRENGTH TESTS**		Pass
T.1	**General**		Pass
T.2	**Steady force test, 10 N ..... :**	(See appended table T.2)	Pass
T.3	**Steady force test, 30 N ..... :**		N/A
T.4	**Steady force test, 100 N ..... :**		N/A
T.5	**Steady force test, 250 N ..... :**		N/A
T.6	**Enclosure impact test**		N/A
	Fall test		N/A
	Swing test		N/A
T.7	**Drop test ..... :**		N/A
T.8	**Stress relief test..... :**	See appended table T.8	Pass
T.9	**Glass Impact Test .....:**		N/A
T.10	**Glass fragmentation test**		N/A
	Number of particles counted.....:		N/A
T.11	**Test for telescoping or rod antennas**		N/A
	Torque value (Nm) ..... :		N/A
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION**		N/A
U.1	**General**		N/A
	Instructional safeguard ..... :	No CRTs.	N/A
U.2	**Test method and compliance for non-intrinsically protected CRTs**		N/A
U.3	**Protective screen**		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS**		N/A
V.1	**Accessible parts of equipment**		N/A
V.1.1	General		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
V.1.2	Surfaces and openings tested with jointed test probes		N/A
V.1.3	Openings tested with straight unjointed test probes		N/A
V.1.4	Plugs, jacks, connectors tested with blunt probe		N/A
V.1.5	Slot openings tested with wedge probe		N/A
V.1.6	Terminals tested with rigid test wire		N/A
V.2	**Accessible part criterion**		N/A
X	**ALTERNATIVE METHOD FOR DETERMINING CLEARANCES FOR INSULATION IN CIRCUITS CONNECTED TO AN AC MAINS NOT EXCEEDING 420 V PEAK (300 V RMS)**		N/A
	Clearance .....:		N/A
Y	**CONSTRUCTION REQUIREMENTS FOR OUTDOOR ENCLOSURES**		N/A
Y.1	**General**	No such construction.	N/A
Y.2	**Resistance to UV radiation**		N/A
Y.3	**Resistance to corrosion**		N/A
Y.3.1	Metallic parts of outdoor enclosures are resistant to effects of water-borne contaminants by..... :		N/A
Y.3.2	Test apparatus		N/A
Y.3.3	Water – saturated sulphur dioxide atmosphere		N/A
Y.3.4	Test procedure ..... :		N/A
Y.3.5	Compliance		N/A
Y.4	**Gaskets**		N/A
Y.4.1	General		N/A
Y.4.2	Gasket tests		N/A
Y.4.3	Tensile strength and elongation tests		N/A
	Alternative test methods ..... :		N/A
Y.4.4	Compression test		N/A
Y.4.5	Oil resistance		N/A
Y.4.6	Securing means		N/A
Y.5	**Protection of equipment within an outdoor enclosure**		N/A
Y.5.1	General		N/A
Y.5.2	Protection from moisture		N/A
	Relevant tests of IEC 60529 or Y.5.3 ..... :		N/A
Y.5.3	Water spray test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Y.5.4	Protection from plants and vermin		N/A
Y.5.5	Protection from excessive dust		N/A
Y.5.5.1	General		N/A
Y.5.5.2	IP5X equipment		N/A
Y.5.5.3	IP6X equipment		N/A
Y.6	**Mechanical strength of enclosures**		N/A
Y.6.1	General		N/A
Y.6.2	Impact test ..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

5.2	**TABLE: Classification of electrical energy sources**						Pass
Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters				ES Class
			U (V)	I (mA)	Type[1)]	Additional Info [2)]	
420Vdc	All primary circuits	--	--	--	--	--	Declared ES3
420Vdc	50Vdc + to -	Normal	51.6V	--	SS	DC	ES1
*420Vdc	50Vdc + to -	Abnormal-maximum output load	51.5V	--	SS	DC	ES1
*420Vdc	50Vdc + to -	Single fault-T3 Pin 5-6	52.0V	--	SS	DC	ES1
420Vdc	50Vdc + to -	Single fault-Q5 D-S	0V	--	SS	DC	ES1
420Vdc	50Vdc + to -	Single fault-Q11 D-S	0V	--	SS	DC	ES1
420Vdc	50Vdc + to PE	Normal- Fig4	--	U2, mV: -128.4mVpk U2/500, mA: -0.257mApk	SS	276.243K	ES1
420Vdc	50Vdc + to PE	Earth loss, Fig5	--	U2, mV: -246.0mVpk U2/500, mA: -0.492mApk	SS	276.243K	ES1
420Vdc	50Vdc - to PE	Normal- Fig4	--	U2, mV: -104.4mVpk U2/500, mA: -0.210mApk	SS	276.243K	ES1
420Vdc	50Vdc - to PE	Earth loss, Fig5	--	U2, mV: -226.0mVpk U2/500, mA:	SS	276.243K	ES1

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Clause	Requirement + Test	Result - Remark	Verdict

				-0.452mApk			
*420Vdc	50Vdc output to PE	Abnormal-maximum output load, Fig4	--	U2, mV: -117.5mVpk U2/500, mA: -0.235 mApk	SS	276.243K	ES1
*420Vdc	50Vdc output to PE	Single fault-Q1 G-S, Fig4	--	U2, mV: -276.8mVpk U2/500, mA: -0.554 mApk	SS	276.243K	ES1
420Vdc	T1 Pin 3 – Pin 4	Normal	50.8V	--	SS	276.243K	ES2
420Vdc	T1 Pin3(after Q11) and Pin4	Normal	49.56V	--	SS	276.243K	ES2
420Vdc	T1 Pin3 and Pin4 (after Q5)	Normal	50.68V	--	SS	276.243K	ES2
420Vdc	T1 Pin3(after Q11) and Pin4 (after Q5)	Normal	52.36V	--	SS	DC	ES1
Supplementary information:							
1) Type: Steady state (SS), Capacitance (CP), Single pulse (SP), Repetitive pulses (RP), etc. 2) Additional Info: Frequency, Pulse duration, Pulse off time, Capacitance value, etc.							

5.4.1.8	**TABLE: Working voltage measurement**			Pass
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments
Input voltage: 420Vdc	--	--	--	--
T1 pin1 to pin 3	251.4	524.0	276.243K	--
pin1 to pin 4	284.3	564.0	276.243K	Max. voltage
pin2 to pin 3	296.3	439.2	276.243K	Max. voltage
pin2 to pin 4	262.4	388.8	276.243K	--
T1 pin1 to earth (earthed Baseplate)	287.2	574.0	276.243K	Max. voltage
pin2 to earth (earthed Baseplate)	297.0	441.6	276.243K	Max. voltage
T3 pin1 to pin 9	430.9	480.2	276.243K	--
pin1 to pin 10	430.4	477.4	276.243K	--

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Clause	Requirement + Test	Result - Remark	Verdict

pin1 to pin 11	429.6	516.6	276.243K	--
pin1 to pin 12	429.7	480.2	276.243K	--
T3 pin2 to pin 9	451.3	639.0	276.243K	Max. voltage
Pin2 to pin 10	450.2	635.4	276.243K	--
Pin2 to pin 11	446.6	621.0	276.243K	--
Pin2 to pin 12	449.8	635.4	276.243K	--
T3 pin3 to pin 9	17.25	-92.0	276.243K	--
Pin3 to pin 10	14.58	-84.8	276.243K	--
Pin3 to pin 11	8.086	54.4	276.243K	--
Pin3 to pin 12	14.53	-84.0	276.243K	--
T3 pin4 to pin 9	7.963	-49.2	276.243K	--
Pin4 to pin 10	7.523	-44.4	276.243K	--
Pin4 to pin 11	14.78	82.0	276.243K	--
Pin4 to pin 12	7.554	42.2	276.243K	--
T3 pin5 to pin 9	304.1	492.0	276.243K	--
Pin5 to pin 10	303.7	488.0	276.243K	--
Pin5 to pin 11	303.5	488.0	276.243K	--
Pin5 to pin 12	303.8	488.0	276.243K	--
T3 pin6 to pin 9	303.1	476.0	276.243K	--
Pin6 to pin 10	302.9	476.0	276.243K	--
Pin6 to pin 11	303.0	508.0	276.243K	--
Pin6 to pin 12	303.1	476.0	276.243K	--
T3 pin7 to pin 9	295.9	468.8	276.243K	--
Pin7 to pin 10	295.4	462.4	276.243K	--
Pin7 to pin 11	295.8	449.6	276.243K	--
Pin7 to pin 12	295.9	456.0	276.243K	--
T3 pin8 to pin 9	295.9	440.0	276.243K	--
Pin8 to pin 10	295.9	440.0	276.243K	--
Pin8 to pin 11	296.5	475.2	276.243K	--
Pin8 to pin 12	296.0	440.0	276.243K	--
T3 pin1 to earth (earthed Baseplate)	428.7	467.6	276.243K	--
Pin2 to earth (earthed Baseplate)	450.1	624.0	276.243K	Max. voltage
Pin3 to earth (earthed Baseplate)	14.73	-81.6	276.243K	--

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Clause	Requirement + Test	Result - Remark	Verdict

Pin4 to earth (earthed Baseplate)	7.916	37.4	276.243K	--
Pin5 to earth (earthed Baseplate)	304.4	291.4	276.243K	--
Pin6 to earth (earthed Baseplate)	304.3	469.0	276.243K	--
Pin7 to earth (earthed Baseplate)	295.7	462.4	276.243K	--
Pin8 to earth (earthed Baseplate)	295.7	440.0	276.243K	--
U1 pin 9 to pin 1	7.339	-47.0	276.243K	--
pin 9 to pin 2	7.96	44.6	276.243K	--
pin 9 to pin 3/8	7.96	-44.6	276.243K	--
pin 9 to pin 4/5	7.604	41.8	276.243K	--
U1 pin 10 to pin 1	9.941	-45.4	276.243K	--
pin 10 to pin 2	9.23	43.4	276.243K	--
pin 10 to pin 3/8	8.836	-45.4	276.243K	--
pin 10 to pin 4/5	10.15	-41.8	276.243K	--
U1 pin 11 to pin 1	13.85	53.6	276.243K	--
pin 11 to pin 2	14.29	54.8	276.243K	--
pin 11 to pin 3/8	12.28	49.2	276.243K	--
pin 11 to pin 4/5	14.98	53.6	276.243K	--
U1 pin 14 to pin 1	302.4	477.0	276.243K	--
pin 14 to pin 2	300.0	570.6	276.243K	Max. voltage
pin 14 to pin 3/8	304.2	472.8	276.243K	--
pin 14 to pin 4/5	306.4	477.6	276.243K	--
U1 pin 15 to pin 1	311.0	480.2	276.243K	--
pin 15 to pin 2	311.7	533.4	276.243K	--
pin 15 to pin 3/8	310.1	469.0	276.243K	--
pin 15 to pin 4/5	312.5	474.6	276.243K	--
U1 pin 16 to pin 1	311.1	488.0	276.243K	--
pin 16 to pin 2	311.0	558.4	276.243K	--
pin 16 to pin 3/8	311.6	483.0	276.243K	--
pin 16 to pin 4/5	314.2	485.8	276.243K	Max. voltage
U2 pin 9 to pin 1	8.055	45.6	276.243K	--
pin 9 to pin 2	6.962	43.2	276.243K	--
pin 9 to pin 3/8	8.265	-45.6	276.243K	--
pin 9 to pin 4/5	7.463	42.4	276.243K	--

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Clause	Requirement + Test	Result - Remark	Verdict

U2 pin 10 to pin 1	12.6	42.4	276.243K	--
pin 10 to pin 2	10.73	41.2	276.243K	--
pin 10 to pin 3/8	11.23	-45.2	276.243K	--
pin 10 to pin 4/5	12.38	41.2	276.243K	--
U2 pin 11 to pin 1	14.27	56.8	276.243K	--
pin 11 to pin 2	13.81	53.6	276.243K	--
pin 11 to pin 3/8	12.64	53.2	276.243K	--
pin 11 to pin 4/5	15.15	55.2	276.243K	--
U2 pin 14 to pin 1	295.6	435.4	276.243K	--
pin 14 to pin 2	296.8	441.0	276.243K	--
pin 14 to pin 3/8	296.0	438.0	276.243K	--
pin 14 to pin 4/5	298.3	440.4	276.243K	--
U2 pin 15 to pin 1	303.8	450.0	276.243K	--
pin 15 to pin 2	305.4	454.8	276.243K	--
pin 15 to pin 3/8	303.9	452.4	276.243K	--
pin 15 to pin 4/5	306.2	457.2	276.243K	Max. voltage
U2 pin 16 to pin 1	305.7	450.0	276.243K	--
pin 16 to pin 2	307.3	452.4	276.243K	--
pin 16 to pin 3/8	305.0	450.0	276.243K	--
pin 16 to pin 4/5	307.4	452.4	276.243K	Max. voltage
*U1201 pin3 to pin1	5.804	118.2	276.243K	Max. voltage
*Pin3 to pin2	4.923	-129.0	276.243K	--
Pin4 to pin1	5.026	112.8	276.243K	--
Pin4 to pin2	4.154	-132.0	276.243K	Max. voltage
Q1 Pin D to Pin S	--	--	276.243K	--
Input voltage: 350Vdc	--	--	--	--
T1 pin1 to pin 4	266.3	442.4	276.243K	--
Pin2 to pin 3	248.1	369.6	276.243K	--
T1 pin1 to earth (earthed Baseplate)	265.9	442.4	276.243K	--
pin2 to earth (earthed Baseplate)	249.5	366.0	276.243K	--
T3 pin2 to pin 9	379.0	544.0	276.243K	--
T3 pin2 to earth (earthed Baseplate)	379.4	540.0	276.243K	--
U1 pin 14 to pin 2	251.4	392.0	276.243K	--

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Clause	Requirement + Test	Result - Remark	Verdict

U1 pin 16 to pin 4/5	261.2	404.8	276.243K	--
U2 pin 15 to pin 4/5	259.4	387.6	276.243K	--
U2 pin 16 to pin 4/5	260.7	382.8	276.243K	--
*U1201 pin3 to pin1	6.052	173.6	276.243K	--
Pin4 to pin2	3.961	-140.0	276.243K	--
Supplementary information:				
The following terminals were connected to earth: Input Negative, output "-", earthed Baseplate Normal Loading: Output 50.0Vdc/22.0A *: Loading: Output 0V/0A				

5.4.1.10.2	**TABLE: Vicat softening temperature of thermoplastics**		N/A
Method .....:	ISO 306 / B50		—
Object/ Part No./Material	Manufacturer/trademark	Thickness (mm)	T softening (°C)
Supplementary information:			

5.4.1.10.3	**TABLE: Ball pressure test of thermoplastics**			N/A
Allowed impression diameter (mm) .....:	≤ 2 mm			—
Object/Part No./Material	Manufacturer/trademark	Thickness (mm)	Test temperature (°C)	Impression diameter (mm)
Supplementary information:				

5.4.2, 5.4.3	**TABLE: Minimum Clearances/Creepage distance**							Pass
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U_{rms} (V)	Freq [1] (kHz)	Required cl (mm)	cl (mm)	E.S. [2] (V)	Required cr (mm)	cr (mm)
Main board Top	--	--	--	--	--	--	--	--
Basic/supplementary :	--	--	--	--	--	--	--	--
Lr(primary) to earthed Baseplate	564	296.3	276.243	1.8	4.9	-	4.2	4.9
U1 primary to earthed Baseplate	570.6	314.0	276.243	1.8	11.5	-	4.2	11.5
C5D,C5B,C5A,C5F, C5E,C5C to earthed Baseplate	420	420	276.243	1.8	10.1	-	4.2	10.1

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Clause	Requirement + Test				Result - Remark			Verdict
Q1, Q2 body to earthed Baseplate	420	420	276.243	1.8	6.0	-	4.2	6.0
T3 core to earth standoff	624	450.1	276.243	1.8	7.5	-	4.8	7.5
T3 to earthed Baseplate	624	450.1	276.243	1.8	6.0	-	4.8	6.0
Primary circuit to earth standoff	420	420	276.243	1.8	5.3	-	4.2	5.3
Reinforced:	--	--	--	--	--	--	--	--
Lr(primary) to T1 core (secondary)	564	296.3	276.243	3.5	8.7	-	8.4	8.7
C5D,C5B,C5A,C5F, C5E,C5C to T1 top layer copper winding	564	296.3	276.243	3.5	8.6	-	8.4	8.6
*U1 primary to secondary	570.6	314	276.243	3.5	8.1	-	3.5	8.1
T3 core (primary) to secondary circuit	624	450.1	276.243	3.5	9.5	-	9.1	9.5
&below Bottom side	--	--	--	--	--	--	--	--
Basic/supplementary ：	--	--	--	--	--	--	--	--
T3 core (primary) to earth standoff	639.0	451.3	276.243	1.8	7.7	-	1.8	7.7
Control board primary circuit to earth standoff	420	420	276.243	1.8	3.7	-	1.8	4.5
Control board top primary circuit to earth standoff	420	420	276.243	1.8	5.7	-	1.8	5.7
Control board bottom primary circuit to earth standoff	420	420	276.243	1.8	3.7	-	1.8	4.5
Reinforced:	--	--	--	--	--	--	--	--
Lr core/winding copper to T1 core/winding copper	564	296.3	276.243	3.5	8.6	-	3.5	8.6
HSB (Primary) to RT(Secondary)	420	420	276.243	3.5	5.2	-	3.5	5.2
U2 primary to secondary pin	457.2	307.3	276.243	3.5	8.1	-	3.5	8.1
T3 core (primary) to secondary circuit	639.0	451.3	276.243	3.5	8.6	-	3.5	8.6

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Clause	Requirement + Test	Result - Remark	Verdict

T3 core (primary) to Control board top trace	639.0	451.3	276.243	3.5	10.2	-	3.5	10.2
T3 core (primary) to U1 secondary pin	639.0	451.3	276.243	3.5	9.4	-	3.5	9.4
Control board top primary to secondary	420	420	276.243	3.5	10.1	-	3.5	10.0
Control board bottom primary to secondary	420	420	276.243	3.5	8.5	-	3.5	8.5
U1201 primary to secondary pin top side	173.6	6.1	276.243	3.5	10.1	-	3.5	10.1
U1201 primary to secondary pin bottom side	173.6	6.1	276.243	3.5	8.5	-	3.5	8.5

Supplementary information:

1) Only for frequency above 30 kHz

2) Complete Electric Strength voltage (E.S. (V) when 5.4.2.4 applied)

Remarks:

1/ *U1 covered with coating formed PD1 condition

& all bottom side potted with potting material formed PD1 condition

2/ Metal baseplate was considered as dead metal

3/ Clearance distance was evaluated for altitude up to 3048m above sea level, correction factor for clearance is 1.15

5.4.4.2	**TABLE: Minimum distance through insulation**			Pass
Distance through insulation (DTI) at/of:	Peak voltage (V)	Insulation	Required DTI (mm)	Measured DTI (mm)
PCB same layer primary to secondary	639	RI	0.4	Min.0.7
PCB different layer overlap primary to secondary	639	RI	0.4	Min. 0.7 or 3layers

Supplementary information:

--

5.4.4.9	**TABLE: Solid insulation at frequencies >30 kHz**					Pass
Insulation material	E_P	Frequency (kHz)	K_R	Thickness d (mm)	Insulation	V_{PW} (Vpk)
Potting barrier (ENCL-BTM):	-	-	-	-	-	-
1000(f2)(X)	32	276.243	0.29	0.7	Basic insulation	639

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Clause	Requirement + Test	Result - Remark	Verdict

Tape on earthed Baseplate (TAPE-HTSK-1, TAPE-HTSK-2, TAPE-HTSK-3) and Tape on Lr (TAPE-Lr)	-	-	-	-	-	-
1318-1 (a)	49	276.243	0.29	0.03	Basic insulation	639
1350F-1 (b)	49	276.243	0.29	0.03	Basic insulation	639
1388B-1 (b)	49	276.243	0.29	0.03	Basic insulation	639
1388Y-1 (b)	49	276.243	0.29	0.03	Basic insulation	639
Super 10 (a)	49	276.243	0.29	0.03	Basic insulation	639
92	27	276.243	0.29	0.03	Basic insulation	639
1K220	27	276.243	0.29	0.03	Basic insulation	639
1P801	49	276.243	0.29	0.03	Basic insulation	639
1K7170	27	276.243	0.29	0.03	Basic insulation	639
1H818 (m)	49	276.243	0.29	0.03	Basic insulation	639
4916 #25	27	276.243	0.29	0.03	Basic insulation	639
650S #25	27	276.243	0.29	0.03	Basic insulation	639
35660 (a)	49	276.243	0.29	0.03	Basic insulation	639
35660Y (e)	49	276.243	0.29	0.03	Basic insulation	639
T-280B	49	276.243	0.29	0.03	Basic insulation	639
CT-282F	49	276.243	0.29	0.03	Basic insulation	639
CT-286F	49	276.243	0.29	0.03	Basic insulation	639
CT (b)(g)	49	276.243	0.29	0.03	Basic insulation	639

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Clause	Requirement + Test	Result - Remark	Verdict

CT* (b)(g)	49	276.243	0.29	0.03	Basic insulation	639
CT* (c)(g)	49	276.243	0.29	0.03	Basic insulation	639
PZ* (b)(g)	49	276.243	0.29	0.03	Basic insulation	639

Supplementary information:

Use alternative method, see appended Table 5.4.9 and clause 5.4.9.1.

For Potting barrier (ENCL-BTM) and Tape on earthed Baseplate:

1.2x639/0.29=2645Vpk

Factor KR=0.29 refer to Table 22 for other thin foil materials, at frequency 276.243kHz.

5.4.9	**TABLE: Electric strength tests**		Pass
Test voltage applied between:	Voltage shape (Surge, Impulse, AC, DC, etc.)	Test voltage (V)	Breakdown Yes / No
Input +/- to earthed Baseplate	DC	2500V	No
Input to output	DC	4242V	No
Potting barrier (ENCL-BTM):	--	--	--
1000(f2)(X)	DC	4000V	No
Tape on earthed Baseplate (TAPE-HTSK-1, TAPE-HTSK-2, TAPE-HTSK-3) and Tape on Lr (TAPE-Lr) (1 layer)	--	--	--
1318-1 (a)	DC	6000V	No
1350F-1 (b)	DC	7000V	No
1388B-1 (b)	DC	7000V	No
1388Y-1 (b)	DC	7000V	No
Super 10 (a)	DC	7000V	No
92	DC	6000V	No
1K220	DC	7000V	No
1P801	DC	7000V	No
1K7170	DC	7000V	No
1H818 (m)	DC	7000V	No
4916 #25	DC	5000V	No
650S #25	DC	7000V	No
35660 (a)	DC	7000V	No
35660Y (e)	DC	6000V	No
T-280B	DC	7000V	No

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Clause	Requirement + Test	Result - Remark	Verdict

CT-282F	DC	7000V	No
CT-286F	DC	7000V	No
CT (b)(g)	DC	7000V	No
CT* (b)(g)	DC	7000V	No
CT* (c)(g)	DC	7000V	No
PZ* (b)(g)	DC	7000V	No
Supplementary information:			
*after humidity test condition, 120h, 40°C, 93%R.H . Use alternative method, see appended Table 5.4.9 and clause 5.4.9.1. For Potting barrier (ENCL-BTM) and Tape on earthed Baseplate: 1.2x639/0.29=2645Vpk Factor KR=0.29 refer to Table 22 for other thin foil materials, at frequency 276.243kHz			

5.5.2.2	**TABLE: Stored discharge on capacitors**				N/A
Location	Supply Voltage (V)	Operating and fault condition [1)]	Switch position	Measured voltage (Vpk)	ES Class
Supplementary information:					

5.6.6	**TABLE: Resistance of protective conductors and terminations**			N/A
Location	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
Supplementary information:				

5.7.4	**TABLE: Unearthed accessible parts**					Pass
Location	Operating and fault conditions	Supply Voltage (V)	Parameters			ES class
			Voltage (V_{rms} or V_{pk})	Current (A_{rms} or A_{pk})	Freq. (Hz)	
Refer appended table 5.2	-	-	-	-	-	-
Supplementary information:						
-						

5.7.5	**TABLE: Earthed accessible conductive part**	Pass

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Clause	Requirement + Test	Result - Remark	Verdict

Supply voltage (V) .....:	420Vdc			—
Phase(s) .....:	DC			
Power Distribution System .....:	N/A			
Location	Fault Condition No in IEC 60990 clause 6.2.2	Touch current (mA)	Comment	
Earthed Baseplate	Earth loss, Fig5	U3, mV: -214.0mVpk U3, mA: -0.428mApk	ES1	
Supplementary Information:				
--				

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

6.2.2	TABLE: Power source circuit classifications					Pass
Location	Operating and fault condition	Voltage (V)	Current (A)	Max. Power[1)] (W)	Time (S)	PS class
All circuit	-	-	-	-	-	PS3 (declared)
Supplementary information:						
Abbreviation: SC= short circuit; OC= open circuit 1) Measured after 3 s for PS1 and measured after 5 s for PS2 and PS3.						

6.2.3.1	TABLE: Determination of Arcing PIS				Pass
Location	Open circuit voltage after 3 s (Vpk)	Measured r.m.s current (A)	Calculated value	Arcing PIS? Yes / No	
All circuit	-	-	-	Yes (declared)	
Supplementary information:					
-					

6.2.3.2	Table: Determination of Resistive PIS			Pass
Location	Operating and fault condition	Dissipate power (W)	Resistive PIS?	

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Clause	Requirement + Test	Result - Remark	Verdict

			Yes/No
All circuit	-	-	Yes (declared)
Supplementary Information:			
Abbreviation: SC= short circuit; OC= open circuit			

8.5.5	**TABLE: High Pressure Lamp**			N/A
Lamp manufacturer	Lamp type	Explosion method	Longest axis of glass particle (mm)	Particle found beyond 1 m Yes / No?
Supplementary information:				

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

5.4.1.4, 9.3, B.1.5, B.2.6	**TABLE: Temperature measurements**				Pass
Supply voltage (V) .....:	350Vdc	420Vdc	400Vdc	-	—
Ambient temperature during test T_{amb} (°C) .....:	65	65	65	-	—
Maximum measured temperature T of part/at:	T (°C)				Allowed T_{max} (°C)
Thermal gel: TS 300-60, Potting TC 200-1S, Coating SL 1307 FLZ/&	--	--	--	--	--
Earthed Baseplate	78.8	79.7	77.4	--	--
Main board Top side	--	--	--	--	--
Lr core	87.7	94.6	84.9	--	130
PCB around Lr	86.3	91.0	83.6	--	130

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Clause	Requirement + Test	Result - Remark	Verdict

T1 core	82.6	83.7	80.6	--	130
PCB around T1	92.1	93.7	88.5	--	130
T3 core	80.8	81.9	79.3	--	130
PCB around T3	81.8	83.0	80.3	--	130
U1	83.1	84.3	81.0	--	125
Main board Bottom side	--	--	--	--	--
Lr core	102.1	125.3	96.2	--	130
PCB around Lr	112.0	125.6	105.4	--	130
T1 core	93.1	93.4	89.0	--	130
PCB around T1	106.7	108.3	100.9	--	130
T3 core	87.2	88.8	85.6	--	130
PCB around T3	87.6	89.4	86.0	--	130
U2	97.8	99.3	93.7	--	125
Potting barrier(inside)	80.7	90.4	78.4	--	170
Potting barrier (outside)	71.3	74.9	70.3	--	170
Control board bottom side	--	--	--	--	--
PCB aound T3	91.3	93.4	89.0	--	130
Control board top side	--	--	--	--	--
U1201	98.6	101.4	94.3	--	110
U12	92.3	96.2	91.8	--	130
Ambient	65.6	65.7	65.9	--	--
Thermal gel: BERGQUIST LIQUI FORM TLF 6001(d), Potting TS-12A, Coating SL 1307 FLZ/&	--	--	--	--	--
Earthed Baseplate	79.1	79.6	77.1	--	--
Main board Top side	--	--	--	--	--
Lr core	90.0	93.5	86.3	--	130
PCB around Lr	90.1	94.6	86.7	--	130
T1 core	82.7	83.3	80.3	--	130
PCB around T1	93.4	94.9	89.1	--	130
T3 core	80.7	81.5	78.9	--	130
PCB around T3	81.5	82.4	79.7	--	130
U1	83.1	84.1	80.8	--	125
Main board Bottom side	--	--	--	--	--
Lr core	106.6	128.9	97.9	--	130
PCB around Lr	115.7	129.3	107.2	--	130
T1 core	104.1	105.0	98.0	--	130
PCB around T1	110.3	114.7	103.1	--	130

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Clause	Requirement + Test	Result - Remark	Verdict

T3 core	86.3	88.2	84.9	--	130
PCB around T3	86.4	88.1	84.8	--	130
U2	92.2	93.8	89.2	--	125
Potting barrier(inside)	87.0	97.7	82.7	--	170
Potting barrier (outside)	71.3	74.3	70.0	--	170
Control board bottom side	--	--	--	--	--
PCB around T3	87.8	89.0	85.5	--	130
Control board top side	--	--	--	--	--
U1201	97.2	100.1	92.6	--	110
U12	89.9	93.1	89.0	--	130
Ambient	65.1	65.2	65.1	--	--

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:

Tamb = The thermal steady state temperature measurement of the ambient air.
T = The thermal steady state temperature measurement.
Tmax = The limit of the thermal steady state temperature measurement.
Loading: 50Vdc/22.0A
Sample and Fan are in Air duct.
External Forced Air Cooling:
Fan: Full load 5m/s air velocity for baseplate + 1.46’ earthed heatsink.
Fan Distance from Unit: 23 cm
Air-flow Direction: Vin “+” to Vin “-”

B.2.5	**TABLE: Input test**							Pass
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
350V dc	--	3.247	3.6	1136.0	--	External fuse	3.247	Loading: 50Vdc,22A
400V dc	--	2.833	3.6	1133.0	--	External fuse	2.833	Loading: 50Vdc,22A
420V dc	--	2.717	3.6	1141.0	--	External fuse	2.717	Loading: 50Vdc,22A

Supplementary information:

-

B.3, B.4	**TABLE: Abnormal operating and fault condition tests**	Pass
Ambient temperature T_{amb} (°C) ..... :	See below	—
Power source for EUT: Manufacturer, model/type, output rating . :	-	—

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Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Condition	Supply voltage (V)	Test time	Fuse no.	Fuse current (A)	Observation
50Vdc output	Max output load	420Vdc	6h40mins	External fuse	3.66A	50Vdc Output circuit exceed 29.5A, 50Vdc output shutdown, Run to thermal equilibrium at 29.5A, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 83.4; T3: 50.0; U1: 44.6; U2: 61.2; U1201: 65.1; Ambient: 25.2; PTV: 51.5V (No Loading) TC: 0.235mApk
50Vdc output	Short Circuit	420Vdc	1hr	External fuse	0.03A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 62.9; T3: 43.7; U1: 38.3; U2: 49.7; U1201: 51.1; Ambient: 24.4; PTV: 0V TC: 0.2mApk
External Fan	Failure	420Vdc	1h25mins	External fuse	2.72A~0.03A	After 20mins, 50Vdc output bouncing, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 132.5; T3: 100.4 U1: 103.9; U2: 108.4; U1201: 108.2; Ambient: 62.2; PTV: 51.6V (No Loading) TC: 0.23mApk
DC mains	Polarity reverse	420Vdc	1S	External fuse	>21A	50Vdc output no output, External Fuse open, No Hazard. NB, NC, NT, NCD, NF. T1: 26.1; T3: 25.4; U1: 25.2;

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Clause	Requirement + Test	Result - Remark	Verdict

						U2: 24.5; U1201: 24.0; Ambient: 23.5; PTV: 0V TC: 0.114mApk
T1 Pin3(after Q11) and Pin4 (after Q5)	Over load	420Vdc	4h20mins	External fuse	3.02A	T1 (50Vdc) Output circuit exceed 24A, T1 (50vdc) output shutdown, Run to thermal equilibrium at 24A, No Hazard. NB, NC, NT, NCD, NF. T1: 126.9; T3: 92.2; U1: 88.4; U2: 103.8; U1201: 105.8, Ambient: 65.7, PTV: 51.5V (No Loading) TC: 0.232mApk.
C2	Short Circuit	420Vdc	1s	External fuse	>21A	50Vdc output no output, External Fuse open, No Hazard. NB, NC, NT, NCD, NF, YEP. T1: 62.1; T3: 43.4; U1: 38.5; U2: 49.5; U1201: 51.0; Ambient: 24.0; PTV: 0V TC: 0.136mApk
Q1 D-S	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output no output, External fuse open, No Hazard. NB, NC, NT, NF, YEP. CD: Q1, Q2, repeated three times the results are the same. T1: 61.3; T3: 43.8; U1: 41.2; U2: 43.2; U1201: 42.6; Ambient: 22.6; PTV: 0V TC: 0.114mApk
Q1 G-D	Short Circuit	420Vdc	1s	External fuse	>21A	50Vdc output no output, External fuse open, No Hazard. NB, NC, NT, NF, YEP.

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Clause	Requirement + Test				Result - Remark	Verdict
						CD: Q1, Q2, repeated three times the results are the same. T1: 60.9; T3: 45.4; U1: 47.5; U2: 53.5; U1201: 50.0; Ambient: 24.6; PTV: 0V TC: 0.112mApk
Q1 G-S	Short Circuit	420Vdc	1h	External fuse	0.01A~ 0.536A	50Vdc output Bouncing, 0V/0A~34.3V/14.8A, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 60.4; T3: 44.7; U1: 42.6; U2: 47.3; U1201: 45.4; Ambient: 24.3; PTV: 51.2V (No Loading) TC: 0.554mApk
C5A	Short Circuit	420Vdc	1h	External fuse	2.246A	50Vdc output power reduce, 44.5V/19.78A, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 67.4; T3: 49.7; U1: 47.6; U2: 53.3; U1201: 50.4; Ambient: 24.6; PTV: 51.6V (No Loading) TC: 0.268mApk
T1 Pin1 – Pin2	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output no output, No Hazard. NB, NC, NT, NF, YEP. CD: Q1, Q2, repeated three times the results are the same. T1: 60.9; T3: 45.4; U1: 47.5; U2: 53.5; U1201: 50.0; Ambient: 24.6;

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Clause	Requirement + Test	Result - Remark	Verdict

						PTV: 0V TC: 0.182mApk
T1 Pin3 – Pin4	Short Circuit	420Vdc	1h	External fuse	0.007A	50Vdc output Shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 68.9; T3: 46.4; U1: 43.5; U2: 51.5; U1201: 50.0; Ambient: 24.3; PTV(+to -): 51.2V (No Loading) PTV(+/- to PE): 7.84V, 891.5Hz
Q5 D-S	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output no output, No Hazard. NB, NC, NT, NF, NEP. CD: Q1, Q2, repeated three times the results are the same. T1: 63.9; T3: 45.6; U1: 42.5; U2: 48.5; U1201: 48.0; Ambient: 24.8; PTV: 0V TC: 0.150mApk
Q5 G-D	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output no output, No Hazard. NB, NC, NT, NF, NEP. CD: Q3, Q4, repeated three times the results are the same. T1: 61.9; T3: 45.2; U1: 41.3; U2: 47.2; U1201: 44.2; Ambient: 23.7; PTV: 0V TC: 0.112mApk
Q5 G-S	Short Circuit	420Vdc	1h	External fuse	2.79A	50Vdc output normal, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.6; T3: 45.3; U1: 41.2;

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Clause	Requirement + Test			Result - Remark		Verdict
						U2: 47.1; U1201: 44.2; Ambient: 23.5 PTV: 50.5V (No Loading) TC: 0.216mApk
T3 Pin 1-2	Short Circuit	420Vdc	1h	External fuse	0.007A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 67.1; T3: 45.7; U1: 40.6; U2: 50.9; U1201: 51.8; Ambient: 25.4; PTV: 51.2V (No Loading) TC: 0.114mApk
T3 Pin 3-4	Short Circuit	420Vdc	1h	External fuse	0.02A~ 0.44A	50Vdc output Bouncing, 0V/0A~6.5V/1.8A, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 70.4; T3: 49.0; U1: 42.6; U2: 54.3; U1201: 55.4; Ambient: 25.0; PTV: 51.5V (No Loading) TC: 0.262mApk
T3 Pin 5-6	Short Circuit	420Vdc	1h	External fuse	2.73A	50Vdc output normal, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 70.0; T3: 53.8; U1: 41.6; U2: 55.3; U1201: 55.2; Ambient: 24.7; PTV: 52.0V (No Loading) TC: 0.246mApk
T3 Pin 7-8	Short Circuit	420Vdc	1h	External fuse	0.012A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.2; T3: 42.3; U1: 40.6;

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Clause	Requirement + Test	Result - Remark	Verdict

						U2: 43.3; U1201: 41.8; Ambient: 23.2; PTV: 51.0V (No Loading) TC: 0.250mApk
D1206	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 60.0; T3: 43.1; U1: 40.6; U2: 45.3; U1201: 43.2; Ambient: 24.2; PTV: 51.5V (No Loading) TC: 0.194mApk
T3 Pin 9-10	Short Circuit	420Vdc	1h	External fuse	2.754A	50Vdc output normal, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.0; T3: 45.8; U1: 41.3; U2: 47.3; U1201: 44.2; Ambient: 23.9; PTV: 51.7V (No Loading) TC: 0.132mApk
T3 Pin 11-12	Short Circuit	420Vdc	1h	External fuse	0.015A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 68.6; T3: 47.1; U1: 40.6; U2: 52.3; U1201: 53.2; Ambient: 24.8; PTV: 51.0V (No Loading) TC: 0.192mApk
D1209	Short Circuit	420Vdc	1h	External fuse	0.006A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 60.6; T3: 45.1; U1: 41.6;

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Clause	Requirement + Test			Result - Remark		Verdict
						U2: 47.3; U1201: 44.2; Ambient: 24.6; PTV: 51.4V (No Loading) TC: 0.166mApk
Q1301 D – S	Short Circuit	420Vdc	1h	External fuse	0.001A	50Vdc output no output, No Hazard. NB, NC, NT, NF, YEP. CD: Q1, Q2, repeated three times the results are the same. T1: 60.3; T3: 42.9; U1: 42.5; U2: 46.5; U1201: 44.0; Ambient: 24.2; PTV: 0V TC: 0.108mApk
U1201 pin1-2	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.4; T3: 43.7; U1: 40.3; U2: 43.1; U1201: 42.6; Ambient: 21.8; PTV: 51.0V (No Loading) TC: 0.114mApk
U1201 pin3-4	Short Circuit	420Vdc	1h	External fuse	0.015A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 69.2; T3: 47.7; U1: 41.3; U2: 53.1; U1201: 54.0; Ambient: 23.8; PTV: 51.6V (No Loading) TC: 0.168mApk
*U1201 Pin 1	Open Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 23.1; T3: 25.9;

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Clause	Requirement + Test			Result - Remark		Verdict
						U1: 23.8; U2: 24.0 U1201: 23.6; Ambient: 23.0; PTV: 51.4V (No Loading) TC: 0.108mApk
U14 Pin4-5 (C1401)	Short Circuit	420Vdc	1h	External fuse	0.01A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.2; T3: 44.7; U1: 41.5; U2: 47.1; U1201: 44.3; Ambient: 24.8; PTV: 51.6V (No Loading) TC: 0.206mApk
U12 pin (11-12)	Short Circuit	420Vdc	1h	External fuse	0.002A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.0; T3: 44.3; U1: 41.4; U2: 47.0; U1201: 44.4; Ambient: 24.8; PTV: 51.6V (No Loading) TC: 0.098mApk
Input V- (2) to control board adjacent connection pin (C1201)	Short Circuit	420Vdc	1S	External fuse	>21A	50Vdc output no output, External Fuse open, No Hazard. NB, NC, NT, NCD, NF, YEP. T1: 62.8; T3: 44.4; U1: 42.5; U2: 47.5; U1201: 47.0; Ambient: 25.0; PTV: 0V TC: 0.102mApk
RT	Short Circuit	420Vdc	1h	External fuse	0.007A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 58.5; T3: 42.0;

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Clause	Requirement + Test	Result - Remark	Verdict

						U1: 40.4; U2: 44.2; U1201: 42.9; Ambient: 24.1; PTV: 51.3V (No Loading) TC: 0.16mApk
U1 pin 9-pin 11	Short Circuit	420Vdc	1h	External fuse	0.005A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 67.2; T3: 46.0; U1: 39.4; U2: 51.2; U1201: 51.9; Ambient: 25.5; PTV: 51.4V (No Loading) TC: 0.144mApk
U2 pin 14-pin 16	Short Circuit	420Vdc	1h	External fuse	0.008A	50Vdc output shutdown, Run to thermal equilibrium, No Hazard. NB, NC, NT, NCD, NF, NEP. T1: 61.2; T3: 43.5; U1: 40.2; U2: 43.0; U1201: 42.3; Ambient: 22.8; PTV: 51.1V (No Loading) TC: 0.124mApk
Q11 D-S	Short Circuit	420Vdc	1s	External fuse	>21	50Vdc output no output, External fuse open, No Hazard. NB, NC, NT, NF, YEP. CD: Q3, Q4, repeated three times the results are the same. T1: 61.9; T3: 44.4; U1: 46.5; U2: 52.5; U1201: 50.3; Ambient: 24.4; PTV: 0V TC: 0.112mApk
Supplementary information:						
NB: No indication of dielectric breakdown YB: Dielectric breakdown (indicate time and location)						

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Clause	Requirement + Test	Result - Remark	Verdict

NC: Cheesecloth remained intact (Annex G)
YC: Cheesecloth charred or flamed (Annex G)
NT: Wrapping tissue remained intact (Annex G)
YT: Wrapping tissue charred or flamed (Annex G)
NCD: No components damaged
CD: Components damaged (list component)
PTV: Prospective Touch Voltage (V)
TC: Touch Current (mA)TW: Transformer winding opened
CT: Constant temperatures were obtained
TT: See temperature measurements table 5.4.1.4
NF: No Flame
DF: Flame distinguished within 10s (indicate time)
STF: Sustained flaming above 10s (indicate time)
IP: Internal protection operated (list component)
NEP: External protective device did not operate (list component)
YEP: External protective operated (list component)

External fuse: Littelfuse 0505010.MXP
*: Loading: 50Vdc/0A

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

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Clause	Requirement + Test	Result - Remark	Verdict

M.4.2	**TABLE: Charging safeguards for equipment containing a secondary lithium battery**		N/A
Maximum specified charging voltage (V) ..... :			—
Maximum specified charging current (A) ..... :			—
Highest specified charging temperature (°C) ..... :			
Lowest specified charging temperature (°C) ..... :			

Battery manufacturer/type	Operating and fault condition	Measurement			Observation
		Charging voltage (V)	Charging current (A)	Temp. (°C)	

Supplementary information:

Abbreviation: SC= short circuit; OC= open circuit; MSCV= maximum specified charging voltage; MSCC= maximum specified charging current; HSCT= highest specified charging temperature; LSCT= lowest specified charging temperature

Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**							N/A
Output Circuit	Condition	U_{oc} (V)	Time (s)	I_{sc} (A)		S (VA)		
				Meas.	Limit	Meas.	Limit	

Supplementary Information:

T.2, T.3, T.4, T.5	**TABLE: Steady force test**					Pass
Location/Part	Material	Thickness (mm)	Probe	Force (N)	Test Duration (s)	Observation
Internal components	--	--	--	10	5	No hazard.

Supplementary information:

-

T.6, T.9	**TABLE: Impact test**				N/A
Location/Part	Material	Thickness (mm)	Height (mm)	Observation	

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

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

T.8	TABLE: Stress relief test				Pass
Location/Part	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Potting Barrier	Plastics	0.7	108	7	NO SHRINKAGE OR DISTORTION
Supplementary information:					
--					

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

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Clause	Requirement + Test	Result - Remark	Verdict

4.1.2	**TABLE: Critical components information**	Pass

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Potting barrier (ENCL-BTM)	SABIC INNOVATIVE PLASTICS US L L C	1000(f2)(X)	Min. V-2, 105°C, min. 0.4mm	UL 94	UL E121562 , -
Tape on heatsink (TAPE-HTSK-1, TAPE-HTSK-2, TAPE-HTSK-3)	3M COMPANY	1318-1 (a), 1350F-1 (b), 1388B-1 (b), 1388Y-1 (b), Super 10 (a), 92	Min. 130°C	UL 510A	UL E17385 , -
Alternative	P LEO & CO LTD	1K220, 1P801, 1K7170, 1H818 (m)	Min. 130°C	UL 510A	UL E126174 , -
Alternative	TERAOKA SEISAKUSHO CO LTD	4916 #25, 650S #25	Min. 130°C	UL 510A	UL E56086 , -
Alternative	SYMBIO INC	35660 (a), 35660Y (e)	Min. 130°C	UL 510A	UL E50292 , -
Alternative	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-282F, CT-286F, CT (b)(g), CT* (b)(g), CT* (c)(g)	Min. 130°C	UL 510A	UL E165111 , -
Tape on Lr (TAPE-Lr)	3M COMPANY	1318-1 (a), 1350F-1 (b), 1388B-1 (b), 1388Y-1 (b), Super 10 (a), 92	Min.130°C	UL 510A	UL E17385 , -
Alternative	P LEO & CO LTD	1K220, 1P801, 1K7170, 1H818 (m)	Min. 130°C	UL 510A	UL E126174 , -

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

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Alternative	TERAOKA SEISAKUSHO CO LTD	4916 #25, 650S #25	Min. 130°C	UL 510A	UL E56086 , -
Alternative	SYMBIO INC	35660 (a), 35660Y ©	Min. 130°C	UL 510A	UL E50292 , -
Alternative	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-282F, CT-286F, CT (b)(g), CT* (b)(g), CT* ©(g)	Min. 130°C	UL 510A	UL E165111 , -
Thermal glue On top side of PCBA	PARKWELLER NEW MATERIAL (HUIZHOU) CO.,LTD	TS 300-XX, TS 300-60	V-0, 150°C Min. thickness 0.5mm	UL 94	UL E524393 , -
Alternative	Henkel Corporation	BERGQUIST LIQUI FORM TLF 6001(d)	V-0, 150°C Min. thickness 0.5mm	UL 94	UL E59150 , -
Potting material On bottom side of PCBA	PARKWELLER NEW MATERIAL (HUIZHOU) CO.,LTD	TC 200-XX, TC 200-1S	V-0, 150°C Min. thickness 0.5mm	UL 94	UL E524393 , -
Alternative	SHENZHEN TOSHIN SILICONE MATERIAL CO LTD	TS-12xx, TS-12A	V-0, 150°C Min. thickness 0.5mm	UL 94	UL E345066 , -
Coating On U1	LACKWERKE PETERS GMBH & CO KG	SL 1307 FLZ/& (Note1)	V-0, 105°C Thickness 25µm-65 µm	UL 94, UL746E	UL E80315 , -
Isolated IC (U1/U2)	Infineon Technologies AG	2EDR8259H	5000Vac isolation voltage, 125°C	UL 1577 IEC 60747-17	UL E311313 , VDE 40055138
Alternative	Texas Instruments Incorporated/Texas Instruments Deutschland GmbH	UCC21540DW/ UCC21550/ UCC2154x (c)	5000Vac isolation voltage, 125°C	UL 1577 IEC 60747-17	UL E181974 , VDE 40040142

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

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
Alternative	interchangeable	interchangeable	5000Vac isolation voltage Min. 125°C	UL 1577 IEC 60747-17	UL - , VDE -
Optocoupler (U1201)	CT Micro	CT1016(V)(T2)-W, CT101(X1)(X2)-W	Double protection optical isolators rated for Min.5000 vac, 110°C	UL 1577 IEC 60747-5-5	UL E364000 , VDE 40039590
Alternative	LITE-ON Technology Corporation	LTV-1D02, LTV-1DXX(&), LTV-10xx	Double protection optical isolators rated for Min.5000 vac, 110°C	UL 1577 IEC 60747-5-5	UL E113898 , VDE 138213
Alternative	TOSHIBA ELECTRONIC DEVICES & STORAGE CORPORATION	TLP383, TLP385	Double protection optical isolators rated for Min.5000 vac, 110°C	UL 1577 IEC 60747-5-5	UL E67349 , VDE 40040216
Alternative	Everlight Electronics	EL817	Double protection optical isolators, providing 5000 vac isolation, 110°C	UL 1577 IEC 60747-5-5	UL E214129 , VDE 132249
Alternative	interchangeable	interchangeable	Double protection optical isolators, providing 5000 vac isolation, Min. 110°C	UL 1577 IEC 60747-5-5	UL , VDE
PCB	Interchangeable	Interchangeable	Min. V-1, Min.130 °C	UL 796	UL , -
Baseplate	Interchangeable	Interchangeable	Metal, 60.6mmx63mm, see Enclosure ID 07-01 for dimension details.	IEC/EN/UL 62368-1	Tested with appliance , -
Lr/CT	Interchangeable	Interchangeable	EMBEDED in PWB, Min. 130°C, see Enclosure ID 04-01 for PWB details.	IEC/EN/UL 62368-1	Tested with appliance , -

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

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity[1)]
T1	Interchangeable	Interchangeable	EMBEDED in PWB, Min. 130°C, see Enclosure ID 04-01 for PWB details.	IEC/EN/UL 62368-1	Tested with appliance , -
CT	Interchangeable	Interchangeable	EMBEDED in PWB, Min. 130°C, see Enclosure ID 04-01 for PWB details.	IEC/EN/UL 62368-1	Tested with appliance , -
T3	Interchangeable	Interchangeable	EMBEDED in PWB, Min. 130°C, see Enclosure ID 04-01 for PWB details.	IEC/EN/UL 62368-1	Tested with appliance , -

Supplementary information:

For component(s) which reference IEC/ISO Standards are listed without publication year, Licenses are available upon request

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Customer's Testing Facility according to CTF stage 1 or CTF stage 2 procedure has been used.
Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
See Enclosure ID 07-02 for details.	--	--	--	--	--

Enclosure
National Differences

Australia / New Zealand
China
EU Group and National Differences
Japan
Republic of Korea
Saudi Arabia
USA / Canada

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

IEC 62368-1

(AUSTRALIA / NEW ZEALAND) NATIONAL DIFFERENCES

(**Audio/video, information and communication technology equipment**)

Differences according to ……..:	AS/NZS 62368.1:2022
TRF template used: ……..:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No. ……..:	AU_NZ_ND_IEC62368_1E
Attachment Originator ……..:	JAS-ANZ
Master Attachment ……..:	2022-07-01

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	National Differences		
Appendix ZZ	Variations to IEC 62368-1:2018 (ED. 3.0) for Australia and New Zealand		Pass
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2018 (ED. 3.0)		Pass
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:		Pass
2	After the first paragraph, *add* the following: The Australian or Australian/New Zealand Standards listed below are modified adoptions of, or not equivalent to, the IEC normative references and are required for the application of this Standard. All references in the source text to those IEC normative references shall be replaced by references to the corresponding Australian or Australian/New Zealand Standards. Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably -AS/NZS 3112, *Approval and test specification—Plugs and socket-outlets* -AS/NZS 3123, *Approval and test specification—Plugs, socket-outlets and couplers for general industrial application* -AS/NZS 3191, *Electric flexible cords* *-AS/NZS 60884.1.Plugs and socket-outlets for household and similar purposes, Part 1: General requirements* *-IEC 60086-2 Primary batteries — Part 2: Physical and electrical specifications* -AS/NZS 60065, *Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)* -AS/NZS 60320.1, *Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)*		Pass

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IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	-AS/NZS 60320.2.2, *Appliance couplers for household and similar general purposes Part 2.2: Interconnection couplers for household and similar equipment (IEC 60320-2-2, Ed.2.0 (1998) MOD)* -AS/NZS 60695.2.11*, Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products* -AS/NZS 60695.11.5, *Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance* -AS/NZS 60695.11.10, *Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods* -AS/NZS 60884.1, *Plugs and socket-outlets for household and similar purposes, Part 1: General requirements* -AS/NZS 60950.1, *Information technology equipment—Safety*, Part 1: *General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)* IEC 61032:1997, *Protection of persons and equipment by enclosures—Probes for verification* -AS/NZS 61558.1, *Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)* -AS/NZS 61558.2.16, *Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V, Part 2.16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units.*		
4.7.2	**Requirements** *Delete* the text of the second paragraph and *replace* with the following: Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet conforming to AS/NZS 3112, shall conform to the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets. Conformity is checked by inspection and, if necessary, by the tests in AS/NZS 3112. NOTE: Equipment with plug portions for use in countries other than Australia and New Zealand will need to conform to other countries' requirements Note Additional AS/NZS 3112 Appendix J,TRF is appended to end of this TRF.		N/A
4.7.3	**Compliance Criteria** *Delete* this clause		N/A
4.8.1	**General**		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	After second list, *add* the following: NOTE: Refer to the Consumer Goods (Products Containing Button/Coin Batteries) Safety Standard 2020 and Consumer Goods (Products Containing Button/Coin Batteries) Information Standard 2020 for more information on button cell batteries in Australia..		
5.4.10.2.1	**General** *Delete* the first paragraph and *replace* with the following: In Australia, the separation is checked by the test given in both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test given in either 5.4.10.2.2 or 5.4.10.2.3..		N/A
Table 28	*Delete* Table 28 and *replace* with the following: Parts / Impulse test (New Zealand; Australia) / Steady state test (New Zealand; Australia) Parts indicated in Clause 5.4.10.1 a) [a]: 2.5 kV; 7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment.; 1.5 kV; 3 kV Parts indicated in Clause 5.4.10.1 b) and c) [b]: 1.5 kV [c]; 1.0 kV; 1.5 kV [a] Surge suppressors shall not be removed. [b] Surge suppressors may be removed, provided that such devices pass the impulse test of Clause 5.4.10.2.2 when tested as components outside the equipment. [c] During this test, it is allowed for a surge suppressor to operate and for a sparkover to occur in a GDT.		N/A
5.4.10.2.2	*Delete* "NOTE" and *replace* with "NOTE 1". After NOTE 1, *add* the following: NOTE 2: For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 3: For Australia, the value of 2.5 kV for Clause 5.4.10.1 a) was chosen to ensure the adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.		N/A
5.4.10.2.3	*Delete* "NOTE" and *replace* with "NOTE 1". After NOTE 1, *add* the following: NOTE 2: For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 3: The 3 kV and 1.5 kV values for Australia have been determined considering the low frequency induced voltages from the power supply distribution system.		N/A
6	**Electrically-caused fire**		
6.6	After Clause 6.6, *add* the new Clauses 6.201 as follows: **6.201 External power supplies, docking stations and other similar devices** (see special national conditions)		N/A
8.6	**Stability of equipment**		
Table 36	Footnote [a], after first sentence, *add* the following: Equipment having displays with moving images shall include "television sets and display devices".		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.6.1	After Clause 8.6.1 *add* the following new clauses: **8.6.201 Restraining Device fixing point** (see special national conditions) **8.6.202 Restraining device** (see special national conditions)		N/A
Annex F **Paragraph F.3.3.4**	**Rated Voltage** *Delete* "NOTE" and *replace* with NOTE1" After NOTE 1, *add* the following Equipment that is intended for connection to the supply mains in Australia and New Zealand shall be marked with: (a) A rated voltage of: • 230 V for single phase equipment • 400 V for poly phase equipment Or (b) A rated voltage range that includes: • 230 V for single phase equipment • 400 V for poly phase equipment NOTE 2: equipment that is not rated as above is not suitable for direct connection to the supply mains in Australia or new Zealand.		N/A
Annex F.3.3.5	After the list, *add* the following Equipment that is intended for connection to supply mains in Australia or New Zealand shall be marked with a rated frequency of 50 Hz or a rated frequency range or nominal value which includes 50Hz		N/A
Annex F.3.8	After "The DC output of an external power supply", insert "or docking stations and other similar external devices"		N/A
Annex G **Paragraph G.4.2**	**Mains connectors** 1 After "IEC 60320", insert "or AS/NZS 60320 series". 2 After "IEC 60906-1", insert"or AS/NZS 3123" 3 *After* first paragraph *add* the following: 10 A or 15 A 250 V flat pin plugs for the connection of equipment to mains-powered socket-outlets for household or similar general use shall comply with AS/NZS 3112 or AS/NZS 60884.1.		N/A
Paragraph G.5.3.1	**Transformers, General** 1 Third dashed point *replace* 'IEC 61558-1 and the relevant parts of IEC 61558-2' with 'AS/NZS 61558-1 and the relevant parts of AS/NZS 61558.2' 2 Fourth dashed point *replace* 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.		N/A
Annex G.7.1	**Mains supply cords, General** Fourth dashed paragraph, *replace* 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Table G.7	**Sizes of conductors**		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	1 First column, second row, *delete* “6” and *replace* with “7.5” 2 Second column, second row, *delete* ‘0,75’ and *replace* with ‘0.75[b] 3 *Delete* NOTE 1. 4 *Replace* ‘NOTE 2’ with ‘NOTE:’. 5 *Delete* ‘Footnote b’ and *replace* with the following: [b] This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm^2 three-core supply flexible cords are not permitted; see AS/NZS 3191). 6 Footnote c *replace* ‘IEC 60320-1’ with ‘AS/NZS 60320.1’ 7 Footnote d *replace* ‘IEC 60320-1’ with ‘AS/NZS 60320.1’		
Annex M M 2.1	*Add* “IEC 60086-2” to the list		N/A
Annex M Paragraph M.3.2	**Test method** Delete”NOTE” and replace with “NOTE 1” After NOTE 1 *add* the following: NOTE 2: In cases where the voltage source is provided by power from an unassociated power source, consideration should be given to the effects of possible single fault conditions in the unassociated equipment. If the power source is unknown then it should be assumed that the maximum limit of ES1 may be applied to the source input under assumed single fault conditions in the source when assessing the charging circuit in the equipment under test.		N/A
	Special national conditions (if any)		
6.201	**External power supplies, docking stations and other similar devices** For external power supplies, docking stations and other similar devices, during and after abnormal operating conditions and during single fault conditions the output voltage— (a) at all ES1 outlets or connectors shall not increase by more than 10 % of the output rated voltage under normal operating conditions, measured after 3 s of introducing a singlefault condition and after 3 s of introducing abnormal operating conditions; and (b) of a USB outlet or connector shall not increase by more than 3 V or 10 % of the output rated voltage under normal operating conditions, whichever is higher, measured after3 seconds of introducing a single fault condition and after 3 s of introducing abnormal operating conditions		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	For equipment with multiple rated voltages at the output, the requirements apply with the equipment configured for each output rated voltage in turn NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries. The 3 s measurement delay is based on IEC document 108/742/INF, *TC 108, Standards Interpretation Panel Question 15 — Output voltage*, in relation to similar requirements in IEC 62368-3:2017. Conformity shall be checked by measurement, taking into account the abnormal operating conditions of Annex B.3 and the simulated single fault conditions of Annex B.4.		
8.6.201	**Restraining device fixing point** Freestanding-capable MS2 and MS3 television sets and display devices shall be provided with a fixing point to facilitate the anchoring of the equipment from toppling The fixing point shall conform to Clause 8.7 where the fixing point uses a wall, ceiling or other structure mount. Alternatively, the fixing point shall be capable of withstanding a pull equal to the mass of the equipment in all directions without damage Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point		N/A
8.6.202	**Restraining device** MS2 and MS3 television sets and display devices shall be provided with a restraining device and associated hardware to attach to the television set or display device. The restraining device shall be capable of withstanding a pull equal to the mass of the equipment in all directions. Instructions for installation or instructions for use shall be provided to specify correct use of the fixing point		N/A

IEC 62368_1E ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT **AS_NZS_3112:2017_+A1:2021 Appendix J** **AUSTRALIAN / NEW ZEALAND NATIONAL DIFFERENCES** **(Approval and test specification—Plugs and socket-outlets)**			
Differences according to ……..: AS_NZS_3112:2017_Amendment 1:2021_Appendix J			
TRF template used: ……..: IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. ……..: AS_NZS_3112:2017_Appendix J **Attachment Originator ……..**: JAS-ANZ **Master Attachment** ……..: 2022-06			
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	Note: AS/NZS 3112 is NOT covered by IECEE Accreditation for Testing / Reporting **Please State Laboratory Accreditation for this Standard**		
	Accreditation		
	Accreditation Stamp		

J1 SCOPE	General: This Appendix specifies additional dimensional and constructional requirements for detachable plug portions, or equipment incorporating integral supply pins or equipment incorporating detachable plug portions. This Appendix shall be read in conjunction with Section 2 of this Standard. For the purposes of this Appendix, where the term ‘plug’ is used in Section 2 it shall be taken to mean the plug portion of equipment or the detachable plug portion. The equipment shall comply with the relevant product Standard. The tests and requirements specified in this Appendix are in addition to any test and requirements of the relevant product Standard for the equipment. (AS/NZS 3112:2017/A1:2021)	N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1
CHINA NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment -Part 1: Safety requirements)

Differences according to …..…..…:	GB 4943.1-2022
TRF template used: ……..:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No. ……:	CN_ND_IEC62368_1E
Attachment Originator ……..:	CQC
Master Attachment …… :	2025-02-25

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	National Differences		
4.1.2	**Use of components** Add a paragraph: A component used shall comply with related requirements corresponding altitude of the equipment.		N/A
4.11	Add clause 4.11,as follows: Protection in PRIMARY CIRCUITS against overcurrent short-circuits and earth faults shall be provided as an integral part of the equipment except the device shall meet the all requirement of Fault conditions. If pluggable equipment type B or permanently connected equipment depends on protective devices outside the equipment for protection, this shall be stated in the installation instructions of the equipment, with requirements for short-circuit protection, over-current protection ,or both if necessary.		N/A
5.3.2.2	**Contact requirements** Amend the 2nd paragraph of table 8 to be: For equipment intended to be used at altitude of 2000m to 5000m, the values in this table are multiplied by the multiplication factor corresponding altitude of 5000m.		Pass
5.4.2.5	**Multiplication factors for altitudes higher than 2 000 m above sea level** Amend the 1st paragraph to be: For equipment to be operated at more than 2000 m above sea level and up to 5000m above sea level, the minimum CLEARANCE in tables 10,11 and 14,and resistance test voltages required in table 15, shall meet the requirements of 5000 m above sea level, This	3048m	Pass

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IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	is multiplied by the multiplication factor corresponding altitude of 5000m in table 16. For equipment to be used at equal or less than 2000 m above sea level, the minimum CLEARANCE in tables 10, 11 and 14, and resistance test voltages required in table 15, shall meet the requirements of 2000 m above sea level. This is multiplied by the multiplication factor corresponding altitude of 2000m in table 16. Delete note 2 of Clause 5.4.2.5.		
5.4.5.1	**General** Delete the 2nd paragraph of Clause 5.4.5.1: This test does not apply to equipment where one antenna terminal on the equipment is connected to earth in accordance with 5.6.7. Add the following: The Insulation resistance between CATV antenna coaxial sockets and protective earth of apparatus shall comply with BASIC INSULATION. If it's possible that CLASS II apparatus with CATV antenna coaxial sockets connect with protective earth of another CLASS I apparatus by other terminals, the insulation resistance between them shall comply with BASIC INSULATION as well. If antenna cable separated from the protective earth before connection to the apparatus, there is no requirements of Insulation resistance between them but F.4 requirements shall be meet. *Del*ete "NOTE" of Clause 5.4.5.1		N/A
5.4.8	**Humidity conditioning** Amend clause 5.4.8 as follows : The humidity conditioning is conducted for 120 h in a cabinet or room containing air with ambient temperature (40±2) °C and a relative humidity of (93±3)%. During this conditioning, the component or subassembly is not energized. For equipment not to be operated at tropical climatic conditions, humidity conditioning is conducted for 48 h in a cabinet or room containing air with a relative humidity of (93±3) %. The temperature of the air, at all places where samples can be located, is maintained within 2 °C of any convenient value between 20 °C and 30 °C such that condensation does not occur.		Pass

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Add note: For equipment to be operated at 2000 m - 5000m above sea level, assessment and requirement of humidity conditioning for Insulation material properties are considered. Pre-processing conditions and requirements below 2000m can be used until additional data is available.		
6.4.9 Y.4.3	Delete references to ASTM and NEMA.		N/A
6.5.1	**General requirements** Delete the text of the Note “Wire complying with UL 2556 VW-1 is considered to comply with these requirements”.		N/A
F.1	Amend the second paragraph of annex F.1 to be: Unless symbols are used or otherwise specified, safety related equipment markings, instructions, and instructional safeguards shall be in normative Chinese.		N/A
F.2.2	After the first paragraph of annex F.2.2 ,add the following: For apparatus intended to be used at altitude not exceeding 2000m, a warning label containing the following or a similar appropriate wording or a symbol shown below shall fixed to the equipment at readily visible place. "Only used at altitude not exceeding 2000m."  For apparatus intended to be used in not-tropical climate regions, a warning label containing the following or a similar appropriate wording or a symbol shown below shall fixed to the equipment at readily visible place. "Only used in not-tropical climate regions."  If only symbol used, the explanation of the symbol shall be contained in the instruction manual. The statements above shall be given in a language acceptable to the regions where the apparatus is intended to be used.		N/A
F.3.3.4	After the last paragraph, Added: ⋯for single rated voltage, “220 V” or three-phase “380V” shall be marked only. For a rating voltage range, 220 V or three-phase 380V shall be covered. For multiple rated voltages, one of them shall be 220 V or three-phase 380V and which default setting from		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	manufacture shall be 220 V or three-phase 380V as well.		
F.3.3.5	After the last paragraph, Added: Rated frequency shall be 50Hz or frequency range shall cover 50Hz.		N/A
F.4	**Instructions** Added: – For apparatus incorporating antenna coaxial sockets which is non-separated with CATV network, a warning wording or a similar shall be given in the instruction manual: “A CATV cable intended to be connected to apparatus shall be separated with the protective earth of the apparatus, otherwise fire hazard might be caused.”		N/A
F.5	**Instructional safeguards** In table F.2 , change 230V to 220V, change 400Y/230V 3Ø to 380 Y/220 V 3Ø		N/A
G.4.2	Amend clause G.4.2 as follows : Plugs connected to the MAINS in apparatus shall comply with GB/T 1002,GB/T 1003,GB/T 2099.1 or GB/T11918（All parts） series. Appliance coupler shall comply with GB/T 17465（All parts） series or GB/T 11918（All parts） series.		N/A
	Special national conditions (if any)		
0.12	Add clause 0.12 Description of relevant information.		Pass
1	GB 4943.1-2022 applies to equipment used at altitudes not exceeding 5000m above sea level, For apparatus intended to be used at altitude not exceeding 2000m, The requirements can be appropriately reduced, but warning instructions shall be provided.. Revise the sixth paragraph of 1 as: In addition to specified by the manufacturer, this document assumes a maximum altitude of 5000m		N/A
B.2.6.1	Amend T_{ma} as follows: T_{ma} is the maximum ambient temperature permitted by the manufacturer's specification, or 35 °C, whichever is greater. Add note 1: For equipment not to be operated at tropical climatic conditions, T_{ma} is the maximum ambient temperature permitted by the manufacturer's specification, or 25 °C, whichever is greater.		Pass

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Add note 2: For equipment to be operated at 2000m-5000m above sea leave, its temperature test conditions and temperature limits are under consideration. temperature test conditions and temperature limits below 2000m can be used until additional data is available.		
Annex Z (normative)	Added annex Z: Instructions of the new safety warning labels.		N/A
Annex AA (informative)	Added annex AA: Illustration relative to safety explanation in normative Chinese, Tibetan, Mongolian, Zhuang Language and Uighur.		N/A

IEC62368_1E – 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 IEC 62368-1:2020+A11:2020
Attachment Form No. ……:	EU_GD_IEC62368_1E
Attachment Originator ……..:	UL(Demko)
Master Attachment …… :	2021-02-04
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	CENELEC COMMON MODIFICATIONS (EN)		
	Clause numbers in the cells that are shaded light grey are clause references in EN IEC 62368-1:2020+A11:2020. All other clause numbers in that column, except for those in the paragraph below, refers to IEC 62368-1:2018. Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2018 are prefixed “Z”.		
	Add the following annexes: Annex ZA (normative) — Normative references to international publications with their corresponding European publications Annex ZB (normative) — Special national conditions Annex ZC (informative) — A-deviations Annex ZD (informative) — IEC and CENELEC code designations for flexible cords		
1	**Modification to Clause 3 .**		
3.3.19	**Sound exposure** *Replace 3.3.19 of IEC 62368-1 with the following definitions:*		N/A
3.3.19.1	**momentary exposure level, MEL** metric for estimating 1 s sound exposure level from the HD 483-1 S2 test signal applied to both channels, based on EN 50332-1:2013, 4.2. Note 1 to entry: MEL is measured as A-weighted levels in dB. Note 2 to entry: See B.3 of EN 50332-3:2017 for additional information.		N/A
3.3.19.3	**sound exposure, *E*** A-weighted sound pressure (p) squared and integrated over a stated period of time, T Note 1 to entry: The SI unit is Pa^2 s.		N/A

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IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	$E = \int_0^T p(t)^2 \, \mathrm{d}t$		
3.3.19.4	**sound exposure level, *SEL*** logarithmic measure of sound exposure relative to a reference value, *E0*, typically the 1 kHz threshold of hearing in humans. Note 1 to entry: *SEL* is measured as A-weighted levels in dB. $SEL = 10 \lg \left(\frac{E}{E_0}\right)$ dB Note 2 to entry: See B.4 of EN 50332-3:2017 for additional information.		N/A
3.3.19.5	**digital signal level relative to full scale, dBFS** levels reported in dBFS are always r.m.s. Full scale level, 0 dBFS, is the level of a dc-free 997-Hz sine wave whose undithered positive peak value is positive digital full scale, leaving the code corresponding to negative digital full scale unused Note 1 to entry: It is invalid to use dBFS for non-r.m.s. levels. Because the definition of full scale is based on a sine wave, the level of signals with a crest factor lower than that of a sine wave may exceed 0 dBFS. In particular, square wave signals may reach +3,01 dBFS.		N/A
2	**Modification to Clause 10**		
10.6	**Safeguards against acoustic energy sources** Replace 10.6 of IEC 62368-1 with the following:		N/A
10.6.1.1	**Introduction** **Safeguard** requirements for protection against long-term exposure to excessive sound pressure levels from personal music players closely coupled to the ear are specified below. Requirements for earphones and headphones intended for use with personal music players are also covered. A personal music player is a portable equipment intended for use by an **ordinary person**, that: – is designed to allow the user to listen to audio or audiovisual content / material; and – uses a listening device, such as headphones or earphones that can be worn in or on or around the ears; and		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	– has a player that can be body worn (of a size suitable to be carried in a clothing pocket) and is intended for the user to walk around with while in continuous use (for example, on a street, in a subway, at an airport, etc.). EXAMPLES Portable CD players, MP3 audio players, mobile phones with MP3 type features, PDAs or similar equipment. Personal music players shall comply with the requirements of either 10.6.2 or 10.6.3. NOTE 1 Protection against acoustic energy sources from telecom applications is referenced to ITU-T P.360. NOTE 2 It is the intention of the Committee to allow the alternative methods for now, but to only use the dose measurement method as given in 10.6.5 in future. Therefore, manufacturers are encouraged to implement 10.6.5 as soon as possible. Listening devices sold separately shall comply with the requirements of 10.6.6. These requirements are valid for music or video mode only. The requirements do not apply to: – professional equipment; NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment. – hearing aid equipment and other devices for assistive listening; – the following type of analogue personal music players: • long distance radio receiver (for example, a multiband radio receiver or world band radio receiver, an AM radio receiver), and • cassette player/recorder; NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies. – a player while connected to an external amplifier that does not allow the user to walk around while in use.		

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	For equipment that is clearly designed or intended primarily for use by children, the limits of the relevant toy standards may apply. The relevant requirements are given in EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		
10.6.1.2	**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
10.6.2	**Classification of devices without the capacity to estimate sound dose**		N/A
10.6.2.1	**General** This standard is transitioning from short-term based (30 s) requirements to long-term based (40 hour) requirements. These clauses remain in effect only for devices that do not comply with sound dose estimation as stipulated in EN 50332-3. For classifying the acoustic output LAeq,T , measurements are based on the A-weighted equivalent sound pressure level over a 30 s period. For music where the average sound pressure (long term LAeq,T) measured over the duration of the song is lower than the average produced by the programme simulation noise, measurements may be done over the duration of the complete song. In this case, T becomes the duration of the song. NOTE Classical music, acoustic music and broadcast typically has an average sound pressure (long term LAeq,T) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the content and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song does not exceed the required limit.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For example, if the player is set with the programme simulation noise to 85 dB, but the average music level of the song is only 65 dB, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dB.		
10.6.2.2	**RS1 limits (to be superseded, see 10.6.3.2)** RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the *L*Aeq,*T* acoustic output shall be ≤ 85 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 27 mV (analogue interface) or -25 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1. – The RS1 limits will be updated for all devices as per 10.6.3.2.		N/A
10.6.2.3	**RS2 limits (to be superseded, see 10.6.3.3)** RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or when the combination of player and listening device is known by other means such as setting or automatic 130 detection, the *L*Aeq,*T* acoustic output shall be ≤ 100 dB(A) when playing the fixed “programme simulation noise” as described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 150 mV (analogue interface) or -10 dBFS (digital interface) when playing the fixed “programme simulation noise” as described in EN 50332-1.		N/A
10.6.2.4	**RS3 limits** RS3 is a class 3 acoustic energy source that exceeds RS2 limits.		N/A
10.6.3	**Classification of devices (new)**		N/A
10.6.3.1	**General**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Previous limits (10.6.2) created abundant false negative and false positive PMP sound level warnings. New limits, compliant with The Commission Decision of 23 June 2009, are given below.		
10.6.3.2	**RS1 limits (new)** RS1 is a class 1 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the *L*Aeq,*T* acoustic output shall be ≤ 80 dB when playing the fixed “programme simulation noise” described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output voltage shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.3.3	**RS2 limits (new)** RS2 is a class 2 acoustic energy source that does not exceed the following: – for equipment provided as a package (player with its listening device), and with a proprietary connector between the player and its listening device, or where the combination of player and listening device is known by other means such as setting or automatic detection, the weekly sound exposure level, as described in EN 50332-3, shall be ≤ 80 dB when playing the fixed "programme simulation noise" described in EN 50332-1. – for equipment provided with a standardized connector (for example, a 3,5 phone jack) that allows connection to a listening device for general use, the unweighted r.m.s. output level, integrated over one week, as described in EN50332-3, shall be ≤ 15 mV (analogue interface) or -30 dBFS (digital interface) when playing the fixed “programme simulation noise” described in EN 50332-1.		N/A
10.6.4	**Requirements for maximum sound exposure**		N/A
10.6.4.1	**Measurement methods** All volume controls shall be turned to maximum during tests. Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable.		N/A
10.6.4.2	**Protection of persons**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Except as given below, protection requirements for parts **accessible** to **ordinary persons**, **instructed persons** and **skilled persons** are given in 4.3. NOTE 1 Volume control is not considered a **safeguard.** Between RS2 and an **ordinary person**, the **basic safeguard** may be replaced by an **instructional safeguard** in accordance with Clause F.5, except that the **instructional safeguard** shall be placed on the equipment, or on the packaging, or in the instruction manual. Alternatively, the **instructional safeguard** may be given through the equipment display during use. The elements of the **instructional safeguard** shall be as follows: – element 1a: the symbol , IEC 60417-6044 (2011-01) – element 2: “High sound pressure” or equivalent wording – element 3: “Hearing damage risk” or equivalent wording – element 4: “Do not listen at high volume levels for long periods.” or equivalent wording An **equipment safeguard** shall prevent exposure of an **ordinary person** to an RS2 source without intentional physical action from the **ordinary person** and shall automatically return to an output level not exceeding what is specified for an RS1 source when the power is switched off. The equipment shall provide a means to actively inform the user of the increased sound level when the equipment is operated with an output exceeding RS1. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an output exceeding RS1. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time. NOTE 2 Examples of means include visual or audible signals. Action from the user is always needed. NOTE 3 The 20 h listening time is the accumulative listening time, independent of how often and how long the personal music player has been switched off.		

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Clause	Requirement + Test	Result - Remark	Verdict
	A **skilled person** shall not be unintentionally exposed to RS3.		
10.6.5	**Requirements for dose-based systems**		N/A
10.6.5.1	**General requirements** Personal music players shall give the warnings as provided below when tested according to EN 50332-3, using the limits from this clause. The manufacturer may offer optional settings to allow the users to modify when and how they wish to receive the notifications and warnings to promote a better user experience without defeating the safeguards. This allows the users to be informed in a method that best meets their physical capabilities and device usage needs. If such optional settings are offered, an administrator (for example, parental restrictions, business/educational administrators, etc.) shall be able to lock any optional settings into a specific configuration. The personal music player shall be supplied with easy to understand explanation to the user of the dose management system, the risks involved, and how to use the system safely. The user shall be made aware that other sources may significantly contribute to their sound exposure, for example work, transportation, concerts, clubs, cinema, car races, etc.		N/A
10.6.5.2	**Dose-based warning and requirements** When a dose of 100 % *CSD* is reached, and at least at every 100 % further increase of *CSD*, the device shall warn the user and require an acknowledgement. In case the user does not acknowledge, the output level shall automatically decrease to compliance with class RS1. The warning shall at least clearly indicate that listening above 100 % *CSD* leads to the risk of hearing damage or loss.		N/A
10.6.5.3	**Exposure-based requirements** With only dose-based requirements, cause and effect could be far separated in time, defying the purpose of educating users about safe listening practice. In addition to dose-based requirements, a PMP shall therefore also put a limit to the short-term sound level a user can listen at. The exposure-based limiter (EL) shall automatically reduce the sound level not to exceed 100 dB(A) or 150 mV integrated over the past 180 s, based on methodology defined in EN 50332-3.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The EL settling time (time from starting level reduction to reaching target output) shall be 10 s or faster. Test of EL functionality is conducted according to EN 50332-3, using the limits from this clause. For equipment provided as a package (player with its listening device), the level integrated over 180 s shall be 100 dB or lower. For equipment provided with a standardized connector, the unweighted level integrated over 180 s shall be no more than 150 mV for an analogue interface and no more than -10 dBFS for a digital interface. NOTE In case the source is known not to be music (or test signal), the EL may be disabled.		
10.6.6	**Requirements for listening devices (headphones, earphones, etc.)**		N/A
10.6.6.1	**Corded listening devices with analogue input** With 94 dB *L*Aeq acoustic pressure output of the listening device, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the input voltage of the listening device when playing the fixed “programme simulation noise” as described in EN 50332-1 shall be ≥ 75 mV. NOTE The values of 94 dB and 75 mV correspond with 85 dB and 27 mV or 100 dB and 150 mV.		N/A
10.6.6.2	**Corded listening devices with digital input** With any playing device playing the fixed “programme simulation noise” described in EN 50332-1, and with the volume and sound settings in the listening device (for example, built-in volume level control, additional sound features like equalization, etc.) set to the combination of positions that maximize the measured acoustic output, the *L*Aeq,*T* acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		N/A
10.6.6.3	**Cordless listening devices** In cordless mode, – with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and – respecting the cordless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and – with volume and sound settings in the receiving device (for example, built-in volume level control, additional sound features like equalization, etc.)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	set to the combination of positions that maximize the measured acoustic output for the above mentioned programme simulation noise, the *L*Aeq,*T* acoustic output of the listening device shall be ≤ 100 dB with an input signal of -10 dBFS.		
10.6.6.4	**Measurement method** *Measurements shall be made in accordance with EN 50332-2 as applicable.*		N/A
3	**Modification to the whole document**		
	Delete all the "country" notes in the reference document according to the following list:		

0.2.1	Note 1 and 2	1	Note 4 and 5	3.3.8.1	Note 2
3.3.8.3	Note 1	4.1.15	Note	4.7.3	Note 1 and 2
5.2.2.2	Note	5.4.2.3.2.2 Table 12	Note c	5.4.2.3.2.4	Note 1 and 3
5.4.2.3.2.4 Table 13	Note 2	5.4.2.5	Note 2	5.4.5.1	Note
5.4.10.2.1	Note	5.4.10.2.2	Note	5.4.10.2.3	Note
5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3 and 4
5.6.8	Note 2	5.7.6	Note	5.7.7.1	Note 1 and Note 2
8.5.4.2.3	Note	10.2.1 Table 39	Note 3 and 4 and 5	10.5.3	Note 2
~~10.6.1~~	Note 3	F.3.3.6	Note 3	Y.4.1	Note
Y.4.5	Note				

4	**Modification to Clause 1**		
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.*		Pass
5	**Modification to 4.Z1**		
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):	DC supply	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.		
6	**Modification to 5.4.2.3.2.4**		
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
7	**Modification to 10.2.1**		
10.2.1	Add the following to [c)] and [d)] in table 39: For additional requirements, see 10.5.1.		N/A
8	**Modification to 10.5.1**		
10.5.1	***Add*** *the following after the first paragraph:* For RS 1 compliance is checked by measurement under the following conditions: 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 pre-sets 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. NOTE Z1 Soldered joints and paint lockings are examples of adequate locking. 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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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. For RS1, the dose-rate shall not exceed 1 µSv/h taking account of the background level. NOTE Z2 These values appear in Directive 96/29/Euratom of 13 May 1996.		
9	**Modification to G.7.1**		
G.7.1	***Add** the following note:* NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
10	**Modification to Bibliography**		
	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.		
11	**ADDITION OF ANNEXES**		
ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		
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.		N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
	• 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 1,5 kV. 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.		
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).		N/A
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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Justification: In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.		
5.6.4.2.1	**Ireland and United Kingdom** After the indent for **pluggable equipment type A**, the following is added: – the **protective current rating** is taken to be 13 A, this being the largest rating of fuse used in the **mains** plug.		N/A
5.6.4.2.1	**France** After the indent for **pluggable equipment type A**, the following is added: – in certain cases, the **protective current rating** of the circuit supplied from the mains is taken as 20 A instead of 16 A.		N/A
5.6.5.1	To the second paragraph the following is added: The range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current over 10 A and up to and including 13 A is: 1,25 mm^2 to 1,5 mm^2 in cross-sectional area.		N/A
5.6.8	**Norway** To the end of the subclause the following is added: Equipment connected with an earthed mains plug is classified as **class I equipment**. See the Norway marking requirement in 4.1.15. The symbol IEC 60417-6092, as specified in F.3.6.2, is accepted.		N/A
5.7.6	**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
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
5.7.7.1	**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.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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.”.		
8.5.4.2.3	**United Kingdom** Add the following after the 2nd dash bullet in 3rd paragraph:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	An emergency stop system complying with the requirements of IEC 60204-1 and ISO 13850 is required where there is a risk of personal injury.		
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 polyphase 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 *Justification:* Heavy Current Regulations, Section 6c		N/A

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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
ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		
10.5.2	**Germany** The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. *Justification*: 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		
ZD	**IEC and CENELEC CODE DESIGNATIONS FOR FLEXIBLE CORDS (EN)**		

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60227 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H
Cords insulated and sheathed with halogen-free thermoplastic compounds		
Light halogen-free thermoplastic insulated and sheathed flexible cords		H03Z1Z1-F H03Z1Z1H2-F
Ordinary halogen-free thermoplastic insulated and sheathed flexible cords		H05Z1Z1-F H05Z1Z1H2-F

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT

IEC 62368-1:2018

JAPAN NATIONAL DIFFERENCES

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

Differences according to ……:	J62368-1(2023)
TRF template used ……..:	IECEE OD-2020-F3:2022, Ed. 1.2
Attachment Form No. ……..……..:	JP_ND_IEC62368_1E
Attachment Originator ……...:	UL Solutions (JP)
Master Attachment ……..…..:	Dated 2023-05-12

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	National Differences		
4.1.2	Where the component, or a characteristic of a component, is a safeguard or a part of a safeguard, components shall comply with the requirements of this document or, where specified in a requirements clause, with the safety aspects of the relevant JIS component standards or IEC component standards, or components shall have properties equivalent to or better than these.		N/A
5.6.1	Mains socket-outlet and interconnection coupler shall comply with Clause G.4.2A if they are incorporated as part of the equipment.		N/A
5.6.2.1	Connection for protective conductor of class 0I equipment provided with instructional safeguard in accordance with Clause F.3.6.1A is considered to make earlier and break later than supply connection. Mains plug having a lead wire for protective earthing connection of class 0I equipment shall comply with all of the following: – Not to be used for equipment having a rated voltage of 150 V or more – Clip is not used for the earthing connection of the lead wire. – The lead wire for earthing is at least 10 cm long If class 0I equipment provides an independent main protective earthing terminal and is intended to be installed by ordinary person, earthing wire shall be provided in the package of the equipment.		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.2.2	Internal earthing conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector need not be green-and-yellow.		N/A
5.6.3	In case of class 0I equipment using power supply cord having two conductors (no earthing conductor), the conductor of protective earthing lead wire shall comply with either of the following: – use of annealed copper wire with 1.6 mm diameter or corrosion-inhibiting metal wire having size and strength that are equivalent to or more than the above copper wire – single core cord or single core cab tire cable with 1.25 mm^2 or more cross-sectional area		N/A
5.7.3	For class 0I equipment that is provided with mains socket-outlet in the configuration as specified in JIS C 8282 series, JIS C 8300 or JIS C 8303, or that is provided with mains appliance outlet as specified in JIS C 8283 series for the purpose of interconnection, the measurement is conducted on the system of the interconnected equipment having a single connection to the mains.		N/A
5.7.5	In case of class 0I equipment, touch current shall not exceed 1.41 mA peak or for sinusoidal wave, 1.0 mA r.m.s. when measured using the network specified in Figure 4 of IEC 60990:2016.		N/A
6.4.3.2	A fuse complying with JIC C 6575 series or a fuse having equivalent characteristics shall open within 1 s. A fuse having time/current characteristics other than those specified in IEC 60127 shall be tested with the characteristics taken into account. In case of Class A fuse of JIS C 6575, replace “2.1 times” by “1.35 times” and in case of Class B fuse of JIS C 6575, replace “2.1 times” by “1.6 times”.		N/A
8.5.4.3.1	Only three-phase stationary equipment rated more than AC 200 V can be considered as being for use in locations where children are not likely to be present, when complying with Clause F.4.		N/A
8.5.4.3.2	For equipment installed where children may be present, an instructional safeguard shall be provided by easily understandable wording in accordance with Clause F.5, except that element 3 is optional.		N/A
8.5.4.3.4	The media destruction device is tested according to Clause V.1.2 with applicable jointed test probes to the opening. And then the wedge probe per Figure V.4 shall not contact any moving part.		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.3.5	The wedge probe of Figure V.4 and applicable jointed test probes specified in Clause V.1.2 shall not contact any moving part. Instructional safeguard shall not be used instead of equipment safeguard for preventing access to hazardous moving parts.		N/A
F.3.5.1	When the mains socket-outlet is configured in accordance with JIS C 8282 series, JIS C 8300 or JIS C 8303, the assigned current or power shall be marked. If the voltage of the socket-outlet is the same as the mains voltage, the voltage need not be marked. Instructional safeguard of Class 0I equipment shall be provided with an instructional safeguard in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8300 or JIS C 8303 to which class I equipment can be connected is provided in accordance with Clause G.4.2A except for the cases where the socket-outlet is accessible only to skilled persons.		N/A
F.3.5.3	If the fuse is necessary for the safeguard function, the symbols indicating pre-arcing time-current characteristic shall be included.		N/A
F.3.6.1A	Marking for class 0I equipment The requirements of Clauses F.3.6.1.1 and F.3.6.1.2 shall be applied to class 0I equipment. For class 0I equipment, a marking of instructions shall be provided regarding the earthing connection. In addition to the above, for class 0I equipment, an instruction to connect earthing before and disconnect earthing after the connection of supply conductors shall be marked on the visible place of the main body or shall be in the text of an accompanying document.		N/A
F.3.6.2	Symbols, IEC 60417-5172 (2003-02) or IEC 60417-6092 (2011-10), shall not be used for class I equipment or class 0I equipment.		N/A
F.3.8A	Attention marking for aging deterioration of CRT television Year of manufacture, standard usage period by design according to JIS C 9921-5 and cautionary statement for possible risks of aging deterioration when used beyond the specified period shall be marked on CRT television except for industrial use CRT television.		N/A
F.4	For audio equipment with terminals classified as ES3 in accordance with Table E.1, and for other equipment with terminals marked in accordance with		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
	F.3.6.1 and F.3.6.1A, the instructions shall require that the external wiring connected to these terminals shall be installed by a skilled person, or shall be connected by means of ready-made leads or cords that are constructed in a way that would prevent contact with any ES3 circuit. For class 0I equipment provided with independent main protective earthing terminal, where the cord for the protective earthing connection is not provided in the package of the equipment, if the protective earthing connection is made by instructed person or skilled person, the suitable installation instruction for the protective earthing connection shall be provided.		
G.3.2.1	The thermal link when tested as a separate component, shall comply with the requirements of JIS C 6691 or have properties equivalent to or better than that.		N/A
G.3.4	Except for devices covered by Clause G.3.5, overcurrent protective devices used as a safeguard shall comply with the applicable JIS or IEC standard in accordance with 4.1.2 or shall have equivalent or better properties. Such a protective device shall have adequate breaking (rupturing) capacity to interrupt the maximum fault current (including short-circuit current) that can flow.		N/A
G.4.1	This requirement does not apply to connectors covered in Clauses G.4.2 and G.4.2A.		N/A
G.4.2	Mains connectors, mains plugs and socket-outlets shall comply with JIS C 8283 series, JIS C 8285, IEC 60309 series, JIS C 8282 series, JIS C 8300, JIS C 8303, or have equivalent or better properties. A power supply cord set provided with appliance connector that can fit appliance inlet complying with JIS C 8283-1 shall comply with JIS C 8286. Construction shall prevent mechanical stress not to transmit to the soldering part of appliance inlet terminal. When an equipment is rated not more than 125 V and all of the following are met, Type C14 and C18 appliance inlet complying with JIS C 8283-3 can be considered as rated 15 A. – The temperature of appliance inlet does not exceed the value specified in JIS C 8283-1 under the most unfavourable normal operating condition as specified in Clause B.2.1. – "Use only designated cord set attached in this equipment" or equivalent text is described in the operating instruction. If the cord set is not provided in		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict
	the package of the equipment, suitable information regarding to the cord set is described in the operating instruction.		
G.4.2A	Mains socket-outlet and interconnection coupler provided with the class II, class I and class 0I equipment respectively		N/A
G.7.1	A mains supply cord need not include the protective earthing conductor for class 0I equipment provided with independent protective earthing conductor.		N/A
G.7.2 Table G.7	Cross-sectional area of equipment rated up to and including 3 A shall be 0.75 mm^2.		N/A
G.7.6.1 Table G.9	The cross-sectional area of mains cords according to JIS C 3010 may comply with relevant Japanese wiring regulation. For cables other than those complying with JIS C 3662 series or JIS C 3663 series, the terminals shall be suitable for the size of the intended cables.		N/A

ATTACHMENT to TRF IEC62368_1E			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1:2018
Republic of Korea NATIONAL DIFFERENCES
Audio/video, information and communication technology equipment – Part 1: Safety requirements

Differences according to ……:	KC 62368-1(2021-08)
TRF template used: ……..:	IECEE OD-2020-F3, Ed. 1.2
Attachment Form No. ……..:	KR_ND_IEC62368_1E
Attachment Originator ……:	KTL
Master Attachment ……:	2024-09-02

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	National Differences		
4.1.1	As of January 1, 2023, internal and external components and subassemblies that comply with IEC 60950-1 or IEC 60065 are not acceptable if those components and subassemblies mandates KC certification.		N/A
G.4.2	Plugs for the connection of the apparatus to the supply main shall comply with the Korean requirement (KS C 8305 or KC 60884-1 or KC 60799).		N/A
	Special national conditions (if any)		
Voltage	The marking of rated voltage or rated voltage range, for appliances intended to be connected to the supply mains, shall include 110 V, 220 V or 380 V.		N/A
Frequency	Only appliances having supply frequency of 60 Hz or a frequency range including 60 Hz are accepted.		N/A
Instruction	Instruction manuals and appliance marking related safety, including nameplate shall be in Korean		N/A

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IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT
IEC 62368-1:2018
(SAUDI ARABIA) NATIONAL DIFFERENCES
(Audio/video, information and communication technology equipment Part 1: Safety requirements)

Differences according to …..……:	National standard SASO-IEC-62368-1
TRF template used: ……..:	IECEE OD-2020-F3:2024, Ed. 1.3
Attachment Form No. ……:	SA_ND_IEC62368_1E
Attachment Originator ……..:	Saudi Standards, Metrology and Quality Organization (SASO)
Master Attachment …… :	2025-07-17

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	National Differences		
L.7	Plugs used for pluggable equipment comply with standard SASO-2203		N/A
	Type of plug & socket-outlets: G type		N/A
B.2.2	**Frequency and tolerance (Hz)**		N/A
	60 Hz ± 0.2		N/A
B.2.3	**Rated Voltage (V)**		N/A
	Single phase 230 V Three phase 400 V **Voltage tolerance (%)** ± 5		N/A

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IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT **IEC 62368-1** **U.S.A. AND CANADA NATIONAL DIFFERENCES** (Audio/video, information and communication technology equipment – Part 1: Safety requirements)	
Differences according to……:	CSA/UL 62368-1:2019
TRF template used……...:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No……...:	US_CA_ND_IEC62368_1E
Attachment Originator……:	UL(US)
Master Attachment……...:	Dated 2022-03-04
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IEC 62368-1 - US and Canadian National Differences **Special National Conditions based on Regulations and Other National Differences**			
1 (1DV.1) (1.3)	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.	Comply	Pass
1 (1DV.2.1)	This standard includes additional requirements for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities. See Annex DVB.		N/A
1 (1DV.2.2)	This standard includes additional requirements for equipment intended for mounting under cabinets. See Annex DVC.		N/A
1 (1DV.2.3)	IEC 62368-3 clause 5 for DC power transfer at ES1 or ES2 voltage levels is considered informative. IEC 62368-3 clause 6 for remote power feeding telecommunication (RFT) circuits is considered normative (see ITU K.50). Alternatively, equipment with RFT circuits are given in either UL 2391 or CSA/UL 60950-21. RFT-C circuits are not permitted unless the RFT-C circuit complies with RFT-V limits (≤ 200V per conductor to earth).		N/A
1 (1DV.3)	For protection against direct lightning strikes, reference is made to NFPA 780 and CAN/CSA-B72 for additional requirements.		N/A
1 (1DV.5)	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A

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IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
4.1 (4.1.17)	For lengths exceeding 3.05 m, external interconnecting cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.	no external interconnecting cable provided with the unit, considered in end system	N/A
	For lengths 3.05 m or less, external interconnecting cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.	no external interconnecting cable provided with the unit, considered in end system	N/A
4.6 (4.6.2)	Wire-wrap terminals have special construction and performance requirements.		N/A
4.8 (4.8.3, 4.8.4.5, 4.8.5)	Coin / button cell batteries have modified special construction and performance requirements.		N/A
5.4.2.3.2 (5.4.2.3.2.1)	Surge Arrestors and Transient Voltage Surge Suppressors installed external to the equipment are required to comply with the appropriate NEC and CEC requirements.		N/A
5.5.9	Receptacles, rated 125-V, single phase, 15- or 20-A accessible to either ordinary, instructed, or skilled persons are required to be provided with GFCI Protection for Personnel if the equipment containing the receptacles is installed outdoors. The protection devices are required to comply with UL 943, and CAN/CSA C22.2 No.144.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.7, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment.		N/A
5.7.8 (5.7.8.1)	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure is required to comply with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.9)	Output terminals provided for supply of other equipment, except mains supply, are required to be marked with a maximum rating or reference to equipment permitted to be connected.		N/A
Annex F (F.3.7)	Outdoor Enclosures are required to be classified and marked in accordance with UL 50 or 50E, or CAN/CSA C22.2 No. 94.1 or 94.2.		N/A
Annex G (G.7)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		N/A
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		N/A
	Power supply cords for outdoor equipment are required to be suitable outdoor use type as required by Section 400.4 of the NEC and Rule 4-012 of the CEC, i.e., marked “W.”		N/A
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 Vpeak or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex Q (Q.3)	Equipment with paired conductor and/or coax communications cables/wiring connected to building wiring are required to have special voltage, current, power and marking requirements.		N/A
Annex DVA (1)	Equipment that is designed such that it may be powered from a separate electrical service, is required to meet applicable requirements for service equipment for control and protection of services and their installation and complies with Article 230 of the National Electrical Code (NEC), NFPA 70 and Section 6 of the Canadian Electrical Code, Part I, CSA C22.1.		N/A
	Equipment intended for use in spaces used for environmental air (plenums) are subjected to special flammability requirements for heat and visible smoke release.		N/A
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. and Canadian Regulations.		N/A
	Baby monitors are required to additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
	Storage batteries and battery management equipment, other than associated with lead-acid batteries, and including battery backup systems that are not an integral part of stationary AV and ICT equipment, such as provided in separate		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	cabinets, are required to be certified (listed) to the appropriate standard(s) for such storage batteries and equipment.		
Annex DVA (5.6)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment is required to comply with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) are required to have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a minimum flammability classification of V-1.		N/A
Annex DVA (10.3)	Equipment with lasers is required to meet the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5)	Equipment that produces ionizing radiation is required to comply with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.4)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or that are lower than the “Normal Operating Condition” in Table 2 of CAN/CSA C22.2 No. 235.”		N/A
Annex DVA (F.3.3.6)	Equipment identified for ITE (computer) room installation is required to be marked with the rated current.		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers are required to have the "on" position indicated by the handle in the up position, where mounted in an enclosure, vertically mounted disconnect switches and circuit breakers with vertical operating means extending outside the enclosure are required to indicate in a location visible when accessing the external operating means whether the switch or circuit breaker is in the open (off) or closed (on) position.		N/A
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		N/A
	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		N/A

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles is required to comply with NEC 250.146(D) and CEC 10-400 and 10-612.		N/A
Annex DVA (G.4.3)	Interconnection of units by conductors supplied by a limited power source, or a Class 2 circuit defined in the NEC/CEC may have field wiring connections other than specified in DVH.3, such as wire-wrap and crimp-on types, if the limited power source and Class 2 circuits are separated from all other circuits by barriers, routing or fixing.		N/A
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (G.7)	Flexible cords used outdoors are required to have the suffix “W” marked on the flexible cord.		N/A
Annex DVA (M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	If applicable per NEC 725.121(C), some limited power sources supplied from AV/ICT equipment are required to have a label indicating the maximum voltage and rated current output per conductor for each connection point. Where multiple connection points have the same rating, a single label is permitted to be used.		N/A
	Wiring terminals intended to supply Class 2 outputs in accordance with the NEC or CEC Part 1are required to be marked with the voltage rating and “Class 2” or equivalent. The marking is located adjacent to the terminals and visible during wiring.		N/A
	Applicable parts of Chapter 8 of the NEC, and Rules 54 and 60 of the CEC, may be applicable to ITE installed outdoors with connections to communication systems.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material		Pass

IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	requirements. These equipment and components include: appliance couplers, attachment plugs, battery backup systems, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultracapacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, modular data centers, power supply cords, some power distribution equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.		N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are required to be in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.2.1)	For safe and reliable connection to a mains, permanently connected equipment is to be provided.	No such equipment	N/A
Annex DVH (DVH.2.2)	Additional considerations for D.C. mains.	No such equipment	N/A
Annex DVH (DVH.3.2.1)	Terminals for permanent wiring, including protective earthing terminals, are required to be suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and be specially marked when specified.		N/A
Annex DVH (DVH.3.2.3)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
Annex DVH (DVH.3.2.4)	All associated mains supply terminals are located in proximity to each other and to the main protective earthing terminal, if any.	No such equipment	N/A
Annex DVH (DVH.3.2.5)	Terminals are located, guarded or insulated so that, should a strand of a conductor escape when the conductor is fitted, there is no likelihood of accidental contact between such a strand and accessible conductive parts or unearthed conductive parts separated from accessible conductive parts by supplementary insulation only.	No such equipment	N/A
Annex DVH (DVH.3.3)	When field connection to an external circuit is via wires (example, free conductors), the wires are not smaller than 18 AWG (0.82 mm^2) and the free length of the wire inside an outlet box or wiring compartment is 150 mm or more.	No such equipment	N/A
Annex DVH (DVH.3.4)	Size of protective earthing conductors and terminals	No such equipment	N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH.4.1)	Wire bending space	No such equipment	N/A

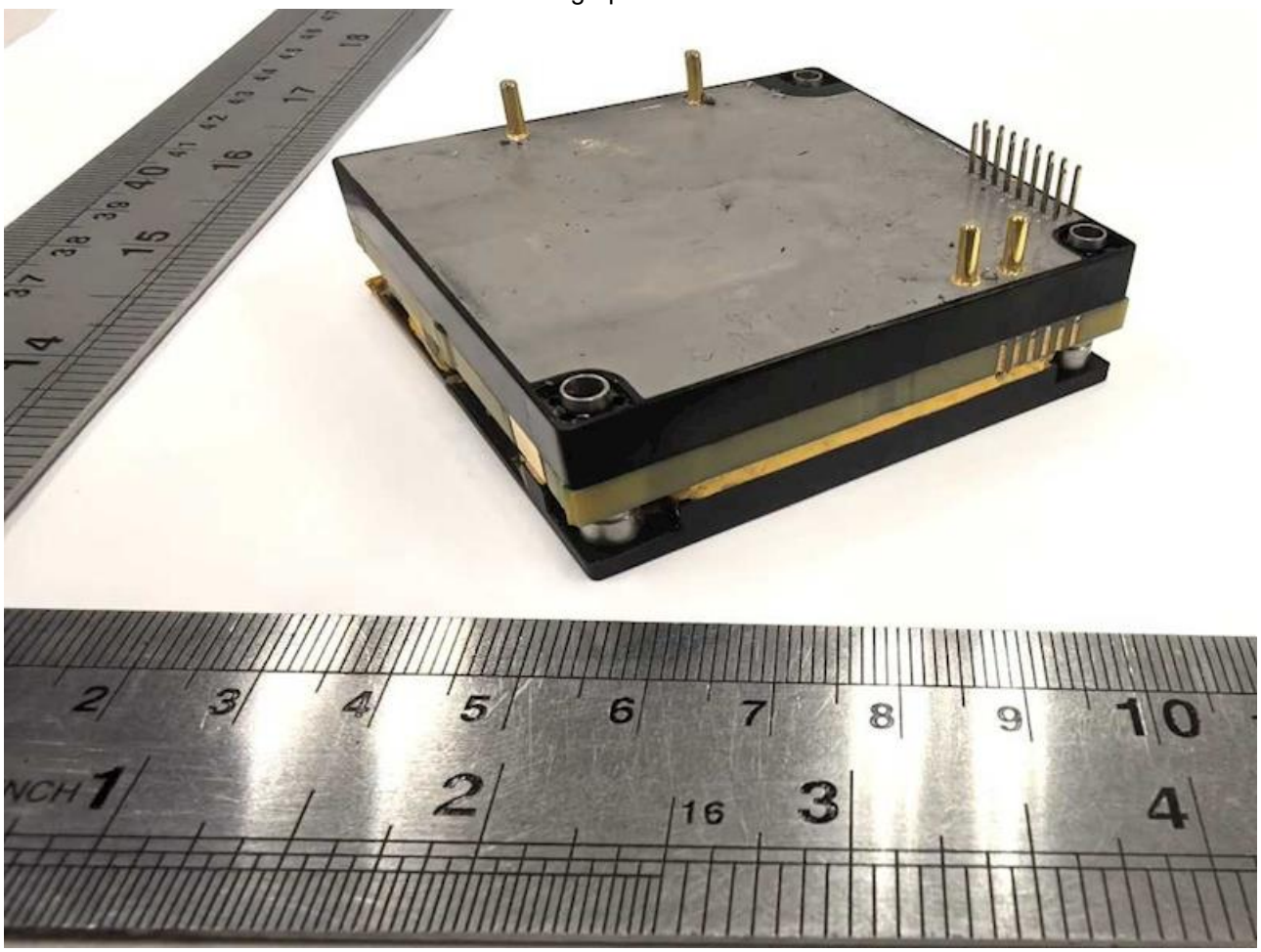
IEC62368_1E – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.4.2)	Volume of wiring compartment	No such equipment	N/A
Annex DVH (DVH.4.3)	Separation of circuits	No such equipment	N/A
Annex DVH (DVH.5)	Equipment markings and instructional safeguards	No such equipment	N/A
Annex DVH (DVH.5.1)	Identification of protective earthing terminal	No such equipment	N/A
Annex DVH (DVH.5.2)	Identification of terminal for earthed conductor (neutral)	No such equipment	N/A
Annex DVH (DVH.5.3)	Identification of terminals for aluminium conductors	No such equipment	N/A
Annex DVH (DVH.5.4)	Wire temperature ratings	No such equipment	N/A
Annex DVH (DVH.5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.		N/A
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

Enclosures

Type	Supplement Id	Description
Photographs	03-01	Overall view 1
Photographs	03-02	Overall view 2
Photographs	03-03	Overall view 3
Photographs	03-04	Overall view 4 (without potting)
Photographs	03-05	Overall view 5 (without potting)
Photographs	03-06	Internal view 1
Photographs	03-07	Internal view 2
Photographs	03-08	Internal view 3
Photographs	03-09	Internal view 4
Photographs	03-10	Internal view 5
Photographs	03-11	Internal view 6
Photographs	03-12	Internal view 7
Photographs	03-13	Internal view 8
Photographs	03-14	Internal view 9
Diagrams	04-01	Main PWB construction
Diagrams	04-02	Side PWB construction
Schematics + PWB	05-01	main PWB layout709-061643-0003-AA_Assy
Schematics + PWB	05-02	side PWB layout 709-061644-0002-AA_Assy
Manuals	06-01	Instruction manual
Miscellaneous	07-01	Product drawing
Miscellaneous	07-02	CTF-2 equipment lsit

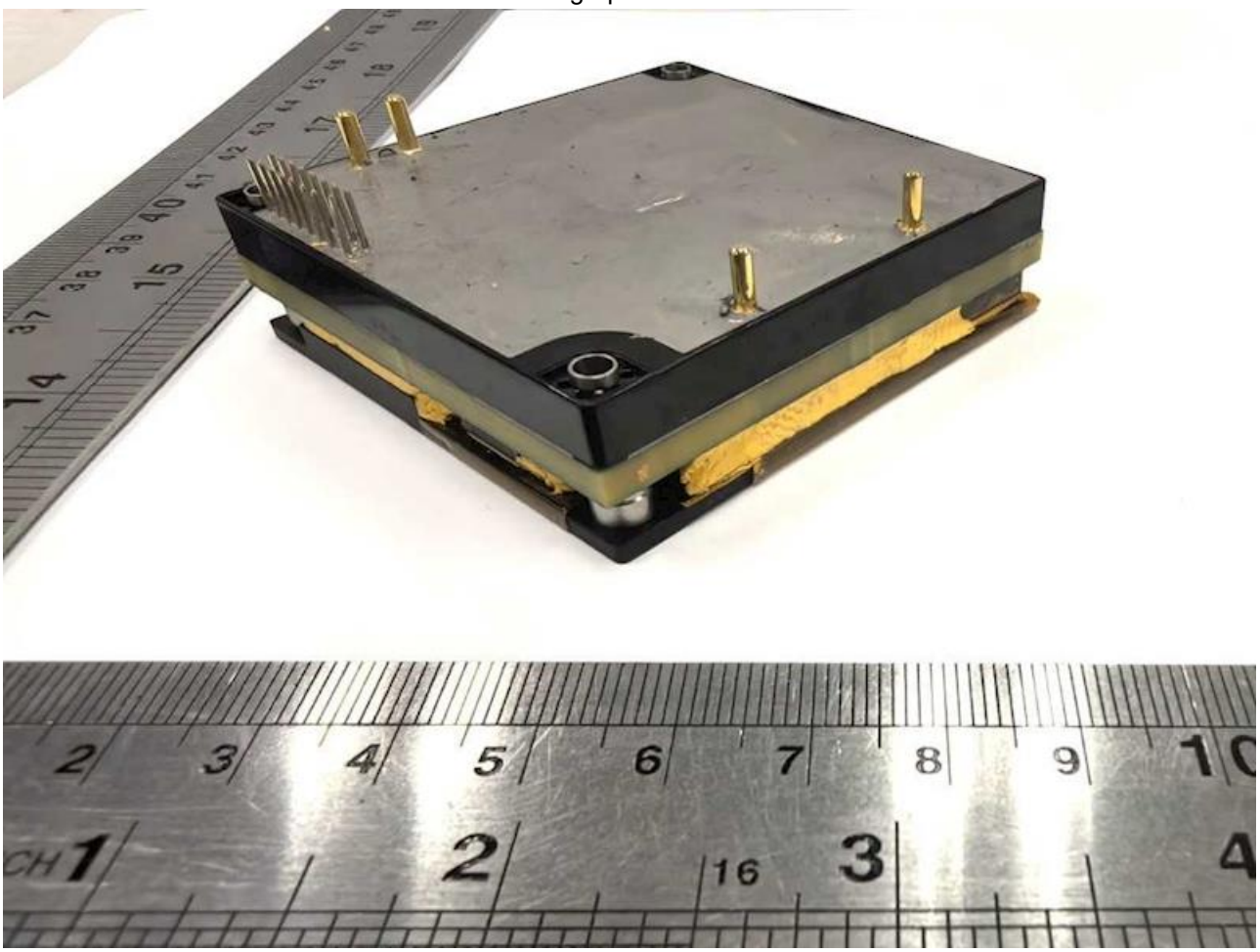
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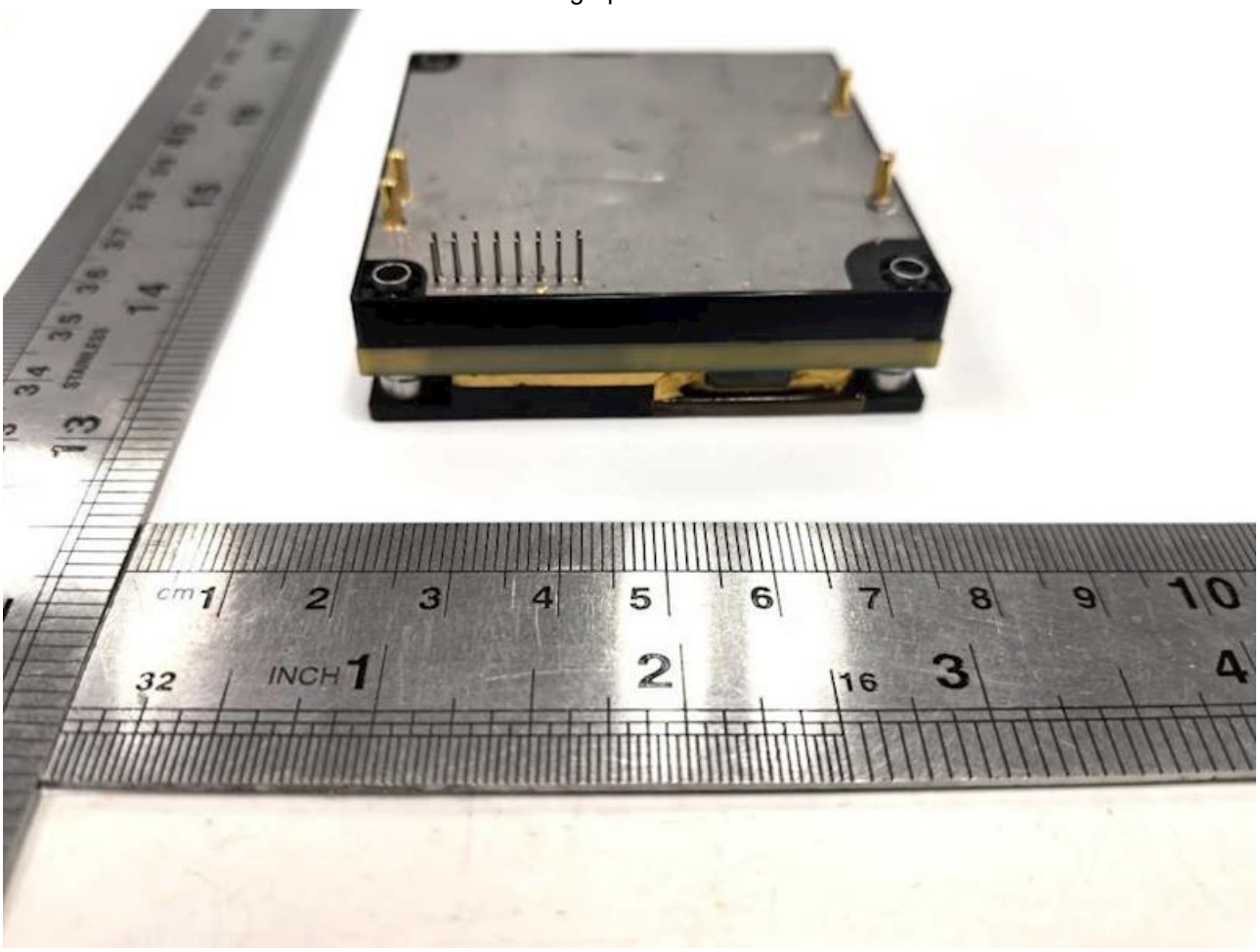
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Photographs ID 03-02



Enclosures

Photographs ID 03-03



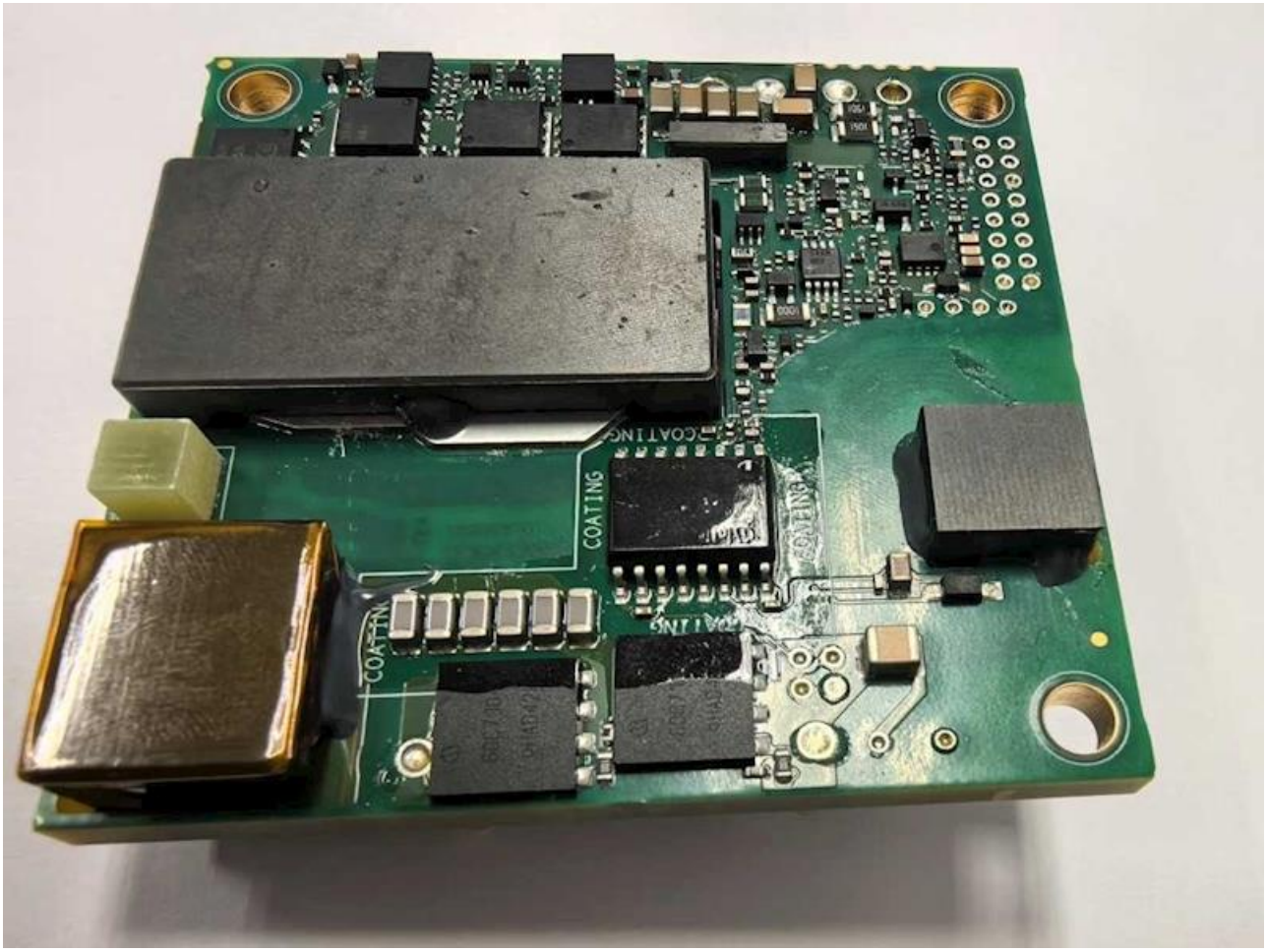
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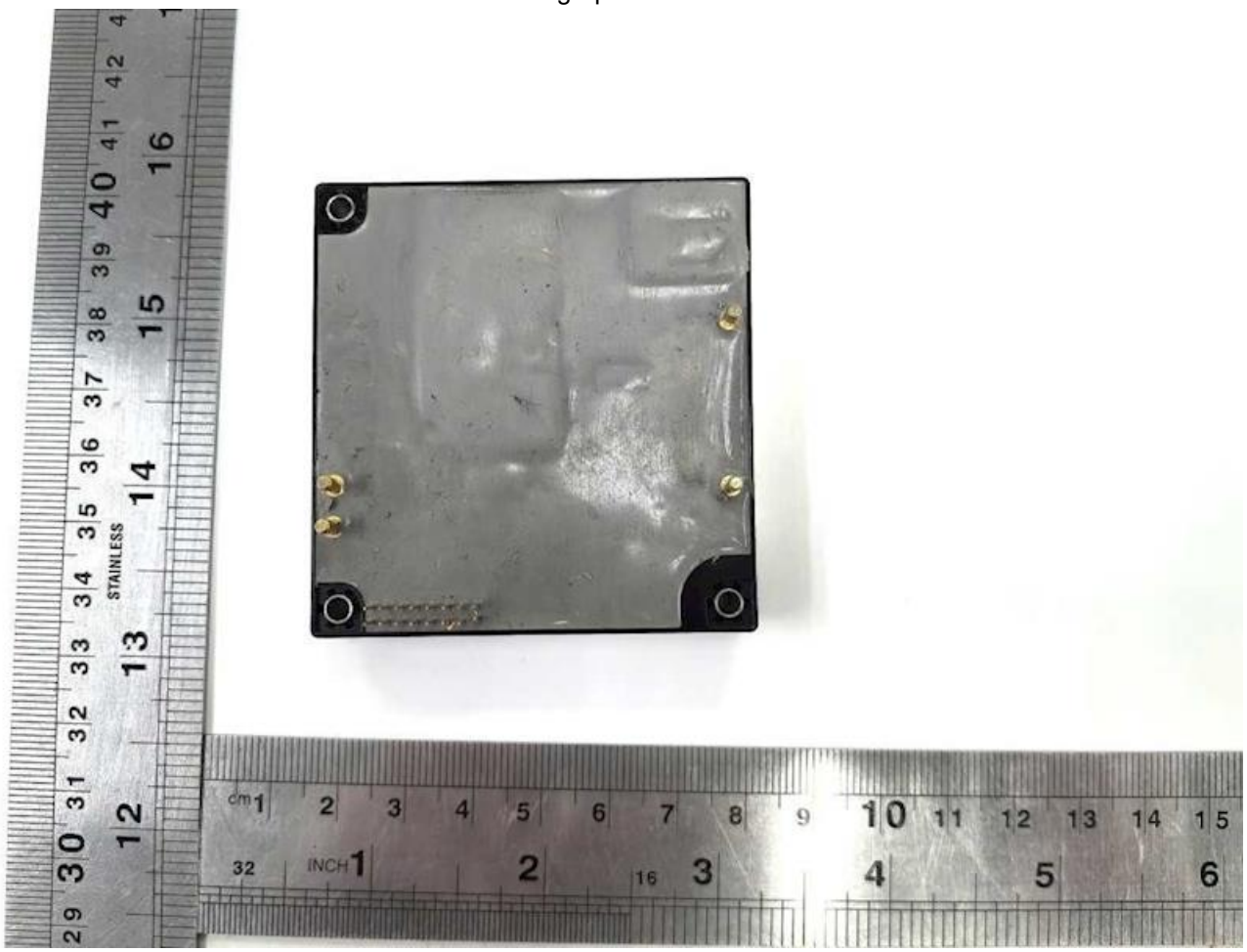
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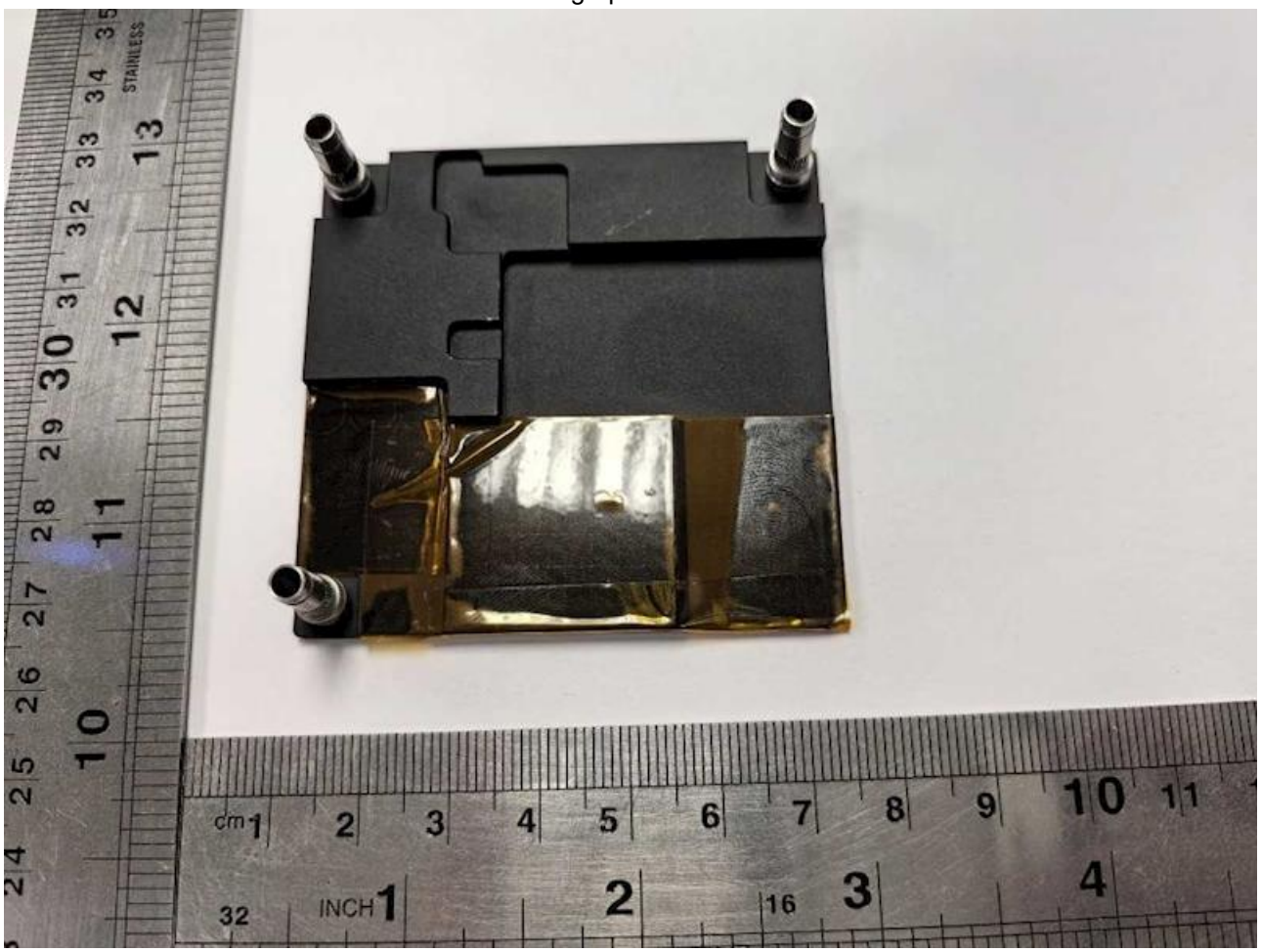
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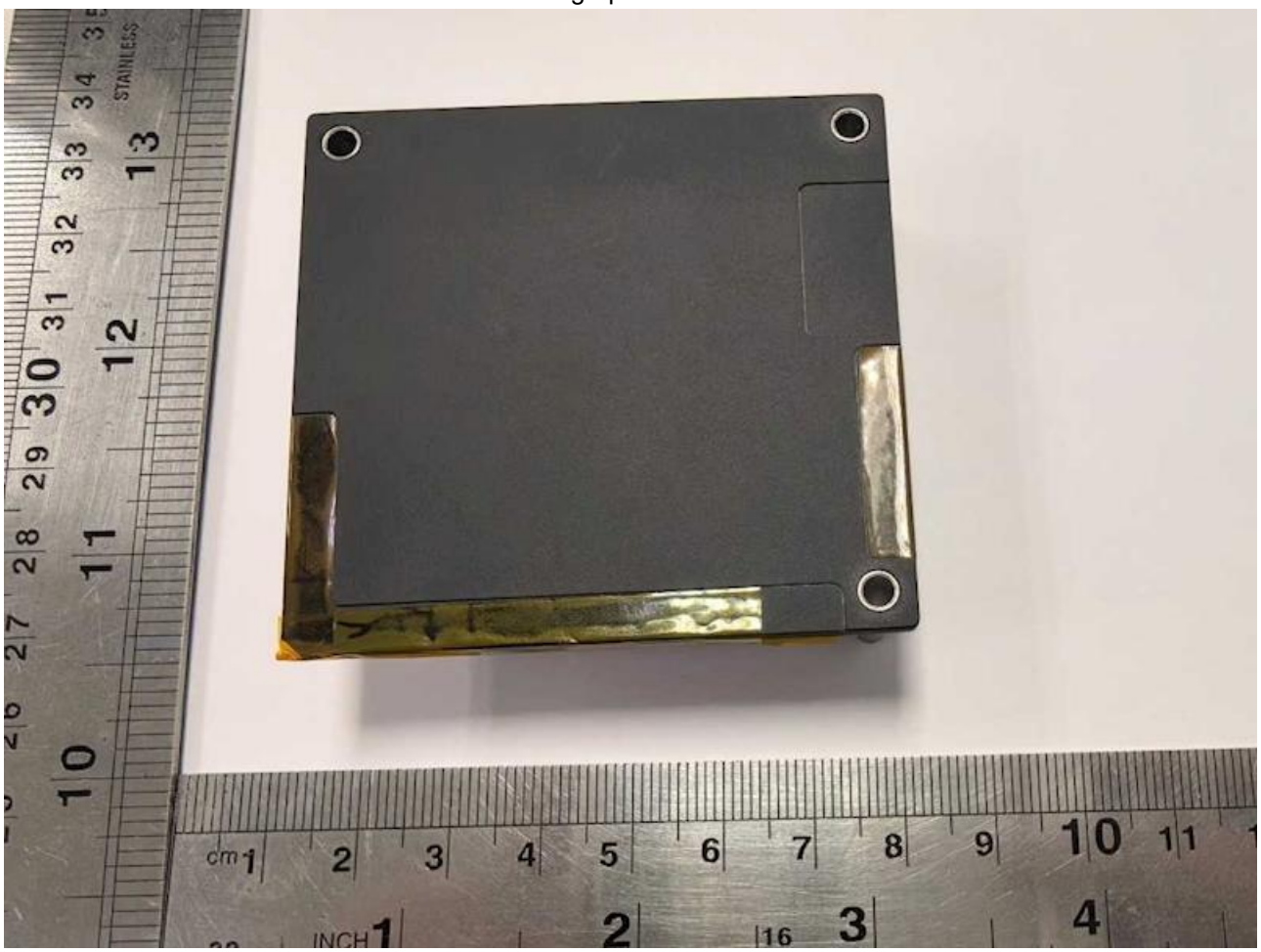
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Photographs ID 03-07



Enclosures

Photographs ID 03-08



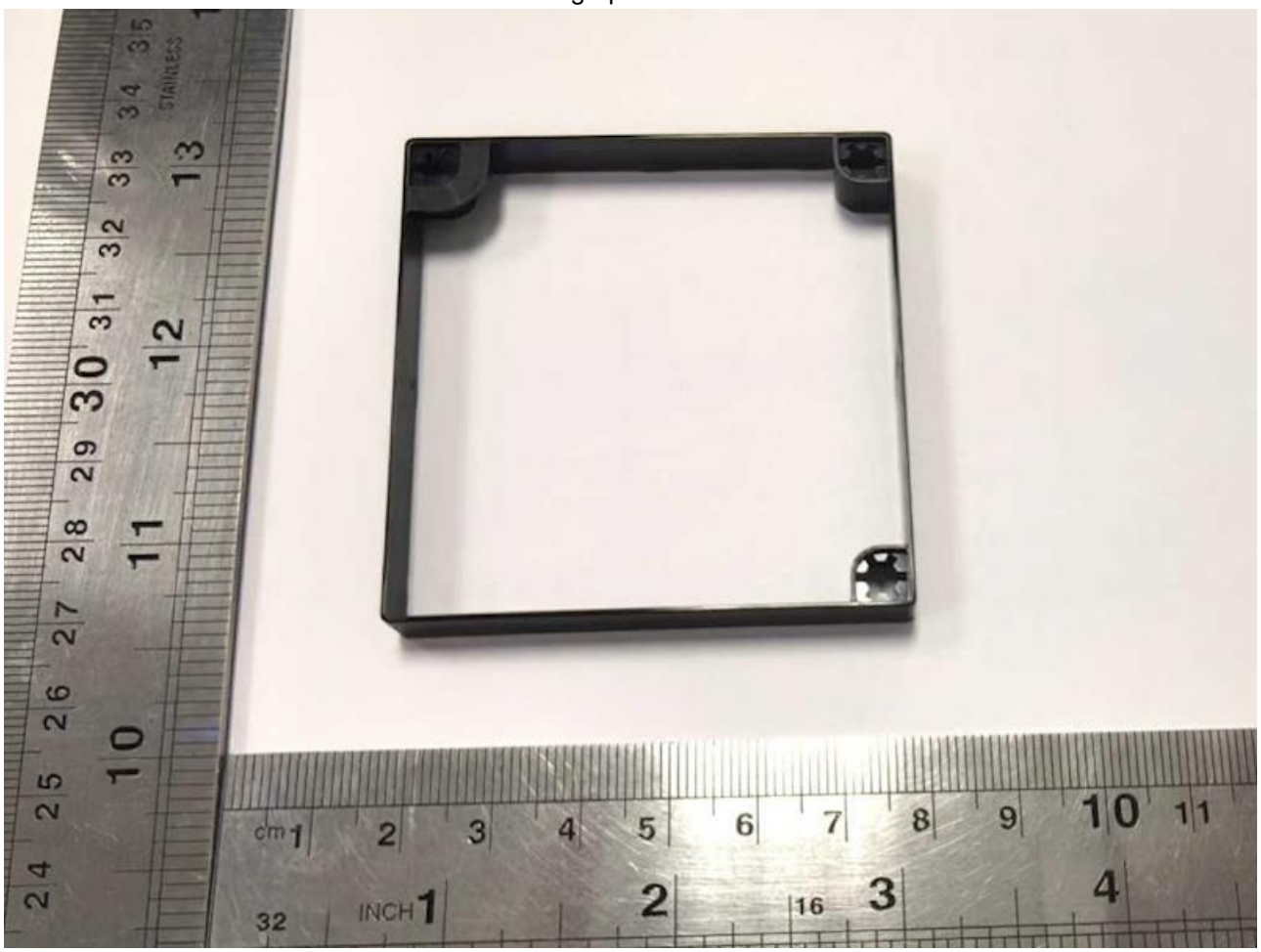
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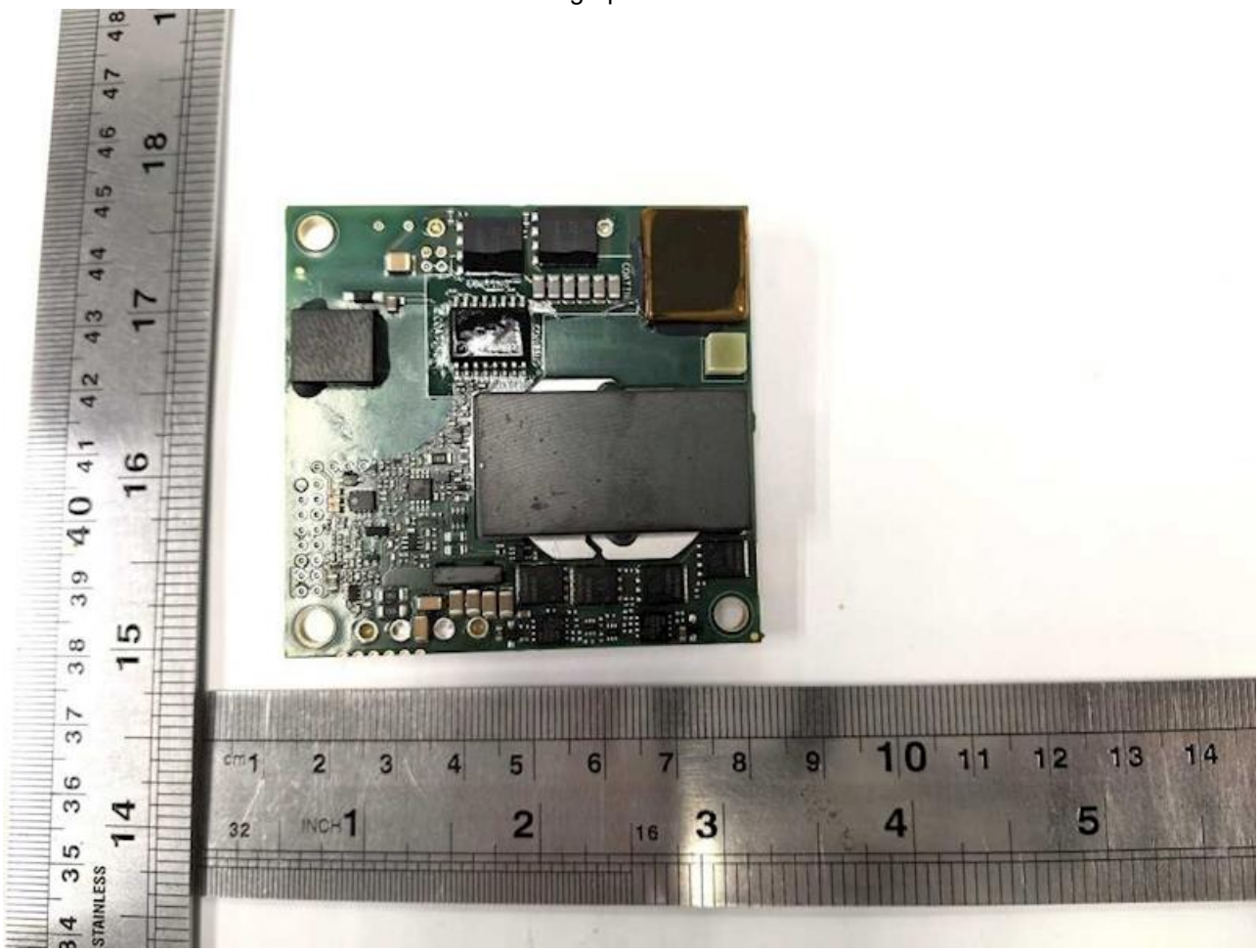
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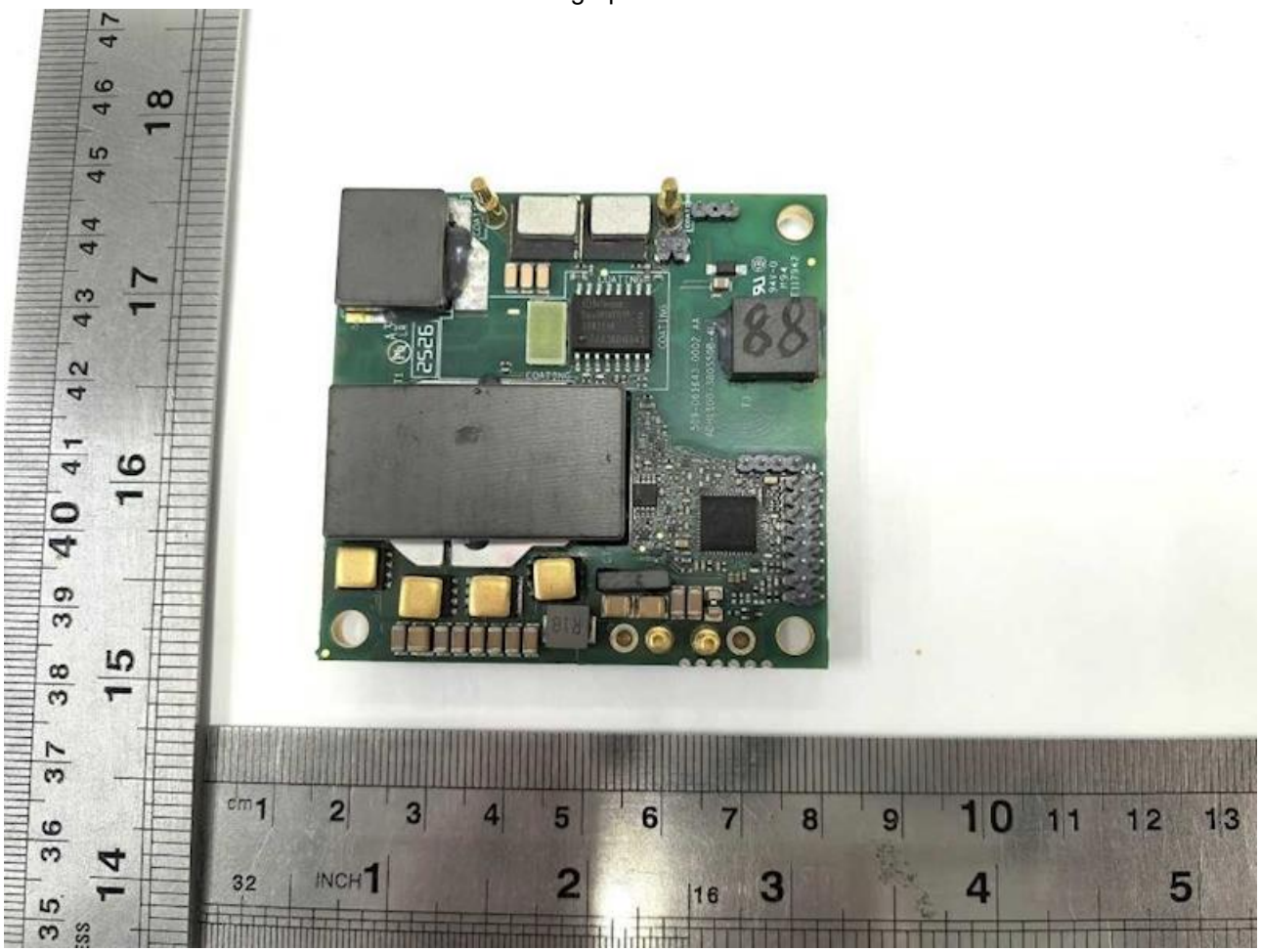
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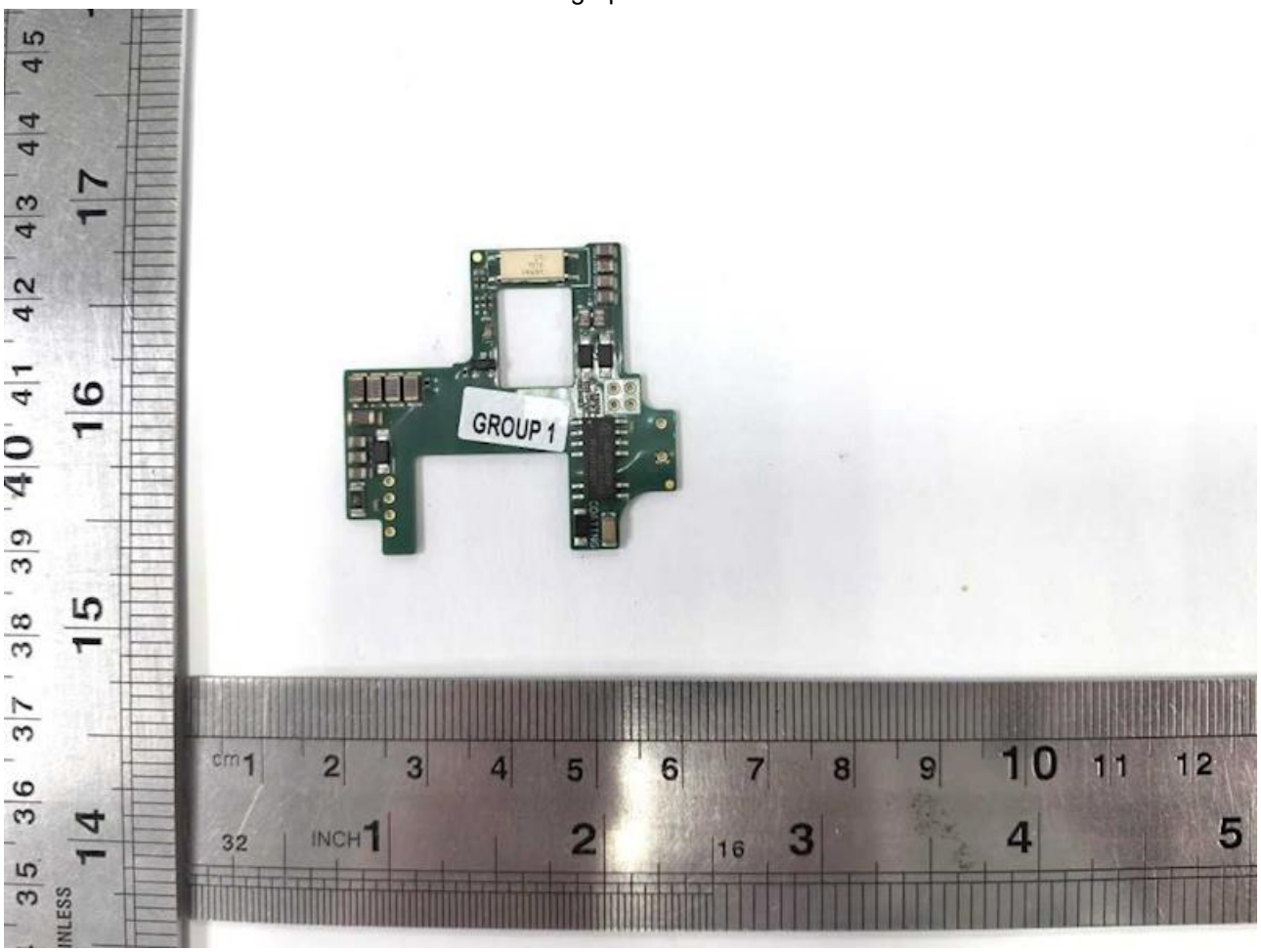
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Photographs ID 03-12



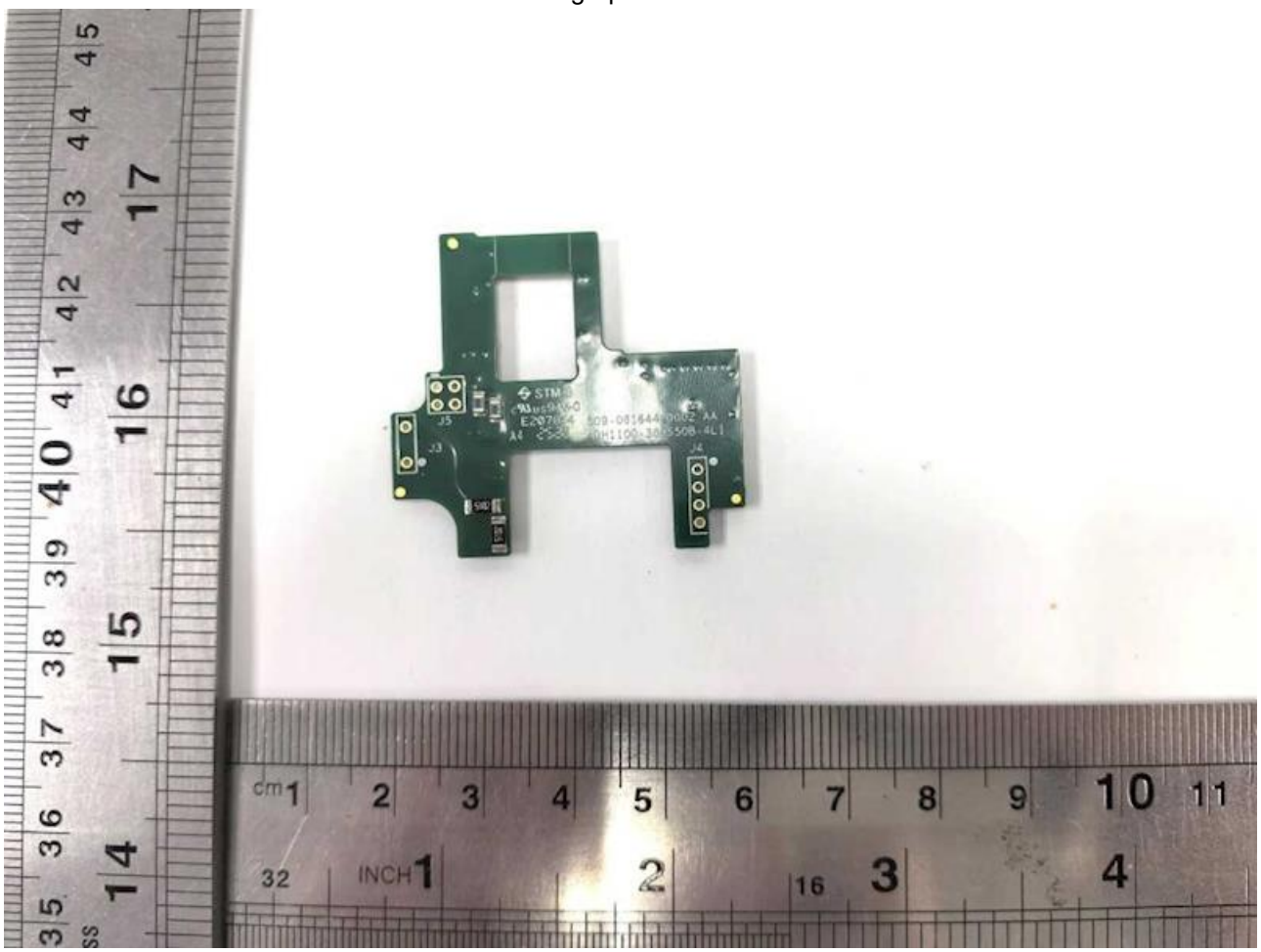
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Photographs ID 03-13



Enclosures

Photographs ID 03-14



Enclosures

Diagrams ID 04-01

REVISIONS HISTORY

P/N SUFFIX	REVISION	ECO NO.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY
-0000	AA		FIRST RELEASE P/N: 509-061643-0000	2024-05-14	simmy.shen	Lisi Li	Mabel QIN
-0001	AA		RELEASE FOR P2 P/N: 509-061643-0001	2024-11-25	simmy.shen	Lisi Li	Mabel QIN
-0002	AA		RELEASE FOR EVT P/N: 509-061643-0002	2025-05-21	simmy.shen	Lisi Li	Mabel QIN
-0003	AA		RELEASE FOR DVT P/N: 509-061643-0003	2025-11-14	simmy.shen	Lisi Li	

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3	HOLE SPECIFICATIONS
4	HIPOT TEST (COMPONENT SIDE)
5	HIPOT TEST (SOLDER SIDE)

PWB GENERAL REQUIREMENT SHALL MEET:
1) 920-000246-0000 (ASP-6)- GENERAL SPECIFICATION FOR PWB
2) 920-000067-0000 (ASP-8)- APPROVAL PWB MATERIAL SOURCE

NOTE: IN THE EVENT OF CONFLICT BETWEEN THE REQUIREMENT OF THIS SPECIFICATIONS AND THE ABOVE DOCUMENTS SPECIFY ITS USE, THE REQUIREMENTS OF THIS SPECIFICATIONS SHALL APPLY.

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PROJECT/MODEL NO.
ADH1100-380S50B-4LI

DESCRIPTION
PCB-14L Main Board

DOCUMENT NO./ITEM NO.
509-061643-0003

COMPUTER GENERATED

PANEL DRAWING
707-061643-XXXX

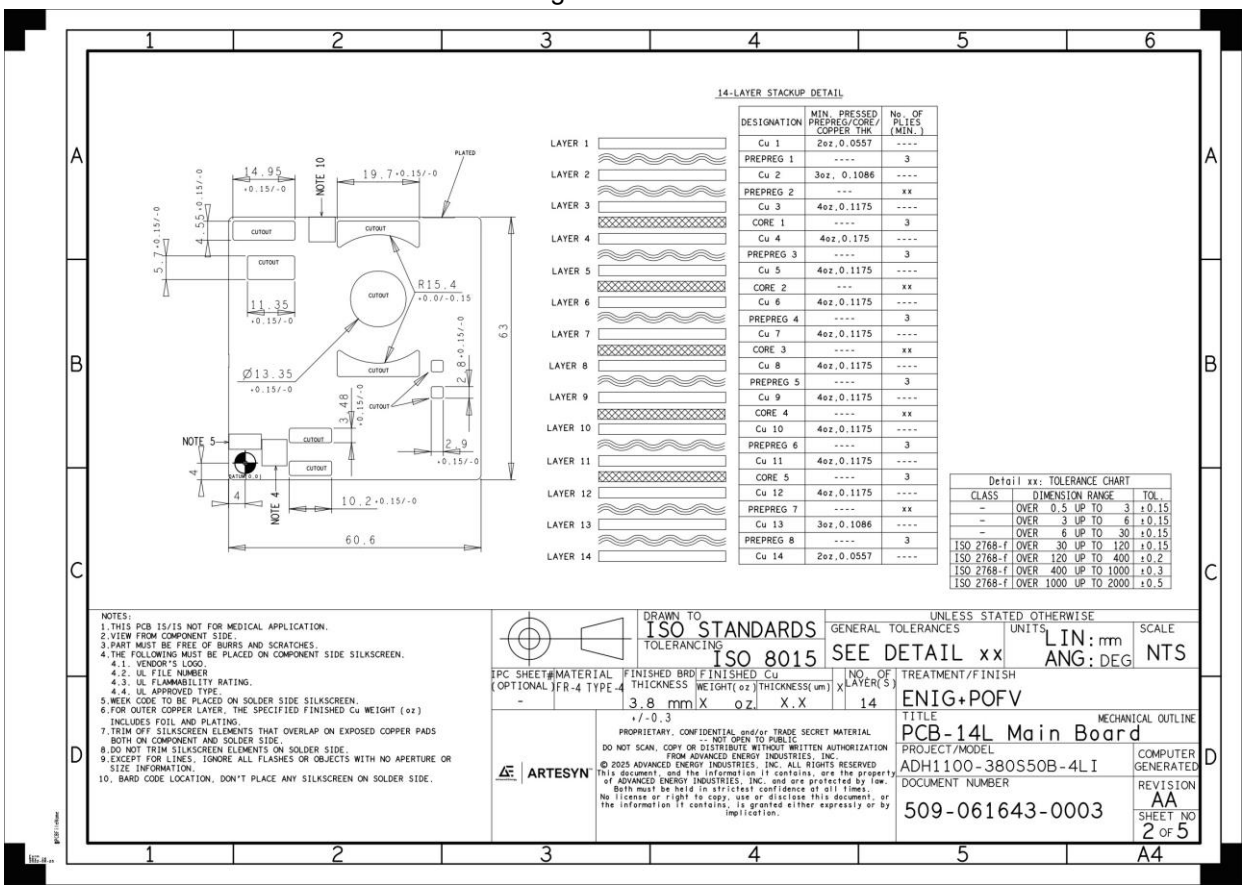
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TECHNICAL REFERENCE: simmy.shen
Email @aei.com

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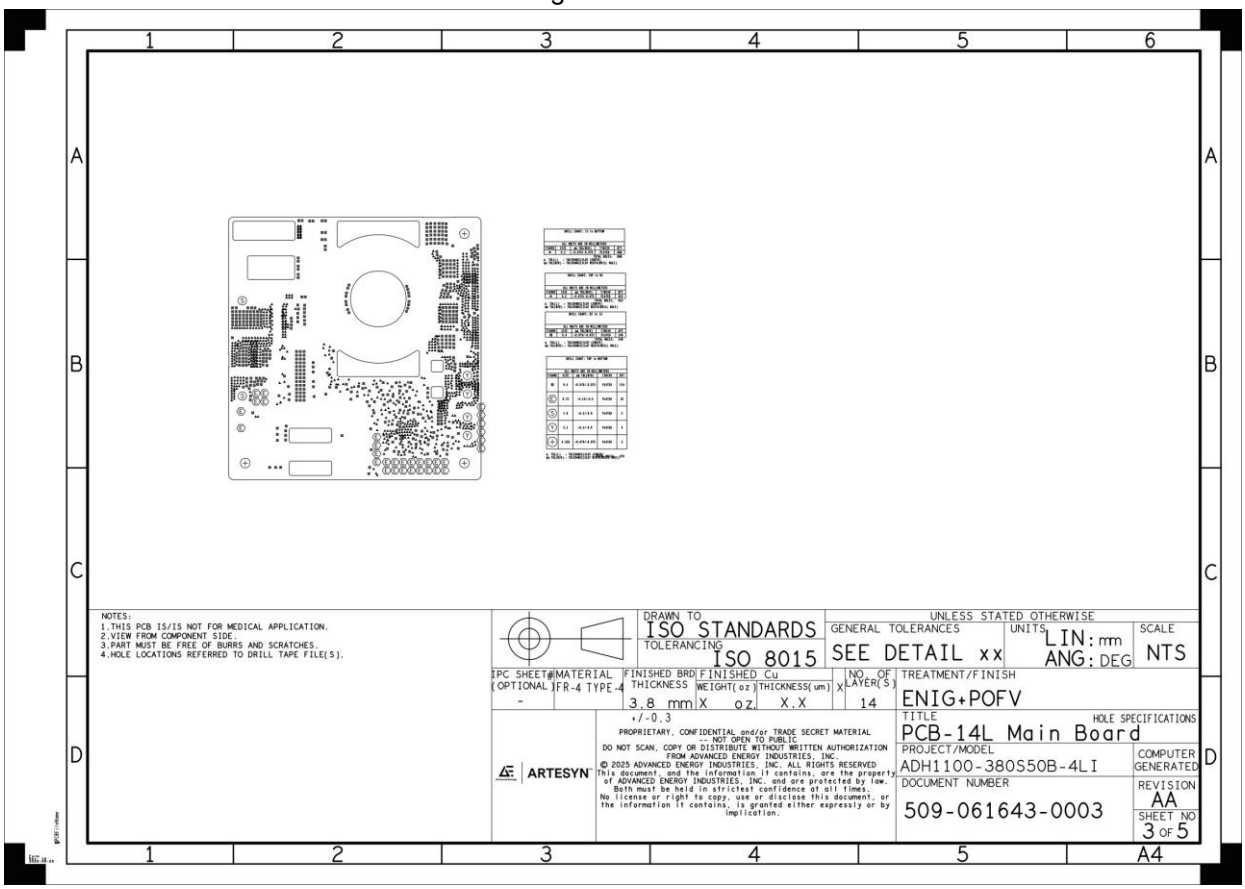
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Diagrams ID 04-01



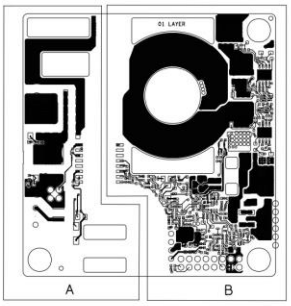
Enclosures

Diagrams ID 04-01



Enclosures

Diagrams ID 04-01



dielectric strength: DC>4500V
test condition:10KHZ,1V,25degrees centigrade
notice isolation voltage test:
1)Short all pads of the primary circuit on the top side as one net "A"
2)Short all pads of the secondary circuit on the top side as one net"B"
3)short all pads of the primary circuit on the bottom side as one net "C"
4)short all pads of the secondary circuit on the bottom side as one net "D"
5)short "A" and "C" as one net "E"
6)short "B" and "D" as one net "F"
7)short HI-POT test between E and F must be 4500V DC
10 sec/25 degrees centigrade

NOTES:
1. VIEW FROM COMPONENT SIDE.

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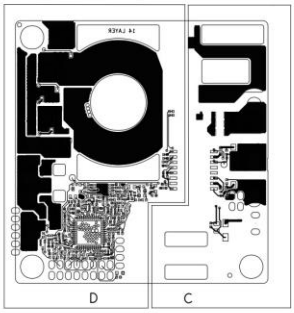
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PCB-14L Main Board
PROJECT/MODEL ADH1100-380S50B-4LI
COMPUTER GENERATED
DOCUMENT NUMBER 509-061643-0003
REVISION AA
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Enclosures

Diagrams ID 04-01

dielectric strength: DC>4500V
test condition:10KHZ,1V,25degrees centigrade
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7)short HI-POT test between E and F must be 4500V DC
10 sec/25 degrees centigrade



NOTES:
1. VIEW FROM SOLDER SIDE.

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TITLE: PCB-14L Main Board (HIPOT TEST (SOLDER SIDE))
PROJECT/MODEL: ADH1100-380S50B-4LI
COMPUTER GENERATED
DOCUMENT NUMBER: 509-061643-0003
REVISION: AA
SHEET NO: 5 OF 5

Enclosures

Diagrams ID 04-02

REVISIONS HISTORY

P/N SUFFIX	REVISION	ECO NO.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY
-0000	AA		FIRST RELEASE P/N: 509-061644-0000	2024-05-14	simmy.shen	Lisi Li	Mabel Qin
-0001	AA		RELEASE FOR P2 P/N: 509-061644-0001	2024-11-25	simmy.shen	Lisi Li	Mabel Qin
-0002	AA		RELEASE FOR EVT P/N: 509-061644-0002	2025-05-22	simmy.shen	Lisi Li	

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2) 920-000067-0000 (ASP-8)- APPROVAL PWB MATERIAL SOURCE

NOTE: IN THE EVENT OF CONFLICT BETWEEN THE REQUIREMENT OF THIS SPECIFICATIONS AND THE ABOVE DOCUMENTS SPECIFY ITS USE, THE REQUIREMENTS OF THIS SPECIFICATIONS SHALL APPLY.

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PROJECT/MODEL NO.
ADH1100-380S50B-4LI

DESCRIPTION
PCB-4L AUX Board

DOCUMENT NO./ITEM NO.
509-061644-0002

COMPUTER GENERATED

PANEL DRAWING
707-061644-XXXX

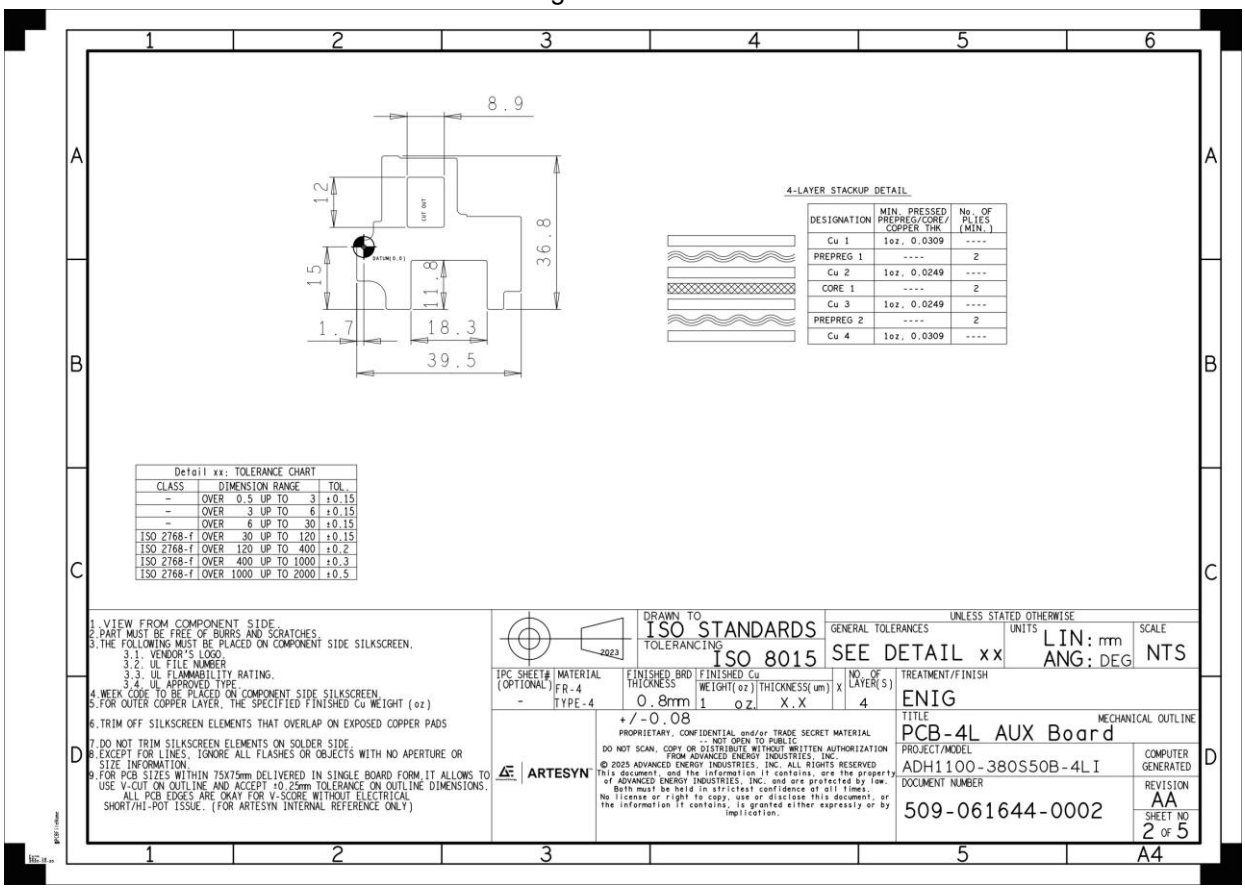
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TECHNICAL REFERENCE: simmy.shen
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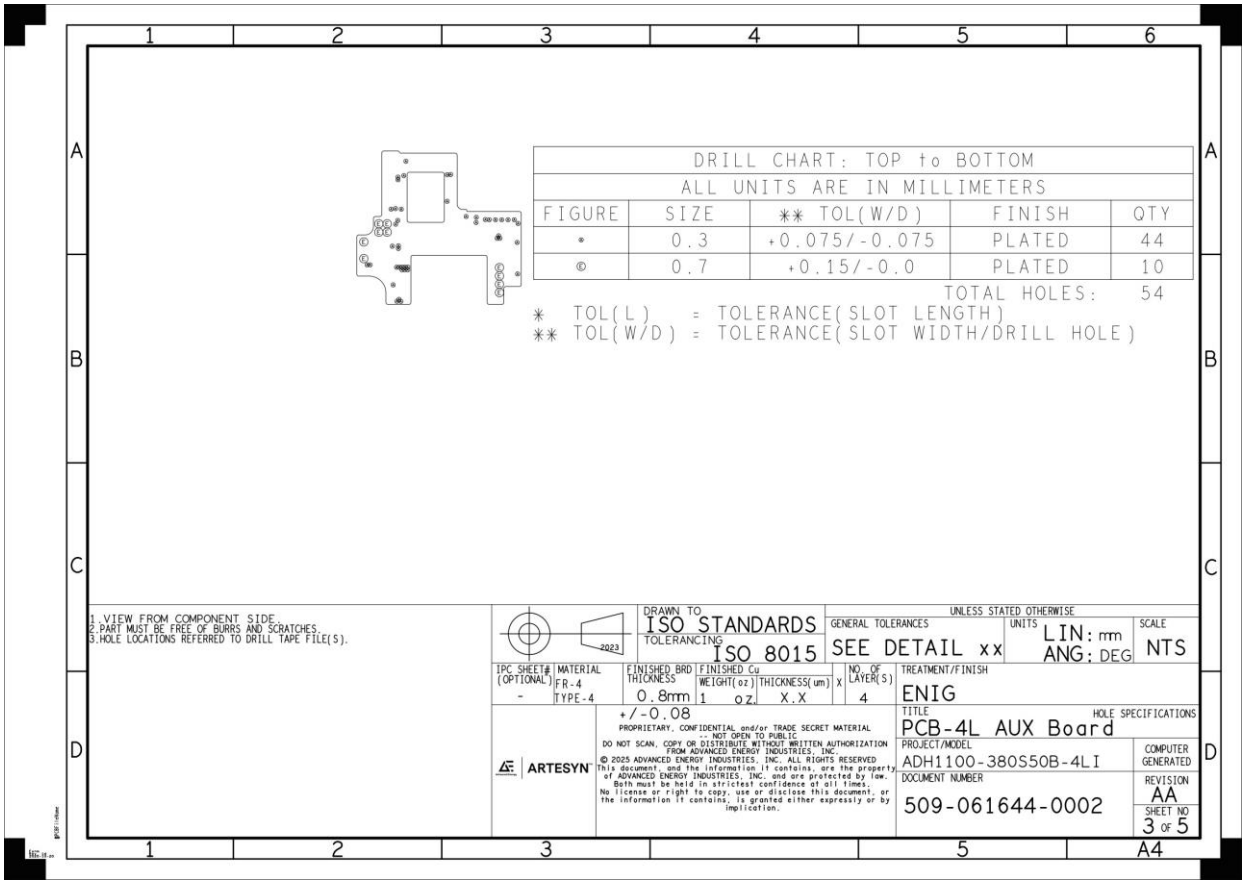
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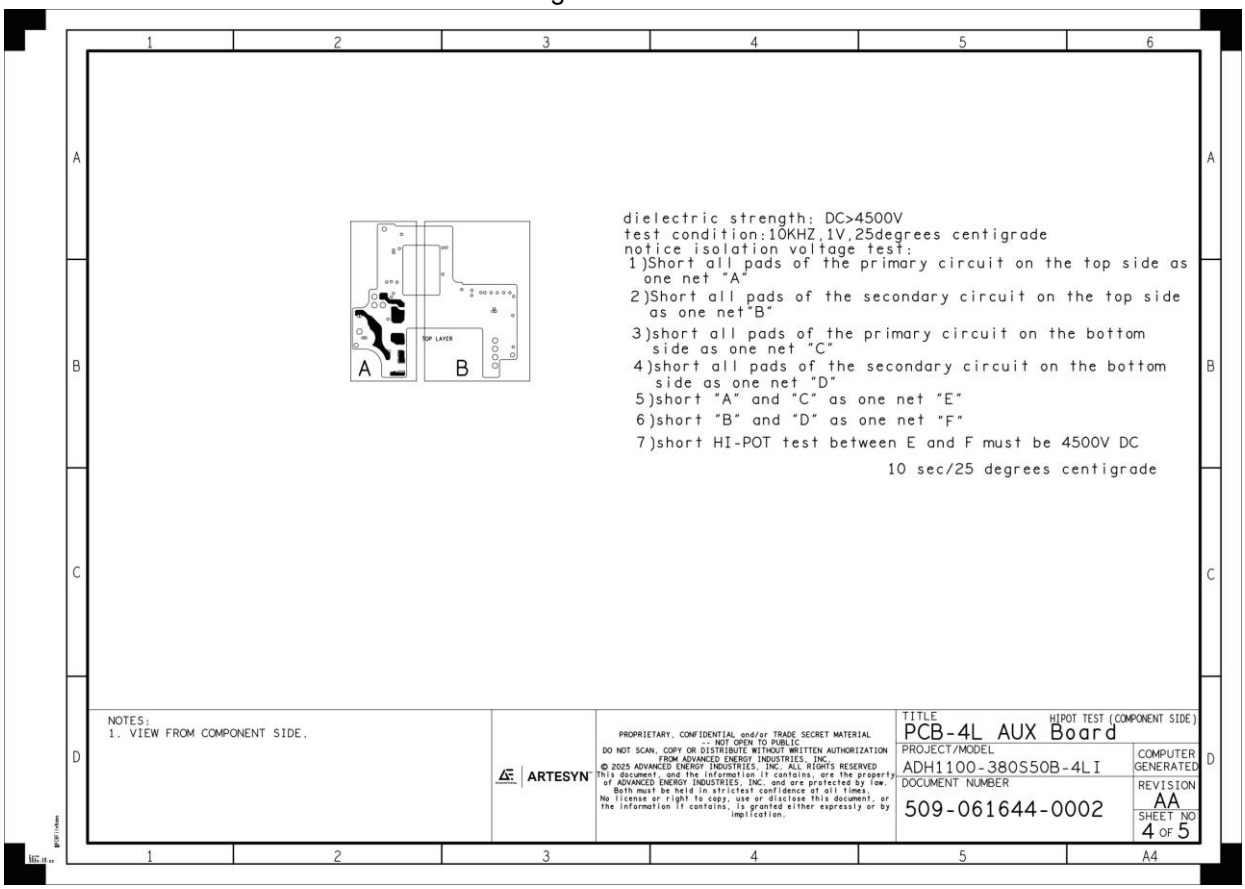
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Diagrams ID 04-02



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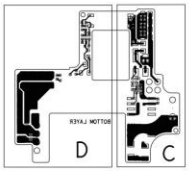
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Enclosures

Diagrams ID 04-02

dielectric strength: DC>4500V
test condition:10KHZ,1V,25degrees centigrade
notice isolation voltage test:
1)Short all pads of the primary circuit on the top side as one net "A"
2)Short all pads of the secondary circuit on the top side as one net"B"
3)short all pads of the primary circuit on the bottom side as one net "C"
4)short all pads of the secondary circuit on the bottom side as one net "D"
5)short "A" and "C" as one net "E"
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7)short HI-POT test between E and F must be 4500V DC
10 sec/25 degrees centigrade



NOTES:
1. VIEW FROM SOLDER SIDE.

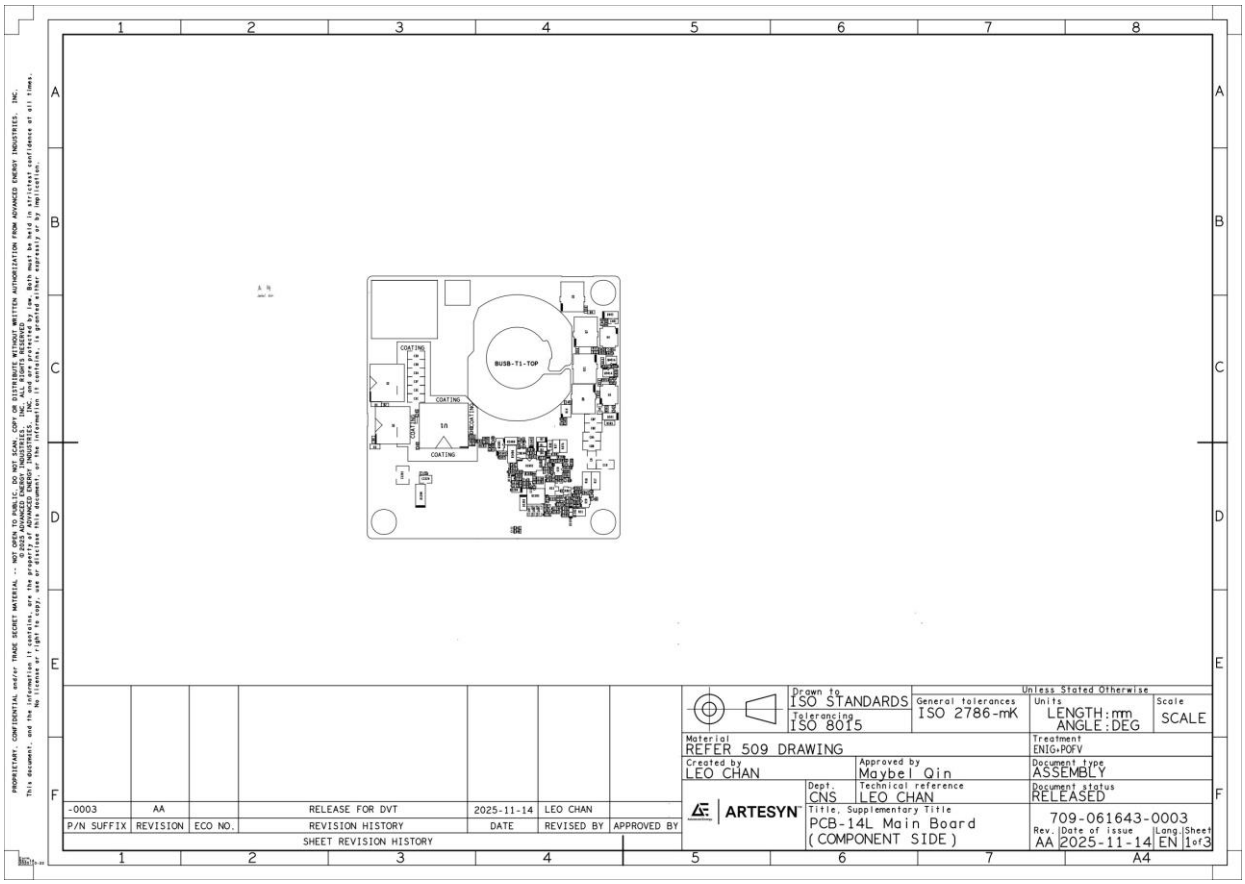
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TITLE: PCB-4L AUX Board (HIPOT TEST (SOLDER SIDE))
PROJECT/MODEL: ADH1100-380S50B-4LI
COMPUTER GENERATED
DOCUMENT NUMBER: 509-061644-0002
REVISION: AA
SHEET NO: 5 OF 5

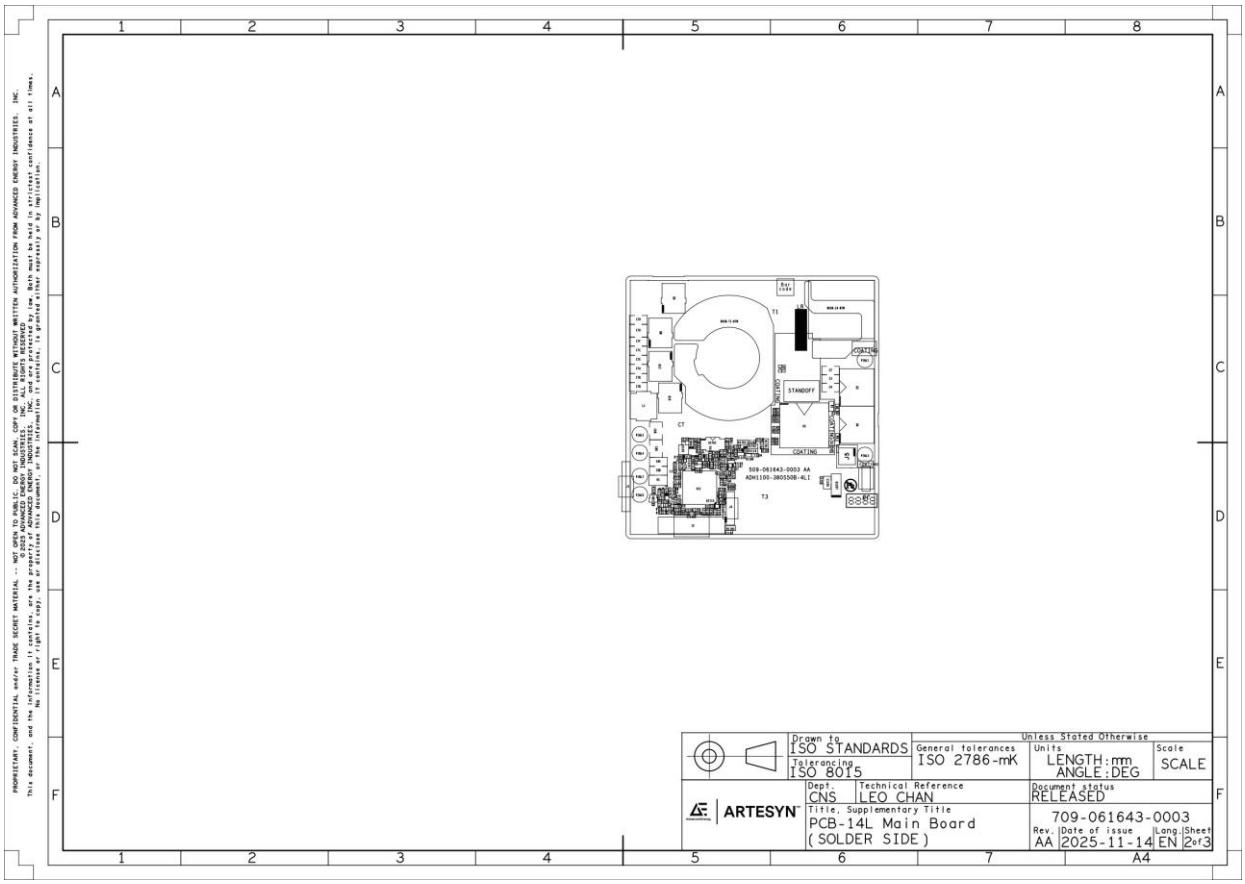
Enclosures

Schematics + PWB ID 05-01



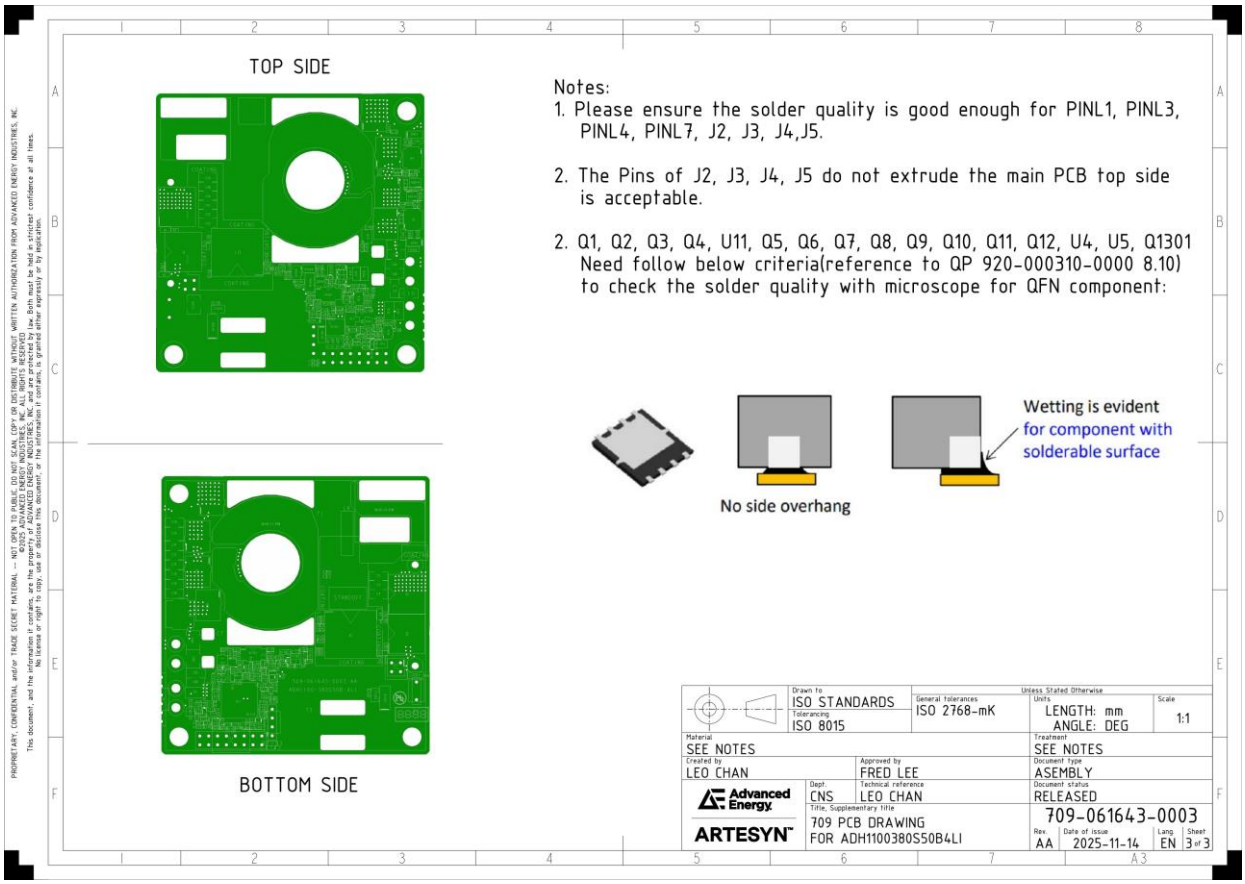
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Schematics + PWB ID 05-01



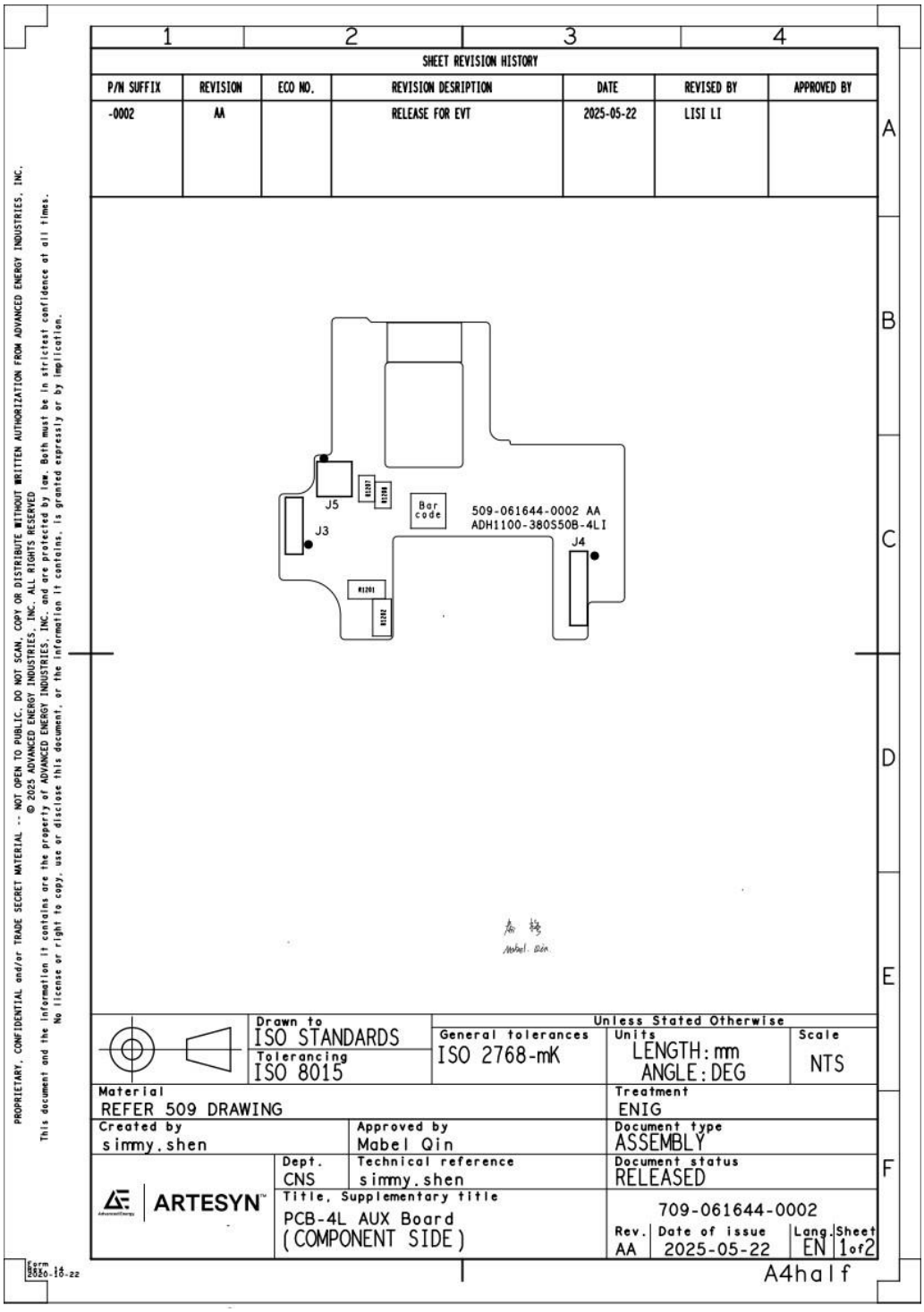
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Schematics + PWB ID 05-01



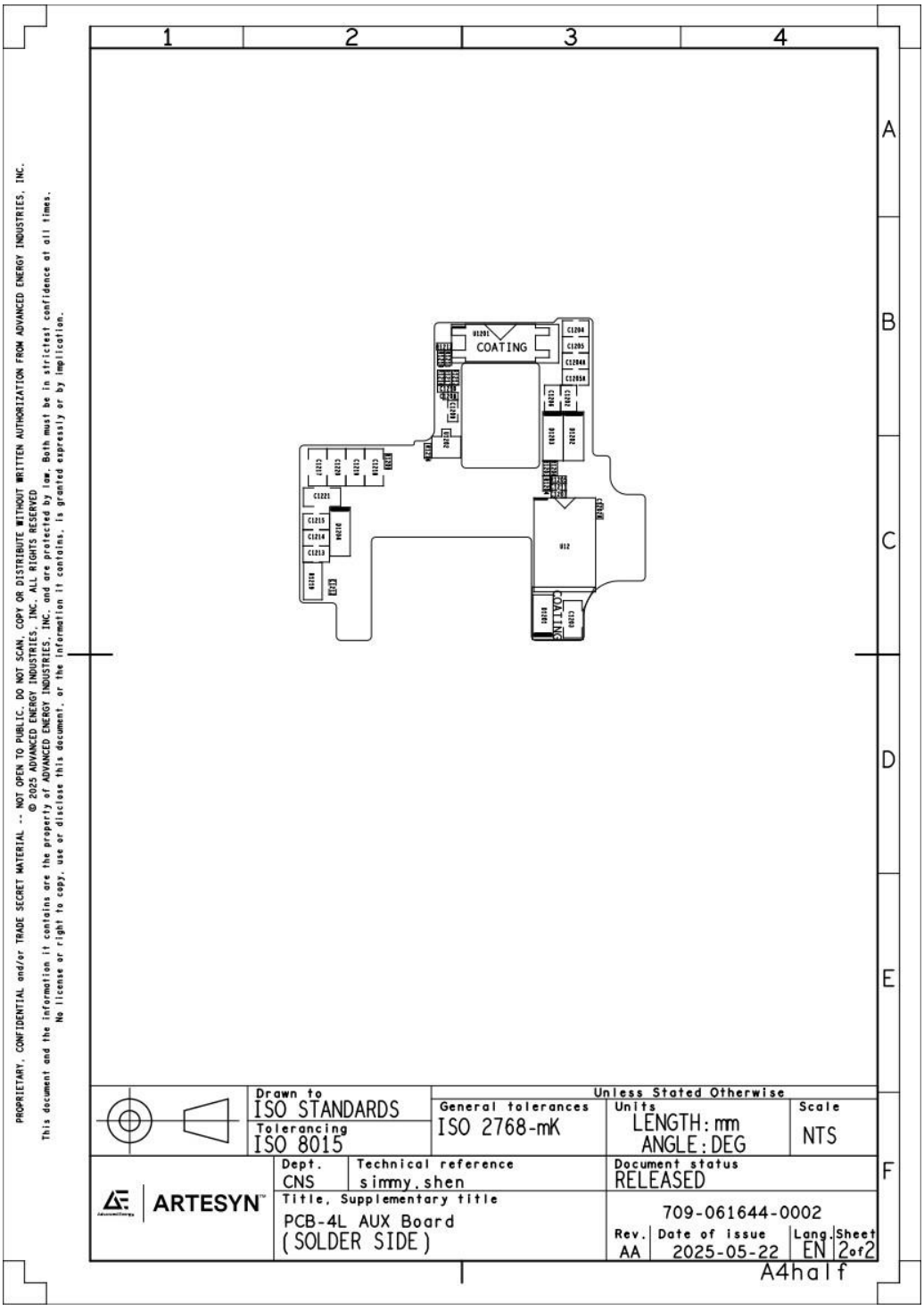
Enclosures

Schematics + PWB ID 05-02



Enclosures

Schematics + PWB ID 05-02



Enclosures

Manuals ID 06-01

SFAETY INSTRUCTION MANUAL/ SICHERHEITSANWEISUNG
For ADH1100380S50XXXXXXXX / ADH1100-380S50XXXXXXXX

To comply with the published safety standards, the following must be observed when using this equipment:

Zur Einhaltung der veröffentlichten Sicherheitsstandards ist bei der Verwendung dieses Geräts Folgendes zu beachten:

Rating：
DC Input: 350-420VDC, 3.6A
DC output: 50VDC, 22A
Max. output power is 1100W

Bewertung:
Gleichstromeingang: 350–420 V DC, 3,6 A
Gleichstromausgang: 50 V DC, 22 A
Maximale Ausgangsleistung: 1100 W

1. This product is a Class I built-in Isolated brick Converter, make sure to connect to protective earthing in final use.

   Bei diesem Produkt handelt es sich um einen eingebauten isolierten Konverter der Klasse I. Stellen Sie sicher, dass er im Endbetrieb an eine Schutzerdung angeschlossen wird.

2. The product provides Reinforced insulation between input to output, basic insulation between input to heatsink, suitable safeguard should be considered in the end system.

   Das Produkt bietet eine verstärkte Isolierung zwischen Eingang und Ausgang sowie eine Basisisolierung zwischen Eingang und Kühlkörper. Im Endsystem sollten geeignete Schutzmaßnahmen berücksichtigt werden.

3. These DC-DC converters have no in-line fuse. For safe operation, an external 10A, 500VDC, fast acting fuse must be employed as input line fuse before installation.

   Diese DC/DC-Wandler verfügen über keine integrierte Sicherung. Für einen sicheren Betrieb muss vor der Installation eine externe, schnell ansprechende 10-A-Sicherung mit 500 V DC als Eingangssicherung verwendet werden.

4. Maximum ambient temperature around the equipment must not exceed 65°C and Full load 5m/s air velocity for baseplate + 1.46'' heatsink, air flow from V+ to V-.

   Die maximale Umgebungstemperatur um das Gerät darf 65 °C nicht überschreiten. Bei Volllast beträgt die Luftgeschwindigkeit 5 m/s für die Grundplatte + 1,46 Zoll Kühlkörper, Luftstrom von V+ nach V-.

5. The operating altitude for the equipment is up to 3048m.

   Die maximale Betriebshöhe des Geräts beträgt 3048 m.

6. This equipment is not suitable for use in locations where children are likely to be present.

   Dieses Gerät ist nicht für die Verwendung an Orten geeignet, an denen sich Kinder aufhalten könnten.

7. The power supply is intended for use as a component part of other equipment. When installing the power supply and making input and output connections, the relevant safety standards e.g. UL/EN/IEC 62368-1; CSA 22.2 No. 62368-1, etc. must be complied with, especially the requirements for creepage distances, clearances and distance through insulation between primary wiring and earth or secondary wiring.

   Das Netzteil ist als Bestandteil anderer Geräte vorgesehen. Bei der Installation des Netzteils und beim Herstellen der Ein- und Ausgangsverbindungen müssen die einschlägigen Sicherheitsstandards, z. B. UL/EN/IEC 62368-1, CSA 22.2 Nr. 62368-1 usw., insbesondere die Anforderungen an Kriechstrecken, Luftstrecken und Isolationsabstände zwischen Primär- und Erdungs- bzw. Sekundärleitungen, eingehalten werden.

8. This unit contains the secondary output of PS3. When installing into the end system, suitable enclosure must be provided for these secondary outputs and the associated wires.

Our ref: ADH1100380S50XXXXXXXX / ADH1100-380S50XXXXXXXX /SIM Issue Date: 24Nov. 25

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Enclosures

Manuals ID 06-01

SFAETY INSTRUCTION MANUAL/ SICHERHEITSANWEISUNG
For ADH1100380S50XXXXXXXX / ADH1100-380S50XXXXXXXX

Diese Einheit enthält den sekundären Ausgang der PS3. Beim Einbau in das Endsystem muss ein geeignetes Gehäuse für diese sekundären Ausgänge und die zugehörigen Kabel vorgesehen werden.

9. Manufacturer info for CE, UKCA./ Herstellerinformationen für CE, UKCA

MANUFACTURER AND LOCAL REPRESENTATIVE/S:	**HERSTELLER UND LOKALER VERTRETER:**
MANUFACTURER: **Astec International Ltd.** 16th Floor, Lu Plaza 2 Wing Yip Street, Kwun Tong, Kowloon, Hong Kong	**HERSTELLER** **Astec International Ltd.** 16th Floor, Lu Plaza 2 Wing Yip Street, Kwun Tong, Kowloon, Hong Kong
UK Representative: **Artesyn Embedded Power Ground Floor Offices,** Barberry House, 4 Harbour Buildings, Waterfront West, Brierley Hill, West Midlands, DY5 1LN	**Vertreter des Vereinigten Königreichs:** **Artesyn Embedded Power Erdgeschossbüros,** Barberry House, 4 Harbour Buildings, Waterfront West, Brierley Hill, West Midlands, DY5 1LN
EU Representative: **Astec Europe Limited Austria Branch Campus 21** Liebermannstraße F15 201 2345 Brunn am Gebirge Austria	**EU-Vertreter:** **Astec Europe Limited Österreich Niederlassung** Campus 21 Liebermannstraße F15 201 2345 Brunn am Gebirge Österreich

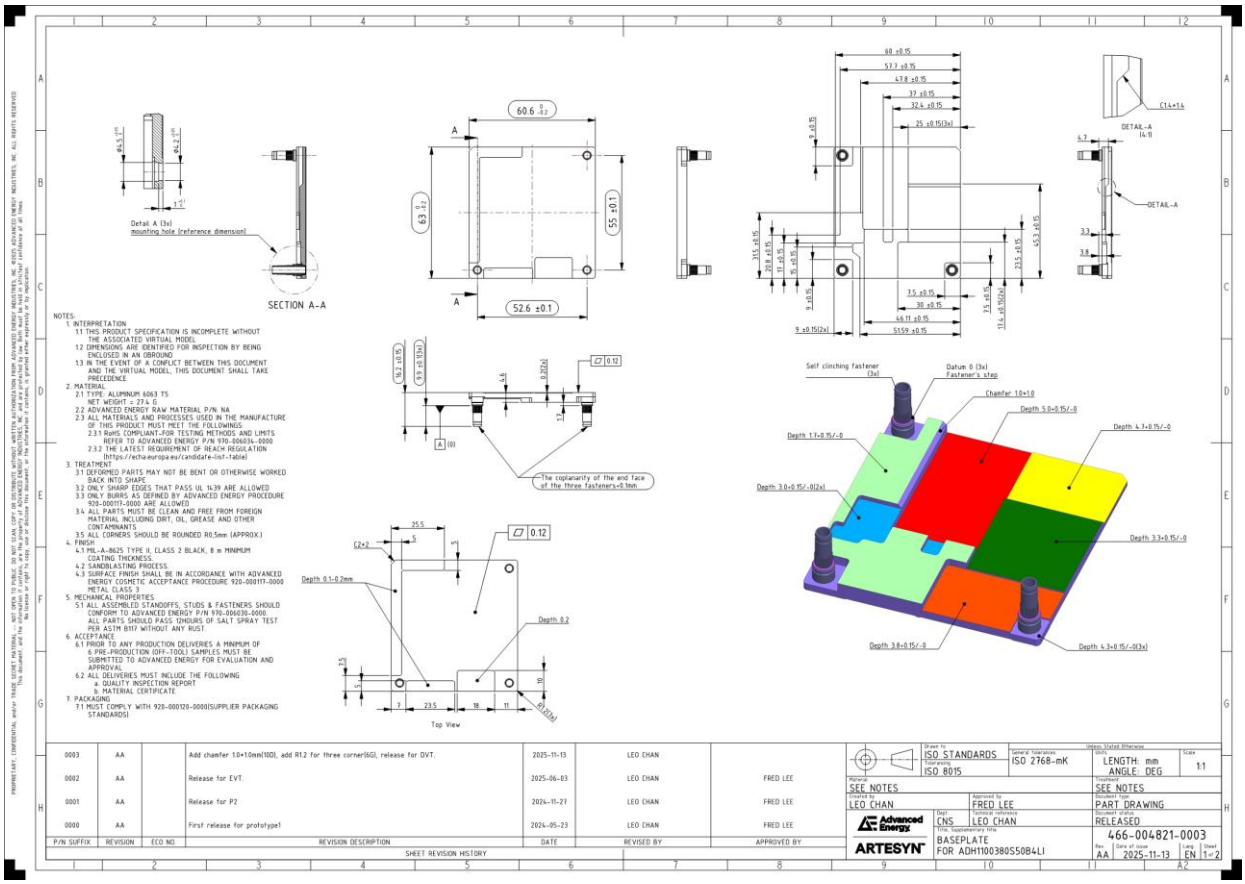
10. The Power module is not an apparatus in the meaning of EMC Directive 2014/30/EU and its implementing laws and is only for inclusion by professional installers within other equipment and must not be operated as a stand-alone product. EMC compliance to appropriate standards must be verified at system-level. This product is for sale to OEMs and System Integrators, including through Distribution Channels. It is not intended for sale to End-Users.

    Das Leistungsmodul ist kein Gerät im Sinne der EMV-Richtlinie 2014/30/EU und der dazugehörigen Durchführungsbestimmungen und darf ausschließlich von Fachinstallateuren in andere Geräte integriert werden. Es darf nicht als eigenständiges Produkt betrieben werden. Die EMV-Konformität mit den entsprechenden Normen muss auf Systemebene überprüft werden. Dieses Produkt ist für den Verkauf an OEMs und Systemintegratoren, auch über Vertriebskanäle, bestimmt. Es ist nicht für den Verkauf an Endverbraucher vorgesehen.

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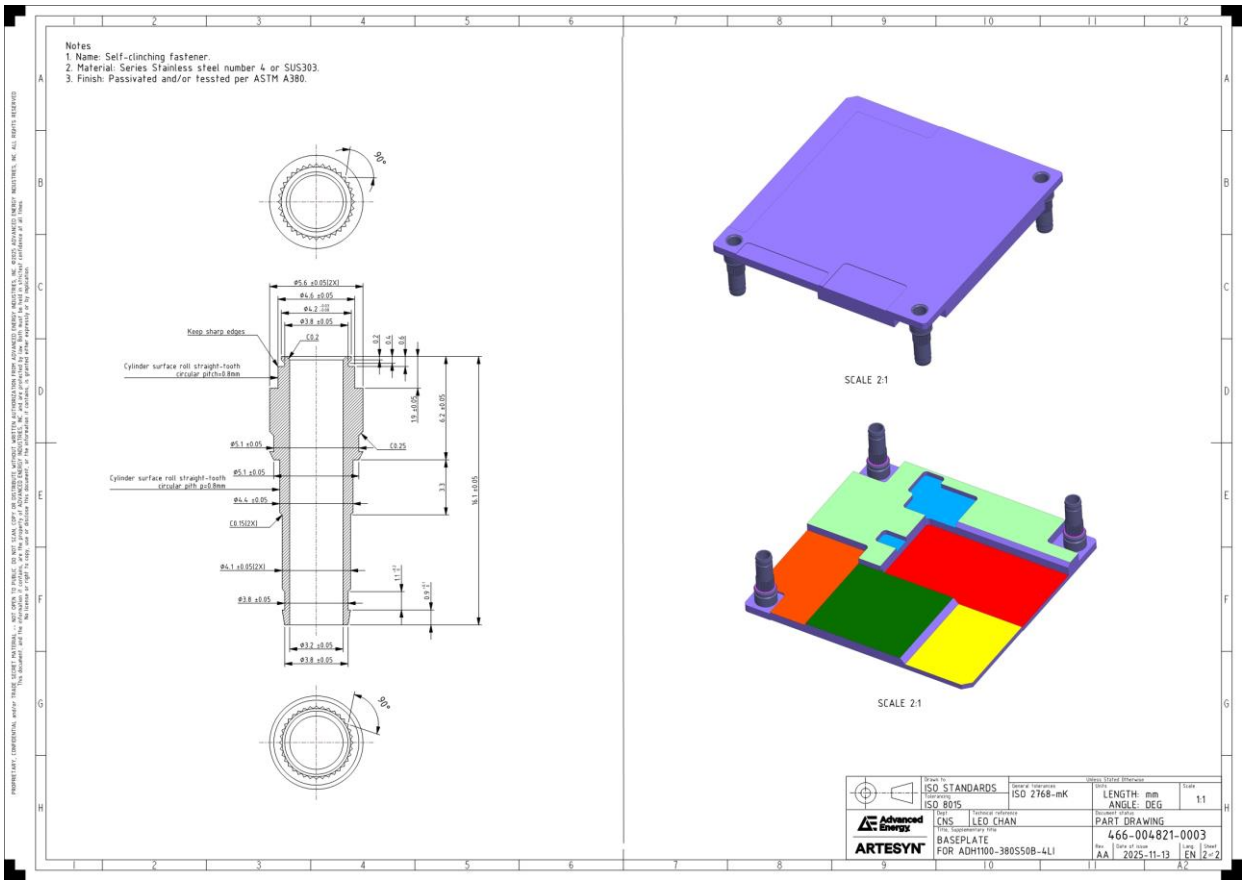
Enclosures

Miscellaneous ID 07-01



Enclosures

Miscellaneous ID 07-01



Enclosures

Miscellaneous ID 07-02

List of test equipment used

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
4.4.3.8, T.8	STRESS RELIEF TEST	67256, OV5, Dry Oven	60-155°C	2025-09-02	2026-09-02
		61282, T6, THERMOMETER	-190~500°C	2025-06-24	2026-06-24
		67224, SW3, Stopwatch	3s-7hrs,day error	2025-01-23	2026-01-23
5.2.2.1-5.2.2.6	CLASSIFICATION OF ELECTRICAL ENERGY SOURCES	67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
		68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh; Impedance >1MΩ	2025-01-24	2026-01-24
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		68627, F46, Voltage Probe	1~300V/10x	2025-01-24	2026-01-24
		67338, F31, Leakage Current test fixture	Input Impedance 2KΩ; Output Impedance 10.5KΩ; Frequency 20~1MHz	2025-06-23	2026-06-23
5.4.1.3	TEST FOR HYGROSCOPIC MATERIALS	68893, HC8, Temperature & Humidity Chamber	'-70~+180°C, 25/40°C@93/96%rh; Day Error: 60s~24Hrs	2025-08-19	2026-08-19
		68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
5.4.1.5.2, 5.4.1.5.3	TEST FOR POLLUTION DEGREE 1 ENVIRONMENT AND FOR AN INSULATING COMPOUND	68893, HC8, Temperature & Humidity Chamber	'-70~+180°C, 25/40°C@93/96%rh; Day Error: 60s~24Hrs	2025-08-19	2026-08-19
		68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
5.4.1.8	DETERMINATION OF WORKING VOLTAGE	67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
5.4.4.2	MINIMUM DISTANCE THROUGH INSULATION	68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh; Impedance >1MΩ	2025-01-24	2026-01-24
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		67832, F34, High voltage differential probe	DC:1~1500V; AC:1~1000V DC,50Hz~500kHz	2025-07-20	2026-07-20
		67837, E226, E-LOAD	'6/60V,24/240A,3.6KW	2025-03-10	2026-03-10
		69085, D81, TRUE RMS CLAMP METER	10~600V,5~600A,50/60/440Hz 40Ω-4000Ω	2025-03-20	2026-03-20
5.4.2, 5.4.3	CLEARANCE DISTANCE AND CREEPAGE DISTANCE	67891, C17, Digital Caliper(belongs to Archer)	1-150mm	2025-08-21	2026-08-21
5.4.4.9	SOLID INSULATION AT FREQUENCY>30 KHz Refer to Table 20, Table 21 and Table 22	68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
		F17			
5.4.9.1	ELECTRIC STRENGTH TEST – TYPE TESTING OF SOLID INSULATION	68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
5.7.4	TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT – UNEARTHED ACCESSIBLE PARTS	67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
		68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh; Impedance >1MΩ	2025-01-24	2026-01-24
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		67338, F31, Leakage Current test fixture	Input Impedance 2KΩ; Output Impedance 10.5KΩ; Frequency 20~1MHz	2025-06-23	2026-06-23
5.7.5	TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS	67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
		68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh;	2025-01-24	2026-01-24

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	– SINGLE-PHASE EQUIPMENT ON TN OR TT SYSTEM (CONT'D		Impedance >1MΩ		
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		67338, F31, Leakage Current test fixture	Input Impedance 2KΩ; Output Impedance 10.5KΩ; Frequency 20~1MHz	2025-06-23	2026-06-23
B.2.5	INPUT TEST: SINGLE PHASE	69085, D81, TRUE RMS CLAMP METER	10~600V,5~600A,50/60/440Hz 40Ω-4000Ω	2025-03-20	2026-03-20
		69240, AC11, Programmable AC/DC power supply,	'L-N/0-450VAC,three-phase Max.35A, single-phase Max.105A, Max.12kw 15-500Hz 0-636VDC,Max.105A	2025-03-03	2026-03-03
		68327, DPM9, Digital power meter	1mA-20A,1.5-600V,10mW-5kW 50Hz~1kHz,PF:0.1~1, 1-60min	2025-08-19	2026-08-19
		69044, E230, E-LOAD	200V/250A/3400W	2024-11-14	2025-11-14
B.2.6, 5.4.1.4, 6.3, 9.3, B.1.5	NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT	69085, D81, TRUE RMS CLAMP METER	10~600V,5~600A,50/60/440Hz 40Ω-4000Ω	2025-03-20	2026-03-20
		69240, AC11, Programmable AC/DC power supply,	'L-N/0-450VAC,three-phase Max.35A, single-phase Max.105A, Max.12kw 15-500Hz 0-636VDC,Max.105A	2025-03-03	2026-03-03
		68327, DPM9, Digital power meter	1mA-20A,1.5-600V,10mW-5kW 50Hz~1kHz,PF:0.1~1, 1-60min	2025-08-19	2026-08-19
		69044, E230, E-LOAD	200V/250A/3400W	2024-11-14	2025-11-14
		60762, DA2, Data Acquisition Switch Unit	0~250°C	2025-06-24	2026-06-24
		66063, OV4, Dry Oven	-------	NCR	NCR
		69186, AM7, Anemometer	2~20 m/s	2025-08-27	2026-08-27
		68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
B.3	SIMULATED ABNORMAL OPERATING CONDITIONS	69085, D81, TRUE RMS CLAMP METER	10~600V,5~600A,50/60/440Hz 40Ω-4000Ω	2025-03-20	2026-03-20
		69240, AC11, Programmable AC/DC power supply,	'L-N/0-450VAC,three-phase Max.35A, single-phase Max.105A, Max.12kw 15-500Hz 0-636VDC,Max.105A	2025-03-03	2026-03-03
		68327, DPM9, Digital power meter	1mA-20A,1.5-600V,10mW-5kW 50Hz~1kHz,PF:0.1~1, 1-60min	2025-08-19	2026-08-19
		69044, E230, E-LOAD	200V/250A/3400W	2024-11-14	2025-11-14
		60762, DA2, Data Acquisition Switch Unit	0~250°C	2025-06-24	2026-06-24
		69186, AM7, Anemometer	2~20 m/s	2025-08-27	2026-08-27
		67223, SW2, Stopwatch	3s-7hrs,day error	2025-01-23	2026-01-23
		67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
		68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh; Impedance >1MΩ	2025-01-24	2026-01-24
		67338, F31, Leakage Current test fixture	Input Impedance 2KΩ; Output Impedance 10.5KΩ; Frequency 20~1MHz	2025-06-23	2026-06-23
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		68627, F46, Voltage Probe	1~300V/10x	2025-01-24	2026-01-24
		69149, S19, Oscilloscope	3mVpk~60Vpk, 3200ms~8ns, 50Ω/1MΩ; Cap:13pF Impedance>1MΩ	2025-08-21	2026-08-21
		68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
B.4	SIMULATED SINGLE FAULT CONDITIONS (CONT'D)	69085, D81, TRUE RMS CLAMP METER	10~600V,5~600A,50/60/440Hz 40Ω-4000Ω	2025-03-20	2026-03-20
		67837, E226, E-LOAD	'6/60V,24/240A,3.6KW	2025-03-10	2026-03-10

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		68465, DA29, midi LOGGER	0~300°C	2025-06-21	2026-06-21
		69186, AM7, Anemometer	2~20 m/s	2025-08-27	2026-08-27
		67223, SW2, Stopwatch	3s-7hrs,day error	2025-01-23	2026-01-23
		67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
		68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh; Impedance >1MΩ	2025-01-24	2026-01-24
		67338, F31, Leakage Current test fixture	Input Impedance 2KΩ; Output Impedance 10.5KΩ; Frequency 20~1MHz	2025-06-23	2026-06-23
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		68627, F46, Voltage Probe	1~300V/10x	2025-01-24	2026-01-24
		69149, S19, Oscilloscope	3mVpk~60Vpk, 3200ms~8ns, 50Ω/1MΩ; Cap:13pF Impedance>1MΩ	2025-08-21	2026-08-21
		68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
G.5.3.3	TRANSFORMER OVERLOAD	69085, D81, TRUE RMS CLAMP METER	10~600V,5~600A,50/60/440Hz 40Ω-4000Ω	2025-03-20	2026-03-20
		69240, AC11, Programmable AC/DC power supply,	'L-N/0-450VAC,three-phase Max.35A, single-phase Max.105A, Max.12kw 15-500Hz 0-636VDC,Max.105A	2025-03-03	2026-03-03
		68327, DPM9, Digital power meter	1mA-20A,1.5-600V,10mW-5kW 50Hz~1kHz,PF:0.1~1, 1-60min	2025-08-19	2026-08-19
		69044, E230, E-LOAD	200V/250A/3400W	2024-11-14	2025-11-14
		60762, DA2, Data Acquisition Switch Unit	0~250°C	2025-06-24	2026-06-24
		69186, AM7, Anemometer	2~20 m/s	2025-08-27	2026-08-27
		67223, SW2, Stopwatch	3s-7hrs,day error	2025-01-23	2026-01-23
		67560, DC28, DC POWER SUPPLY	DC0-600V,0-40A	2024-12-30	2025-12-30
		68328, DPM10, Digital power meter	1mA-20A,1-600V,10mW-3kW 50Hz~1KHz,PF:0~1; 1~60min THD:0.1%~40%,0.01~1KWh; Impedance >1MΩ	2025-01-24	2026-01-24
		67338, F31, Leakage Current test fixture	Input Impedance 2KΩ; Output Impedance 10.5KΩ; Frequency 20~1MHz	2025-06-23	2026-06-23
		67587, S12, Digital Phosphor Oscilloscope	3mVpk~60Vpk, 8ns~800ms, 50kHz~500MHz,50Ω/1MΩ; Cap:13pF; Impedance >1MΩ	2025-04-15	2026-04-15
		68627, F46, Voltage Probe	1~300V/10x	2025-01-24	2026-01-24
		69149, S19, Oscilloscope	3mVpk~60Vpk, 3200ms~8ns, 50Ω/1MΩ; Cap:13pF Impedance>1MΩ	2025-08-21	2026-08-21
		68468, H5, ELECTRICAL SAFETY ANALYZER	AC 1-5KV,0.1-40mA, DC1-6KV,0.1-10mA,10~60s Impedance: >1MΩ	2025-07-20	2026-07-20
		66063, OV4, Dry Oven	-------	NCR	NCR