



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: E147630-A6004-CB-1

Date of issue.....: 2021-12-17

Total number of pages: 84

Name of Test Laboratory: UL RTP

preparing the Report: 12 Laboratory Drive, Research Triangle Park , NC, 27709, USA

Applicant's name.....: UNIPower L L C

Address: 210 N UNIVERSITY DR, SUITE 700
CORAL SPRINGS FL 33065
UNITED STATES

Test specification:

Standard: IEC 62368-1:2014

Test procedure: CB Scheme

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

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

Test Report Form No.....: IEC62368_1D

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

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

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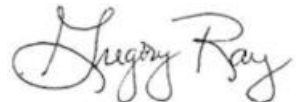
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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

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Test Item description	Component - Switch-mode Power Supply
Trade Mark(s)	None
Manufacturer	UNIPOWER L L C 210 N University Dr, Suite 700 Coral Springs FL 33065 UNITED STATES
Model/Type reference	AL-070U-XY-Z and AL-085U-XY-Z where X = S, D or T (single, double or triple output) where Y = up to 3 digit number with each digit represented by 0 through 9 delineating the output voltage(s) where Z = configuration (up to 4 digit/alpha suffix) All models noted above may be followed by "(F)" which represents T1 is Class F Insulation System.
Ratings	<p>AL-070U-XY-Z: Input AC: 100-240V, 47-63Hz, 2A Output: See Description below</p> <p>where X = S, D or T (single, double or triple output) where Y = up to 3 digit number with each digit represented by 0 through 9 delineating the output voltage(s) below:</p> <p>0 = 1.5 to 4 Vdc, 1 = 4 to 5 Vdc, 2 = 10 to 13.8 Vdc 3 = 13.8 to 16.5 V dc, 4 = 21 to 26 Vdc, 5 = 32 to 48 Vdc 6 = 5.7 to 8 Vdc, 7 = 26 to 32 Vdc, 8 = 16.5 to 21 Vdc 9 = 8 to 10 Vdc</p> <p>where Z = configuration (up to 4 digit/alpha suffix).</p> <p>Total Output Power of each of the supplies is 70 Watts.</p> <p>-----</p> <p>AL-085U-XY-Z: Input AC: 100-240V, 47-6 Hz, 3.15A Output: See Description below</p> <p>where X = S, D, T or Q (single, double, triple or quad output) where Y = up to 4 digit number with each digit represented by 0 through 9 delineating the output voltage(s) below:</p> <p>0 = 1.5 to 4 Vdc, 1 = 4 to 5 Vdc, 2 = 10 to 13.8 Vdc 3 = 13.8 to 16.5 V dc, 4 = 21 to 26 Vdc, 5 = 32 to 48 Vdc 6 = 5.7 to 8 Vdc, 7 = 26 to 32 Vdc, 8 = 16.5 to 21 Vdc 9 = 8 to 10 Vdc</p> <p>where Z = configuration (up to 4 digit/alpha suffix).</p> <p>Total Output Power of each of the supplies is 85 Watts.</p> <p>All models noted above may be followed by "(F)" which represents T1 is Class F Insulation System.</p>

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	
Testing location/ address		UL RTP, 12 Laboratory Drive, Research Triangle Park , NC, 27709, USA
Tested by (name, function, signature)		Jeff Hite / Project Handler 
Approved by (name, function, signature)		Gregory Ray / Reviewer 
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature)		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) ...:		
Approved by (name, function, signature)		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	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 (30 pages)

Enclosures (54 pages)

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

CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2.2.1-5.2.2.6)

DETERMINATION OF WORKING VOLTAGE (5.4.1.8)

SEPARABLE THIN SHEET MATERIAL (5.4.4.6.2)

ELECTRIC STRENGTH TEST – TYPE TESTING OF SOLID INSULATION (5.4.9.1)

SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CAPACITOR (5.5.2.2)

TOUCH CURRENT MEASUREMENT – EARTHED ACCESSIBLE CONDUCTIVE PARTS – SINGLE-PHASE EQUIPMENT ON TN OR TT SYSTEM (5.7.4)

INPUT TEST: SINGLE PHASE (B.2.5)

NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6, 5.4.1.4, 6.3, 9.2)

Testing Location:**CBTL: UL RTP, 12 Laboratory Drive, Research Triangle Park , NC, 27709, USA**

Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test for SELV Circuits (2.2) was covered in the Test Report Ref.

No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.

Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Clause 2.10.2 "Determination of working voltage" was covered in the Test Report Ref. No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.

Test reconducted for reference only, previous testing deemed acceptable based on polarity change having a Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Clause 5.2 "Electric Strength" was covered in the Test Report Ref.

No. E147630-A7-CB-3, CB Cert US-27667-M1-UL. Additional testing was done as part of this investigation.

Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Input: Single-Phase (1.6.2) was covered in the Test Report Ref.

No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.

Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Heating (4.5.1, 1.4.12, 1.4.13) was covered in the Test Report Ref.

No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.

SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Component Failure (5.3.1, 5.3.4, 5.3.7) was covered in the Test Report Ref. No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.
SIMULATED SINGLE FAULT CONDITIONS (B.4)	Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Component Failure (5.3) was covered in the Test Report Ref. No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.
TEST FOR THE PERMANENCE OF MARKINGS (ANNEX F.3.10)	Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Durability (1.7.11) was covered in the Test Report Ref. No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.
TRANSFORMER OVERLOAD (ANNEX G.5.3.3)	Testing conducted in accordance with IEC 60950-1:2005(Second Edition); Am1:2009+Am2:2013 was considered representative. Test of Power Supply Output Short-Circuit/Overload (5.3.7) was covered in the Test Report Ref. No. E147630-A7-CB-3, CB Cert US-27667-M1-UL.

Summary of compliance with National Differences:

List of countries addressed: Australia / New Zealand, EU Group and National Differences, Japan, USA / Canada

☒ **The product fulfils the requirements of:** EN 62368-1:2014 + A11:2017, BS EN 62368-1:2014 + A11:2017

Statement concerning the uncertainty of the measurement systems used for the tests

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

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

☒ **Statement not required by the standard used for type testing**

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

Copy of Marking Plate - Refer to Enclosure titled Marking Plate for copy.

TEST ITEM PARTICULARS:	
Classification of use by	Skilled person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	For building-in
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	for building in
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	25
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	approx. 100m m
Mass of equipment (kg)	0.4 Kg
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..... :	2007-09-19, 2007-09-25, 2007-10-03, 2007-10-25, 2008-02-27, 2013-12-03, 2021-10-18, 2021-11-12, 2021-12-09
Date (s) of performance of tests..... :	2007-10-01 TO 2008-01-03, 2008-03-04 TO 2008-04-05, 2014-04-07 TO 2014-04-09, 2021-11-15, 2021-12-15
GENERAL REMARKS:	
<p>“(See Enclosure #)” refers to additional information appended to the report. “(See appended table)” refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) :	GREEN CUBES TECHNOLOGY CORP TAIWAN BRANCH 7th Fl 6 Lane 497 Chung Cheng Rd Hsin Tien District New Taipei 23148 TAIWAN
GENERAL PRODUCT INFORMATION:	
Report Summary All applicable tests according to the referenced standard(s) have been carried out.	
Product Description Model AL-070U-XY-Z and AL-085U-XY-Z Series are switch-mode power supplies. This unit is designed for building-in to an end product. The supplies provide basic insulation from input to chassis and reinforced insulation from input to output. Product is intended for building into end-use equipment, for connection to a Class I source of supply and to a TN power system.	
Model Differences Models identical except for differences noted in Ratings and in the Critical Components List. where X = S, D or T (single, double or triple output) where Y = up to 3 digit number with each digit represented by 0 through 9 delineating the output voltage(s) where Z = configuration (up to 4 digit/alpha suffix) All models noted above may be followed by "(F)" which represents T1 is Class F Insulation System. For models with Suffix "(F)" - T1 is Class F Insulation System.	
Additional application considerations – (Considerations used to test a component or sub-assembly) - This report is based on a previous evaluation to IEC 60950-1:2005(2nd ED.), AM1:2009+AM2:2013 under CBTR Ref. No.: E147630-A7-CB-2, CB Test Certificate Ref. No. US-23237-UL. Based on the previously conducted performance testing, only the tests conducted as part of this investigation were considered necessary. The test sample receive dates and test dates are from the original report except for the following: Sample receive dates: 2021-10-18, 2021-11-12, 2021-12-09, test dates: 2021-11-15, 2021-12-15 All marking plates are identical except for the model number and output ratings. Marking label in report is representative of all models (input current rating may vary) Green Cubes Technology and Unipower LLC are part of the same parent company.	

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 25°C
- The product is intended for use on the following power systems : TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- The equipment disconnect device is considered to be : Considered in the end product

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
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Earthed Dead Metal: 308 Vrms, 472 Vpk, Primary-SELV: 333 Vrms, 860 Vpk
- The following output circuits are at ES1 energy levels : All
- The following output circuits are at PS3 energy levels : All
- The maximum investigated branch circuit rating is : 20 A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- An investigation of the protective bonding terminals has : Not been conducted
- The following end-product enclosures are required : Fire, Electrical. This power supply shall be installed in compliance with the enclosure, mounting, spacing, casualty and segregation requirements of the end product application., Mechanical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : For models with "(F)" suffix, T1 is, (Class F). For models without "(F)" suffix, T1 (Class B). LE1 (Class B), LE2 (Class B)
- The maximum continuous power supply output (Watts) relied on forced air cooling from : a 37 CFM fan placed on the input side of the unit under test with exception of the AL-085U-Q1225. The AL-085U-Q1225 was tested with a 28 cfm fan. Heating Tests were performed on an open bench. Type J thermocouples were used to record temperatures.
- This power supply is provided with overcurrent protection in the ungrounded (hot) side of the line.
- This unit has been evaluated for Basic Insulation between primary and chassis as well as Reinforced Insulation between primary and secondary.
- These power supplies have the option of using input terminal blocks. The suitability of these terminal blocks and the associated connection to the supply will need to be considered in the end product.

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:

(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.)

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

Electrically-caused injury (Clause 5):

(Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification)

Example: +5 V dc input

ES1

Source of electrical energy	Corresponding classification (ES)
Mains Input	ES3
Output	ES1

Electrically-caused fire (Clause 6):

(Note: List sub-assembly or circuit designation and corresponding energy source classification)

Example: Battery pack (maximum 85 watts):

PS2

Source of power or PIS	Corresponding classification (PS)
Mains Input	PS3
Outputs	PS3

Injury caused by hazardous substances (Clause 7)

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

Example: Liquid in filled component

Glycol

Source of hazardous substances	Corresponding chemical
N/A	N/A

Mechanically-caused injury (Clause 8)

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

Example: Wall mount unit

MS2

Source of kinetic/mechanical energy	Corresponding classification (MS)
Weight	MS1

Thermal burn injury (Clause 9)

(Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.)

Example: Hand-held scanner – thermoplastic enclosure

TS1

Source of thermal energy	Corresponding classification (TS)
N/A	To be tested in the end product

Radiation (Clause 10)

(Note: List the types of radiation present in the product and the corresponding energy source classification.)

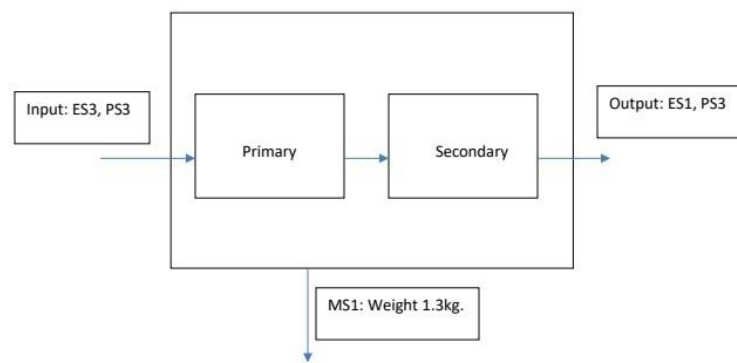
Example: DVD – Class 1 Laser Product

RS1

Type of radiation	Corresponding classification (RS)
N/A	N/A

ENERGY SOURCE DIAGRAM

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

☒ **ES** ☒ **PS** ☒ **MS** ☒ **TS** ☐ **RS**

OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	Possible Hazard			
5.1	Electrically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (ES3: Primary Filter circuit)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	ES3:Mains Input	-	-	Enclosure provided by the End Product.
Ordinary	ES1:Output	-	-	-
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
Product	PS3:Input and output	Temperature tests in the end product to ensure no ignition.	All parts mounted on V-1, made of V-2 min. No ignition during faults.	Enclosure provided by the end product.
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	-	-	-	-
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Ordinary	MS1:weight	-	-	-
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Ordinary	TS: To be considered in the end product.			
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	-	-	-	-
Supplementary Information:				
(1) See attached energy source diagram for additional details.				
(2) "N" – Normal Condition; "A" – Abnormal Condition; "S" Single Fault				

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		Pass
4.1.1	Acceptance of materials, components and subassemblies		Pass
4.1.2	Use of components		Pass
4.1.3	Equipment design and construction		Pass
4.1.15	Markings and instructions	(See Annex F)	Pass
4.4.4	Safeguard robustness	Equipment is for building-in and the mechanical safeguards will be evaluated in the end product.	N/A
4.4.4.2	Steady force tests		N/A
4.4.4.3	Drop tests		N/A
4.4.4.4	Impact tests.....		N/A
4.4.4.5	Internal accessible safeguard enclosure and barrier tests		N/A
4.4.4.6	Glass Impact tests.....		N/A
4.4.4.7	Thermoplastic material tests		N/A
4.4.4.8	Air comprising a safeguard		N/A
4.4.4.9	Accessibility and safeguard effectiveness		N/A
4.5	Explosion		Pass
4.6	Fixing of conductors		Pass
4.6.1	Fix conductors not to defeat a safeguard		Pass
4.6.2	10 N force test applied to		N/A
4.7	Equipment for direct insertion into mains socket - outlets	Equipment is not a direct plug-in	N/A
4.7.2	Mains plug part complies with the relevant standard		N/A
4.7.3	Torque (Nm).....		N/A
4.8	Products containing coin/button cell batteries	Equipment does not contain a battery	N/A
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery		—
4.8.4	Battery Compartment Mechanical Tests.....		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object	Equipment is for Building-in	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5	ELECTRICALLY-CAUSED INJURY		Pass
5.2.1	Electrical energy source classifications	(See appended table 5.2)	Pass
5.2.2	ES1, ES2 and ES3 limits	Equipment contains ES1 and ES3 circuits	Pass
5.2.2.2	Steady-state voltage and current	(See appended table 5.2)	Pass
5.2.2.3	Capacitance limits	See 5.5.2.2 for measurements.	Pass
5.2.2.4	Single pulse limits		N/A
5.2.2.5	Limits for repetitive pulses		N/A
5.2.2.6	Ringings signals		N/A
5.2.2.7	Audio signals		N/A
5.3	Protection against electrical energy sources	Accessibility to be evaluated in the end product.	N/A
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		N/A
5.3.2.1	Accessibility to electrical energy sources and safeguards		N/A
5.3.2.2	Contact requirements		N/A
	a) Test with test probe from Annex V		N/A
	b) Electric strength test potential (V).....		N/A
	c) Air gap (mm)		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		Pass
5.4.1.2	Properties of insulating material	Natural rubber, materials containing asbestos and hygroscopic materials are not used as insulation.	Pass
5.4.1.3	Humidity conditioning		N/A
5.4.1.4	Maximum operating temperature for insulating materials	(See appended table 5.4.1.4)	Pass
5.4.1.5	Pollution degree	2	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound		N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions		N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage		Pass
5.4.1.9	Insulating surfaces		Pass
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat softening temperature		N/A
5.4.1.10.3	Ball pressure		N/A
5.4.2	Clearances		Pass
5.4.2.2	Determining clearance using peak working voltage	(See appended table 5.4.2.2)	Pass
5.4.2.3	Determining clearance using required withstand voltage	(See appended table 5.4.2.3)	Pass
	a) a.c. mains transient voltage	2500	—
	b) d.c. mains transient voltage	-	—
	c) external circuit transient voltage	-	—
	d) transient voltage determined by measurement... :	-	—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages.....		N/A
5.4.3	Creepage distances	(See appended table 5.4.3)	Pass
5.4.3.1	General		Pass
5.4.3.3	Material Group	iiib	—
5.4.4	Solid insulation		Pass
5.4.4.2	Minimum distance through insulation	(See appended table 5.4.4.2)	Pass
5.4.4.3	Insulation compound forming solid insulation		Pass
5.4.4.4	Solid insulation in semiconductor devices	Optocoupler complies with G.12	Pass
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material		Pass
5.4.4.6.1	General requirements	Thin sheet, Supplementary: 2 layers.	Pass
5.4.4.6.2	Separable thin sheet material	Test complies with a 2500Vdc hipot	Pass

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of layers (pcs)	1 layer for Basic and 2 layers for Supplementary Insulation	Pass
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material..... :		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		Pass
5.4.4.9	Solid insulation at frequencies >30 kHz		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ)		—
5.4.6	Insulation of internal wire as part of supplementary safeguard		N/A
5.4.7	Tests for semiconductor components and for cemented joints		Pass
5.4.8	Humidity conditioning		N/A
	Relative humidity (%)		—
	Temperature (°C)		—
	Duration (h)		—
5.4.9	Electric strength test..... :	(See appended table 5.4.9)	Pass
5.4.9.1	Test procedure for a solid insulation type test		Pass
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit		N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test..... :		N/A
5.4.10.2.3	Steady-state test		N/A
5.4.11	Insulation between external circuits and earthed circuitry		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op} (V)		—
	Nominal voltage U_{peak} (V)		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Max increase due to variation U_{sp}		—
	Max increase due to ageing ΔU_{sa}		—
	$U_{op} = U_{peak} + \Delta U_{sp} + \Delta U_{sa}$		—
5.5	Components as safeguards		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	(See appended table 5.5.2.2)	Pass
5.5.3	Transformers	(See Annex G.5.3)	Pass
5.5.4	Optocouplers	(See sub-clause 5.4 or Annex G.12)	Pass
5.5.5	Relays		N/A
5.5.6	Resistors	Resistor not relied on for safety.	N/A
5.5.7	SPD's		N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable		N/A
5.6	Protective conductor		N/A
5.6.2	Requirement for protective conductors		N/A
5.6.2.1	General requirements	Equipment is for building-in and the bonding should be evaluated in the end product.	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)		—
5.6.4	Requirement for protective bonding conductors		N/A
5.6.4.1	Protective bonding conductors		N/A
	Protective bonding conductor size (mm^2).....		—
	Protective current rating (A)		—
5.6.4.3	Current limiting and overcurrent protective devices		N/A
5.6.5	Terminals for protective conductors		N/A
5.6.5.1	Requirement		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Conductor size (mm ²), nominal thread diameter (mm).....:		N/A
5.6.5.2	Corrosion		N/A
5.6.6	Resistance of the protective system		N/A
5.6.6.1	Requirements		N/A
5.6.6.2	Test Method Resistance (Ω).....:		N/A
5.6.7	Reliable earthing		N/A
5.7	Prospective touch voltage, touch current and protective conductor current		Pass
5.7.2	Measuring devices and networks		Pass
5.7.2.1	Measurement of touch current.....:	(See appended table 5.7.4)	Pass
5.7.2.2	Measurement of prospective touch voltage		N/A
5.7.3	Equipment set-up, supply connections and earth connections		Pass
	System of interconnected equipment (separate connections/single connection).....:	Single connection	—
	Multiple connections to mains (one connection at a time/simultaneous connections).....:	-	—
5.7.4	Earthed conductive accessible parts	(See appended Table 5.7.4)	Pass
5.7.5	Protective conductor current		N/A
	Supply Voltage (V)		—
	Measured current (mA)		—
	Instructional Safeguard		N/A
5.7.6	Prospective touch voltage and touch current due to external circuits		N/A
5.7.6.1	Touch current from coaxial cables		N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (mA)		N/A
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA)		N/A
6	ELECTRICALLY- CAUSED FIRE		Pass
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		Pass
6.2.2	Power source circuit classifications		Pass
6.2.2.1	General	All products classified as PS3	Pass

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Clause	Requirement + Test	Result - Remark	Verdict
6.2.2.2	Power measurement for worst-case load fault.....:		N/A
6.2.2.3	Power measurement for worst-case power source fault		N/A
6.2.2.4	PS1		N/A
6.2.2.5	PS2		N/A
6.2.2.6	PS3	(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 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	Pass
6.3.1 (b)	Combustible materials outside fire enclosure	Equipment is for building-in	N/A
6.4	Safeguards against fire under single fault conditions		Pass
6.4.1	Safeguard Method	Control of fire spread used.	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	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		N/A
6.4.5.2	Supplementary safeguards		N/A
6.4.6	Control of fire spread in PS3 circuit		Pass
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers	Equipment is for building-in. To be evaluated as part of the end product.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.8.1	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 in Fire Enclosure: dimensions (mm)		N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm)		N/A
	Flammability tests for the bottom of a fire enclosure		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c).....		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating		N/A
6.5	Internal and external wiring		N/A
6.5.1	Requirements	No wiring provided with the product.	N/A
6.5.2	Cross-sectional area (mm ²)		—
6.5.3	Requirements for interconnection to building wiring		N/A
6.6	Safeguards against fire due to connection to additional equipment		N/A
	External port limited to PS2 or complies with Clause Q.1		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 (PPE)		N/A
	Personal safeguards and instructions.....		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010)		—
7.6	Batteries		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8	MECHANICALLY-CAUSED INJURY		Pass
8.1	General		Pass
8.2	Mechanical energy source classifications	Product is MS1 for sharp edges and weight. Additional safeguards should be considered in the end product.	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
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard :		—
8.5.4	Special categories of equipment comprising moving parts		N/A
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks :		N/A
8.5.4.2.2	Instructional safeguards against moving parts		N/A
	Instructional Safeguard :		—
8.5.4.2.3	Disconnection from the supply		N/A
8.5.4.2.4	Probe type and force (N)..... :		N/A
8.5.5	High Pressure Lamps		N/A
8.5.5.1	Energy Source Classification		N/A
8.5.5.2	High Pressure Lamp Explosion Test :		N/A
8.6	Stability		N/A
8.6.1	Product classification		N/A
	Instructional Safeguard :		—
8.6.2	Static stability		N/A
8.6.2.2	Static stability test		N/A
	Applied Force..... :		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		N/A
	Unit configuration during 10° tilt :		—

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Clause	Requirement + Test	Result - Remark	Verdict
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force)		N/A
	Position of feet or movable parts		—
8.7	Equipment mounted to wall or ceiling		N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface)		N/A
8.7.2	Direction and applied force		N/A
8.8	Handles strength		N/A
8.8.1	Classification		N/A
8.8.2	Applied Force		N/A
8.9	Wheels or casters attachment requirements		N/A
8.9.1	Classification		N/A
8.9.2	Applied force.....		—
8.10	Carts, stands and similar carriers		N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		N/A
	Instructional Safeguard		—
8.10.3	Cart, stand or carrier loading test and compliance		N/A
	Applied force.....		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N).....		—
8.10.6	Thermoplastic temperature stability (°C)		N/A
8.11	Mounting means for rack mounted equipment		N/A
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable <i>N</i>		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas		N/A
	Button/Ball diameter (mm)		—
9	THERMAL BURN INJURY		Pass
9.2	Thermal energy source classifications		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
9.3	Safeguard against thermal energy sources	Equipment for building-in, further testing should be done in the end product.	N/A
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard		N/A
9.4.2	Instructional safeguard		N/A

10	RADIATION		N/A
10.2	Radiation energy source classification		N/A
10.2.1	General classification		N/A
10.3	Protection against laser radiation		N/A
	Laser radiation that exists in the equipment:		—
	Normal, abnormal, single-fault		N/A
	Instructional safeguard		—
	Tool		—
10.4	Protection against visible, infrared, and UV radiation		N/A
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons :		N/A
10.4.1.b)	RS3 accessible to a skilled person :		N/A
	Personal safeguard (PPE) instructional safeguard		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 :		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque :		N/A
10.4.1.f)	UV attenuation :		N/A
10.4.1.g)	Materials resistant to degradation UV		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.4.1.h)	Enclosure containment of optical radiation :		N/A
10.4.1.i)	Exempt Group under normal operating conditions :		N/A
10.4.2	Instructional safeguard :		N/A
10.5	Protection against x-radiation		N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards :		N/A
	Instructional safeguard for skilled person :		N/A
10.5.3	Most unfavourable supply voltage to give maximum radiation..... :		—
	Abnormal and single-fault condition..... :		N/A
	Maximum radiation (pA/kg) :		N/A
10.6	Protection against acoustic energy sources		N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A) :		N/A
	Output voltage, unweighted r.m.s. :		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards :		N/A
	Equipment safeguard prevent ordinary person to RS2 :		—
	Means to actively inform user of increase sound pressure :		—
	Equipment safeguard prevent ordinary person to RS2 :		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output :		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A) :		—

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Clause	Requirement + Test	Result - Remark	Verdict
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A)		—
B	NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS		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		Pass
B.2.5	Input test	(See appended table B.2.5)	Pass
B.3	Simulated abnormal operating conditions		Pass
B.3.1	General requirements	(See appended table B.3)	Pass
B.3.2	Covering of ventilation openings		N/A
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector		N/A
B.3.5	Maximum load at output terminals	See table B.3	Pass
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.		N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		Pass
B.4	Simulated single fault conditions		Pass
B.4.2	Temperature controlling device open or short-circuited		N/A
B.4.3	Motor tests		N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature		N/A
B.4.4	Short circuit of functional insulation		N/A
B.4.4.1	Short circuit of clearances for functional insulation		N/A
B.4.4.2	Short circuit of creepage distances for functional insulation		N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		N/A
B.4.6	Short circuit or disconnect of passive components		Pass

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		Pass
B.4.9	Battery charging under single fault conditions		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 apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	TEST GENERATORS		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS		N/A
E.1	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V)		—
	Rated load impedance (Ω)		—
E.2	Audio amplifier abnormal operating conditions		N/A
F	EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS		Pass
F.1	General requirements		Pass
	Instructions – Language	Instructions not provided as the equipment is for building-in	—
F.2	Letter symbols and graphical symbols		Pass
F.2.1	Letter symbols according to IEC60027-1		Pass
F.2.2	Graphic symbols IEC, ISO or manufacturer specific		Pass
F.3	Equipment markings		Pass
F.3.1	Equipment marking locations		Pass
F.3.2	Equipment identification markings		Pass
F.3.2.1	Manufacturer identification	See page 1 of report	—
F.3.2.2	Model identification	See models and ratings	—

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.3	Equipment rating markings		Pass
F.3.3.1	Equipment with direct connection to mains		Pass
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of supply voltage :	AC	—
F.3.3.4	Rated voltage :	See models and ratings	—
F.3.3.5	Rated frequency..... :	See models and ratings	—
F.3.3.6	Rated current or rated power :	See models and ratings	—
F.3.3.7	Equipment with multiple supply connections		N/A
F.3.4	Voltage setting device		N/A
F.3.5	Terminals and operating devices		Pass
F.3.5.1	Mains appliance outlet and socket-outlet markings..... :		N/A
F.3.5.2	Switch position identification marking :		N/A
F.3.5.3	Replacement fuse identification and rating markings..... :	Fuse replacement located on the PWB.	Pass
F.3.5.4	Replacement battery identification marking :		N/A
F.3.5.5	Terminal marking location		Pass
F.3.6	Equipment markings related to equipment classification		Pass
F.3.6.1	Class I Equipment		Pass
F.3.6.1.1	Protective earthing conductor terminal		N/A
F.3.6.1.2	Neutral conductor terminal		N/A
F.3.6.1.3	Protective bonding conductor terminals		Pass
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking :		—
F.3.8	External power supply output marking		N/A
F.3.9	Durability, legibility and permanence of marking		Pass
F.3.10	Test for permanence of markings	Tested with compliant results.	Pass
F.4	Instructions		N/A
	a) Equipment for use in locations where children not likely to be present - marking	Equipment for building-in.	N/A
	b) Instructions given for installation or initial use		N/A
	c) Equipment intended to be fastened in place		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	d) Equipment intended for use only in restricted access area		N/A
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		N/A
	g) Protective earthing conductor current exceeding ES 2 limits		N/A
	h) Symbols used on equipment		N/A
	i) Permanently connected equipment not provided with all-pole mains switch		N/A
	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards		N/A
	Where "instructional safeguard" is referenced in the test report it specifies the required elements, location of marking and/or instruction		N/A
G	COMPONENTS		Pass
G.1	Switches		N/A
G.1.1	General requirements		N/A
G.1.2	Ratings, endurance, spacing, maximum load		N/A
G.2	Relays		N/A
G.2.1	General requirements		N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	Protection Devices		Pass
G.3.1	Thermal cut-offs		N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H)		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Single Fault Condition		—
	Test Voltage (V) and Insulation Resistance (Ω) ..		—
G.3.3	PTC Thermistors		N/A
G.3.4	Overcurrent protection devices	Equipment provided with a fuse	Pass
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		Pass
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions	(See appended Table B.4)	Pass
G.4	Connectors		Pass
G.4.1	Spacings	Equipment is for building-in and the mating connector is not provided. To be evaluated in the end product.	Pass
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	The winding does not make contact when it crosses over as there is one layer of thin sheet material.	Pass
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s)		—
	Temperature (°C)		—
G.5.2.3	Wound Components supplied by mains		N/A
G.5.3	Transformers		Pass
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1)	See G.5.3.2 and G.5.3.3	Pass
	Position	T1	—
	Method of protection	Protection by inherent impedance	—
G.5.3.2	Insulation		Pass
	Protection from displacement of windings	Margin tape provided on each end of each winding.	—

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3.3	Overload test.....:	(See appended table B.3)	Pass
G.5.3.3.1	Test conditions		Pass
G.5.3.3.2	Winding Temperatures testing in the unit		Pass
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	Motors		N/A
G.5.4.1	General requirements		N/A
	Position		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days)		—
G.5.4.5	Running overload test for d.c. motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V).....:		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h)		N/A
	Electric strength test (V).....:		—
G.5.4.6	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature		N/A
	Electric strength test (V)		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h)		N/A
	Electric strength test (V).....:		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A
G.5.4.9	Series motors		N/A
	Operating voltage		—
G.6	Wire Insulation		N/A
G.6.1	General	Only enamel coated winding wires used with less than Basic insulation.	N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	Mains supply cords		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.7.1	General requirements		N/A
	Type		—
	Rated current (A)		—
	Cross-sectional area (mm ²), (AWG)		—
G.7.2	Compliance and test method		N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N)		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ... :		—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g)		—
	Diameter (m)		—
	Temperature (°C)		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	Varistors		Pass
G.8.1	General requirements		Pass
G.8.2	Safeguard against shock	See Critical Component List.	Pass
G.8.3	Safeguard against fire		N/A
G.8.3.2	Varistor overload test		N/A
G.8.3.3	Temporary overvoltage		N/A
G.9	Integrated Circuit (IC) Current Limiters		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.		N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA		—
G.9.1 d)	IC limiter output current (max. 5A)		—
G.9.1 e)	Manufacturers' defined drift		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	Resistors		N/A
G.10.1	General requirements		N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	Capacitor and RC units		Pass
G.11.1	General requirements		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 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results)		Pass
	Type test voltage Vini	Min. 5000Vrms	—
	Routine test voltage, Vini,b	Min. 5000Vrms	—
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		N/A
	Compliance with cemented joint requirements (Specify construction)		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation.....		N/A
	Number of insulation layers (pcs)		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14	Coating on components terminals		N/A
G.14.1	Requirements		N/A
G.15	Liquid filled components		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	IC including capacitor discharge function (ICX)		N/A
G.16 a)	Humidity treatment in accordance with sc 5.4.8 – 120 hours		N/A
G.16 b)	Impulse test using circuit 2 with U_c = to transient voltage		N/A
G.16 C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
G.16 C2)	Test voltage		—
G.16 D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A
G.16 D2)	Capacitance		—
G.16 D3)	Resistance		—
H	CRITERIA FOR TELEPHONE RINGING SIGNALS		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringling signal		N/A
H.3.1.1	Frequency (Hz)		—
H.3.1.2	Voltage (V)		—
H.3.1.3	Cadence; time (s) and voltage (V)		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
H.3.1.4	Single fault current (mA):		—
H.3.2	Tripping device and monitoring voltage		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V).....		—
J	INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION		N/A
	General requirements		N/A
K	SAFETY INTERLOCKS		N/A
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method.....		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location)		N/A
K.7.2	Overload test, Current (A).....		N/A
K.7.3	Endurance test		N/A
K.7.4	Electric strength test		N/A
L	DISCONNECT DEVICES		N/A
L.1	General requirements	Disconnect will be evaluated as part of the end product.	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

IEC 62368-1			
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	Requirements		N/A
M.2.2	Compliance and test method (identify method)... :		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
M.3.3	Compliance :		N/A
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature :		—
M.4.2.2 b)	Single faults in charging circuitry :		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method)		N/A
M.6.2	Leakage current (mA)		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume V_z (m ³ /s)		—
M.8.2.3	Correction factors		—
M.8.2.4	Calculation of distance d (mm)		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing)		N/A
N	ELECTROCHEMICAL POTENTIALS		N/A
	Metal(s) used		—
O	MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES		Pass
	Figures O.1 to O.20 of this Annex applied.....	Applied	—
P	SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS		N/A
P.1	General requirements	Equipment is for building-in and does not use adhesive.	N/A
P.2.2	Safeguards against entry of foreign object		N/A
	Location and Dimensions (mm)		—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Openings in transportable equipment		N/A
	Transportable equipment with metalized plastic parts :		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) :		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	T _c (°C)..... :		—
	T _r (°C) :		—
	T _a (°C) :		—
P.4.2 b)	Abrasion testing :		N/A
P.4.2 c)	Mechanical strength testing :		N/A
Q	CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING		N/A
Q.1	Limited power sources		N/A
Q.1.1 a)	Inherently limited output		N/A
Q.1.1 b)	Impedance limited output		N/A
	- Regulating network limited output under normal operating and simulated single fault condition		N/A
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) :		—
	Current limiting method..... :		—
R	LIMITED SHORT CIRCUIT TEST		N/A
R.1	General requirements		N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A)). :		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
S	TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (°C)		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosure materials of equipment with a steady-state power exceeding 4000 W		N/A
	Samples, material		—
	Wall thickness (mm)		—
	Conditioning (test condition), (°C).....		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T	MECHANICAL STRENGTH TESTS		N/A
T.1	General requirements		N/A
T.2	Steady force test, 10 N		N/A
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		N/A
T.9	Impact Test (glass)		N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A
	Impact energy (J)		—
	Height (m).....		—
T.10	Glass fragmentation test.....		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm)		—
U	MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFFECTS OF IMPLOSION		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen		N/A
V	DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)		N/A
V.1	Accessible parts of equipment	Equipment is for building-in. Accessibility will be evaluated in the end product.	N/A
V.2	Accessible part criterion		N/A

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

4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
Input Connector	TKP	P-8800 Series	250V, 5A	UL 1977 UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E118260) , -	
Input Connector - Alternate	Chyao Shiunn	JS-4001 Series	250V, 5A	UL 1977. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL(E113875) , --	
Input Connector - Alternate	Dinkle	DT-35, DT-45, DT-4 Series	300V min./20A	UL 1059. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL(E102914) , --	
Input Connector - Alternate	How Der Electronic Co LTD	FTB-80, HD-81, HI-20 Series	250V min./10A	UL 1059. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E112196) , --	
Input Connector - Alternate	Molex	41791 Series	250V, 5A	UL 1977. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E29179) , --	
Y Capacitor, CY1, CY2 - Alternate	Walsin Technology Corp. (Pan Overseas)	AC Series	4700 pF, 250 V min., Y2	UL 60384-14, IEC 60384-14	UL (E146544) , VDE (40001829)	
Y Capacitor, CY1, CY2 - Alternate	Jyh Chung Electronics Co., LTD	JY Series	4700 pF, 250 V min., Y2	UL 60384-14, IEC 60384-14	UL (E187963) , VDE (123326)	
Y Capacitor, CY1, CY2 - Alternate	TDK Corporation	CD Series	4700 pF, 250 V min., Y2	UL 60384-14, IEC 60384-14	UL (E37861) , VDE (40029780)	

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Bridging Capacitor, CY3, CY4 (AL-070U Models only) - Alternate	Walsin Technology Corp. (Pan Overseas)	AC Series	4700 pF, 250V min., Y2	UL 60384-14, IEC 60384-14	UL (E146544) , VDE (40001829)
Bridging Capacitor, CY3, CY4 (AL-070U Models only) - Alternate	Jyh Chung Electronics Co., LTD	JY Series	4700 pF, 250V min., Y2	UL 60384-14, IEC 60384-14	UL (E187963) , VDE (123326)
Bridging Capacitor, CY3, CY4 (AL-070U Models only) - Alternate	TDK Corporation	CD Series	4700 pF, 250V min., Y2	UL 60384-14, IEC 60384-14	UL (E37861) , VDE (40029780)
Bridging Capacitor, CY3 (AL-085U Models) - Alternate	Walsin Technology Corp. (Pan Overseas)	AH Series	2200 pF, 250V min., Y1	UL 60384-14, IEC 60384-14	UL (E146544) , VDE (40001804)
Bridging Capacitor, CY3 (AL-085U Models) - Alternate	Jyh Chung Electronics Co., LTD	JD Series	2200 pF, 250V min., Y1	UL 60384-14, IEC 60384-14	UL (E187963) , VDE (137027)
Bridging Capacitor, CY3 (AL-085U Models) - Alternate	TDK Corporation	CS Series	2200 pF, 250V min., Y1	UL 60384-14, IEC 60384-14	UL (E37861) , VDE (40029781)
Opto Isolator, PC1	Lite-On	LTV-817	Isolation Voltage of 5000Vrms. Isolation thickness > 0.4 mm	IEC 60747-5-5:2007, EN 60747-5-5:2011+A1:2015, UL 1577	UL (E113898) , VDE (40015248)
Opto Isolator, PC1 - Alternate	Cosmo electronics corp	K1010	Isolation Voltage of 5000Vrms. Isolation thickness > 0.4 mm	EN 60747-5-5:2011+A1:2015, UL 1577	UL (E169586) , VDE (101347)
Opto Isolator, PC1 - Alternate	Sharp Corporation (QTC)	PC123	Isolation Voltage of 5000Vrms.	IEC 60747-5-5:2007, EN 60747-5-	UL (E64380) , VDE (40045389)

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
			Isolation thickness > 0.4 mm	5:2011+A1:2015, UL 1577	
AL-070U Series: Transformer, T1	Green Cubes	G050-3951- XXXXAB, where X can be any alphanumeric character.	<p>Provided with Class B insulation. See attached Enclosure - Diagrams for Transformer Build.</p> <p>Provides Reinforced Insulation. Contains R/C (OBWM2) magnet wire on R/C (QFMZ2) phenolic bobbin rated min. V-1, min. 0.7 mm thick.</p>	Evaluated as part of End Product.	-- , --
AL-070U Series: Transformer, T1 with Class F Insulation	SUMITOMO BAKELITE CO. LTD, or RONG CHYUAN TECHNOLOGY CORP (E184138), or DONGGUAN ZHANGMUTOU HONG CHAN ELECTRONICS CO LTD (E231049), or SHOWWELL GROUP CO LTD (E257040)	G050-3951- XXXXABH, where X can be any alphanumeric character.	<p>Provided with Class F Insulation System SBI5.1. See Enclosure - Diagrams.</p> <p>Provides Reinforced Insulation. Contains R/C (OBWM2) magnet wire and R/C (ONAZ2) Tape on R/C (QFMZ2) phenolic bobbin rated min. V-1, min. 0.7 mm thick.</p>	Evaluated as part of End Product.	-- , --
AL-070U Series; Alternate insulation system for Transformer, T1	SUMITOMO BAKELITE CO. LTD, or RONG CHYUAN TECHNOLOGY CORP (E184138), or	SBI5.1	Provides Reinforced Insulation. Class F insulation system	UL 1446. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
	DONGGUAN ZHANGMUTOU HONG CHAN ELECTRONICS CO LTD (E231049), or SHOWWELL GROUP CO LTD (E257040).				
AL-085U Series: Alternate Transformer, T1	Green Cubes	G050-A452- XXXXAB or G050-A332- XXXXAB where X can be any alphanumeric character.	Provided with Class B insulation. See attached Enclosure - Diagrams for Transformer Build. Provides Reinforced Insulation. Contains R/C (OBWM2) magnet wire on R/C (QFMZ2) phenolic bobbin rated min. V-1, min. 0.7 mm thick.	Evaluated as part of End Product. IEC60950- 1:2005/A1:2009 + A2:2013.	-- , --
AL-085U Series; Alternate insulation system for Transformer, T1	SUMITOMO BAKELITE CO. LTD.	SBI5.1	Provides Reinforced Insulation. Class F insulation system	UL 1446. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --
AL-085U Series: Transformer, T1 - Tape	Interchangeable	Interchangeable	Mylar Tape wrapped around Transformer with 3 layers. See Diagram 4-11 for details.	UL 510. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --
AL-085U Series: Silicone Sealant	Interchangeable	Interchangeable	(RTV) -Room Temperature Vulcanizing Sealant- used to maintain	UL 94. UL Standard has requirements that meet or exceed	UL , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
			separation between resistors and other components near transformer away from transformer.	the relevant IEC requirements.	
Transformer, T1 - Insulation System (All Models)	Green Cubes Technology Corp.	HIS-8A	Maximum 600V, rated Class B insulation System	UL 1446. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E229670) , --
Bridge Diode, BD1	Interchangeable	Interchangeable	2 A, 600V min. (AL-070U Series) 4A, 600V min. (AL-085U Series)	Evaluated as part of End Product.	-- , --
Varistor, MOV1	Joyin	10S471K	300 Vac (min. 2.5KV, 1.25KVA min surge)	UL 1449, IEC 61051-2	UL325508) , VDE (40004658)
Varistor, MOV1 - Alternate	Centra Science	CNR-10V471K	300 Vac (min. 6KV, 3KVA min surge)	UL 1449, IEC 61051-2	UL (E316325) , VDE (127092)
AL-070U Series: X Capacitor, CX1	Pilkor (Cowell Fashion Co LTD.)	PCX2 335M, PCX2 337 series	0.22 uF or 0.33uF, min. 250 Vac , X2	UL 60384-14, IEC 60384-14	UL (E165646) , Semko, (Cert PCX2 335M SE/0256-2G, PCX2 337 SE/0256-1O)
AL-070U Series: X Capacitor, CX1 - Alternate	Iskra	KNB1530, KNB1532, KNB1533, KNB1560, KNB1562, or KNB1563	0.22 uF or 0.33uF, 250 Vac max., X2	UL 60384-14, IEC 60384-14	UL (E145156) , VDE (139106 L and 139447 L)
AL-085U Series: X Capacitor, CX1	Pilkor (Cowell Fashion Co LTD.)	PCX2 335M PCX2 337 series	0.33 uF, min. 250 Vac , X2	UL 60384-14, IEC 60384-14	UL (E165646) , Semko, (Cert PCX2 335M SE/0256-2G,

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
					PCX2 337 SE/0256-1O)
AL-085U Series: X Capacitor, CX1 - Alternate	Iskra	KNB1530, KNB1532, KNB1533, KNB1560, KNB1562, or KNB1563	0.33 uF, min. 250 Vac , X2	UL 60384-14, IEC 60384-14	UL (E145156) , VDE (139106 L and 139447 L)
AL-070U Series: Line Choke, LE1 (optional)	Green Cubes	G030-6173-2001 or G030-6702- 3001	Rated 130C. See Enclosure Diagrams for details	Evaluated as part of End Product. IEC60950- 1:2005/A1:2009 + A2:2013.	-- , --
AL-085U Series: Line Choke, LE1 (optional)	Green Cubes	G030-6702-3001	Rated 130C. See Enclosure Diagrams for details	Evaluated as part of End Product. IEC60950- 1:2005/A1:2009 + A2:2013.	-- , --
Line Choke, LE2 (optional)	Green Cubes	G030-5123-2001 or G030-5123- 2004	Rated 130C. See Enclosure Diagrams for details	Evaluated as part of End Product. IEC60950- 1:2005/A1:2009 + A2:2013.	-- , --
AL-070U Models: Electrolytic Capacitor, C1	Interchangeable	Interchangeable	150 uF Max., 400Vac min., 105°C min.	Evaluated as part of End Product.	-- , --
AL-085U Models: Electrolytic Capacitor, C1	Interchangeable	Interchangeable	180 uF Max., 400Vac min., 105°C min.	Evaluated as part of End Product.	-- , --
AL-070U Series: Fuse, F1	Bel Fuse	5ST, 5STP, MRT	2A, 250V	UL248-1, UL 248- 14, IEC 60127-1, IEC 60217-2	UL (E20624) , VDE (Cert 4000507, MRT Cert 40001000)
AL-070U Series: Fuse, F1 – Alternate	Conquer	UTE, UTE-A, MET	2A, 250V	UL248-1, UL 248- 14, IEC 60127-1, IEC 60217-2	UL (E82636) , VDE (Cert 40008019,

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
					MET Cert 40017157)
AL-070U Series: Fuse, F1 - Alternate	Littelfuse	218	2A, 250V	UL248-1, UL 248- 14, IEC 60127-1, IEC 60217-2	UL (E10480) , VDE (Cert 40013496)
AL-085U Series: Fuse, F1	Bel Fuse	5ST, 5STP, MRT	3.15A, 250V	UL248-1, UL 248- 14, IEC 60127-1, IEC 60217-2	UL (E20624) , VDE (Cert 4000507, MRT Cert 40001000)
AL-085U Series: Alternate Fuse, F1	Conquer	UTE, UTE-A, MET	3.15A, 250V	UL248-1, UL 248- 14, IEC 60127-1, IEC 60217-2	UL (E82636) , VDE (Cert 40008019, MET Cert 40017157)
AL-085U Series: Alternate Fuse, F1	Littelfuse	218	3.15A, 250V	UL248-1, UL 248- 14, IEC 60127-1, IEC 60217-2	UL (E10480) , VDE (Cert 40013496)
Bleeder Resistor, R2	Interchangeable	Interchangeable	Rated 330kohms	Evaluated as part of End Product.	-- , --
AL-070U Series: Power MOSFET, Q1	Interchangeable	Interchangeable	Min. 600V, 9A	Evaluated as part of End Product.	-- , --
AL-085U: Power MOSFET Q1	Interchangeable	Interchangeable	Min. 900V, 11A	Evaluated as part of End Product.	-- , --
Printed wiring board	Interchangeable	Interchangeable	Min V-1, 105°C	UL796. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --
Tubing (covering components)	Sumitomo	Sumitube F2, F32 Series	600V, 125°C, VW- 1	UL224. UL Standard has requirements that meet or exceed	UL (E48762) , --

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
				the relevant IEC requirements.	
Tubing (covering components) - Alternate	Tyco	Versafit V2 Series	600V, 125°C, VW-1	UL224. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E35586) , --
Diode/Transistor Insulator Covers	Pioneer Material Precision Tech	PMP-P-100, PMP-P-300, PMP-P-400 Series	V-2 min, 105°C	UL746C. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E153203) , --
Diode/Transistor Insulator Covers - Alternate	Saint-Gobain	TF1869 Series	V-2 min, 105°C	UL746C. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL (E57750) , --
Label	Symbio Inc	P002, P032 Series	Pressure-sensitive adhesive on silver polyester film rated 150 °C, for application to Metal	UL969. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --
Label - Alternate	KK Enterprise	KK-TACK-TLT1 Series	Pressure-sensitive adhesive on silver polyester film rated 125 °C, for application to Metal	UL969. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --
Label - Alternate	Avery Dennison Korea	S-333 Series	Pressure-sensitive adhesive on silver polyester film rated 150 °C, for application to Metal	UL969. UL Standard has requirements that meet or exceed the relevant IEC requirements.	UL , --
Label - Alternate	Flexcon	Thermifilm MM-200-SM Series	Pressure-sensitive adhesive on silver polyester film rated 150 °C, for	UL969. UL Standard has requirements that meet or exceed	UL , --

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

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
			application to Metal	the relevant IEC requirements.	
Secondary side Resistor - all models noted	Interchangeable	Interchangeable	See Enclosure for models and values.	Evaluated as part of this investigation.	- , -

Supplementary information:

1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.

IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
4.8.4, 4.8.5	TABLE: Lithium coin/button cell batteries mechanical tests			N/A
(The following mechanical tests are conducted in the sequence noted.)				
4.8.4.2	TABLE: Stress Relief test			—
Part		Material	Oven Temperature (°C)	Comments
4.8.4.3	TABLE: Battery replacement test			—
Battery part no. :				—
Battery Installation/withdrawal		Battery Installation/Removal Cycle		Comments
		1		
		2		
		3		
		4		
		5		
		6		
		8		
		9		
		10		
4.8.4.4	TABLE: Drop test			—
Impact Area		Drop Distance	Drop No.	Observations
			1	
			2	
			3	
4.8.4.5	TABLE: Impact			—
Impacts per surface		Surface tested	Impact energy (Nm)	Comments
4.8.4.6	TABLE: Crush test			—
Test position		Surface tested	Crushing Force (N)	Duration force applied (s)
Supplementary information:				

4.8.5	TABLE: Lithium coin/button cell batteries mechanical test result	N/A
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IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Test position	Surface tested	Force (N)	Duration force applied (s)
Supplementary information:			

5.2		Table: Classification of electrical energy sources					Pass
5.2.2.2 – Steady State Voltage and Current conditions							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
1	264V, 60 Hz	AL-070U-S5, 48Vdc to Chassis. Represents all models in the series.	Normal	48.3Vdc	1.99	DC	ES1
			Abnormal	-	-	-	
			Single fault - Open R32	0Vdc, Dropped to 0 V once the short was applied	-	-	
			Single fault – Short D3	0Vdc, Dropped to 0 V once the short was applied	-	-	
2	264V, 60 Hz	AL-085U-S5, 48Vdc to Chassis. Represents all models in the series	Single fault - Short IC3 (pins 2 to 3)	Max 0Vpk, Dropped to 0V once the short was applied.	-	-	ES1
			Normal	49.9	2.21	DC	
			Abnormal	-	-	-	
			Single fault – Open R38	Dropped to 0V once the short was applied.	-	-	
			Single fault - Open R32	Dropped to 0V once the short was applied.	-	-	
Single fault - Short D5	Max 0Vdc, Output folds back.	-	-				

IEC 62368-1							
Clause		Requirement + Test			Result - Remark		Verdict
			Single fault - Open R16	Max 22.2Vdc, Output folds back	-	-	
5.2.2.3 - Capacitance Limits							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class	
				Capacitance, nF	Upk (V)		
			Normal				
			Abnormal				
			Single fault – SC/OC				
5.2.2.4 - Single Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				
5.2.2.5 - Repetitive Pulses							
No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				
Test Conditions: Normal – Abnormal - Supplementary information: SC=Short Circuit, OC=Open Circuit							

5.4.1.4, 6.3.2, 9.0, B.2.6	TABLE: Temperature measurements						Pass
	Supply voltage (V)	See Below	See Below	See Below	See Below	—	
	Ambient T _{min} (°C)	See Below	See Below	See Below	See Below	—	

IEC 62368-1						
Clause	Requirement + Test	Result - Remark				Verdict
	Ambient T_{\max} (°C)	See Below	See Below	See Below	See Below	—
	Tma (°C)	25	25	25	25	—
Maximum measured temperature T of part/at:		T (°C)				Allowed T_{\max} (°C)
Model AL-085U-Q1225, using Load as noted below		85V, 60Hz	264V, 60Hz	--	--	--
LE1 Winding		35.2	27.8	--	--	90
LE2 Winding		30.2	26.2	--	--	90
T1 Core		36.3	38.2	--	--	110
T1 Winding		34.9	38.0	--	--	110
Q1 Casing		34.7	38.9	--	--	105
Ambient		23.6	23.6	--	--	--
--		--	--	--	--	--
Model AL-070U-T124, using Load as noted below		90V, 60Hz	264V, 50Hz	--	--	--
1) Inductor LE1 Coil		61.9	29.4	--	--	90
2) PWB under R2 (under LE1 Coil)		39.6	29.0	--	--	105
3) Body CX1		28.4	24.4	--	--	90
4) Inductor LE2 Coil		32.2	26.3	--	--	90
5) PWB under BD1		57.3	36.7	--	--	105
6) Bulk Capacitor C1, adj. R3		36.0	32.2	--	--	85
7) Transformer T1 Core		51.9	47.3	--	--	110
8) Transformer T1 Winding - Top		42.6	39.0	--	--	110
9) Transformer T1 Winding - Bottom		49.7	42.9	--	--	110
10) PWB between R3 and R4		44.0	42.9	--	--	105
11) Q1 Heatsink		46.0	43.1	--	--	105
12) PWB under R13		40.2	34.3	--	--	105
13) D5 Heatsink		61.1	59.4	--	--	105
14) PWB under IC1		35.4	30.8	--	--	105
15) Inductor, L1		45.0	43.7	--	--	105
16) Inductor, L2		56.4	55.8	--	--	105
17) Capacitor C20		38.1	35.7	--	--	85
18) PWB Under R19		46.9	46.7	--	--	105
Ambient		23.5	23.0	--	--	--
--		--	--	--	--	--

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
Model AL-085U-Q1245, using Load as noted below	90V, 60Hz	264V, 50Hz	--	--	--
1) Inductor LE1 Coil	44.3	30.4	--	--	90
2) PWB under R2 (under LE1 Coil)	36.8	35.8	--	--	105
3) Body CX1	26.5	26.4	--	--	85
4) Inductor LE2 Coil	49.4	35.5	--	--	90
5) PWB under BD1	52.3	39.5	--	--	105
6 Bulk Capacitor C1, adj. R3	30.9	31.6	--	--	85
7) Transformer T1 Core	42.1	52.3	--	--	110
8) Transformer T1 Winding - Top	43.8	60.1	--	--	110
9) Transformer T1 Winding - Bottom	45.8	56.5	--	--	110
10) PWB under R3	28.4	29.2	--	--	105
11) Q1 Heatsink	41.9	85.3	--	--	105
12) PWB under R13	42.9	46.6	--	--	105
13) D5 Heatsink	61.9	66.4	--	--	105
14) PWB under IC1	38.6	42.1	--	--	105
15) Inductor, L1	67.1	82.0	--	--	105
16) Inductor, L2	41.0	45.1	--	--	105
17) Inductor, L3	63.1	64.9	--	--	105
18) Inductor, L4	53.0	59.5	--	--	105
19) Inductor, L5	50.4	56.6	--	--	105
20) PWB Under R20	55.1	56.6	--	--	105
Ambient	23.0	23.0	--	--	--
--	--	--	--	--	--
Model AL-085U-Q0245, using Load as noted below	90V, 60Hz	264V, 50Hz	--	--	--
1) Inductor LE1 Coil	37.4	28.0	--	--	90
2) PWB under R2 (under LE1 Coil)	33.3	27.8	--	--	105
3) Body CX1	24.7	24.4	--	--	85
4) Inductor LE2 Coil	34.8	26.6	--	--	105
5) PWB under BD1	42.5	31.9	--	--	105
6) Bulk Capacitor C1, adj. R3	30.5	28.6	--	--	85
7) Transformer T1 Core	46.2	51.1	--	--	110
8) Transformer T1 Winding - Top	50.6	58.1	--	--	110
9) Transformer T1 Winding - Bottom	53.7	62.4	--	--	110

IEC 62368-1					
Clause	Requirement + Test		Result - Remark		Verdict
10) PWB between R3 and R4	40.5	43.2	--	--	105
11) Q1 Heatsink	36.9	37.3	--	--	105
12) PWB under R13	35.7	33.5	--	--	105
13) D5 Heatsink	73.9	76.9	--	--	105
14) PWB under IC1	35.7	35.1	--	--	105
15) Inductor, L1	76.1	95.6	--	--	105
16) Inductor, L3	47.3	52.0	--	--	105
17) Capacitor C20	65.2	75.5	--	--	85
18) PWB Under R23	81.1	89.1	--	--	105
Ambient	23.1	23.1	--	--	--
Model AL-085U-Q0245, showing transformer temperatures with and without tape around transformer. Tape added to isolate transformer from components around transformer.	90V, 60Hz, with tape	264V, 50Hz, with tape	90V, 60Hz, without tape	264V, 50Hz, without tape	--
Transformer, T1 Core	40.3	49.0	42.4	39.1	110
Transformer, T1 Winding - Top	58.1	78.4	61.8	71.6	110
Transformer, T1 Winding - Bottom	50.1	63.8	54.1	53.1	110
-	-	-	-	-	-
Model AL-070U-T122-145(F) with Class F transformer, Output Condition: 70W: 5Vdc, 7.5A; +12Vdc, 2.5A; -12Vdc, 0.625A	90Vac, 60Hz,	264Vac, 50Hz	-	-	-
Tma	25	25	-	-	-
Ambient	24.3	25.2	-	-	-
PWB near BD1	40.9	31.5	-	-	105
LE1 - Coil	45.7	31.0	-	-	110
LE2 - Coil	39.5	29.8	-	-	110
C1 - Top	36.8	31.2	-	-	105
T1 - Core	58.1	52.2	-	-	130
T1 – Coil, toward Primary side	46.8	41.4	-	-	130
T1 – Coil, toward Secondary side	55.6	48.5	-	-	130
PWB near Q1	49.5	41.5	-	-	105
L2 - Coil	52.3	50.1	-	-	110
Duration (hours)	3hr.	3Hr	-	-	-
Supplementary information:					
-					

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
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:							
<p>Note 1: T_{ma} should be considered as directed by applicable requirement</p> <p>Note 2: T_{ma} is not included in assessment of Touch Temperatures (Clause 9)</p> <p>T_{ma} of 25°C was considered when evaluating measured temperatures against limits.</p> <p>Model AL-085U-Q0245 outputs loaded to 3.3V, 10.5A; +12V, 4.0A; 24V, 0.08A. (Air-cooled) CFM: 37.0 cm from unit, air flow from primary to secondary</p> <p>Model AL-085U-Q1245 outputs loaded to 5V, 7.0A; +12V, 4.0A; 24V, 0.08A, 48V, 0A. (Air-cooled) CFM: 37.0 cm from unit, air flow from primary to secondary.</p> <p>Model AL-070U-T124 outputs loaded to 5V, 5A; +12V, 2.4A; 24V, 0.675A. (Air-cooled) CFM: 37.0 cm from unit, air flow from primary to secondary</p> <p>Model AL-085U-Q1225 outputs load to 5V, 10A; 12V, 1A; 12V, 1A, 48V, 0.25A. (Air-Cooled) Fan CFM: 28.0 cm from unit, air flow from primary to secondary.</p>							

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

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

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
5.4.2.2, 5.4.2.4 and 5.4.3	TABLE: Minimum Clearances/Creepage distance						Pass
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz) ¹	Required cl (mm)	cl (mm) ²	Required ³ cr (mm)	cr (mm)
Model AL-070U-T124, connected to 240Vac, 50Hz	--	--	-		--	-	--
T1, Pin 1 to Chassis	340	198	*	1.27 **	2.3	2.0	3.5
T1, Pin 1 to Pin 12	380	199	*	2.54 **	Min. 6.0	4.0	Min. 7.8
T1, Pin 1 to Pin 11	340	198	*	2.54 **	Min. 6.0	4.0	Min. 7.8
T1, Pin 1 to Pin 10	372	198	*	2.54 **	Min. 6.0	4.0	Min. 7.8
T1, Pin 1 to Pin 9	344	198	*	2.54 **	Min. 6.0	4.0	Min. 7.8
T1, Pin 1 to Pin 7	360	210	*	2.54 **	Min. 6.0	4.2	Min. 7.8
T1, Pin 1 to Pin 8	344	197	*	2.54 **	Min. 6.0	2.0	Min. 7.8
T1, Pin 3 to Chassis	472	249	*	1.27 **	2.3	2.5	3.5
T1, Pin 3 to Pin 12	460	242	*	2.54 **	Min. 6.0	4.9	Min. 7.8
T1, Pin 3 to Pin 11	478	249	*	2.54 **	Min. 6.0	5.0	Min. 7.8
T1, Pin 3 to Pin 10	460	239	*	2.54 **	Min. 6.0	4.8	Min. 7.8
T1, Pin 3 to Pin 9	452	250	*	2.54 **	Min. 6.0	5.0	Min. 7.8
T1, Pin 3 to Pin 7	272	244	*	2.54 **	Min. 6.0	4.9	Min. 7.8
T1, Pin 3 to Pin 8	440	234	*	2.54 **	Min. 6.0	4.7	Min. 7.8
T1, Pin 5 to Chassis	−344	208	*	1.27 **	2.3	2.1	3.5
T1, Pin 5 to Pin 12	−356	211	*	2.54 **	Min. 6.0	4.3	Min. 7.8
T1, Pin 5 to Pin 11	−348	211	*	2.54 **	Min. 6.0	4.3	Min. 7.8
T1, Pin 5 to Pin 10	−352	209	*	2.54 **	Min. 6.0	4.2	Min. 7.8
T1, Pin 5 to Pin 9	−344	209	*	2.54 **	Min. 6.0	4.2	Min. 7.8
T1, Pin 5 to Pin 7	−462	216	*	2.54 **	Min. 6.0	4.4	Min. 7.8
T1, Pin 5 to Pin 8	−348	208	*	2.54 **	Min. 6.0	4.2	Min. 7.8
T1, Pin 6 to Chassis	-392	211	*	1.27 **	2.3	2.2	3.5
T1, Pin 6 to Pin 12	−368	211	*	2.54 **	Min. 6.0	4.3	Min. 7.8
T1, Pin 6 to Pin 11	−392	212	*	2.54 **	Min. 6.0	4.3	Min. 7.8
T1, Pin 6 to Pin 10	−376	211	*	2.54 **	Min. 6.0	4.3	Min. 7.8
T1, Pin 6 to Pin 9	−392	209	*	2.54 **	Min. 6.0	4.2	Min. 7.8
T1, Pin 6 to Pin 7	248	163	*	2.54 **	Min. 6.0	3.3	Min. 7.8
T1, Pin 6 to Pin 8	−584	253	*	2.54 **	Min. 6.0	5.1	Min. 7.8
T1, Pin 7 to Pin 8 (Secondary – Secondary)	188	57	*	-	--	-	--

IEC 62368-1							
Clause	Requirement + Test			Result - Remark			Verdict
T1, Pin 12 to Pin 11 (Secondary – Secondary)	–84	18	*	-	--	-	--
PC1, Pin 4 to 1	–332	200	*	2.54 **	7.3	4.0	7.3
PC1, Pin 4 to 2	–332	199	*	2.54 **	7.3	4.0	7.3
PC1, Pin 3 to 1	–340	206	*	2.54 **	7.3	4.2	7.3
PC1, Pin 3 to 2	–344	206	*	2.54 **	7.3	4.2	7.3
Model AL-070U-S5, , connected to 240Vac, 50Hz	--	--	-	-	--	-	--
T1, Pin 1 to Chassis	212	143	*	1.27 **	2.3	3.2	3.5
T1, Pin 1 to Pin 11/12	600	183	*	2.54 **	Min. 6.0	3.7	Min. 7.8
T1, Pin 1 to Pin 9/10	176	143	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 1 to Pin 7	176	143	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 1 to Pin 8	264	149	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 3 to Chassis	240	197	*	1.27 **	2.3	2.0	3.5
T1, Pin 3 to Pin 11/12	360	149	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 3 to Pin 9/10	256	205	*	2.54 **	Min. 6.0	4.1	Min. 7.8
T1, Pin 3 to Pin 7	264	203	*	2.54 **	Min. 6.0	4.1	Min. 7.8
T1, Pin 3 to Pin 8	232	177	*	2.54 **	Min. 6.0	3.6	Min. 7.8
T1, Pin 5 to Chassis	168	148	*	1.27 **	2.3	1.6	3.5
T1, Pin 5 to Pin 11/12	568	182	*	2.54 **	Min. 6.0	3.7	Min. 7.8
T1, Pin 5 to Pin 9/10	160	144	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 5 to Pin 7	168	144	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 5 to Pin 8	288	150	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 6 to Chassis	184	152	*	1.27 **	2.3	1.6	3.5
T1, Pin 6 to Pin 11/12	536	167	*	2.54 **	Min. 6.0	3.4	Min. 7.8
T1, Pin 6 to Pin 9/10	176	149	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 6 to Pin 7	176	148	*	2.54 **	Min. 6.0	3.2	Min. 7.8
T1, Pin 6 to Pin 8	200	144	*	2.54 **	Min. 6.0	3.2	Min. 7.8
PC1, Pin 4 to 1	176	143	*	2.54 **	7.3	3.2	7.3
PC1, Pin 4 to 2	168	143	*	2.54 **	7.3	3.2	7.3
PC1, Pin 3 to 1	168	143	*	2.54 **	7.3	3.2	7.3
PC1, Pin 3 to 2	168	143	*	2.54 **	7.3	3.2	7.3
Model AL-085U-Q1245, connected to 240Vac, 50Hz	--	--	-	-	--	-	--
T1, Pin 1 to Chassis	340	198	*	1.27 **	3.7	2.0	3.7
T1, Pin 1 to Pin 12	350	199	*	2.54 **	8.0	4.0	8.0
T1, Pin 1 to Pin 11	340	198	*	2.54 **	8.0	4.0	8.0

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Clause	Requirement + Test			Result - Remark			Verdict
T1, Pin 1 to Flying Lead out	424	228	*	2.54 **	8.0	4.6	8.0
T1, Pin 1 to Pin 9	340	196	*	2.54 **	8.0	4.0	8.0
T1, Pin 1 to Pin 7	340	196	*	2.54 **	8.0	4.0	8.0
T1, Pin 1 to Pin 8	376	197	*	2.54 **	8.0	4.0	8.0
T1, Pin 3 to Chassis	424	227	*	1.27 **	3.7	2.3	3.7
T1, Pin 3 to Pin 12	448	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 3 to Pin 11	424	226	*	2.54 **	8.0	4.6	8.0
T1, Pin 3 to Flying Lead out	528	327	*	2.54 **	8.0	6.6	8.0
T1, Pin 3 to Pin 9	432	232	*	2.54 **	8.0	4.7	8.0
T1, Pin 3 to Pin 7	424	222	*	2.54 **	8.0	4.5	8.0
T1, Pin 3 to Pin 8	480	275	*	2.54 **	8.0	5.5	8.0
T1, Pin 5 to Chassis	188	131	*	2.54 **	3.7	1.6	3.7
T1, Pin 5 to Pin 12	196	133	*	2.54 **	8.0	3.1	8.0
T1, Pin 5 to Pin 11	184	130	*	2.54 **	8.0	3.1	8.0
T1, Pin 5 to Flying Lead out	264	191	*	2.54 **	8.0	3.9	8.0
T1, Pin 5 to Pin 9	184	130	*	2.54 **	8.0	3.1	8.0
T1, Pin 5 to Pin 7	184	130	*	2.54 **	8.0	3.1	8.0
T1, Pin 5 to Pin 8	232	148	*	2.54 **	8.0	3.2	8.0
T1, Pin 6 to Chassis	192	132	*	1.27 **	3.7	1.6	3.7
T1, Pin 6 to Pin 12	212	140	*	2.54 **	5.4	3.1	8.8
T1, Pin 6 to Pin 11	192	131	*	2.54 **	5.4	3.1	8.8
T1, Pin 6 to Flying Lead out	288	207	*	2.54 **	5.4	4.2	8.8
T1, Pin 6 to Pin 9	200	134	*	2.54 **	5.4	3.1	8.8
T1, Pin 6 to Pin 7	188	131	*	2.54 **	5.4	3.1	8.8
T1, Pin 6 to Pin 8	232	162	*	2.54 **	5.4	3.3	8.8
T1, Pin 12 to Pin 11 (Secondary – Secondary)	114	33	*	-	--	-	--
T1, Pin Flying Lead to Pin 7 (Secondary – Secondary)	116	150	*	-	--	-	--
T1, Pin 9 to Pin 11	38	11	*	2.54 **	5.4	3.0	8.1
PC1, Pin 4 to 1	184	130	*	2.54 **	5.4	3.1	8.1
PC1, Pin 4 to 2	184	130	*	2.54 **	5.4	3.1	8.1
PC1, Pin 3 to 1	184	130	*	2.54 **	5.4	3.1	8.1
PC1, Pin 3 to 2	180	130	*	2.54 **	5.4	3.1	8.1
Model AL-085U-S5, connected to 240Vac, 50Hz	--	--	-	-	--	-	--
T1, Pin 1 to Chassis	350	213	*	1.27 **	3.7	2.2	3.7

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Clause	Requirement + Test			Result - Remark			Verdict
T1, Pin 1 to Pin 11/12	350	209	*	2.54 **	8.0	4.2	8.0
T1, Pin 1 to Pin 9/10	350	206	*	2.54 **	8.0	4.2	8.0
T1, Pin 1 to Pin 7	353	211	*	2.54 **	8.0	4.3	8.0
T1, Pin 1 to Pin 8	353	212	*	2.54 **	8.0	4.3	8.0
T1, Pin 3 to Chassis	386	236	*	1.27 **	3.7	2.4	3.7
T1, Pin 3 to Pin 11/12	386	236	*	2.54 **	8.0	4.8	8.0
T1, Pin 3 to Pin 9/10	401	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 3 to Pin 7	400	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 3 to Pin 8	400	246	*	2.54 **	8.0	5.0	8.0
T1, Pin 5 to Chassis	394	247	*	1.27 **	3.7	2.5	3.7
T1, Pin 5 to Pin 11/12	394	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 5 to Pin 9/10	397	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 5 to Pin 7	394	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 5 to Pin 8	394	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 6 to Chassis	394	247	*	1.27 **	3.7	2.5	3.7
T1, Pin 6 to Pin 11/12	395	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 6 to Pin 9/10	397	247	*	2.54 **	8.0	5.0	8.0
T1, Pin 6 to Pin 7	394	246	*	2.54 **	8.0	5.0	8.0
T1, Pin 6 to Pin 8	394	246	*	2.54 **	8.0	5.0	8.0
T1, Pin 11/12 to Pin 9/10 (Secondary – Secondary)	43.7	42.7	*	-	--	-	--
PC1, Pin 4 to 1	347	212	*	2.54 **	4.5	4.3	8.1
PC1, Pin 4 to 2	346	211	*	2.54 **	4.5	4.3	8.1
PC1, Pin 3 to 1	329	199	*	2.54 **	4.5	4.0	8.1
PC1, Pin 3 to 2	347	211	*	2.54 **	4.5	4.3	8.1
Model AL-085U-Q0245, connected to 240Vac, 50Hz	--	--	-	-	--	-	--
T1, Pin 1 to Chassis	328	308	*	1.27 **	3.7	3.10	3.7
T1, Pin 1 to Pin 12	344	193	*	2.54 **	8.0	3.9	8.0
T1, Pin 1 to Pin 11	312	132	*	2.54 **	8.0	3.1	8.0
T1, Pin 1 to Pin F	432	234	*	2.54 **	8.0	4.7	8.0
T1, Pin 1 to Pin 9	328	193	*	2.54 **	8.0	3.9	8.0
T1, Pin 1 to Pin 7	336	187	*	2.54 **	8.0	3.8	8.0
T1, Pin 1 to Pin 8	384	204	*	2.54 **	8.0	4.1	8.0
T1, Pin 3 to Chassis	424	333	*	1.27 **	3.7	3.4	3.7
T1, Pin 3 to Pin 12	440	255	*	2.54 **	8.0	5.1	8.0

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Clause	Requirement + Test			Result - Remark			Verdict
T1, Pin 3 to Pin 11	440	233	*	2.54 **	8.0	4.7	8.0
T1, Pin 3 to Pin F	820	325	*	2.54 **	8.0	6.5	8.0
T1, Pin 3 to Pin 9	460	231	*	2.54 **	8.0	4.7	8.0
T1, Pin 3 to Pin 7	420	224	*	2.54 **	8.0	4.5	8.0
T1, Pin 3 to Pin 8	480	274	*	2.54 **	8.0	5.5	8.0
T1, Pin 5 to Chassis	328	191	*	1.27 **	3.7	2.0	3.7
T1, Pin 5 to Pin 12	400	195	*	2.54 **	8.0	3.9	8.0
T1, Pin 5 to Pin 11	328	184	*	2.54 **	8.0	3.7	8.0
T1, Pin 5 to Pin F	720	233	*	2.54 **	8.0	4.7	8.0
T1, Pin 5 to Pin 9	540	196	*	2.54 **	8.0	4.0	8.0
T1, Pin 5 to Pin 7	320	184	*	2.54 **	8.0	3.7	8.0
T1, Pin 5 to Pin 8	560	199	*	2.54 **	8.0	4.0	8.0
T1, Pin 6 to Chassis	384	211	*	1.27 **	3.7	2.2	3.7
T1, Pin 6 to Pin 12	464	215	*	2.54 **	5.4	4.3	8.8
T1, Pin 6 to Pin 11	384	209	*	2.54 **	5.4	4.2	8.8
T1, Pin 6 to Pin F	860	279	*	2.54 **	5.4	5.6	8.8
T1, Pin 6 to Pin 9	392	194	*	2.54 **	5.4	3.9	8.8
T1, Pin 6 to Pin 7	368	193	*	2.54 **	5.4	3.9	8.8
T1, Pin 6 to Pin 8	600	206	*	2.54 **	5.4	4.2	8.8
T1, Pin 7 to Pin F (Secondary – Secondary)	480	140	*	-	--	-	--
T1, Pin 8 to Pin 11 (Secondary – Secondary)	240	80	*	-	--	-	--
PC1, Pin 4 to 1	352	211	*	2.54 **	4.5	4.3	8.1
PC1, Pin 4 to 2	312	183	*	2.54 **	4.5	3.7	8.1
PC1, Pin 3 to 1	328	192	*	2.54 **	4.5	3.9	8.1
PC1, Pin 3 to 2	328	191	*	2.54 **	4.5	3.9	8.1
(Trace common to T2 and Q1 pin 3, Trace closest to spacing cut-through) TO (PC1, pin 1)	184	127	*	2.54 **	4.3	3.1	7.5
(Trace common to T2 and Q1 pin 3, Trace closest to spacing cut-through) TO (PC1, pin 2)	184	127	*	2.54 **	4.3	3.1	7.5
(Trace common to T2 and Q1 pin 3, Trace closest to spacing cut-through) TO (CY3, secondary side)	184	127	*	2.54 **	4.3	3.1	7.5
Supplementary information:							
Note 1: Only for frequency above 30 kHz							

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Clause	Requirement + Test	Result - Remark	Verdict

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

Note 3: Provide Material Group

*All frequency below 30kHz

**See Withstand Voltage Clearances for higher values required by the standard. The values noted in this chart are for reference only.

5.4.2.3	TABLE: Minimum Clearances distances using required withstand voltage			Pass
	Overvoltage Category (OV):			II
	Pollution Degree:			2
Clearance distanced between:	Required withstand voltage	Required cl (mm)	Measured cl (mm)	
Model AL-070U-T124, connected to 240Vac, 50Hz	-		--	
T1, Pin 1 to Chassis	2500	1.5	2.3	
T1, Pin 1 to Pin 12	2500	3.0	Min. 6.0	
T1, Pin 1 to Pin 11	2500	3.0	Min. 6.0	
T1, Pin 1 to Pin 10	2500	3.0	Min. 6.0	
T1, Pin 1 to Pin 9	2500	3.0	Min. 6.0	
T1, Pin 1 to Pin 7	2500	3.0	Min. 6.0	
T1, Pin 1 to Pin 8	2500	3.0	Min. 6.0	
T1, Pin 3 to Chassis	2500	1.5	2.3	
T1, Pin 3 to Pin 12	2500	3.0	Min. 6.0	
T1, Pin 3 to Pin 11	2500	3.0	Min. 6.0	
T1, Pin 3 to Pin 10	2500	3.0	Min. 6.0	
T1, Pin 3 to Pin 9	2500	3.0	Min. 6.0	
T1, Pin 3 to Pin 7	2500	3.0	Min. 6.0	
T1, Pin 3 to Pin 8	2500	3.0	Min. 6.0	
T1, Pin 5 to Chassis	2500	1.5	2.3	
T1, Pin 5 to Pin 12	2500	3.0	Min. 6.0	
T1, Pin 5 to Pin 11	2500	3.0	Min. 6.0	
T1, Pin 5 to Pin 10	2500	3.0	Min. 6.0	
T1, Pin 5 to Pin 9	2500	3.0	Min. 6.0	
T1, Pin 5 to Pin 7	2500	3.0	Min. 6.0	
T1, Pin 5 to Pin 8	2500	3.0	Min. 6.0	
T1, Pin 6 to Chassis	2500	1.5	2.3	
T1, Pin 6 to Pin 12	2500	3.0	Min. 6.0	

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Clause	Requirement + Test	Result - Remark	Verdict
T1, Pin 6 to Pin 11	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 10	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 9	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 7	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 8	2500	3.0	Min. 6.0
T1, Pin 7 to Pin 8 (Secondary – Secondary)	2500	-	--
T1, Pin 12 to Pin 11 (Secondary – Secondary)	2500	-	--
PC1, Pin 4 to 1	2500	3.0	7.3
PC1, Pin 4 to 2	2500	3.0	7.3
PC1, Pin 3 to 1	2500	3.0	7.3
PC1, Pin 3 to 2	2500	3.0	7.3
Model AL-070U-S5, , connected to 240Vac, 50Hz	-	-	--
T1, Pin 1 to Chassis	2500	1.5	2.3
T1, Pin 1 to Pin 11/12	2500	3.0	Min. 6.0
T1, Pin 1 to Pin 9/10	2500	3.0	Min. 6.0
T1, Pin 1 to Pin 7	2500	3.0	Min. 6.0
T1, Pin 1 to Pin 8	2500	3.0	Min. 6.0
T1, Pin 3 to Chassis	2500	1.5	2.3
T1, Pin 3 to Pin 11/12	2500	3.0	Min. 6.0
T1, Pin 3 to Pin 9/10	2500	3.0	Min. 6.0
T1, Pin 3 to Pin 7	2500	3.0	Min. 6.0
T1, Pin 3 to Pin 8	2500	3.0	Min. 6.0
T1, Pin 5 to Chassis	2500	1.5	2.3
T1, Pin 5 to Pin 11/12	2500	3.0	Min. 6.0
T1, Pin 5 to Pin 9/10	2500	3.0	Min. 6.0
T1, Pin 5 to Pin 7	2500	3.0	Min. 6.0
T1, Pin 5 to Pin 8	2500	3.0	Min. 6.0
T1, Pin 6 to Chassis	2500	1.5	2.3
T1, Pin 6 to Pin 11/12	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 9/10	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 7	2500	3.0	Min. 6.0
T1, Pin 6 to Pin 8	2500	3.0	Min. 6.0
PC1, Pin 4 to 1	2500	3.0	7.3
PC1, Pin 4 to 2	2500	3.0	7.3

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
PC1, Pin 3 to 1	2500	3.0	7.3
PC1, Pin 3 to 2	2500	3.0	7.3
Model AL-085U-Q1245, connected to 240Vac, 50Hz	-	-	--
T1, Pin 1 to Chassis	2500	1.5	3.7
T1, Pin 1 to Pin 12	2500	3.0	8.0
T1, Pin 1 to Pin 11	2500	3.0	8.0
T1, Pin 1 to Flying Lead out	2500	3.0	8.0
T1, Pin 1 to Pin 9	2500	3.0	8.0
T1, Pin 1 to Pin 7	2500	3.0	8.0
T1, Pin 1 to Pin 8	2500	3.0	8.0
T1, Pin 3 to Chassis	2500	1.5	3.7
T1, Pin 3 to Pin 12	2500	3.0	8.0
T1, Pin 3 to Pin 11	2500	3.0	8.0
T1, Pin 3 to Flying Lead out	2500	3.0	8.0
T1, Pin 3 to Pin 9	2500	3.0	8.0
T1, Pin 3 to Pin 7	2500	3.0	8.0
T1, Pin 3 to Pin 8	2500	3.0	8.0
T1, Pin 5 to Chassis	2500	1.5	3.7
T1, Pin 5 to Pin 12	2500	3.0	8.0
T1, Pin 5 to Pin 11	2500	3.0	8.0
T1, Pin 5 to Flying Lead out	2500	3.0	8.0
T1, Pin 5 to Pin 9	2500	3.0	8.0
T1, Pin 5 to Pin 7	2500	3.0	8.0
T1, Pin 5 to Pin 8	2500	3.0	8.0
T1, Pin 6 to Chassis	2500	1.5	3.7
T1, Pin 6 to Pin 12	2500	3.0	5.4
T1, Pin 6 to Pin 11	2500	3.0	5.4
T1, Pin 6 to Flying Lead out	2500	3.0	5.4
T1, Pin 6 to Pin 9	2500	3.0	5.4
T1, Pin 6 to Pin 7	2500	3.0	5.4
T1, Pin 6 to Pin 8	2500	3.0	5.4
T1, Pin 12 to Pin 11 (Secondary – Secondary)	2500	-	--
T1, Pin Flying Lead to Pin 7 (Secondary – Secondary)	2500	-	--
T1, Pin 9 to Pin 11	2500	3.0	5.4

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
PC1, Pin 4 to 1	2500	3.0	5.4
PC1, Pin 4 to 2	2500	3.0	5.4
PC1, Pin 3 to 1	2500	3.0	5.4
PC1, Pin 3 to 2	2500	3.0	5.4
Model AL-085U-S5, connected to 240Vac, 50Hz	-	-	--
T1, Pin 1 to Chassis	2500	1.5	3.7
T1, Pin 1 to Pin 11/12	2500	3.0	8.0
T1, Pin 1 to Pin 9/10	2500	3.0	8.0
T1, Pin 1 to Pin 7	2500	3.0	8.0
T1, Pin 1 to Pin 8	2500	3.0	8.0
T1, Pin 3 to Chassis	2500	1.5	3.7
T1, Pin 3 to Pin 11/12	2500	3.0	8.0
T1, Pin 3 to Pin 9/10	2500	3.0	8.0
T1, Pin 3 to Pin 7	2500	3.0	8.0
T1, Pin 3 to Pin 8	2500	3.0	8.0
T1, Pin 5 to Chassis	2500	1.5	3.7
T1, Pin 5 to Pin 11/12	2500	3.0	8.0
T1, Pin 5 to Pin 9/10	2500	3.0	8.0
T1, Pin 5 to Pin 7	2500	3.0	8.0
T1, Pin 5 to Pin 8	2500	3.0	8.0
T1, Pin 6 to Chassis	2500	1.5	3.7
T1, Pin 6 to Pin 11/12	2500	3.0	8.0
T1, Pin 6 to Pin 9/10	2500	3.0	8.0
T1, Pin 6 to Pin 7	2500	3.0	8.0
T1, Pin 6 to Pin 8	2500	3.0	8.0
T1, Pin 11/12 to Pin 9/10 (Secondary – Secondary)	2500	-	--
PC1, Pin 4 to 1	2500	3.0	4.5
PC1, Pin 4 to 2	2500	3.0	4.5
PC1, Pin 3 to 1	2500	3.0	4.5
PC1, Pin 3 to 2	2500	3.0	4.5
Model AL-085U-Q0245, connected to 240Vac, 50Hz	-	-	--
T1, Pin 1 to Chassis	2500	1.5	3.7
T1, Pin 1 to Pin 12	2500	3.0	8.0
T1, Pin 1 to Pin 11	2500	3.0	8.0

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
T1, Pin 1 to Pin F	2500	3.0	8.0
T1, Pin 1 to Pin 9	2500	3.0	8.0
T1, Pin 1 to Pin 7	2500	3.0	8.0
T1, Pin 1 to Pin 8	2500	3.0	8.0
T1, Pin 3 to Chassis	2500	1.5	3.7
T1, Pin 3 to Pin 12	2500	3.0	8.0
T1, Pin 3 to Pin 11	2500	3.0	8.0
T1, Pin 3 to Pin F	2500	3.0	8.0
T1, Pin 3 to Pin 9	2500	3.0	8.0
T1, Pin 3 to Pin 7	2500	3.0	8.0
T1, Pin 3 to Pin 8	2500	3.0	8.0
T1, Pin 5 to Chassis	2500	1.5	3.7
T1, Pin 5 to Pin 12	2500	3.0	8.0
T1, Pin 5 to Pin 11	2500	3.0	8.0
T1, Pin 5 to Pin F	2500	3.0	8.0
T1, Pin 5 to Pin 9	2500	3.0	8.0
T1, Pin 5 to Pin 7	2500	3.0	8.0
T1, Pin 5 to Pin 8	2500	3.0	8.0
T1, Pin 6 to Chassis	2500	1.5	3.7
T1, Pin 6 to Pin 12	2500	3.0	5.4
T1, Pin 6 to Pin 11	2500	3.0	5.4
T1, Pin 6 to Pin F	2500	3.0	5.4
T1, Pin 6 to Pin 9	2500	3.0	5.4
T1, Pin 6 to Pin 7	2500	3.0	5.4
T1, Pin 6 to Pin 8	2500	3.0	5.4
T1, Pin 7 to Pin F (Secondary – Secondary)	2500	-	--
T1, Pin 8 to Pin 11 (Secondary – Secondary)	2500	-	--
PC1, Pin 4 to 1	2500	3.0	4.5
PC1, Pin 4 to 2	2500	3.0	4.5
PC1, Pin 3 to 1	2500	3.0	4.5
PC1, Pin 3 to 2	2500	3.0	4.5
(Trace common to T2 and Q1 pin 3, Trace closest to spacing cut-through) TO (PC1, pin 1)	2500	3.0	4.3

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
(Trace common to T2 and Q1 pin 3, Trace closest to spacing cut-through) TO (PC1, pin 2)	2500	3.0	4.3
(Trace common to T2 and Q1 pin 3, Trace closest to spacing cut-through) TO (CY3, secondary side)	2500	3.0	4.3
Supplementary information:			

5.4.2.4	TABLE: Clearances based on electric strength test			N/A
Test voltage applied between:	Required cl (mm)	Test voltage (kV) peak/ r.m.s. / d.c.	Breakdown Yes / No	
Supplementary information:				

5.4.4.2, 5.4.4.5 c) 5.4.4.9	TABLE: Distance through insulation measurements					Pass
Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)	
-	-	--	-	-	-	
Supplementary information:						
Power Supply uses Optical Isolator. . See critical components list,						

5.4.9	TABLE: Electric strength tests			Pass
Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No	
Functional:				
Basic/supplementary:				
Transformer insulation tape Symbio MY130 (Tested per 5.4.4.6.2)	DC	2500	No	
Primary to Ground (AL-070U-S5, AL-070U-T125, AL-070U-S1, AL-085U-S1, AL-085U-Q1245, AL-085U-S5, which represent all models)	DC	2500	No	
Reinforced:				
Primary to Secondary (AL-070U-S5, AL-070U-T125, AL-070U-S1, AL-085U-S1, AL-085U-	DC	4000	No	

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Clause	Requirement + Test	Result - Remark	Verdict
Q1245, AL-085U-S5, which represent all models)			
Routine Tests:			
Supplementary information:			
MOV removed from samples to comply with basic test primary to ground.			

5.5.2.2	TABLE: Stored discharge on capacitors					Pass
Supply Voltage (V), Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification	
AL-070U-T125	-	-	-	-	-	
264V 60Hz	Input Line to Neutral	N	N/A	0.8 (0.5uF)	ES1	
264V 60Hz	Input Line to ground	N	N/A	6.9 (11.1nF)	ES1	
264V 60Hz	Input Neutral to Ground	N	N/A	6.9 (10.4nF)	ES1	
264V 60Hz	Input Line to Neutral	S, Open R2	N/A	3.8 (0.2uF)	ES1	
264V 60Hz	Input Line to ground	S, Open R2	N/A	11.4 (10.2nF)	ES1	
264V 60Hz	Input Neutral to Ground	S, Open R2	N/A	6.9 (10.2nF)	ES1	
-	-	-	-	-	-	
AL-085U-Q1245	-	-	--	-	-	
264V 60Hz	Input Line to Neutral	N	N/A	1.5V (0.53uF)	ES1	
264V 60Hz	Input Line to ground	N	N/A	6.9V (10.9nF)	ES1	
264V 60Hz	Input Neutral to Ground	N	N/A	6.1V (10.6nF)	ES1	
264V 60Hz	Input Line to Neutral	S, Open R2	N/A	0.0V (0.4uF)	ES1	
264V 60Hz	Input Line to ground	S, Open R2	N/A	7.6V (10.5nF)	ES1	
264V 60Hz	Input Neutral to Ground	S, Open R2	N/A	6.9V (10.6nF)	ES1	

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Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

X-capacitors installed for testing are:

[] bleeding resistor rating:

[] ICX:

Notes:

A. Test Location:

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

B. Operating condition abbreviations:

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

IEC 62368-1				
Clause	Requirement + Test		Result - Remark	Verdict
5.6.6.2	TABLE: Resistance of protective conductors and terminations			N/A
Accessible part	Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
Supplementary information:				

5.7.2.2, 5.7.4	TABLE: Earthed accessible conductive part		Pass
Supply voltage:		264V 60Hz	—
Location		Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (mA)
AL-085U-Q1245 Fig 5 N – e open U3/500 0.269Vrms=0.5mA Fig 5 R -e open U3/500 0.225Vrms=0.45mA		1	See column on left Note, use ground trace as chassis.
AL-070U-T125 Fig 5 N – e open U3/500 0.290Vrms=0.58mA Fig 5 R -e open U3/500 0.274Vrms=0.54mA		2*	See column on left Note, use ground trace as chassis.
AL-085U-Q1245 Fig 5 N – e open, N open U3/500 0.414Vrms=0.82mA Fig 5 R -e open, N open U3/500 0.408Vrms=0.81mA		3	--
AL-070U-T125 Fig 5 N – e open, N open U3/500 0.537Vrms=1.07mA Fig 5 R - e open, N open U3/500 0.531Vrms=1.06mA		4	--
		5	--
		6	--
		8	-
Supplementary Information:			
Notes: [1] Supply voltage is the anticipated maximum Touch Voltage [2] Earthed neutral conductor [Voltage differences less than 1% or more] [3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3 [4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.			

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Clause	Requirement + Test	Result - Remark	Verdict

[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

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

6.2.2	Table: Electrical power sources (PS) measurements for classification					Pass
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s*)	PS Classification	
A	Input/Output	Power (W) :	-	-	PS3	
		V _A (V) :	-	-		
		I _A (A) :	-	-		
Supplementary Information:						
(*) Measurement taken only when limits at 3 seconds exceed PS1 limits						

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)				Pass
Location		Open circuit voltage After 3 s (V _p)	Measured r.m.s current (I _{rms})	Calculated value (V _p x I _{rms})	Arcing PIS? Yes / No
Input/Primary		-	-	-	Yes
Supplementary information:					
An Arcing PIS requires a minimum of 50 V (peak) a.c. or d.c. An Arcing PIS is established when the product of the open circuit voltage (V _p) and normal operating condition rms current (I _{rms}) is greater than 15.					

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)				Pass
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes / No (Comment)	Resistive PIS? Yes/No
All	-	-	-	-	Yes
Supplementary Information:					
A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter. If a separate voltmeter and ammeter are used, the product of (V _A x I _A) is used to determine Resistive PIS classification. A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.					

8.5.5	TABLE: High Pressure Lamp		N/A
Description		Values	Energy Source Classification
Lamp type			—
Manufacturer			—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
Cat no.:		—	
Pressure (cold) (MPa)		MS_	
Pressure (operating) (MPa)		MS_	
Operating time (minutes)		—	
Explosion method		—	
Max particle length escaping enclosure (mm) .:		MS_	
Max particle length beyond 1 m (mm)		MS_	
Overall result			
Supplementary information:			

B.2.5 TABLE: Input test								Pass
U (V)	Hz	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
90V	60Hz	1.602 A	2.0	95.3				Model AL-070U-T125, See Load below
120V	60Hz	1.173 A	2.0	89.5				Model AL-070U-T125, See Load below
240V	50Hz	0.637 A	2.0	78.3				Model AL-070U-T125, See Load below
264V	50Hz	0.623 A	2.0	86.9				Model AL-070U-T125, See Load below
--	--	--	--	--				--
90V	60Hz	1.54 A	--	91.6				Model AL-070U-S5, See Load Below
120V	60Hz	1.43 A	2.0	90.1				Model AL-070U-S5, See Load Below
240V	50Hz	0.68 A	2.0	86.6				Model AL-070U-S5, See Load Below
264V	50Hz	0.64 A	--	87.2				Model AL-070U-S5, See Load Below
--	--	--	--	--				--
90V	60Hz	1.71 A	--	103.2				Model AL-070U-T124, See Load Below
120V	60Hz	1.56 A	2.0	99.6				Model AL-070U-T124, See Load Below

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Clause	Requirement + Test				Result - Remark			Verdict
240V	50Hz	0.75 A	2.0	94.2				Model AL-070U-T124, See Load Below
264V	50Hz	0.69 A	--	94.0				Model AL-070U-T124, See Load Below
--	--	--	--	--				--
90V	60Hz	1.74 A	--	99.8				Model AL-085U-S5, See Load Below
120V	60Hz	1.63 A	3.15	99.8				Model AL-085U-S5, See Load Below
240V	50Hz	0.82 A	3.15	101				Model AL-085U-S5, See Load Below
264V	50Hz	0.77 A	--	102				Model AL-085U-S5, See Load Below
--	--	--	--	--				--
90V	60Hz	2.15 A	--	121.9				Model AL-085U-Q1245, See Load Below
120V	60Hz	1.97 A	3.15	119.3				Model AL-085U-Q1245, See Load Below
240V	50Hz	0.94 A	3.15	114.8				Model AL-085U-Q1245, See Load Below
264V	50Hz	0.88 A	--	116.9				Model AL-085U-Q1245, See Load Below
Supplementary information:								
Equipment may be have rated current or rated power or both. Both should be measured								

MODEL: AL-070U-S5								
Output Test Load:								
Condition: 70 W (Air-Cooled)								
48V, 1.46A								
Maximum Operating Ambient: 25°C								
External Forced Air Cooling:								
1. Fan CFM: 37								
2. Fan Distance from Unit: 0 cm								
3. Fan Location: Primary side of unit								
4. Air-flow Direction: From primary to secondary								

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

 MODEL: AL-070U-T125

Output Test Load:

Condition: 70 W (Air-Cooled)

Output Load: 5V, 4.26A; 12V, 1.56A; 48V, 0.63A

Maximum Operating Ambient: 25°C

External Forced Air Cooling:

1. Fan CFM: 32
2. Fan Distance from Unit: 0 cm
3. Fan Location: Primary side of unit
4. Air-flow Direction: From primary to secondary

 MODEL: AL-070U-T124

Output Test Load:

Condition: 70 W (Air-Cooled)

Output Load: 5.0V, 5.0A; 12.0V, 2.4A; 24V, 1.2A

Maximum Operating Ambient: 25°C

External Forced Air Cooling:

1. Fan CFM: 37
2. Fan Distance from Unit: 0 cm
3. Fan Location: Primary side of unit
4. Air-flow Direction: From primary to secondary

 MODEL: AL-085U-S5

Output Test Load:

Condition: 85 W (Air-Cooled)

Output Load: 48.0V, 1.77A

Maximum Operating Ambient: 25°C

External Forced Air Cooling:

1. Fan CFM: 37
 2. Fan Distance from Unit: 0 cm
 3. Fan Location: Primary side of unit
 4. Air-flow Direction: From primary to secondary
-

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

MODEL: AL-085U-Q1245

Output Test Load:

Condition: 85 W (Air-Cooled)

Output Load: 5V, 7.0A; 12.0V, 4.0A; 24V, 0.08A; 48.0V, 0A

Maximum Operating Ambient: 25°C

External Forced Air Cooling:

1. Fan CFM: 37

2. Fan Distance from Unit: 0 cm

3. Fan Location: Primary side of unit

4. Air-flow Direction: From primary to secondary

B.3		TABLE: Abnormal operating condition tests						Pass
Ambient temperature (°C)					See each test			—
Power source for EUT: Manufacturer, model/type, output rating ...					See each test			—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Model AL-070U-T024, T1	Overload of Load Side of D5 to Return (3.3V Line)	90V	1.5 hrs	--	--	T1 Winding: 78.7°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T024, T1	Short 3.3V output	90V	1 hr	--	--	T1 Winding: 29.5°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T024, T1	Overload of Load Side of D3 to Return (12V line)	90V	1.5 hrs	--	--	T1 Winding: 83.6°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T024, T1	Short 12V output	90V	1 hr	--	--	T1 Winding: 29.2°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T104, T1	Overload of Load Side of D3	90V	1.5 hrs	--	--	T1 Winding: 77.8°C.	-	NC, NT, NB, ES Code: A1, B

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
	to Return (3.3V Line)					Ambient 23°C		
Model AL-070U-104, T1	Short 3.3V output	90V	1 hr	--	--	T1 Winding: 38.9°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T104, T1	Overload 24V output	90V	1.5 hrs	--	--	T1 Winding: 79.0°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T104, T1	Short 24V Output	90V	1 hr	--	--	T1 Winding: 30.4°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T120, T1	Overload of T1 Winding, Pin 8 to IC3, Pin2 (3.3V line)	90V	1 hr	--	--	T1 Winding: 40.5°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T120, T1	Short 3.3V output	90V	1.5 hrs	--	--	T1 Winding: 39.6°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T124, T1	Overload of Load Side of D3 to Return (5.0V Line)	90V	1.5 hrs	--	--	T1 Winding: 94.8°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-070U-T124, T1	Short 5.0V output	90V	1.5 hrs	--	--	T1 Winding: 30.9°C. Ambient 23°C	-	NC, NT, NB, ES Code: A1, B
Model AL-085U-S5, T1	Overload of Load Side of D5	90V	2 hrs	--	--	T1 Winding: 63.8°C,	-	NC, NT, NB, CT, ES Code: A3, B

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
	to Return (48V Line)					Ambient 23°C		
Model AL-085U-S5, T1	Short 48V output	90V	1 hr	--	--	T1 Winding: 80.7°C, Ambient 23°C	-	NC, NT, NB, CT, ES Code: A3, B
Model AL-085U-S5, T1	Overload of 48V output	90V	1 hr	--	--	T1 Winding: 108.2°C, Ambient 23°C	-	NC, NT, NB, CT, ES Code: A3, B
AL-085U-Q1245, T1	Overload of Load Side of D5 to Return (5.0V Line)	90V	2 hrs	--	--	T1 Winding: 64.8°C, Ambient 23°C	-	Max. output voltage 3.5V NC, NT, NB, CT, ES Code: A3, B
AL-085U-Q1245, T1	Short 5.0V output	90V	1.5 hrs	--	--	T1 Winding: 30.6°C, Ambient 23°C	-	Max. Output Voltage 0V. NC, NT, NB, CT, ES Code: A3, B
AL-085U-Q1245, T1	Overload of Load Side of D8 to Return (24V line)	90V	2 hrs	--	--	T1 Winding: 34.5°C, Ambient 23°C	-	Max. output voltage 4.2V. NC, NT, NB, CT, ES Code: A3, B
AL-085U-Q1245, T1	Short 24V output	90V	2 hrs	--	--	T1 Winding: 33.7°C, Ambient 23°C	-	Max. output voltage 0V. NC, NT, NB, CT, ES Code: A3, B
AL-085U-Q1245, T1	Overload 24V output	90V	2 hrs	--	--	T1 Winding: 57.2°C, Ambient 23°C	-	Max output voltage 24.3V. NC, NT, NB, CT, ES Code: A3, B
AL-085U-Q0245, T1	Overload of Load Side of D5 to Return (3.3V Line)	90V	2 hrs	--	--	T1 Winding: 150.8°C, Ambient 23°C	-	Max. output voltage: 3.2V, NC, NT, NB, ES Code: A2, B

IEC 62368-1								
Clause	Requirement + Test				Result - Remark			Verdict
AL-085U-Q0245, T1	Short 3.3V output	90V	2 hrs	--	--	T1 Winding: 71°C. Ambient 23°C	-	Max. output voltage: 3.2V, Output folds back and cycles NC, NT, NB, ES Code: A2, B
AL-085U-Q0245, T1	Overload of Load Side of D6 to Return (12V line)	90V	1 hr	--	--	T1 Winding: 92.3°C. Ambient 23°C	-	Max. output voltage: 23.2V. NC, NT, NB, ES Code: A2, B
AL-085U-Q0245, T1	Short 12V output	90V	2 hrs	--	--	T1 Winding: 87.2°C. Ambient 23°C	-	Max. output voltage: 12.1V NC, NT, NB. ES Code: A2, B
AL-085U-Q1045, T1	Overload of Load Side of D6 to Return (3.3V Line)	90V	3 hrs	--	--	T1 Winding: 148°C. Ambient 23°C	-	Max. output voltage 3.2V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1045, T1	Short 3.3V output	90V	2 hrs	--	--	T1 Winding: 104°C. Ambient 23°C	-	Max. output voltage 3.6V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1045, T1	Overload of Load Side of D8 to Return (24V line)	90V	1 hr	--	--	T1 Winding: 143.2°C. Ambient 23°C	-	Max. output voltage 27.8V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1045, T1	Overload 24V output	90V	1.5 hrs	--	--	T1 Winding: 144°C. Ambient 23°C	-	Max. output voltage 28V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1045, T1	Short 24V output	90V	45 min.	--	--	T1 Winding: 76.8°C. Ambient 23°C	-	Max. output voltage 0V. Output folds back.

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Clause	Requirement + Test				Result - Remark			Verdict
								NC, NT, NB, ES Code: A2, B
AL-085U-Q1205, T1	Overload of Load Side of D8 to Return (3.3V Line)	90V	1.5 hrs	--	--	T1 Winding: 120°C. Ambient 23°C	-	Max. output voltage: 3.6V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1205, T1	Short 3.3V output	90V	1.0 hr	--	--	T1 Winding 81°C. Ambient 23°C	-	Max. output voltage 3.5V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1205, T1	Overload of Load Side of D9 to Return (48V line)	90V	2 hrs	--	--	T1 Winding 85°C. Ambient 23°C	-	Max. output voltage: 53V, NC, NT, NB, ES Code: A2, B
AL-085U-Q1205, T1	Short 48V output	90V	1.0 hr	--	--	T1 Winding 53.0°C. Ambient 23°C	-	Max. output voltage: 0V, NC, NT, NB, ES Code: A2, B
AL-085U-Q1205, T1	Overload 48V output	90V	2 hrs	--	--	T1 Winding 128°C. Ambient 23°C	-	Max. output voltage: 50.1V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1240, T1	Overload of Load Side of D9 to Return (3.3V line)	90V	2 hrs	--	--	T1 Winding 124.7°C. Ambient 23°C	-	Max. output voltage 6.3V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1240, T1	Short 3.3V output	90V	1 hr	--	--	T1 Winding: 53.1°C. Ambient 23°C	-	Max. output voltage 0V. NC, NT, NB, ES Code: A2, B

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
AL-085U-Q1240, T1	Overload 3.3V output	90V	2 hrs	--	--	T1 Winding: 117.6°C. Ambient 23°C	-	Max. output voltage 5.3V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1240, T1	Overload of Load Side of D6 to Return (5.0V line)	90V	4 hrs	--	--	T1 Winding: 142°C. Ambient 23°C	-	Max. output voltage 5.1V. NC, NT, NB, ES Code: A2, B
AL-085U-Q1240, T1	Short 5.0V output	90V	1 hr	--	--	T1 Winding: 47.8°C. Ambient 23°C	-	Max. output voltage 0V. The output of the supply folds back. NC, NT, NB, ES Code: A2, B
5Vdc/ 7.5A output, Model AL-070U-T122-145(F) with Class F transformer	Overload	90.0Vac/60 Hz	3Hr	F1	1.69	LE1= 40.6 C LE2= 35.6 C T1= 69.4 C Ambient = 25.3 C	-	Output Voltage= 1.2 Vdc Output Overload current= 15.56A Current Limit/ foldsback @ 16.21 A CT,NB,NC,NT
5Vdc/ 7.5A output, Model AL-070U-T122-145(F) with Class F transformer	Short circuit	90.0Vac/60Hz	2Hr	F1	0.12	LE1= 26.9 C LE2= 26.2 C T1= 28.9 C Ambient = 25.3 C	-	Output Voltage= 0.0 Vdc Output Short Circuit Current=0.0 A * Sample went into hiccup operation NC, NT, NB, CT
Supplementary information:								

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

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

IP - Internal protection operated (list component)

CT - Constant temperatures were obtained

TW - Transformer winding opened

CD - Components damaged (list damaged components)

NB - No indication of dielectric breakdown

YB - Dielectric breakdown (indicate time and location)

NC - Cheesecloth remained intact

YC - Cheesecloth charred or flamed

NT - Tissue paper remained intact

YT - Tissue paper charred or flamed

The following electric strength (ES) potentials were applied where indicated for one minute Testing done as part of the original 60950-1 investigation unless noted:

Code:

A1 - Primary to Chassis at 2677Vdc - Hipot repeated at 2500Vdc in representative samples in both polarities as part of this investigation.

A2 - Primary to Chassis at 3230Vdc for Models AL-085U-Q0245, AL-085U-Q1045, AL-085U-Q1205, AL-085U-Q1240 - Hipot repeated at 2500Vdc using representative samples in both polarities as part of this investigation.

A3 - Primary to Chassis at 2220Vdc for Models AL-085U-S5 and AL-085U-Q1245 - Hipot repeated at 2500Vdc in representative samples in both polarities as part of this investigation.

B - Primary to Secondary at 4242Vdc - Hipot repeated at 4000Vdc in representative samples in both polarities as part of this investigation

The excess temperatures on the windings did not exceed 175°C for a Class B system without protection.

B.4		TABLE: Fault condition tests						Pass
Ambient temperature (°C)					See below.			—
Power source for EUT: Manufacturer, model/type, output rating ...:					See below.			—
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Model AL-070U-S5: Q1	Short	264V, 60Hz	< 1 s	--	--	Temp: 25.6°C, Ambient 22.1°C	-	Final Output: 0V, 0A. T1 NT, NC, IP (F1), NB ES Code: A5, B

IEC 62368-1								
Clause	Requirement + Test					Result - Remark		Verdict
Model AL-085U-T125: BD1 - +to~	Short	264V, 60Hz	< 1 s	--	--	Temp: 30.5°C, Ambient 22.6°C	-	Final Output: 0V, 0A. NT, NC, IP (F1), NB ES Code: A5, B
Model AL-085U-Q1225: BD1 - +to~	Short	264V, 60Hz	< 1 s	--	--	Temp: 28.5°C, Ambient 23.6°C	-	Final Output: 0V, 0A. NT, NC, IP (F1), NB ES Code: A5, B
Supplementary information:								
<p>Comments Key:</p> <p>IP - Internal protection operated (list component)</p> <p>CT - Constant temperatures were obtained</p> <p>TW - Transformer winding opened</p> <p>CD - Components damaged (list damaged components)</p> <p>NB - No indication of dielectric breakdown</p> <p>YB - Dielectric breakdown (indicate time and location)</p> <p>NC - Cheesecloth remained intact</p> <p>YC - Cheesecloth charred or flamed</p> <p>NT - Tissue paper remained intact</p> <p>YT - Tissue paper charred or flamed</p> <p>The following electric strength (ES) potentials were applied where indicated for one minute Testing done as part of the original 60950-1 investigation unless noted:</p> <p>Code:</p> <p>A5 - Primary to Chassis at 2121Vdc - Hipot repeated at 2500Vdc in representative samples in both polarities as part of this investigation.</p> <p>B - Primary to Secondary at 4242Vdc - Hipot repeated at 4000Vdc in representative samples in both polarities as part of this investigation</p> <p>The excess temperatures on the windings did not exceed 175°C for a Class B system without protection.</p>								

Annex M.3	TABLE: Batteries	N/A
The tests of Annex M are applicable only when appropriate battery data is not available		
Is it possible to install the battery in a reverse polarity position?		

IEC 62368-1									
Clause	Requirement + Test			Result - Remark				Verdict	
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition									
Max. current during fault condition									
Test results:								Verdict	
- Chemical leaks									
- Explosion of the battery									
- Emission of flame or expulsion of molten metal									
- Electric strength tests of equipment after completion of tests									
Supplementary information:									

Annex M.4	Table: Additional safeguards for equipment containing secondary lithium batteries					N/A
Battery/Cell No.	Test conditions	Measurements			Observation	
		U	I (A)	Temp (°C)		
	Normal					
	Abnormal					
	Single fault –SC/OC					
Supplementary Information:						
Battery identification	Charging at T _{lowest} (°C)	Observation	Charging at T _{highest} (°C)	Observation		
Supplementary Information:						

Annex Q.1	TABLE: Circuits intended for interconnection with building wiring (LPS)				N/A
Note: Measured UOC (V) with all load circuits disconnected:					
	Components	U _{oc} (V)	I _{sc} (A)	S (VA)	

IEC 62368-1						
Clause	Requirement + Test			Result - Remark		Verdict
Output Circuit			Meas.	Limit	Meas.	Limit
Supplementary Information:						
SC=Short circuit, OC=Open circuit						

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

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

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

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

Enclosure
National Differences

Australia / New Zealand

EU Group and National Differences

Japan

USA / Canada

IEC62368_1D – 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 62368.1:2018
TRF template used	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No.	AU_NZ_ND_IEC62368_1D
Attachment Originator	JAS-ANZ
Master Attachment	2021-04-19
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	NATIONAL DIFFERENCES	Pass
Appendix ZZ	Variations to IEC 62368-1:2014 (ED. 2.0) for Australia and New Zealand	Pass
ZZ1 Scope	This Appendix lists the normative variations to IEC 62368-1:2014 (ED. 2.0)	Pass
ZZ2 Variations	The following modifications are required for Australian/New Zealand conditions:	Pass
2	<p>Add the following to the list of normative references:</p> <p>The following normative documents are referenced in Appendix ZZ:</p> <p>-AS/NZS 3112, <i>Approval and test specification—Plugs and socket-outlets</i></p> <p>-AS/NZS 3123, <i>Approval and test specification—Plugs, socket-outlets and couplers for general industrial application</i></p> <p>-AS/NZS 3191, <i>Electric flexible cords</i></p> <p>-AS/NZS 60065, <i>Audio, video and similar electronic apparatus—Safety requirements (IEC 60065:2015 (ED.8.0) MOD)</i></p> <p>-AS/NZS 60320.1, <i>Appliance couplers for household and similar general purposes, Part 1: General requirements (IEC 60320-1, Ed.2.1 (2007) MOD)</i></p> <p>-AS/NZS 60320.2.2, <i>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)</i></p> <p>-AS/NZS 60695.2.11, <i>Fire hazard testing, Part 2.11: Glowing/hot wire based test methods—Glow-wire flammability test method for end-products</i></p>	Pass

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>-AS/NZS 60695.11.5, <i>Fire hazard testing, Part 11.5: Test flames—Needle-flame test method—Apparatus, confirmatory test arrangement and guidance</i></p> <p>-AS/NZS 60695.11.10, <i>Fire hazard testing, Part 11.10: Test flames—50 W horizontal and vertical flame test methods</i></p> <p>-AS/NZS 60884.1, <i>Plugs and socket-outlets for household and similar purposes, Part 1: General requirements</i></p> <p>-AS/NZS 60950.1:2015, <i>Information technology equipment—Safety, Part 1: General requirements (IEC 60950-1, Ed.2.2 (2013), MOD)</i></p> <p>IEC 61032:1997, <i>Protection of persons and equipment by enclosures—Probes for verification</i></p> <p>-AS/NZS 61558.1:2008 (including Amendment 2:2015), <i>Safety of Power Transformers, Power Supplies, Reactors and Similar Products, Part 1: General requirements and tests (IEC 61558-1 Ed 2.1, MOD)</i></p> <p>-AS/NZS 61558.2.16, <i>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.</i></p>		
4.1.1	<p>Application of requirements and acceptance of materials, components and subassemblies</p> <p>1 Replace the text 'IEC 60950-1' with 'AS/NZS 60950.1:2015'.</p> <p>2 Replace the text 'IEC 60065' with 'AS/NZS 60065'.</p>		Pass
4.7	Equipment for direct insertion into mains socket-outlets		N/A
4.7.2	<p>Requirements</p> <p>Delete the text of the second paragraph and replace with the following:</p> <p>Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112 shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.</p>		N/A
4.7.3	<p>Compliance Criteria</p> <p>Delete the first paragraph and Note 1 and Note 2 and replace with the following:</p>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Compliance is checked by inspection and, if necessary, by the tests in AS/NZS 3112.		
4.8	Delete existing clause title and replace with the following: 4.8 Products containing coin/button cell batteries		N/A
4.8.1	General 1 Second dashed point, delete the text and replace with the following: – include coin/button cell batteries with a diameter of 32 mm or less. 2 After the second dashed point, insert the following Note: NOTE 1: Batteries are specified in IEC 60086-2. 3 After the third dashed point, renumber the existing Note as 'NOTE 2'. 4 Fifth dashed point, delete the word 'lithium'.		N/A
4.8.2	Instructional Safeguard First line, delete the word 'lithium'.		N/A
4.8.3	Construction First line, after the word 'Equipment' insert the words 'containing one or more coin/button batteries and'		N/A
4.8.5	Compliance criteria Delete the first paragraph and replace with the following: Compliance is checked by applying a force of 30 N +/-1 N for 10 s to the battery compartment door/cover by a rigid test finger according to test probe 11 of IEC 61032:1997 at the most unfavourable place and in the most unfavourable direction. The force shall be applied in one direction at a time.		N/A
5.4.10.2	Test Methods		N/A
5.4.10.2.1	General Delete the first paragraph and replace with the following: In Australia only, the separation is checked by the test of both Clause 5.4.10.2.2 and Clause 5.4.10.2.3. In New Zealand, the separation is checked by the test of either Clause 5.4.10.2.2 or Clause 5.4.10.2.3.		N/A
Table 29	Replace the table with the following:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict																								
	<table><tr><td rowspan="2">Parts</td><td colspan="2">Impulse test</td><td colspan="2">Steady state test</td></tr><tr><td>New Zealand</td><td>Australia</td><td>New Zealand</td><td>Australia</td></tr><tr><td>Parts indicated in Clause 5.4.10.1 a) ^a</td><td>2.5 kV 10/700 µs</td><td>7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment, 10/700 µs</td><td>1.5 kV</td><td>3 kV</td></tr><tr><td>Parts indicated in Clause 5.4.10.1 b) and c) ^a</td><td colspan="2">1.5 kV 10/700 µs^c</td><td>1.0 kV</td><td>1.5 kV</td></tr><tr><td colspan="5">^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.</td></tr></table>	Parts	Impulse test		Steady state test		New Zealand	Australia	New Zealand	Australia	Parts indicated in Clause 5.4.10.1 a) ^a	2.5 kV 10/700 µs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment, 10/700 µs	1.5 kV	3 kV	Parts indicated in Clause 5.4.10.1 b) and c) ^a	1.5 kV 10/700 µs ^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.						
Parts	Impulse test		Steady state test																								
	New Zealand	Australia	New Zealand	Australia																							
Parts indicated in Clause 5.4.10.1 a) ^a	2.5 kV 10/700 µs	7.0 kV for hand-held telephones and headsets, 2.5 kV for other equipment, 10/700 µs	1.5 kV	3 kV																							
Parts indicated in Clause 5.4.10.1 b) and c) ^a	1.5 kV 10/700 µs ^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.																											
5.4.10.2.2	After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows: NOTE 201 For Australia, the 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines. NOTE 202 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	After the first paragraph, <i>insert</i> new Notes 201 and 202 as follows: NOTE 201 For Australia, where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used. NOTE 202 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		Pass																								
6.1	General After the first paragraph, <i>insert</i> the following new paragraph: Alternatively, the requirements of Clauses 6.2 to 6.5.2 are considered to be fulfilled if the equipment complies with the requirements of Clause 6.202		Pass																								
6.6	After Clause 6.6, add the new Clauses 6.201 and 6.202 as follows: 6.201 External power supplies, docking stations and other similar devices and 6.202 Resistance to fire—Alternative tests (see special national conditions)		N/A																								
8.5.4	Special categories of equipment comprising moving parts		N/A																								
8.5.4.1	Large data storage equipment In the first dashed row and the second dashed rows replace 'IEC 60950-1:2005' with 'AS/NZS 60950.1:2015'.		N/A																								
8.6	Stability of equipment		N/A																								
8.6.1 and Table 36	Requirements 1. Table 36, <i>insert</i> Footnote c at the end of the 'Glass slide' heading, and add a new Footnote c		N/A																								

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>after the text of Footnote b in the last row of Table 36 as follows:</p> <p>c The glass slide test is not applicable to floor standing equipment, even though the equipment may have controls or a display.</p> <p>2. Table 36, fifth row, <i>insert</i> '201' at the end of 'No stability requirements'</p> <p>3. Table 36, ninth row, <i>insert</i> '201' at the end of 'No stability requirements'</p> <p>4. Table 36, add the following new footnote:</p> <p>201 MS2 and MS3 television sets and display devices, designed only for fixing to a wall, ceiling or equipment rack, are not subjected to stability requirements only if the instructional safeguard of Clause 8.6.1.201 is provided. Otherwise, the glass slide requirements of Clause 8.6.4 and horizontal force requirements of Clause 8.6.5 apply.</p> <p>5. Second paragraph beneath Table 36, delete the words 'MS2 and MS3 television sets' and replace with 'MS2 and MS3 television sets and display devices'</p>		
8.6.1	<p>After Clause 8.6.1 <i>add</i> the following new clauses:</p> <p>8.6.1.201 Instructional safeguard for fixed-mount television sets</p> <p>(see special national conditions)</p>		N/A
Annex F Paragraph F.3.5.1	<p>Mains appliance outlet and socket-outlet markings</p> <p><i>Replace</i> 'IEC 60320-2-2' with 'AS/NZS 60320.2.2'.</p>		N/A
Annex G Paragraph G.4.2	<p>Mains connectors</p> <p>1 In the second line <i>insert</i> 'or AS/NZS 3123' after 'IEC 60906-1'.</p> <p>2 In the second line <i>insert</i> 'or AS/NZS 60320 series' after 'IEC 60320 series'</p> <p>3 <i>Add</i> the following new paragraph:</p> <p>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.</p>		N/A
Paragraph G.5.3.1	<p>Transformers, General</p> <p>1 In the 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'</p> <p>2 In the fourth dashed point <i>replace</i> 'IEC 61558-2-16' with 'AS/NZS 61558.2.16'.</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Paragraph G.7.1	Mains supply cords, General In the fourth dashed paragraph, <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Table G.5	Sizes of conductors 1 In the second row, first column, <i>delete</i> '6' and <i>replace</i> with '7.5' 2 In the second row, second column, <i>delete</i> '0,75' and <i>replace</i> with '0.75' ^b 3 <i>Delete</i> Note 1. 4 <i>Replace</i> 'NOTE 2' with 'NOTE:'. 5 <i>Delete</i> the text of 'Footnote b' and <i>replace</i> 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 In Footnote c <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1' 7 In Footnote d <i>replace</i> 'IEC 60320-1' with 'AS/NZS 60320.1'		N/A
Annex M Paragraph M.3.2	Protection circuits for batteries provided within the equipment, Test method After the first dashed point add the following Note: NOTE 201: 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 SELV 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)		Pass
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— – at all ES1 outlets or connectors shall not increase by more than 10% of its rated output voltage under normal operating condition; and	Equipment is an internal power supply for Building-in.	N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>– of a USB outlet or connector shall not increase by more than 3 V or 10% of its rated output voltage under normal operating conditions, whichever is higher.</p> <p>For equipment with multiple rated output voltages, the requirements apply with the equipment configured for each rated output voltage in turn.</p> <p>NOTE: This is intended to reduce the possibility of battery fire or explosion in attached equipment or accessories when charging secondary lithium batteries.</p> <p>Compliance 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</p>		
6.202	Resistance to fire - Alternative tests		N/A
6.202.1	<p>General</p> <p>Parts of non-metallic material shall be resistant to ignition and spread of fire.</p> <p>This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames from inside the equipment, or the following:</p> <p>a) Components that are contained in an enclosure having a flammability category of V-0 according to AS/NZS 60695.11.10 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of length.</p> <p>b) The following parts which would contribute negligible fuel to a fire:</p> <p>– small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings;</p> <p>– small electrical components, such as capacitors with a volume not exceeding 1 750 mm³, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category V-1, or better, according to AS/NZS 60695.11.10.</p> <p>NOTE: In considering how to minimize propagation of fire and what 'small parts' are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating the fire from one part to another.</p> <p><i>Compliance shall be checked by the tests of Clauses 6.202.2, 6.202.3 and 6.202.4.</i></p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>For the base material of printed boards, compliance shall be checked by the test of Clause 6.202.5.</p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the equipment. When the glow-wire test is carried out, the parts shall be placed in the same orientation as they would be in normal use.</p> <p>These tests are not carried out on internal wiring.</p>		
6.202.2	<p>Testing of non-metallic materials</p> <p>Parts of non-metallic material shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test shall be not carried out on parts of material classified at least FH-3 according to ISO 9772 provided that the relevant part is not thinner than the sample tested.</p>		N/A
6.202.3	<p>Testing of insulating materials</p> <p>Parts of insulating material supporting Potential Ignition Sources shall be subject to the glow-wire test of AS/NZS 60695.2.11 which shall be carried out at 750°C.</p> <p>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE: Contacts in components such as switch contacts are considered to be connections</p>		N/A
	<p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test.</p> <p>However, parts shielded by a barrier which meets the needle-flame test need not be tested</p>		N/A
	<p>The needle-flame test shall be made in accordance with AS/NZS 60695.11.5 with the following modifications</p>		N/A

IEC62368_1D – ATTACHMENT													
Clause	Requirement + Test		Result - Remark	Verdict									
	<table><tr><td>Clause of AS/NZS 60695.11.5</td><td>Change</td></tr><tr><td>9 Test procedure</td><td></td></tr><tr><td>9.2 Application of needle-flame</td><td>Delete the first and second paragraphs and <i>replace</i> with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s +1 s.</td></tr><tr><td>9.3 Number of test specimens</td><td>Replace with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.</td></tr><tr><td>11 Evaluation of test results</td><td>Replace with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.</td></tr></table> <p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to AS/NZS 60695.11.10, provided that the relevant part is not thinner than the sample tested.</p>	Clause of AS/NZS 60695.11.5	Change	9 Test procedure		9.2 Application of needle-flame	Delete the first and second paragraphs and <i>replace</i> with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s +1 s.	9.3 Number of test specimens	Replace with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.	11 Evaluation of test results	Replace with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.		
Clause of AS/NZS 60695.11.5	Change												
9 Test procedure													
9.2 Application of needle-flame	Delete the first and second paragraphs and <i>replace</i> with the following: The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of Figure 1. If possible the flame shall be applied at least 10 mm from a corner. The duration of application of the test flame shall be 30 s +1 s.												
9.3 Number of test specimens	Replace with the following: The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall withstand the test.												
11 Evaluation of test results	Replace with the following: The duration of burning (tb) shall not exceed 30 s. However, for printed circuit boards, it shall not exceed 15 s.												
6.202.4	<p>Testing in the event of non-extinguishing material</p> <p>If parts, other than enclosures, do not withstand the glow wire tests of Clause 6.202.3, by failure to extinguish within 30 s after the removal of the glow wire tip, the needle-flame test detailed in Clause 6.202.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of Clause 6.202.3. Parts shielded by a separate barrier which meets the needle-flame test need not be tested.</p> <p>NOTE 1: If the enclosure does not withstand the glow-wire test the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 2: If other parts do not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirements of Clause 6.202 without the need for consequential testing.</p> <p>NOTE 3: Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having a radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting, in contact with, or in close proximity to, connections.</p>			N/A									
6.202.5	<p>Testing of printed boards</p> <p>The base material of printed boards shall be subjected to the needle-flame test of Clause</p>			N/A									

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>6.202.3. The flame shall be applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a potential ignition source.</p> <p>The test is not carried out if—</p> <ul style="list-style-type: none"> – the printed board does not carry any potential ignition source; – the base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category V-1 or better according to AS/NZS 60695.11.10, or the printed boards are protected by an enclosure meeting the flammability category V-0 according to AS/NZS 60695.11.10, or made of metal, having openings only for connecting wires which fill the openings completely; or – the base material of printed boards, on which the available equipment power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting spark gaps which provides protection against overvoltages, is of flammability category V-0 according to AS/NZS 60695.11.10 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. <p><i>Conformance</i> shall be determined using the smallest thickness of the material.</p> <p>NOTE: Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximize the apparent power for more than 2 min when the circuit supplied is disconnected.</p>		
6.202.6	<p>For open circuit voltages greater than 4 kV</p> <p>Potential ignition sources with open circuit voltages exceeding 4 kV (peak) a.c. or d.c. under normal operating conditions shall be contained in a FIRE ENCLOSURE which shall comply with flammability category V-1 or better according to AS/NZS 60695.11.10.</p>		N/A
8.6.1.201	<p>8.6.1.201 Instructional safeguard for fixed-mount television sets</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>MS2 and MS3 television sets and display devices designed only for fixed mounting to a wall or ceiling or equipment rack shall, where required in Table 36, footnote 201, have an instructional safeguard in accordance with Clause F.5</p> <p>which may be on the equipment or included in the installation instructions or equivalent document accompanying the equipment.</p> <p>The elements of the instructional safeguard shall be as follows:</p> <ul style="list-style-type: none"> – element 1a: not available; – element 2: 'Stability Hazard' or equivalent wording; – element 3: 'The television set may fall, causing serious personal injury or death' or equivalent text; – element 4: the following or equivalent text: <p>To prevent injury, this television set must be securely attached to the floor/wall in accordance with the installation instructions</p>		
8.6.1.202	<p>Restraining device</p> <p>MS2 and MS3 television sets and display devices that are not solely fixed-mounted should be provided with a restraining device such as a fixing point to facilitate restraining the equipment from toppling forward. The restraining device shall be capable of withstanding a pull of 100 N in all directions without damage.</p> <p>Where a restraining device is provided, instructions shall be provided in the instructions for installation or instructions for use to ensure correct and safe installation.</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT	
IEC 62368-1	
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES	
(Audio/video, information and communication technology equipment - Part 1: Safety requirements)	
Differences according to	EN 62368-1:2014+A11:2017
Attachment Form No.	EU_GD_IEC62368_1D_II
Attachment Originator	Nemko AS
Master Attachment	Date 2021-02-04
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	CENELEC COMMON MODIFICATIONS (EN)		Pass																																				
	Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62368-1:2014 are prefixed “Z”.		Pass																																				
CONTENT S	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions Annex ZC (informative) A-deviations Annex ZD (informative) IEC and CENELEC code designations for flexible cords		Pass																																				
	Delete all the “country” notes in the reference document (IEC 62368-1:2014) according to the following list: <table border="1"> <tr> <td>0.2.1</td> <td>Note</td> <td>1</td> <td>Note 3</td> <td>4.1.15</td> <td>Note</td> </tr> <tr> <td>4.7.3</td> <td>Note 1 and 2</td> <td>5.2.2.2</td> <td>Note</td> <td>5.4.2.3.2.2 Table 13</td> <td>Note c</td> </tr> <tr> <td>5.4.2.3.2.4</td> <td>Note 1 and 3</td> <td>5.4.2.5</td> <td>Note 2</td> <td>5.4.5.1</td> <td>Note</td> </tr> <tr> <td>5.5.2.1</td> <td>Note</td> <td>5.5.6</td> <td>Note</td> <td>5.6.4.2.1</td> <td>Note 2 and 3</td> </tr> <tr> <td>5.7.5</td> <td>Note</td> <td>5.7.6.1</td> <td>Note 1 and 2</td> <td>10.2.1 Table 39</td> <td>Note 2, 3 and 4</td> </tr> <tr> <td>10.5.3</td> <td>Note 2</td> <td>10.6.2.1</td> <td>Note 3</td> <td>F.3.3.6</td> <td>Note 3</td> </tr> </table>		0.2.1	Note	1	Note 3	4.1.15	Note	4.7.3	Note 1 and 2	5.2.2.2	Note	5.4.2.3.2.2 Table 13	Note c	5.4.2.3.2.4	Note 1 and 3	5.4.2.5	Note 2	5.4.5.1	Note	5.5.2.1	Note	5.5.6	Note	5.6.4.2.1	Note 2 and 3	5.7.5	Note	5.7.6.1	Note 1 and 2	10.2.1 Table 39	Note 2, 3 and 4	10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3	Pass
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10.5.3	Note 2	10.6.2.1	Note 3	F.3.3.6	Note 3																																		
	For special national conditions, see Annex ZB.		Pass																																				
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.	See Letter of Assurance	Pass																																				
4.Z1	Protective devices included as integral parts of the equipment or as parts of the building installation:		Pass																																				
	a) Included as parts of the equipment	Equipment is provided with a fuse in the primary live side.	Pass																																				
	b) For components in series with the mains; by devices in the building installation		N/A																																				
	c) For pluggable type B or permanently connected: by devices in the building installation		N/A																																				

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.2.3.2.4	Add the following to the end of this subclause: The requirement for interconnection with external circuit is in addition given in EN 50491-3:2009.		N/A
10.2.1	Add the following to c) and d) in table 39: For additional requirements, see 10.5.1.		N/A
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 presets which are not locked in a reliable manner, are adjusted so as to give maximum radiation whilst maintaining an intelligible picture for 1 h, at the end of which the measurement is made. 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 cm ² , at any point 10 cm from the outer surface of the apparatus. 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.		N/A
10.6.1	Add the following paragraph to the end of the subclause: EN 71-1:2011, 4.20 and the related tests methods and measurement distances apply.		N/A
10.Z1	Add the following new subclause after 10.6.5. 10.Z1 Non-ionizing radiation from radio frequencies in the range 0 to 300 GHz The amount of non-ionizing radiation is regulated by European Council Recommendation 1999/519/EC of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). For intentional radiators, ICNIRP guidelines should be taken into account for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). For hand-held and body-mounted devices, attention is drawn to EN 50360 and EN 50566		N/A
G.7.1	Add the following note: NOTE Z1 The harmonized code designations corresponding to the IEC cord types are given in Annex ZD.		N/A
Bibliography	Add the following standards: Add the following notes for the standards indicated:		Pass

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	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.		
ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)		N/A
4.1.15	Denmark, Finland, Norway and Sweden To the end of the subclause the following is added: Class I pluggable equipment type A intended for connection to other equipment or a network shall, if safety relies on connection to reliable earthing or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment shall be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Denmark : "Apparatets stikprop skal tilsluttes en stikkontakt med jord som giver forbindelse til stikproppens jord." In Finland : "Laitte on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway : "Apparatet må tilkoples jordnet stikkontakt" In Sweden : "Apparaten skall anslutas till jordat uttag"	To be evaluated as part of the end product.	N/A
4.7.3	United Kingdom To the end of the subclause the following is added: The torque test is performed using a socket-outlet complying with BS 1363, and the plug part shall be assessed to the relevant clauses of BS 1363. Also see Annex G.4.2 of this annex		N/A
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.	Equipment is for building-in. To be evaluated in the end product.	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		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>from earth the following is applicable: If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none"> • two layers of thin sheet material, each of which shall pass the electric strength test below, or • one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below. <p>If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that clearances and creepage distances do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition</p> <ul style="list-style-type: none"> • passes the tests and inspection criteria of 5.4.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 5.4.9 shall be performed using 1,5 kV), and • is subject to routine testing for electric strength during manufacturing, using a test voltage of 1,5kV. <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> • the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in 5.4.11; • the additional testing shall be performed on all the test specimens as described in EN 60384-14; the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14. 		
5.5.2.1	<p>Norway After the 3rd paragraph the following is added: Due to the IT power system used, capacitors are required to be rated for the applicable line-to-line voltage (230 V).</p>	Capacitors are rated for 230 V phase-to-phase voltage.	Pass
5.5.6	<p>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.</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.1	<p>Denmark Add to the end of the subclause Due to many existing installations where the socket-outlets can be protected with fuses with higher rating than the rating of the socket-outlets the protection for pluggable equipment type A shall be an integral part of the equipment. <i>Justification:</i> In Denmark an existing 13 A socket outlet can be protected by a 20 A fuse.</p>		N/A
5.6.4.2.1	<p>Ireland and United Kingdom After the indent for pluggable equipment type A, the following is added: – the protective current rating is taken to be 13 A, this being the largest rating of fuse used in the mains plug.</p>		N/A
5.6.5.1	<p>Ireland and United Kingdom 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 mm² to 1,5 mm² in cross-sectional area.</p>		N/A
5.7.5	<p>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.</p>		N/A
5.7.6.1	<p>Norway and Sweden To the end of the subclause the following is added: The screen of the television distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation needs to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by a retailer, for example. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Apparatus connected to the protective earthing of the building installation through the mains connection or through other apparatus with a connection to protective earthing – and to a television distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a television distribution system therefore has to be provided through a device providing electrical isolation below a certain</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>frequency range (galvanic isolator, see EN 60728-11)”</p> <p>NOTE In Norway, due to regulation for CATV-installations, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway): “Apparater som er koplet til beskyttelsesjord via nettplugg og/eller via annet 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.”</p> <p>Translation to Swedish: “Apparater som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av apparaten till kabel-TV nät galvanisk isolator finnas mellan apparaten och kabel-TV nätet.”.</p>		
5.7.6.2	<p>Denmark</p> <p>To the end of the subclause the following is added:</p> <p>The warning (marking safeguard) for high touch current is required if the touch current or the protective current exceed the limits of 3,5 mA .</p>		N/A
B.3.1 and B.4	<p>Ireland and United Kingdom</p> <p>The following is applicable: To protect against excessive currents and short-circuits in the primary circuit of direct plug-in equipment, tests according to Annexes B.3.1 and B.4 shall be conducted using an external miniature circuit breaker complying with EN 60898-1, Type B, rated 32A. If the equipment does not pass these tests, suitable protective devices shall be included as an integral part of the direct plug-in equipment, until the requirements of Annexes B.3.1 and B.4 are met</p>		N/A
G.4.2	<p>Denmark:</p> <p>Appliances rated ≤13 A provided with a plug according to DS 60884-2-D1:2011. Class I equipment provided with socket-outlets provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a. If a single-phase equipment having rated >13 A or poly-phase equipment provided with a supply cord with a plug, plug 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 rated 2,5 A in accordance</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>with DS 60884-2-D1:2011 standard sheet DKA 1-4a.</p> <p>Other current rating socket outlets in compliance with Standard Sheet DKA 1-3a or DKA 1-1c.</p> <p>Mains socket-outlets with earth 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</p>		
G.4.2	<p>United Kingdom</p> <p>To the end of the subclause the following is added:</p> <p>The plug part of direct plug-in equipment shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.13, 12.16, and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.</p>		N/A
G.7.1	<p>United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>Equipment which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord shall be fitted with a 'standard plug' in accordance with the Plugs and Sockets etc (Safety) Regulations 1994, Statutory Instrument 1994 No. 1768, unless exempted by those regulations.</p> <p>NOTE "Standard plug" is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
G.7.1	<p>Ireland</p> <p>To the first paragraph the following is added:</p> <p>Apparatus which is fitted with a flexible cable or cord shall be provided with a plug in accordance with Statutory Instrument 525: 1997, "13 A Plugs and Conversion Adapters for Domestic Use Regulations: 1997. S.I. 525 provides for the recognition of a standard of another Member State which is equivalent to the relevant Irish Standard</p>		N/A
G.7.2	<p>Ireland and United Kingdom</p> <p>To the first paragraph the following is added:</p> <p>A power supply cord with a conductor of 1,25 mm² is allowed for equipment which is rated over 10 A and up to and including 13 A.</p>		N/A
ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.2	<p>Germany The following requirement applies: For the operation of any cathode ray tube intended for the display of visual images operating at an acceleration voltage exceeding 40 kV, authorization is required, or application of type approval (Bauartzulassung) and marking. <i>Justification:</i> German ministerial decree against ionizing radiation (Röntgenverordnung), in force since 2002-07-01, implementing the European Directive 96/29/EURATOM. NOTE Contact address: Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig, Tel.: Int +49-531-592-6320, Internet: http://www.ptb.de</p>		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62368-1 (JAPAN) NATIONAL DIFFERENCES (Audio/video, information and communication technology equipment – Part 1: Safety requirements)	
Differences according to	J62368-1 (2020)
TRF template used:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No.	JP_ND_IEC62368_1D
Attachment Originator	UL (JP)
Master Attachment	Date 2021-02-04
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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 standard 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.		Pass
5.6.1	Mains socket-outlet and appliance outlet shall comply with Clause G.4.2A if they are incorporated as part of the equipment.		N/A
5.6.2.1	Mains connection of class 0I equipment: Instructional safeguard in accordance with Clause F.3.6.1A; Mains plug having a lead wire for protective earthing connection of class 0I equipment; Independent main protective earthing terminal installed by ordinary person.		N/A
5.6.2.2	This requirement does not apply to internal conductor of the cord set that is covered by the sheath of mains cord and is formed together with mains plug and appliance connector.		N/A
5.6.3	In case of class 0I equipment using power supply cord having two conductors (no earthing		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>conductor), the conductor of protective earthing lead wire shall comply with either of the following:</p> <ul style="list-style-type: none"> – 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 mm² or more cross-sectional area 		
5.7.3	For class 0I equipment that is provided with mains socket-outlet in the configuration as specified in JIS C 8282 series or JIS C 8303, or otherwise being considered to comply with relevant regulations, or that is provided with mains appliance outlet as specified in JIS C 8283-2-2 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
5.7.4	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.		N/A
6.4.3.3	<p>A fuse complying with JIS C 6575 series or a fuse having equivalent characteristics shall open within 1 s.</p> <p>For 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”. A fuse not complying with JIS C 6575 series shall be tested with the breaking capacity taken into account.</p>		N/A
8.5.4.2.1	Only three-phase stationary equipment rated more than 200 V ac 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
8.5.4.2.2	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

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
8.5.4.2.4	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
8.5.4.2.5	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
9.2.6, Table 38	Handles, Knobs, grips, etc. and external surfaces either held, touched or worn against the body in normal use (> 1 min) ^{b,c}		N/A
F.3.5.1	Instructional safeguard of class 0I equipment in accordance with Clause F.5 when a mains socket-outlet as specified in JIS C 8282 series, JIS C 8303 or relevant regulation 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.		Pass
F.3.6.1A	Marking for class 0I equipment The requirements of Clauses F.3.6.1.1 and F.3.6.1.3 shall be applied to class 0I equipment. For class 0I equipment, a marking of instructions and instructional safeguard shall be provided regarding the earthing connection.		N/A
F.3.6.2.1	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.4	Instruction for audio equipment with terminals classified as ES3 in accordance with Table E.1, and for other equipment with terminals marked in accordance with F.3.6.1 and F.3.6.1A. Installation instruction for the protective earthing connection for class 0I equipment provided with		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	independent main protective earthing terminal, where the cord for the protective earthing connection is not provided within the package for the equipment.		
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 relevant part of JIS C 6575 (corresponding to IEC60127) or shall have equivalent characteristics. If there are no applicable IEC standards, overcurrent protective devices used as a safeguard shall comply with their applicable IEC standards.		Pass
G.4.1	This requirement is not applicable to Clauses G.4.2 and G.4.2A.		N/A
G.4.2	Mains connector shall comply with JIS C 8282 series, JIS C 8283 series, JIS C 8285, JIS C 8303 or IEC 60309 series. Mains plugs and socket-outlets shall comply with JIS C 8282 series, JIS C 8303, IEC 60309 series, or have equivalent or better performance. 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 preventing mechanical stress not to transmit to the soldering part of inlet terminal. Consideration for an equipment rated not more than 125 V provided with Type C14 and C18 appliance coupler complying with JIS C 8283 series.		N/A
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		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	equipment provided with independent protective earthing conductor.		
G.8.3.3	Withstand $1,71 \times 1.1 \times U_0$ for 5 s.		N/A

IEC62368_1D – 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 62368-1:2014
TRF template used.....:	IECEE OD-2020-F3, Ed. 1.1
Attachment Form No.....:	US_CA_ND_IEC62368_1D
Attachment Originator.....:	UL(US)
Master Attachment.....:	Dated 2021-02-04
Copyright © 2021 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.	

IEC 62368-1 - US and Canada National Differences Special National Conditions based on Regulations and Other National Differences			
1.1	All equipment is to be designed to allow installation according to the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, 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.	Equipment designed to comply with the NEC.	Pass
1.4	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1.17	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.		N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.8	Lithium coin / button cell batteries have modified special construction and performance requirements.		N/A
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.5, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment		N/A
5.7.7	Equipment intended to receive telecommunication ringing signals complies with a special touch current measurement tests.		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
6.5.1	PS3 wiring outside a fire enclosure complies with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.8)	Output terminals provided for supply of other equipment, except mains, supply are marked with a maximum rating or references to which equipment it is permitted to be connected.		Pass
Annex G (G.7.1)	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
Annex G (G.7.3)	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
Annex G (G.7.5)	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
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 V _{peak} or 60 V d.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 M	Battery packs for stationary applications comply with special component requirements.		N/A
Annex DVA (1)	Equipment intended for use in spaces used for environmental air 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) 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. & Canadian Regulations.		N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Baby monitors additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
Annex DVA (5.6.3)	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 complies 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) 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 min. flammability classification of V-1.		N/A
Annex DVA (10.3.1)	Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5.1)	Equipment that produces ionizing radiation complies 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.3.3.3)	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 are lower than the "Normal Operating Condition" in Table 2 of CAN/CSA C22.2 No. 235."		N/A
Annex DVA (F.3.3.5)	Equipment identified for ITE (computer) room installation is marked with the rated current		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up 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
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles complies with NEC 250.146(D) and CEC 10-112 and 10-906(8).		N/A
Annex DVA (G.4.3)	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_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
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 (Annex M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	Wiring terminals intended to supply Class 2 outputs according to the NEC or CEC Part 1 are marked with the voltage rating and “Class 2” or equivalent; marking is located adjacent to the terminals and visible during wiring.		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 have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. Components required to comply include: appliance couplers, attachment plugs, battery back-up systems, battery packs, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultra-capacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, data storage equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.		Pass
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.	Equipment is for building-in. Connection to mains to be determined in the end product.	N/A

IEC62368_1D – ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and are specially marked when specified.		N/A
Annex DVH (DVH.3.2)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm ²).		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 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, complies 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

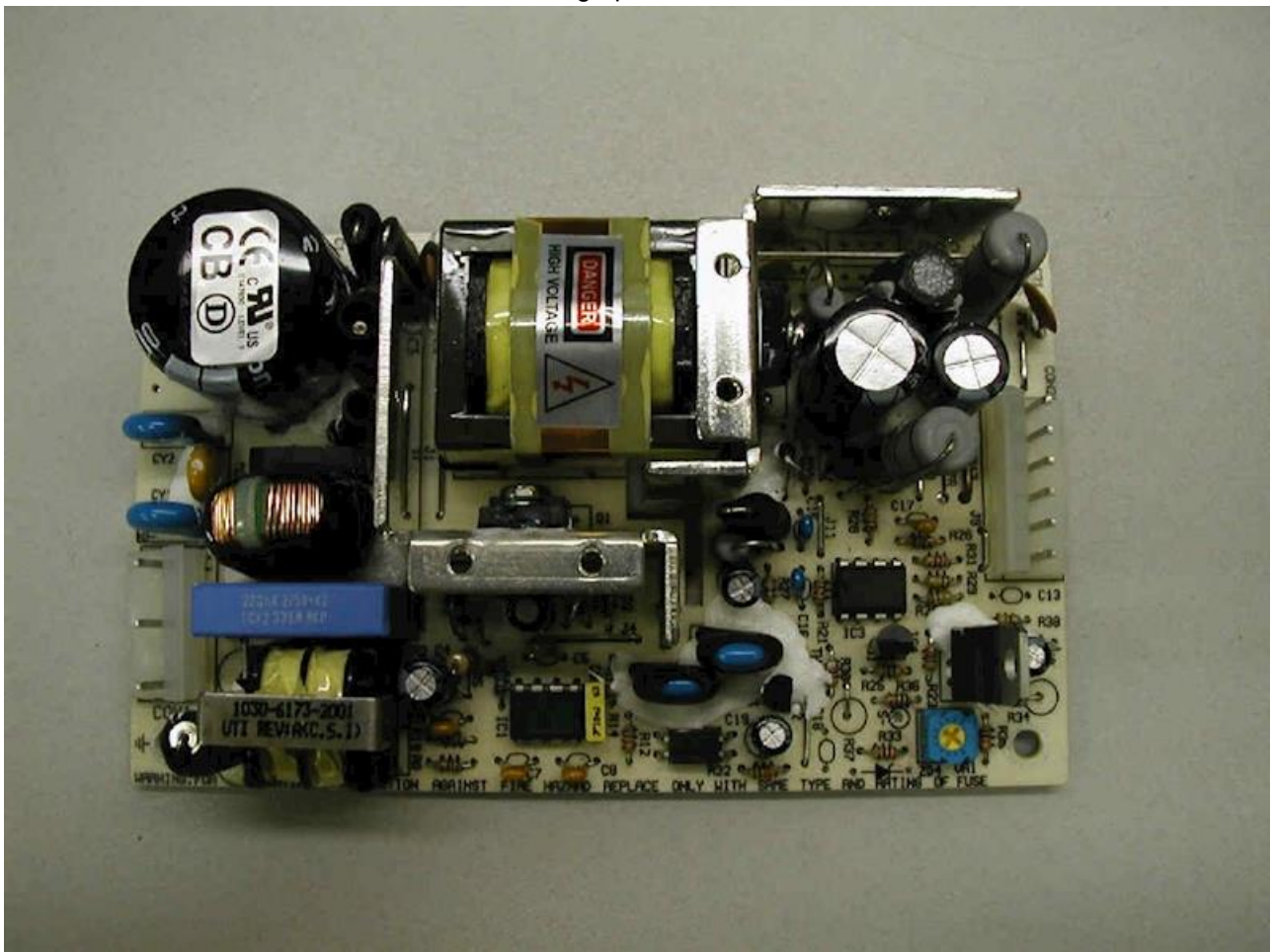
Enclosures

Enclosures

Type	Supplement Id	Description
Photographs	03-01	AL-070U, Single Output, Top View
Photographs	03-02	AL-070U, Single Output, Bottom View
Photographs	03-03	AL-070U, Triple Output, Top View
Photographs	03-04	AL-070U, Triple Output, Bottom View
Photographs	03-05	AL-085U, Single Output, Top View
Photographs	03-06	AL-085U, Single Output, Bottom View
Photographs	03-07	AL-085U, Quad Output, Top View
Photographs	03-08	AL-085U, Quad Output, Bottom View
Diagrams	04-07	Transformer Build Diagrams
Diagrams	04-08	Inductor class B Build Diagrams
Diagrams	04-11	AL-085U Transformer Tape
Diagrams	04-13	Inductor G030-5123-2004 for LE2 Build Diagram
Diagrams	04-14	Transformer G050-3601-XXXXABH for T1 - Build Diagram Class F
Schematics + PWB	05-01	AL-070U Component and Trace Layouts
Schematics + PWB	05-02	AL-085U Component and Trace Layout
Miscellaneous	07-01	Letter of Assurance
Miscellaneous	07-02	Resistor List for loading
Marking Plate	13-01	AL-070U (represents AL-065U) and AL-085U label with (F) - Representative of Series

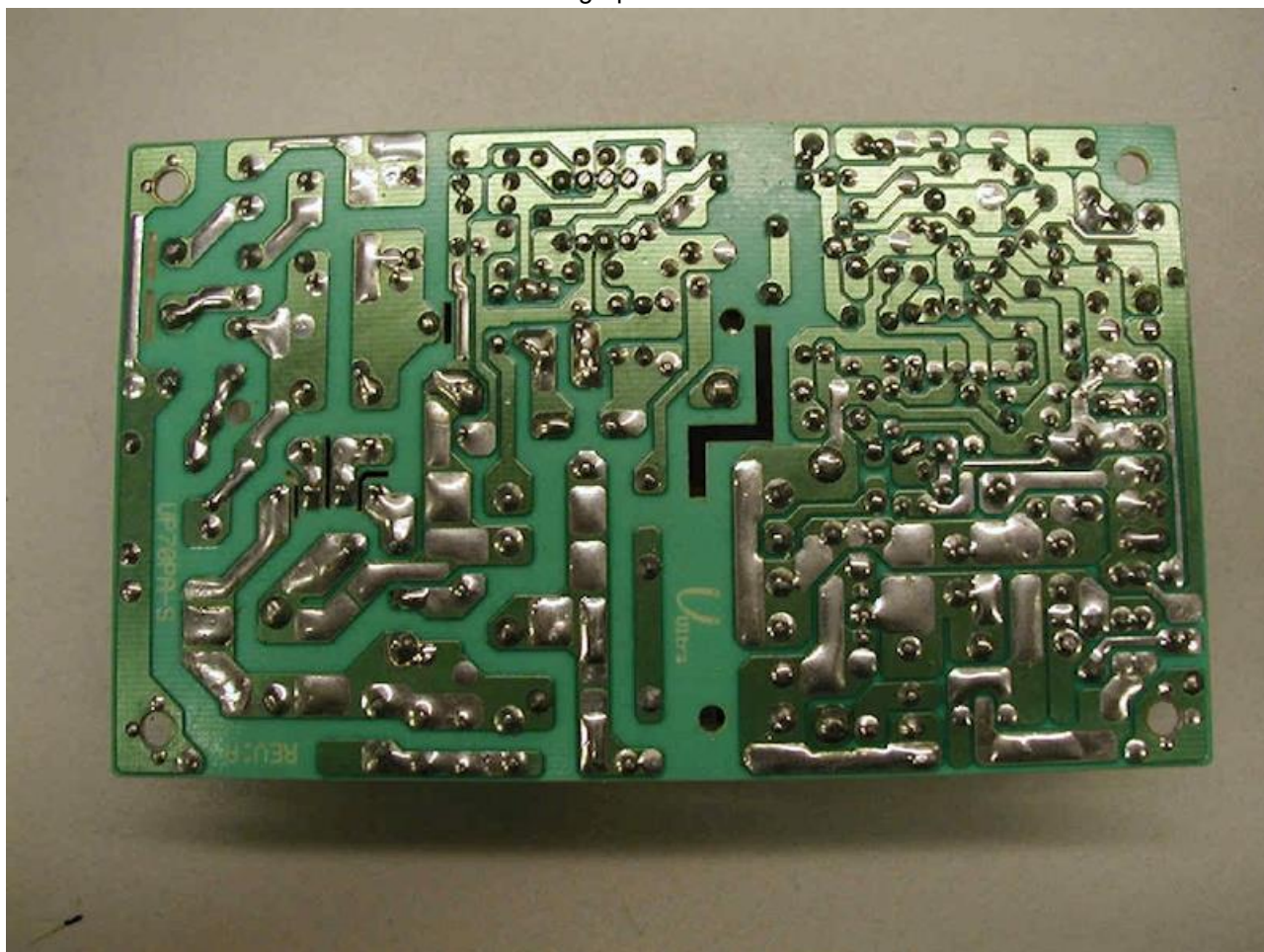
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Photographs ID 03-01



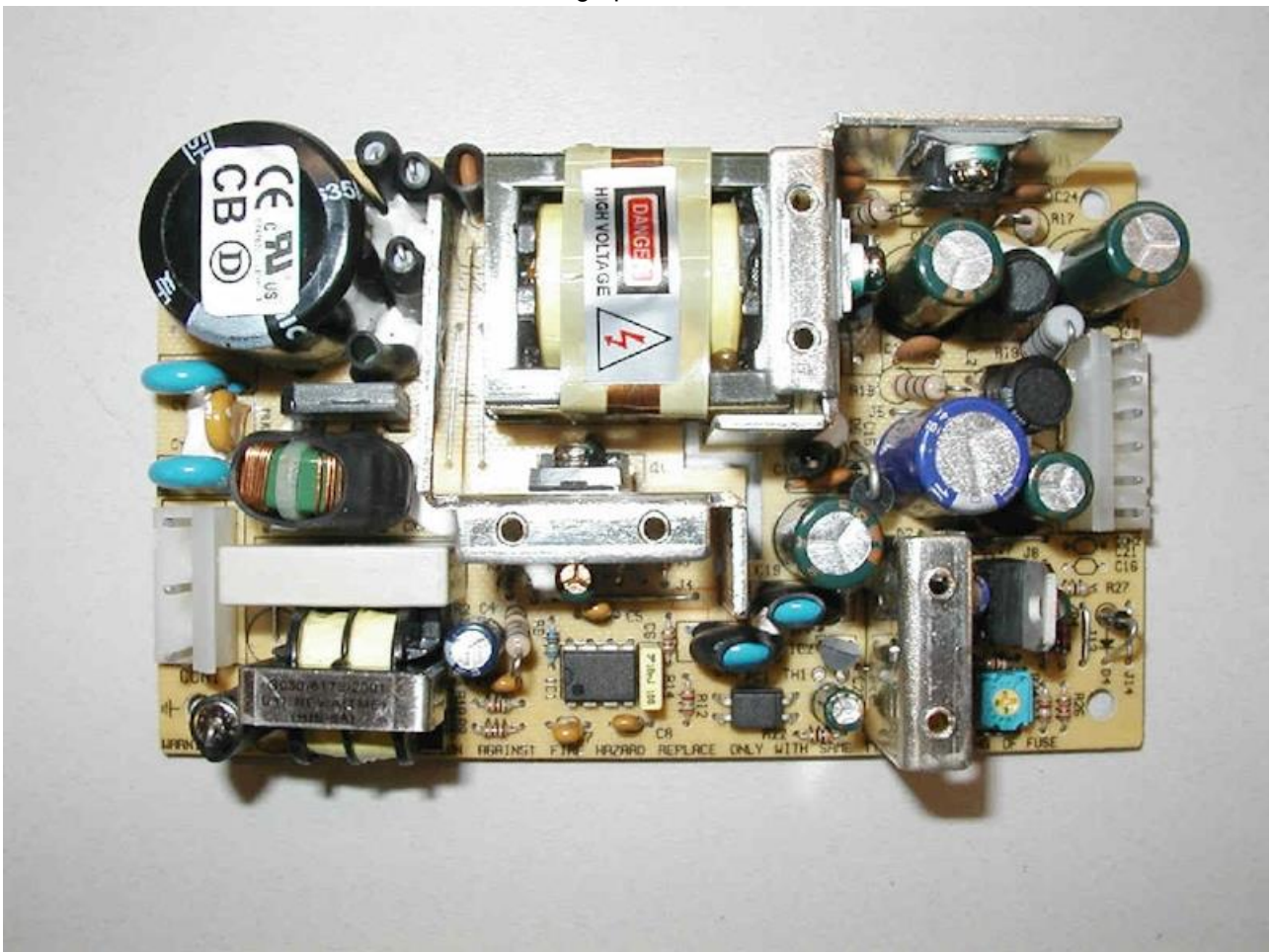
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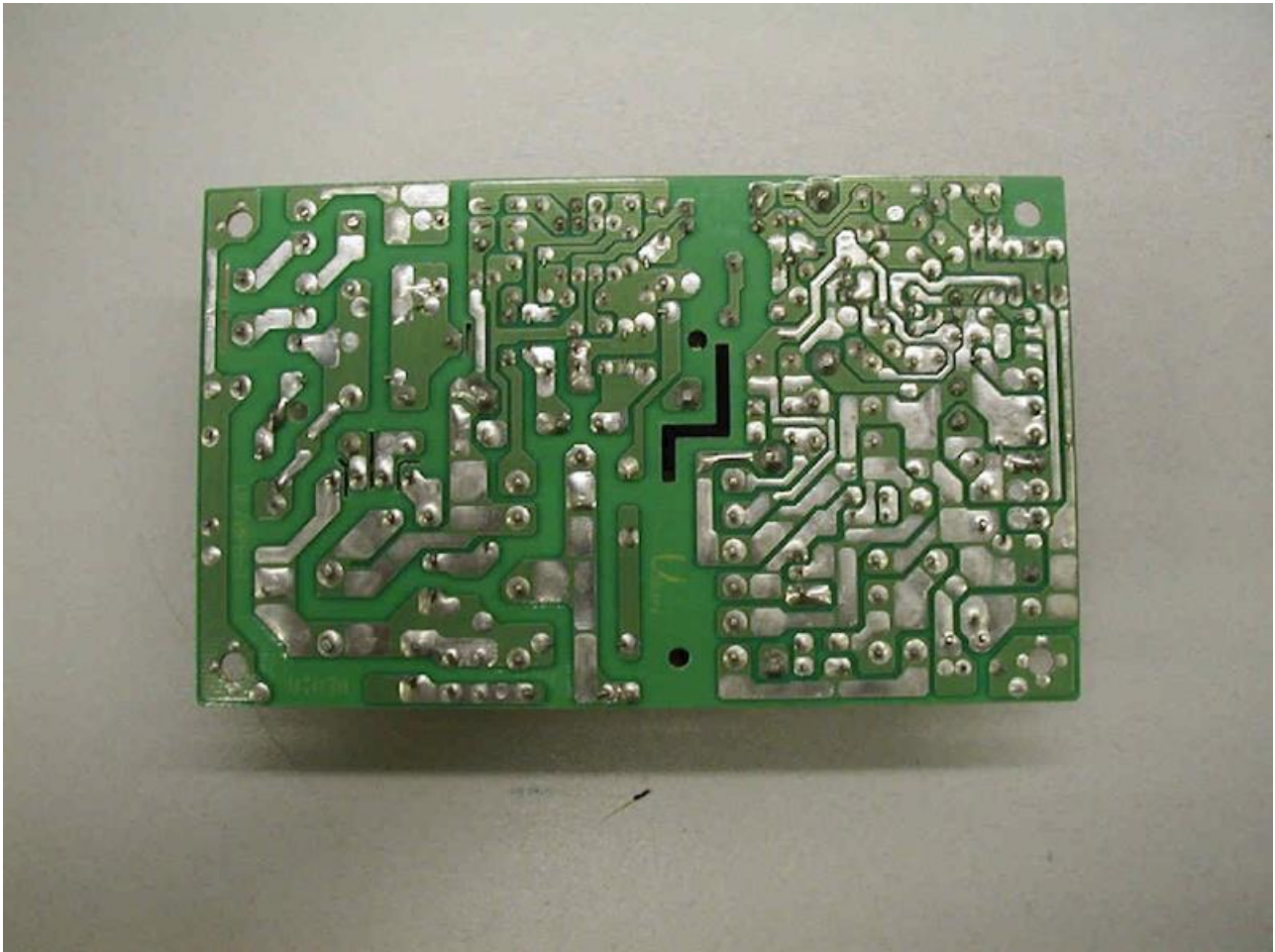
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Photographs ID 03-03



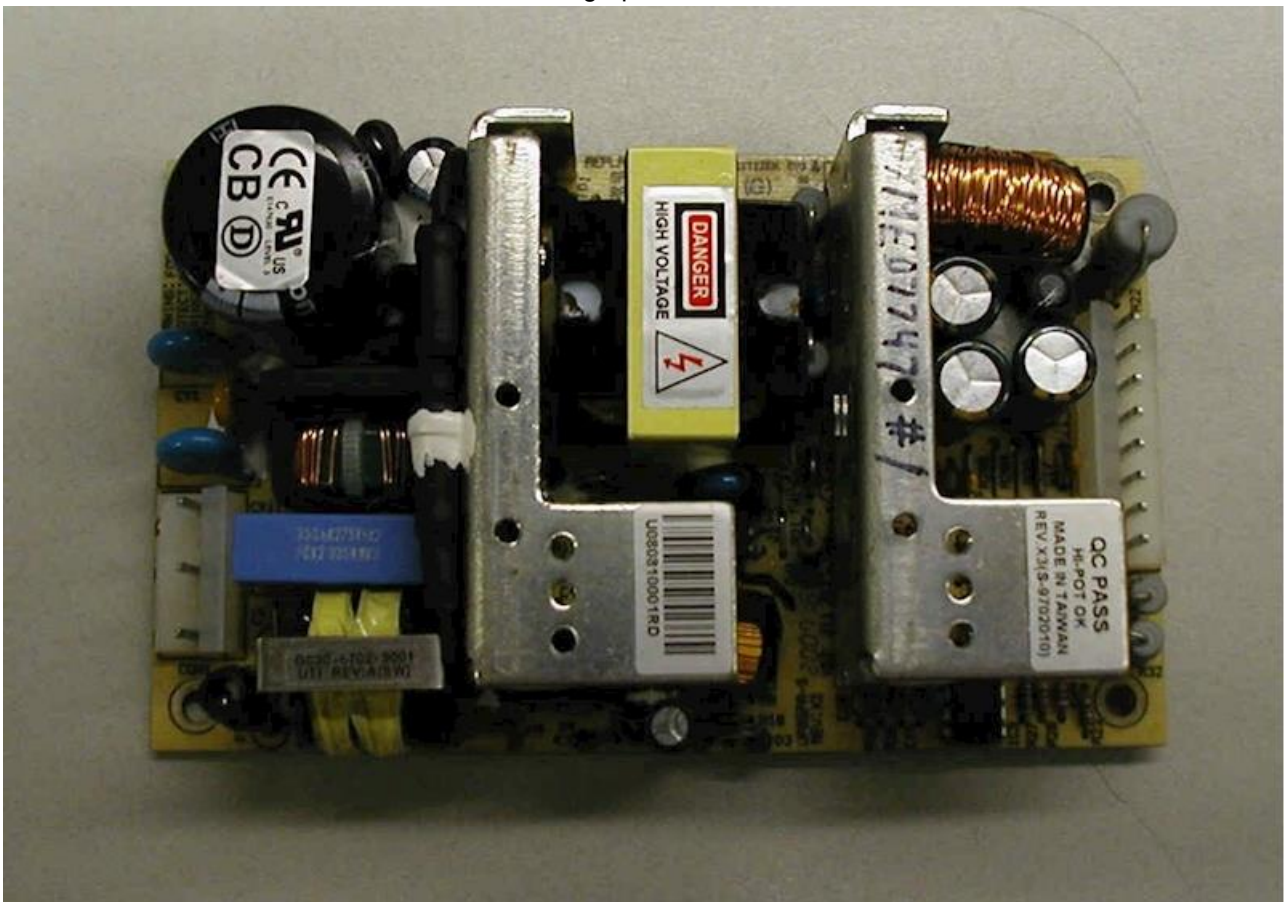
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Photographs ID 03-04



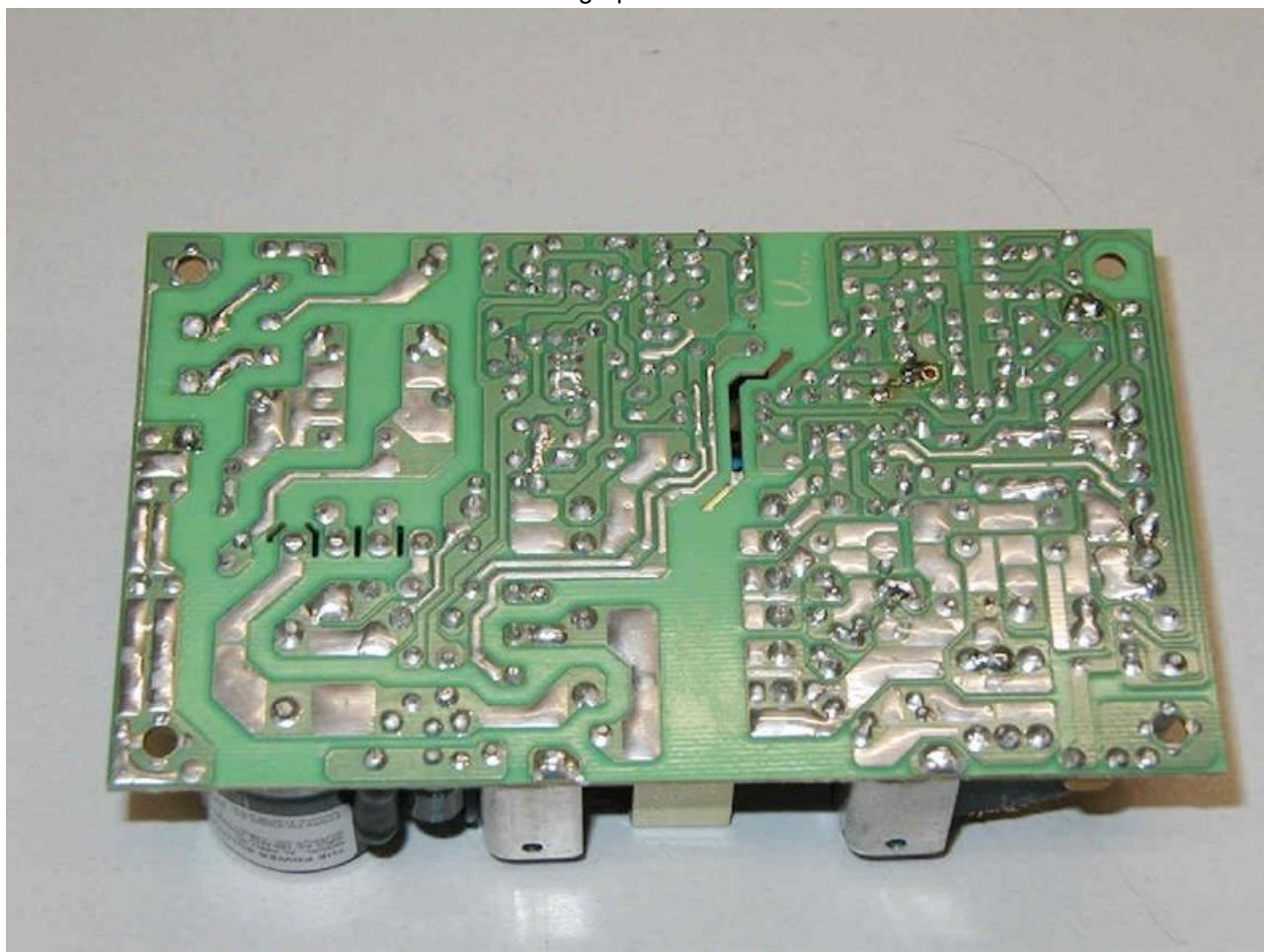
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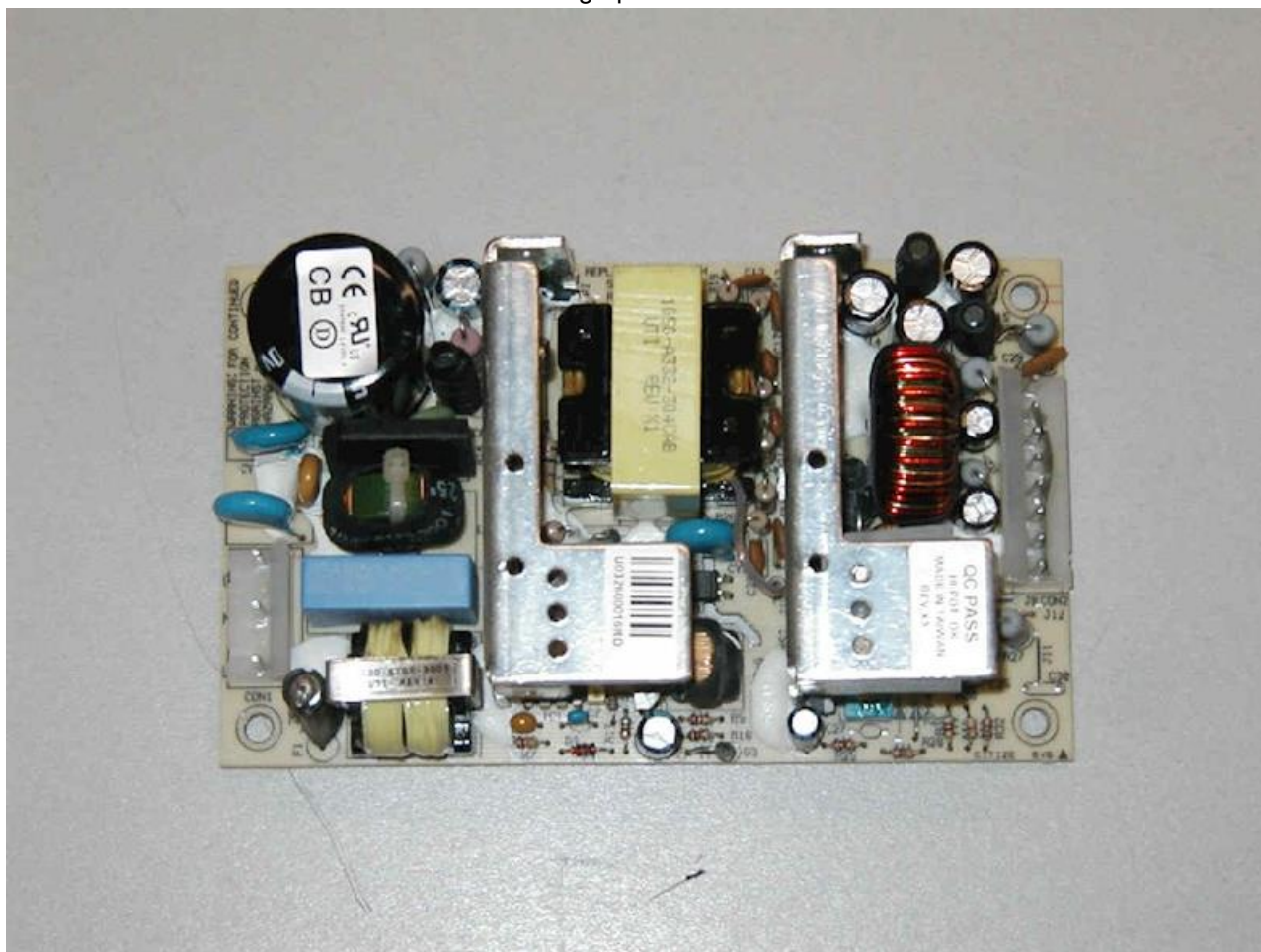
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Photographs ID 03-06



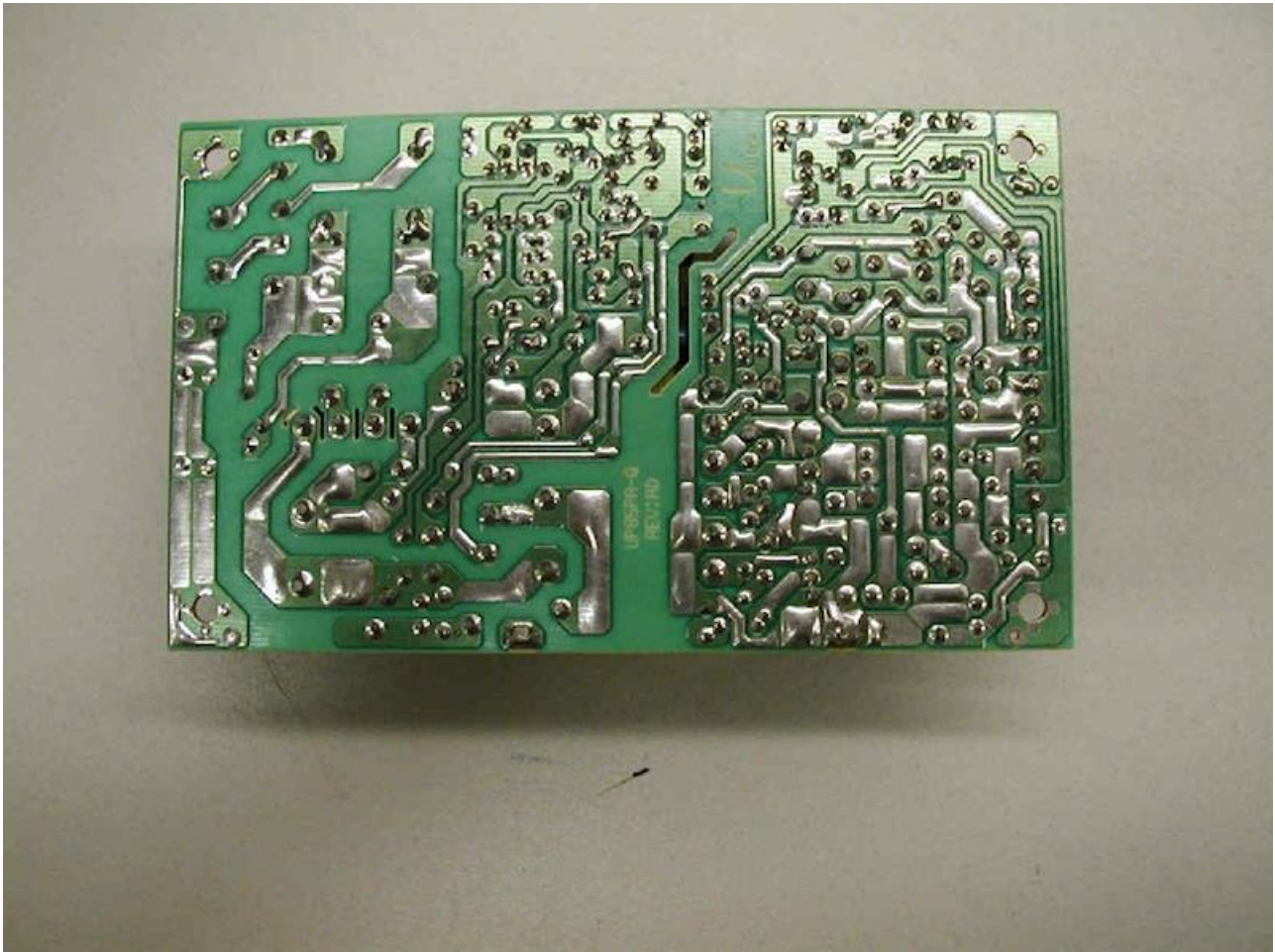
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Photographs ID 03-07



Enclosures

Photographs ID 03-08



Enclosures

Diagrams ID 04-07

Unipower LLC

Transformer List

FRANK 10/06/'21

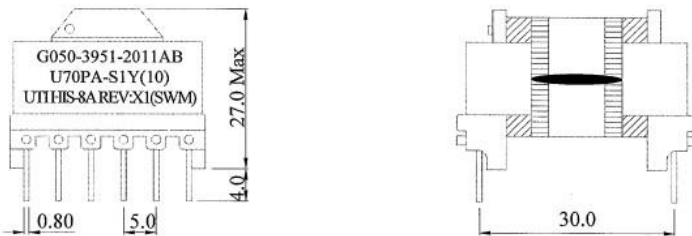
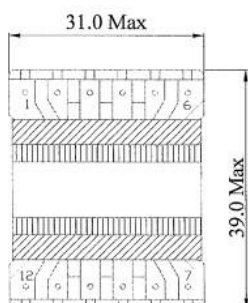

Model Name: AL-070U-S1, AL-070U-S5, AL-070U-T125,
AL-085U-S1, AL-085U-S5, AL-085U-Q1245

Vendor	Model/Series	Remark
Showwell(SWM)		

Enclosures

Diagrams ID 04-07

T1 6V AL-070L-S1

CUSTOMER P/N	G050-3951-2011AB	PART NO	FER028021034HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.XX	.X
DOC. NO		REV	A	PAGE	2 OF 4	±0.1	±0.5
1.DIMENSION :							
							
							
Notes :							
a. 繞線方向：P(1-6)側朝外，底視逆時針							
b. 焊外銅箔 0.20 x 16 x 1 T (with Tape)，焊點在 P(1-12)側。							
2.INDUCTANCE : (@1KHz , 0.3V)							
L(1-3) = 950 uH ± 10%							
3.HI-POT :							
PRI TO SEC : AC 4.0 KV , 1 MINUTE , 5 mA.							
WINDING TO CORE : AC 1.0 KV , 1 MINUTE , 5 mA.							
4.PIN 2 , 4 CUTOFF.							
 展耐有限公司 SHOWWELL GROUP CO., LTD 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw		APPROVED BY	CHECKED BY	DRAWING BY			
		張哲嘉	張庭毓	張家毓			

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Diagrams ID 04-07

CUSTOMER P/N	G050-3951-2011AB	PART NO	FER028021034HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	3 OF 4	±0.1	±0.5

5.OUTLINE :

6.SCHEMATIC :

Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts


W5 (CLOSE)
W4 (CLOSE)
W3 (CLOSE)
W2 (CLOSE)
W1 (CLOSE)

Margent Tape x 4mm

展 尉 有 限 公 司 S H O W w e l l G R O U P C O., L T D 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw	APPROVED BY	CHECKED BY	DRAWING BY
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Diagrams ID 04-07

CUSTOMER P/N	G050-3951-2011AB	PART NO	FER028021034HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	4 OF 4	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : ER-28L	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130℃, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	TUBE	TEFLON TUBE : TFE-TW-300	ZEUS INDUSTRIAL PRODUCT INC., E64007			*	
7	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES:ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
 展 尉 有 限 公 司 S H O W w e l l G R O U P C O . , L T D 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw		APPROVED BY	CHECKED BY		DRAWING BY		
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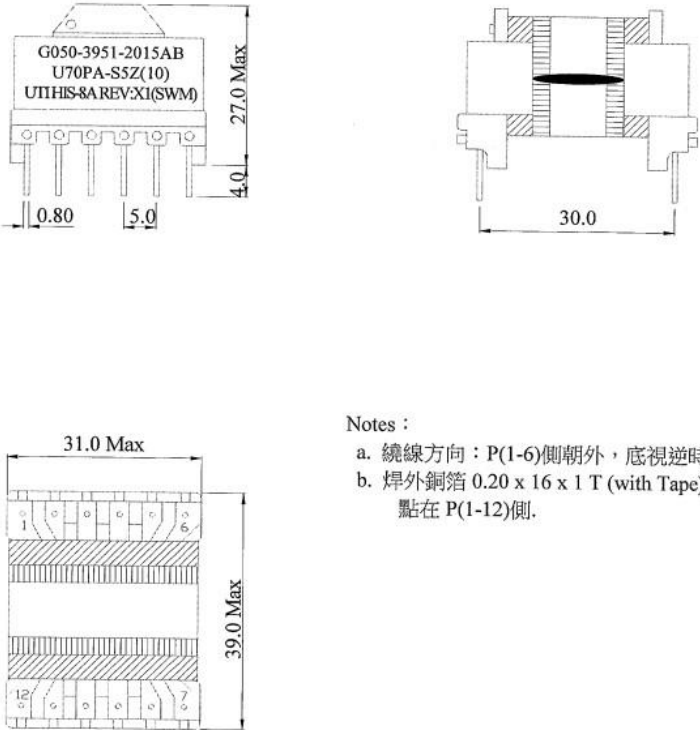
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Diagrams ID 04-07

T1 for AL-0700-55

CUSTOMER P/N	G050-3951-2015AB	PART NO	FER028021035HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	2 OF 4	±0.1	±0.5

1.DIMENSION :




Notes :

- 繞線方向：P(1-6)側朝外，底視逆時針
- 焊外銅箔 0.20 x 16 x 1 T (with Tape)，焊點在 P(1-12)側。

2.INDUCTANCE : (@1KHz , 0.3V)
L(1-3) = 950 uH ± 10%

3.HI-POT :
PRI TO SEC : AC 4.0 KV , 1 MINUTE , 5 mA.
WINDING TO CORE : AC 1.0 KV , 1 MINUTE , 5 mA.

4.PIN 2 , 4 CUTOFF.

 展 尉 有 限 公 司 SHOWWELL GROUP CO., LTD 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw	APPROVED BY	CHECKED BY	DRAWING BY
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Diagrams ID 04-07

CUSTOMER P/N	G050-3951-2015AB	PART NO	FER028021035HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	3 OF 4	±0.1	±0.5

5.OUTLINE :

6.SCHEMATIC :


Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts

Margent Tape x 4mm

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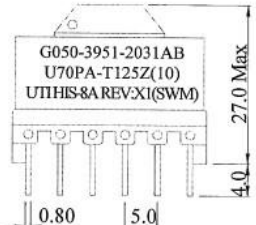
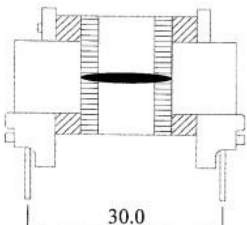
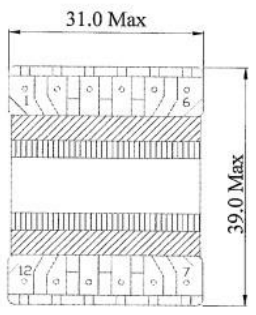

Diagrams ID 04-07

CUSTOMER P/N	G050-3951-2015AB	PART NO	FER028021035HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	4 OF 4	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : ER-28L	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	TUBE	TEFLON TUBE : TFE-TW-300	ZEUS INDUSTRIAL PRODUCT INC., E64007			*	
7	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES:ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
 展尉有限公司 SHOWWELL GROUP CO., LTD 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw		APPROVED BY	CHECKED BY	DRAWING BY			
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Enclosures

Diagrams ID 04-07

T1 for AL-070U-T125

CUSTOMER P/N	G050-3951-2031AB	PART NO	FER02806149HL-PF	TOLERANCES		
DESCRIPTION	ER-28L	DATE	2021,09,29	.XX	.X	
DOC. NO		REV	A	PAGE	2 OF 4	±0.1 ±0.5
<p>1.DIMENSION :</p>    <p>Notes :</p> <p>a. 繞線方向：P(1-6)側朝外，底視逆時針</p> <p>b. 焊外銅箔 0.20 x 16 x 1 T (with Tape)，焊點在 P(1-12)側。</p> <p>2.INDUCTANCE : (@1KHz , 0.3V) L(1-3) = 950 uH ± 10%</p> <p>3.HI-POT : PRI TO SEC : AC 4.0 KV , 1 MINUTE , 5 mA. WINDING TO CORE : AC 1.0 KV , 1 MINUTE , 5 mA.</p> <p>4.PIN 2 , 4 CUTOFF.</p>						
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Diagrams ID 04-07

CUSTOMER P/N	G050-3951-2031AB	PART NO	FER02806149HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	3 OF 4	±0.1	±0.5

5.OUTLINE :

W1 = 0.30 ϕ x 75 Ts
W5 = 0.30 ϕ x 75 Ts
W6 = 0.30 ϕ x 13 Ts
W4 = 0.40 ϕ x 52 Ts
W2 = 0.30 ϕ x 6 x 6 Ts
W3 = 0.30 ϕ x 4 x 8 Ts


6.SCHEMATIC :

Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 1 T
Mylar Tape x 3 Ts
W6 (CLOSE)
W5 (CLOSE)
W4 (CLOSE)
W3 (CLOSE)
W2 (CLOSE)
W1 (CLOSE)
Margent Tape x 4mm

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Diagrams ID 04-07

CUSTOMER P/N	G050-3951-2031AB	PART NO	FER02806149HL-PF			TOLERANCES	
DESCRIPTION	ER-28L	DATE	2021,09,29			.xx	.x
DOC. NO		REV	A	PAGE	4 OF 4	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : ER-28L	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	TUBE	TEFLON TUBE : TFE-TW-300	ZEUS INDUSTRIAL PRODUCT INC., E64007			*	
7	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES:ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
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Diagrams ID 04-07

T1 for AL-085U-S1

CUSTOMER P/N	G050-A452-3010AB	PART NO	FEI033021033V-PF	TOLERANCES		
DESCRIPTION	EI-33	DATE	2021,09,30	.xx	.x	
DOC.NO		REV	A	PAGE	2 OF 4	±0.1 ±0.5
<p>1.DIMENSION :</p> <p style="text-align: right;">G050-A452-3010AB U85PA-S1Z(10) UTI HIS-8A REV : X1(SWM)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Marking :</p> </div> <div style="text-align: center;"> </div> </div> <div style="text-align: center; margin-top: 20px;"> </div> <p>NOTES :</p> <p>a. Core fixed by Mylar Tape x 2 Ts.</p> <p>b. 成品外圍包 32mm Mylar Tape x 3 Ts (底部與 BOBBIN 之 BOSS 平齊).</p>						
<p>2.INDUCTANCE : (@1KHz , 0.30V)</p> <p>L(1-3) = 3.46 mH ± 25%</p> <p>3.HI-POT :</p> <p>PRI TO SEC : AC 4.0 KV , 1 MINUTE , 10 mA.</p> <p>PRI & SEC TO CORE : AC 2.0 KV , 1 MINUTE , 10 mA.</p> <p>4.PIN 2 , 4 CUTOFF.</p>						
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Diagrams ID 04-07

CUSTOMER P/N	G050-A452-3010AB	PART NO	FEI033021033V-PF			TOLERANCES	
DESCRIPTION	EL-33	DATE	2021,09,30			.xx	.x
DOC.NO		REV	A	PAGE	3 OF 4	±0.1	±0.5

5.OUTLINE :

W1 = 0.35 ϕ x 2 x 30 Ts
W4 = 0.35 ϕ x 2 x 30 Ts
W5 = 0.35 ϕ x 10 Ts
W2 = 0.35 ϕ x 8 x 4 Ts
W3 = 0.35 ϕ x 10 Ts


6.SCHEMATIC :

Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts
Mylar Tape x 1 T
Mylar Tape x 3 Ts
W5 (CLOSED)
W4 (CLOSED)
W3 (CLOSED)
W2 (CLOSED)
W1 (CLOSED)
Margent Tape x 4.0mm

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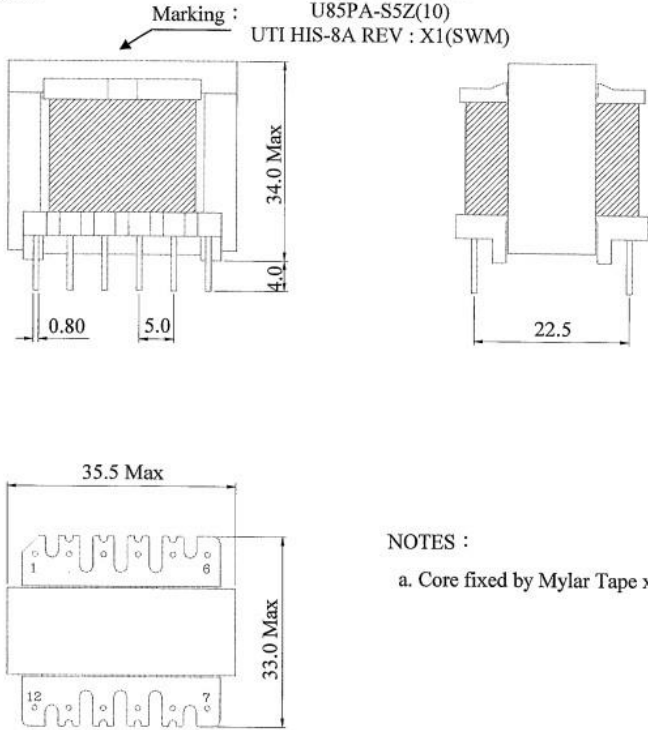

Diagrams ID 04-07

CUSTOMER P/N	G050-A452-3010AB	PART NO	FEI033021033V-PF			TOLERANCES	
DESCRIPTION	EI-33	DATE	2021,09,30			.xx	.x
DOC.NO		REV	A	PAGE	4 OF 4	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : EI-33	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	TUBE	TEFLON TUBE : TFE-TW-300	ZEUS INDUSTRIAL PRODUCT INC., E64007			*	
7	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES:ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
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Diagrams ID 04-07

T1 for AL-085U-S5

CUSTOMER P/N	G050-A452-3015AB	PART NO	FEI033021036V-PF			TOLERANCES	
DESCRIPTION	EI-33	DATE	2021,09,30			.xx	.x
DOC.NO		REV	A	PAGE	2 OF 4	±0.1	±0.5
<p>1.DIMENSION : G050-A452-3015AB U85PA-S5Z(10) UTI HIS-8A REV : X1(SWM)</p> <p>Marking :</p>  <p>NOTES : a. Core fixed by Mylar Tape x 2 Ts.</p>							
<p>2.INDUCTANCE : (@1KHz , 0.30V) L(1-3) = 3.46 mH ± 25%</p>							
<p>3.HI-POT : PRI TO SEC : AC 4.0 KV , 1 MINUTE , 10mA. PRI & SEC TO CORE : AC 2.0 KV , 1 MINUTE , 10mA.</p>							
<p>4.PIN 2 , 4 CUTOFF.</p>							
 <p>展 耐 有 限 公 司 SHOWWELL GROUP CO., LTD 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw</p>		APPROVED BY	CHECKED BY	DRAWING BY			
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CUSTOMER P/N	G050-A452-3015AB	PART NO	FEI033021036V-PF			TOLERANCES	
DESCRIPTION	EI-33	DATE	2021,09,30			.xx	.x
DOC.NO		REV	A	PAGE	3 OF 4	±0.1	±0.5


5.OUTLINE :

6.SCHEMATIC :

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CUSTOMER P/N	G050-A452-3015AB	PART NO	FEI033021036V-PF			TOLERANCES	
DESCRIPTION	EI-33	DATE	2021,09,30			.xx	.x
DOC.NO		REV	A	PAGE	4 OF 4	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : EI-33	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	TUBE	TEFLON TUBE : TFE-TW-300	ZEUS INDUSTRIAL PRODUCT INC., E64007			*	
7	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES:ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
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Diagrams ID 04-07

T1 for AL-085U-Q1245

CUSTOMER P/N	G050-A332-3044AB	PART NO	FEI033021037V-PF			TOLERANCES	
DESCRIPTION	EI-33	DATE	2021,09,30			.xx	.x
UPDATE		REV	A	PAGE	2 OF 5	±0.1	±0.5

1.DIMENSION:

Marking : G050-A332-3044AB
U85PA-Q1245Z(10)
UTI HIS-8A REV:X1(SWM)

NOTES :

a. Core fixed by Mylar Tape x 2 Ts.

2.INDUCTANCE : (@1KHz , 0.30V)
L(1-3) = 2.6 mH ± 25%

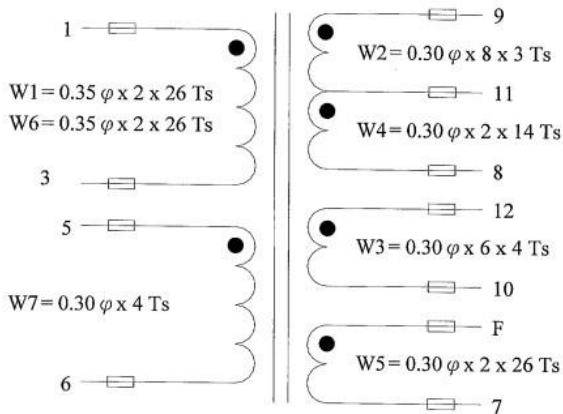
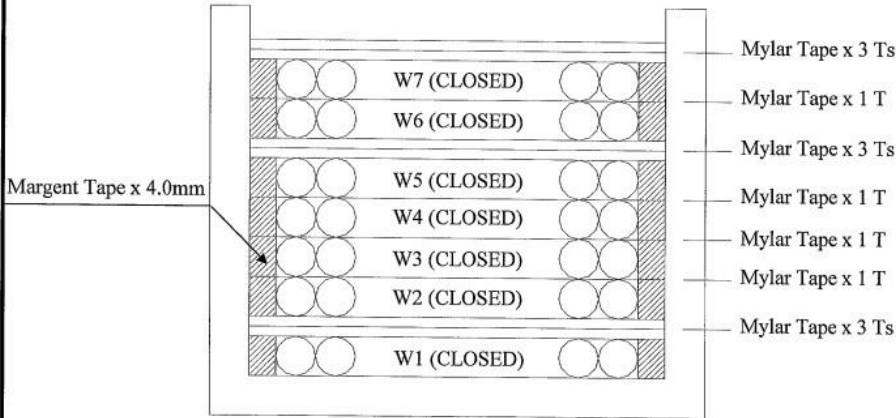

3.HI-POT :
PRI TO SEC : AC 4.0 KV , 1 MINUTE , 10 mA.
PRI & SEC TO CORE : AC 2.0 KV , 1 MINUTE , 10 mA.

4.PIN 2 , 4 CUTOFF.

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CUSTOMER P/N	G050-A332-3044AB	PART NO	FEI033021037V-PF	TOLERANCES		
DESCRIPTION	EI-33	DATE	2021,09,30	.xx	.x	
UPDATE		REV	A	PAGE	3 OF 5	±0.1 ±0.5
<p>6.OUTLINE :</p>  <p>W1 = 0.35 φ x 2 x 26 Ts W6 = 0.35 φ x 2 x 26 Ts W7 = 0.30 φ x 4 Ts W2 = 0.30 φ x 8 x 3 Ts W4 = 0.30 φ x 2 x 14 Ts W3 = 0.30 φ x 6 x 4 Ts W5 = 0.30 φ x 2 x 26 Ts</p>						
<p>7.SCHEMATIC :</p>  <p>Mylar Tape x 3 Ts Mylar Tape x 1 T Mylar Tape x 3 Ts Mylar Tape x 1 T Mylar Tape x 1 T Mylar Tape x 1 T Mylar Tape x 3 Ts Margent Tape x 4.0mm</p>						
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Diagrams ID 04-07

CUSTOMER P/N	G050-A332-3044AB	PART NO	FEI033021037V-PF			TOLERANCES	
DESCRIPTION	EI-33	DATE	2021,09,30			.xx	.x
DOC.NO		REV	A	PAGE	4 OF 4	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : EI-33	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATEISU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	TUBE	TEFLON TUBE : TFE-TW-300	ZEUS INDUSTRIAL PRODUCT INC., E64007			*	
7	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES:ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
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Diagrams ID 04-08

Unipower LLC

Line Choke List FRANK 10/06/'21

Model Name: AL-070U-S1, AL-070U-S5, AL-070U-T125,
AL-085U-S1, AL-085U-S5, AL-085U-Q1245

Vendor	Model/Series	Remark
Showwell(SWM)	G030-6173-2001	LE1 for AL-070U series
Showwell(SWM)	G030-6702-3001	LE1 for AL-070U and AL-085U series
Showwell(SWM)	G030-5123-2001	LE2 for AL-070U and AL-085U series

Enclosures

Diagrams ID 04-08

LEI for AL-070U

CUSTOMER P/N	G030-6173-2001	PART NO	FUU0157106V-PF			TOLERANCES	
DESCRIPTION	UU-15.7	DATE	2019,08,16			.xx	.x
DOC. NO		REV	C	PAGE	2 OF 4	±0.1	±0.5

1.DIMENSION :

Marking : G030-6173-2001-UTI HIS-8A REV:A(SWM)

(SEE ITEM 5)

EPOXY x 1PLS

2.OUTLINE :

3.INDUCTANCE : (@1KHz, 0.3V)
 $L(1-3) = L(6-4) = 17.0 \text{ mH (Min)}$

4.HI-POT :
 WINDING TO WINDING : AC 1.5 KV, 1 MINUTE, 5 mA.
 WINDING TO CORE : AC 1.0 KV, 1 MINUTE, 5 mA.

5.LAYER INSULATION BY MYLAR TAPE x 3 Ts.

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Diagrams ID 04-08

CUSTOMER P/N	G030-6173-2001	PART NO	FUU0157106V-PF	TOLERANCES		
DESCRIPTION	UU-15.7	DATE	2019,08,16	.xx	.x	
DOC. NO		REV	C	PAGE	3 OF 4	±0.1 ±0.5
Material List						
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*
2	CORE	FERRITE CORE : UU-15.7	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*
6	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*
NOTES:1.ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.						
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Diagrams ID 04-08

LEI for AL-085U & AL-070U

CUSTOMER P/N	G030-6702-3001	PART NO	FUU0157150V-PF	TOLERANCES	
DESCRIPTION	UU-15.7	DATE	2020,02,14	.XX	.X
DOC. NO		REV	D	PAGE	2 OF 3
				±0.1	±0.5

1.DIMENSION :

2.OUTLINE :

3.INDUCTANCE : (@1KHz , 0.3V)
 $L(1-3) = L(6-4) = 7.0 \text{ mH (Min)}$


4.HI-POT :
 WINDING TO WINDING : AC 1.5 KV , 1 MINUTE , 5 mA.
 WINDING TO CORE : AC 1.0 KV , 1 MINUTE , 5 mA.

5.LAYER INSULATION BY MYLAR TAPE x 3 Ts.

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Diagrams ID 04-08

CUSTOMER P/N	G030-6702-3001	PART NO	FUU0157150V-PF			TOLERANCES	
DESCRIPTION	UU-15.7	DATE	2020,02,14			.xx	.x
DOC. NO		REV	D	PAGE	3 OF 3	±0.1	±0.5
Material List							
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK	
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*	
2	CORE	FERRITE CORE : UU-15.7	PHILIPS COMPONENTS CO.,LTD (3C90) HIMAG MAGNETIC CORPORATION (MZ-4) KAWATETSU CORPORATION (MB4)			* * *	
3	BOBBIN	HITACHI : CP-J-8800	HITACHI CHEMICAL CO., E42956			*	
4	TAPE	SYMBIO: MY130 (b)	SYMBIO INC., E50292			*	
5	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO.,LTD. E174837			*	
6	VARNISH	HITACHI: WP-2952F-2G	HITACHI CHEMICAL CO., E72979			*	
NOTES : ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.							
 展 尉 有 限 公 司 SHOWWELL GROUP CO., LTD 新北市新莊區思源路 593 巷 17 號 1 樓 電話 : (02)8521-5010 傳真 : (02)8521-5013 http://www.showwell.com.tw		APPROVED BY	CHECKED BY		DRAWING BY		
		張 哲 嘉	張 庭 毓		張 家 毓		

Enclosures

Diagrams ID 04-08

LE2 for AL-070LI & AL-082U

CUSTOMER P/N	G030-5123-2001	PART NO	FTR0180108V-PF	TOLERANCES		
DESCRIPTION	T18 x 10 x 7	DATE	2007,11,08	.xx	.x	
DOC. NO		REV	B	PAGE	2 OF 3	±0.1 ±0.5

1.DIMENSION :

Marking : G030-5123-2001
UTI HIS-8A REV:A (SWM)

2.CORE : T18 x 10 x 7 (Coating)

3.INDUCTANCE : (@1KHz , 0.25V)
L(1-4) = L(2-3) = 15.0 mH Min

4.HI-POT :
WINDING TO WINDING : AC 1.0 KV , 1 MINUTE , 5 mA.
WINDING TO CORE : AC 0.5 KV , 1 MINUTE , 5 mA.

5.出入線須點 EPOXY 膠固定 (4 PLS).


6.束線帶 : 2.0mm , 上下束帶頭入於 CORE 中孔.

7.TUBE : UL 94V-0 , 125°C

<p>展耐有限公司 SHOWWELL GROUP CO., LTD 台北縣新莊市中正路 649 號 9 樓 電話 : (02)2908-7791 傳真 : (02)2908-7793 http://www.showwell.com.tw</p>	APPROVED BY	CHECKED BY	DRAWING BY
	張哲嘉	呂淑姿	黃美卿

Enclosures

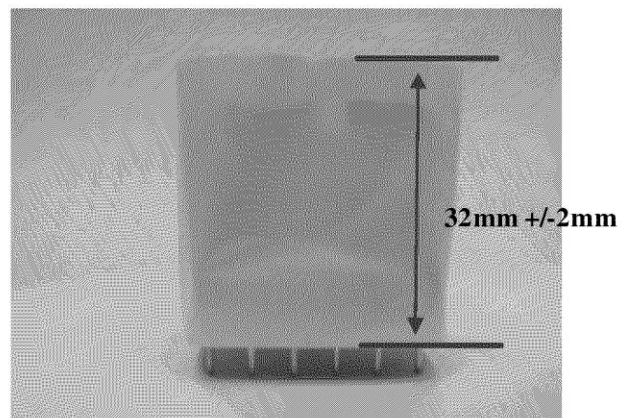
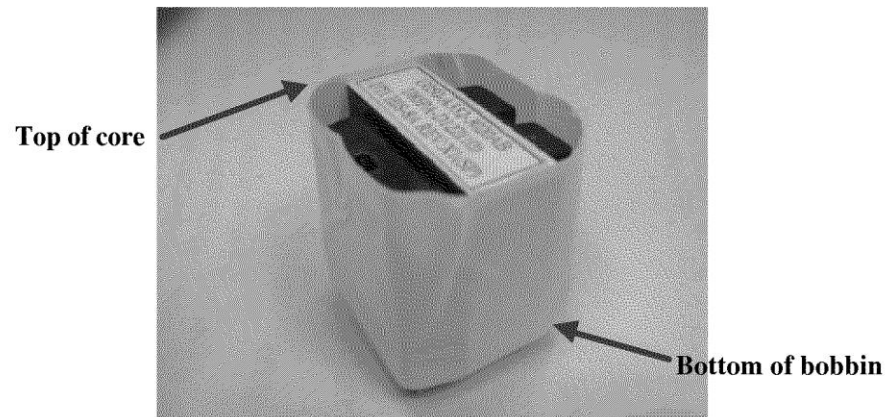
Diagrams ID 04-08

CUSTOMER P/N	G030-5123-2001	PART NO	FTR0180108V-PF	TOLERANCES		
DESCRIPTION	T18 x 10 x 7	DATE	2007,11,08	.xx	.x	
DOC. NO		REV	B	PAGE	3 OF 3	±0.1 ±0.5
Material List						
NO.	ITEM	MATERIAL	SUPPLIER OF THE MATERIAL			RE-MARK
1	SYSTEM	CLASS 130(B), HIS-8A	GREEN CUBES, E229670 (UTI)			*
2	CORE	FERRITE CORE : T18 x 10 x 7	ACME ELECTRONICS CORPORATION (A10) JINGYUAN ELECTRONIC CO., LTD (CHI0)			* *
3	WIRE	POLYURETHANE ENAMELLED COPPER WIRE UEY-2 OR UEYT, 130°C, MW28-C	1. JUNG SHING WIRE CO., LTD. E174837			*
4	TUBE	SHRINK TUBE : F32	SUMITOMO ELECTRIC FINE POLYMER INC E48762			*
NOTES: 1. ALL THE MATERIAL MAY BE CHANGED BY THE EQUIVALENT MATERIAL.						
 展 尉 有 限 公 司 SHOWwell GROUP CO., LTD 台北縣新莊市中正路 649 號 9 樓 電話: (02)2908-7791 傳真: (02)2908-7793 http://www.showwell.com.tw		APPROVED BY	CHECKED BY	DRAWING BY		
		張 哲 嘉	呂 淑 姿	黃 美 卿		

Enclosures

Diagrams ID 04-11

UP85 X'FMER add mylar tape



Enclosures

Diagrams ID 04-13

SPECIFICATION FOR APPROVAL

CUSTOMER NAME: 昂創科技股份有限公司

CUSTOMER PT/NO: G030-5123-2004

DESCRIPTION: LINE FILTER

SP PT/NO.

SAMPLE SUBMIT NO.: SP11H081

ISSUE DATE APR 13, 2012 REV: A

(1) CONFIGURATION & DESCRIPTION UNIT: mm

A	24.0 MAX
B	14.0 MAX
C	15.0±5.0
D	1.5 MAX
E	10.0 REF
F	
G	

※ 繞線方式為同進同出,分邊繞.
 ※ CORE 中間須用 1.0mm 厚隔板將 N1,N2 隔開
 ※ 出入線處須點 EPOXY 固定.

(2) SCHEMATIC

1 N1 2-UEW 0.65 ϕ ±0.1*1
 32Ts (內圈)REF
 2 N2 2-UEW 0.65 ϕ ±0.1*1
 32Ts (內圈)REF

(3) ELECTRICAL CHARACTERISTICS

NO.	PARAMETER	TERMINAL	SPECIFICATION	TEST INSTRUMENTS
1.	INDUCTANCE	N1	8.6 mH MIN	DELTA UNITED 6021 or EQU. @1 KHz, 0.3Vrms.
		N2	8.6 mH MIN	
2.	DC RESISTANCE	N1	70m Ω MAX	DELTA UNITED 5010 or EQU. @25°C
		N2	70m Ω MAX	
3.	HI - POT	COIL COIL COIL CORE	AC 1.0KV,10mA,60Sec. AC 0.5KV,10mA,60Sec.	DELTA UNITED 3315 or EQU.
4.	INSULATION RESISTANCE	COIL CORE	DC 500V, 100m OHM MIN.	DELTA UNITED 3315 or EQU.

APPROVED BY: 陳淑芬 101.04.13

CHECKED BY: 陳淑芬 101.04.13

PREPARED BY: 陳淑芬 101.04.13

SEND POWER
ELECTRONICS CO.,LTD.HONG CHAN
ELECTRONICS CO.,LTD.
PAGE : 2 / 4

Enclosures

Diagrams ID 04-13

SPECIFICATION FOR APPROVAL



CUSTOMER NAME: 昂創科技股份有限公司

CUSTOMER PT/NO: G030-5123-2004

DESCRIPTION: LINE FILTER

SP PT/NO.

SAMPLE SUBMIT NO.: SP11H081

ISSUE DATE

APR 13, 2012

REV: A

PART MATERIAL IDENTIFICATION

No	ITEM	MATERIAL	CLASS	UL FILE NO.	MANUFACTURER
1.	FERRITE CORE	T18*10*7C A15			ACME
		T18*10*7C R15K			VAKOS
		T18*10*7C M15K			HAOBO
2.	TAPE	NO. 35660	130°C	E50292	SYMBIO INC
		NO.1350F-1 NO.1350F-2	130°C	E17385	3M COMPANY ELECTRICAL PRODUCTS DIV
		CT,PZ	130°C	E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO.,LTD.
3.	WIRE	POLYURETHANE TYP-130 MW75	130°C	E84201	TA YA ELECTRIC WIRE & CABLE CO., LTD.
		POLYURETHANE DD MW75	130°C	E84081	PACIFIC ELECTRIC WIRE & CABLE CO.,LTD.
		POLYURETHANE UEW/U MW75	130°C	E201757	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO.,LTD.
4.	VARNISH	V1380FC	130°C	E75225	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC
5.	EPOXY	3300	90°C	E218090	DONG GUAN EATTO ELECTRONIC ATERIAL, CO LTD
6.	SHEET	HC-FR-4	130°C	E226607	JIANGYIN HUCHENG INSULATION MATERIAL FACTORY
		KB-6160	130°C	E123995	KINGBOARD LAMINATES HOLDINGS LTD

APPROVED BY :



CHECKED BY :



PREPARED BY :

SEND POWER
ELECTRONICS CO.,LTD.HONG CHAN
ELECTRONICS CO.,LTD.

PAGE : 3 / 4

Enclosures

Diagrams ID 04-14

SPECIFICATION FOR APPROVAL



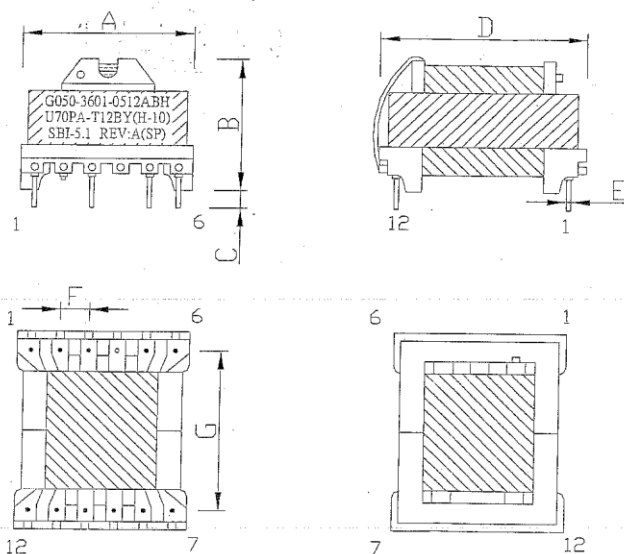
CUSTOMER NAME: 昂創科技股份有限公司 CUSTOMER PT/NO: G050-3601-0512ABH

DESCRIPTION: TRANSFORMER SP PT/NO.

SAMPLE SUBMIT NO.: SP11H080 ISSUE DATE APR 13, 2012 REV: A

(1) CONFIGURATION & DESCRIPTION

UNIT: m/m



※ PIN 4 CUT OFF, PIN 2 CUT OFF 1/2.

NO.	A	B	C	D	E	F	G	H	I	J
SPECIFICATION	34.0	28.0	3.5	40.0	0.8 ϕ	5.0	30.0			
TOLERANCE	MAX	MAX	MIN	MAX	± 0.1	± 0.3	± 0.5			
APPROVED BY: 陳淑芬	CHECKED BY: 陳淑芬			PREPARED BY: 陳淑芬						

SEND POWER
ELECTRONICS CO., LTD.DONG GUAN ZHANG MU TOU
HONG CHAN ELECTRONICS CO., LTD
PAGE: 2 / 6

Enclosures

Diagrams ID 04-14

SPECIFICATION FOR APPROVAL

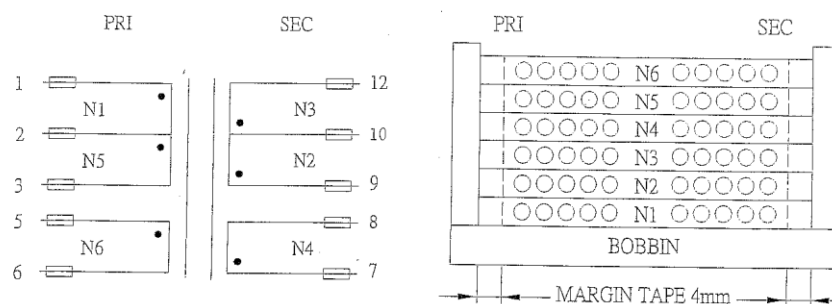


CUSTOMER NAME: 昂創科技股份有限公司 CUSTOMER PT/NO: G050-3601-0512ABH

DESCRIPTION: TRANSFORMER SP PT/NO.

SAMPLE SUBMIT NO.: SP11H080 ISSUE DATE APR 13, 2012 REV: A

(2) SCHEMATIC



※ NOTE • START, TEFLON TUBE.

(3) WINDING CONSTRUCTION

WINDING ORDER	TERMINAL NO. START - FINISH	WINDING SPECIFICATION	MYLAR TAPE	REMARK
#1	N1 1-2	PEW 0.4 ϕ *2*32 Ts	3 Ts	
#2	N2 9-10	PEW 0.4 ϕ *12*5 Ts	1 Ts	
#3	N3 10-12	PEW 0.3 ϕ *5*7 Ts	1 Ts	
#4	N4 7-8	PEW 0.3 ϕ *3*11.5 Ts	3 Ts	
#5	N5 2-3	PEW 0.4 ϕ *2*32Ts	1 Ts	
#6	N6 5-6	PEW 0.3 ϕ *1*11Ts	3Ts	
#7				
#8				
#9				

APPROVED BY :

CHECKED BY :

PREPARED BY :

SEND POWER
ELECTRONICS CO.,LTD.DONG GUAN ZHANG MU TOU
HONG CHAN ELECTRONICS CO.,LTD
PAGE : 3 / 6

Enclosures

Diagrams ID 04-14

SPECIFICATION FOR APPROVAL



CUSTOMER NAME: 昂創科技股份有限公司 CUSTOMER PT/NO: G050-3601-0512ABH

DESCRIPTION: TRANSFORMER SP PT/NO.

SAMPLE SUBMIT NO.: SP11H080 ISSUE DATE APR 13, 2012 REV: A

ELECTRICAL CHARACTERISTICS				
NO.	PARAMETER	TERMINAL	SPECIFICATION	TEST INSTRUMENTS
1.	INDUCTANCE	1 - 3	600 uH $\pm 10\%$	DELTA UNITED 6021 or EQU. @1KHz, 0.3Vrms.
2.	LEAKAGE INDUCTANCE			DELTA UNITED 6021 or EQU. @ KHz, Vrms.
3.	DC RESISTANCE	1 - 3	0.4 Ω MAX	DELTA UNITED 5010 or EQU. @25°C
4.	HI-POT	P-S P-CORE S-CORE	AC 4.0KV, 10mA/ 60SEC AC 2.0KV, 10mA/ 60SEC AC 2.0KV, 10mA/ 60SEC	DELTA UNITED 3315 or EQU. (f= 60Hz)
5.	INSULATION RESISTANCE	COIL-COIL COIL-CORE	DC 500V, 100M OHM MIN.	DELTA UNITED 3315 or EQU.
★TEST CONDITION : TEMPERATURE : 25°C HUMIDITY : 65% RH				
APPROVED BY :		CHECKED BY :		PREPARED BY :

SEND POWER
ELECTRONICS CO., LTD.DONG GUAN ZHANG MU TOU
HONG CHAN ELECTRONICS CO., LTD
PAGE : 4 / 6

Enclosures

Diagrams ID 04-14




SPECIFICATION FOR APPROVAL



CUSTOMER NAME: 昂創科技股份有限公司 CUSTOMER PT/NO: G050-3601-0512ABH

DESCRIPTION: TRANSFORMER SP PT/NO.

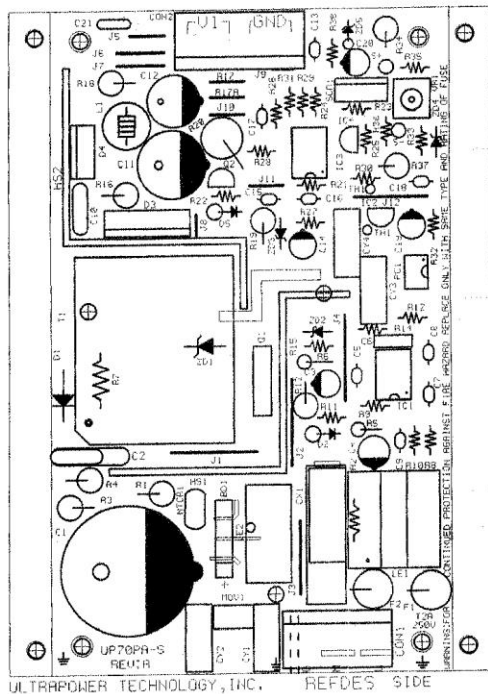
SAMPLE SUBMIT NO.: SPI1H080 ISSUE DATE APR 13, 2012 REV: A

PART MATERIAL IDENTIFICATION					
No	ITEM	MATERIAL	CLASS	UL FILE NO.	MANUFACTURER
1.	INSULATION SYSTEM	CLASS 155(F) SBI5.1		E231049	DONGGUAN ZHANGMUTOU HONG CHAN ELECTRONICS CO.,LTD.
2.	FERRITE CORE	EER2833 MZ4			HIMAG
		ER28/34 AF40			M.E.C
		EER28/34 V023			VAKOS
		EER28/34 JPP-4			A-CORE
3.	BOBBIN	PM-9820 (SW-28DOR EQU)	150°C	E41429	SUMITOMO BAKELITE CO LTD
4.	TAPE	NO. MY130	155°C	E50292	SYMBIO INC
		NO.1351T-1	155°C	E17385	3M COMPANY ELECTRICAL PRODUCTS DIV
		NO.1351T-2			
5.	MARGIN TAPE	#56	155°C	E17385	3M COMPANY ELECTRICAL PRODUCTS DIV
		#35661	155°C	E50292	SYMBIO INC
6.	WIRE	PEWF/U MW5C	155°C	E201757	PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO.,LTD.
7.	VARNISH	BC-346A	155°C	E51047	JOHN C. DOLPH CO.
8.	TUBE	TEFLON (TFL)	200°C	E156256	GREAT HLODING INDUSTRIAL CO.,LTD.
APPROVED BY :		CHECKED BY :		PREPARED BY :	
 陳淑芬 101.04.13		 陳淑芬 101.04.13		 陳淑芬 101.04.13	

SEND POWER
ELECTRONICS CO.,LTD.DONG GUAN ZHANG MU TOU
HONG CHAN ELECTRONICS CO.,LTD
PAGE : 5 / 6

Enclosures

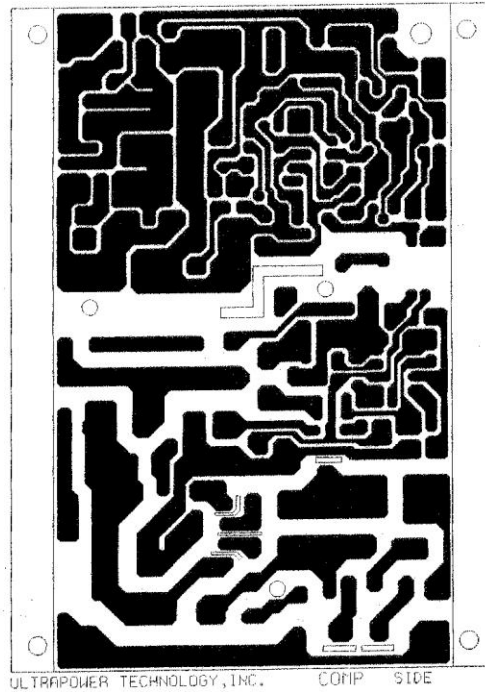
Schematics + PWB ID 05-01



For AL-070U single output
(UP70PA)

Enclosures

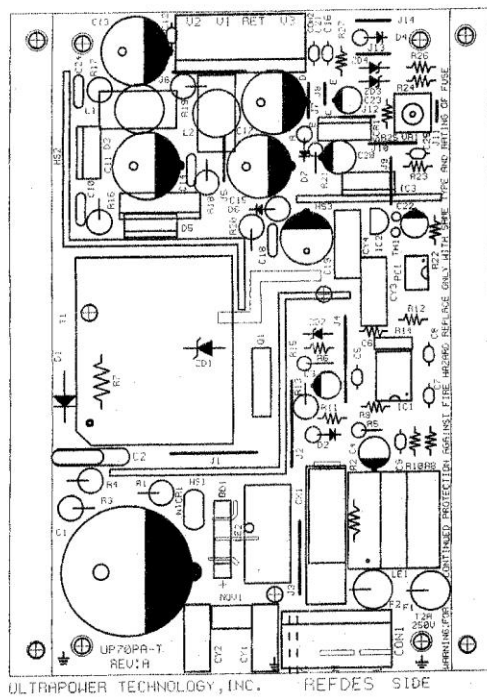
Schematics + PWB ID 05-01



For AL-070U single output
(UP70PA)

Enclosures

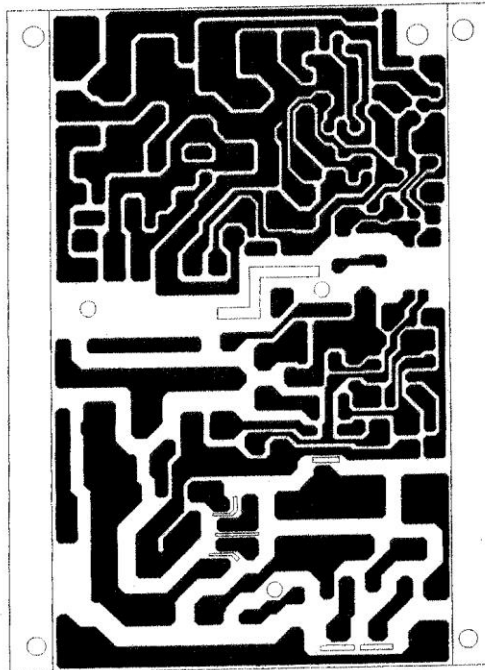
Schematics + PWB ID 05-01



For AL-670U multiple outputs
(UP70PA)

Enclosures

Schematics + PWB ID 05-01

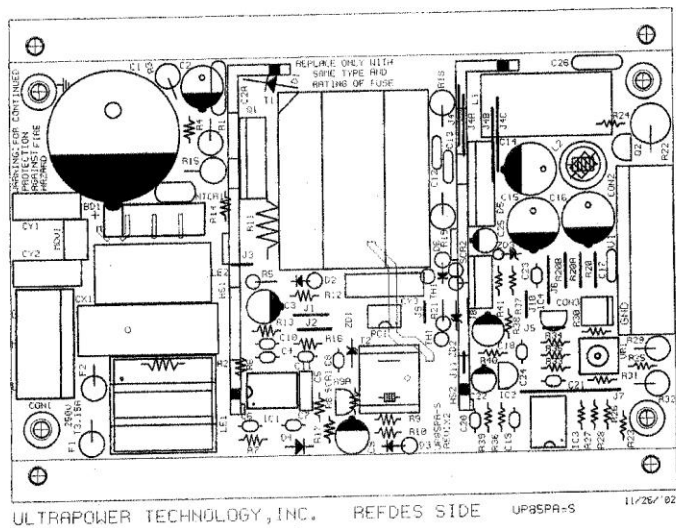


ULTRAPOWER TECHNOLOGY, INC. SOLDER SIDE

For AL-070U multiple outputs
(UP 70PA)

Enclosures

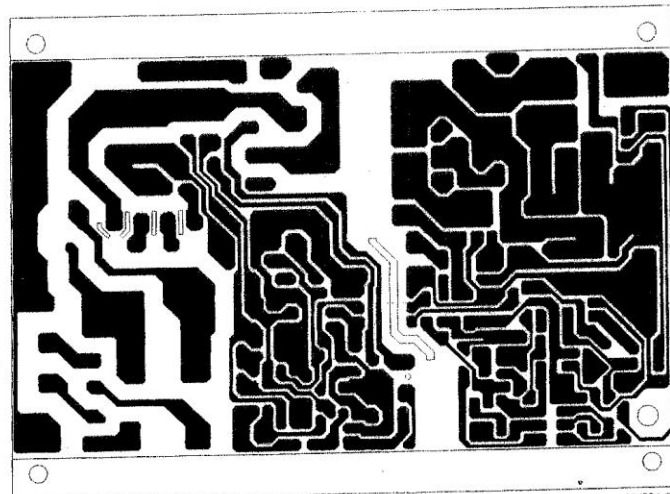
Schematics + PWB ID 05-02



For AL-081U single output
(UP85PA-S)

Enclosures

Schematics + PWB ID 05-02

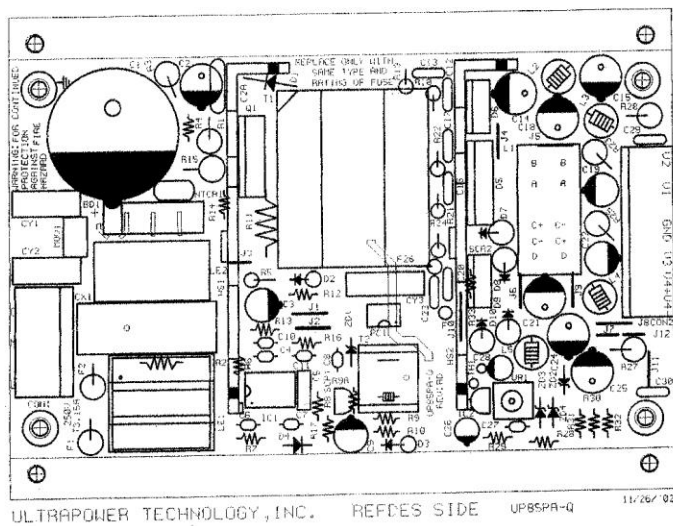


ULTRAPOWER TECHNOLOGY, INC. SOLDER SIDE UP85PA-S 11/26/02

For AL-085U multiple outputs
(UP85PA) single

Enclosures

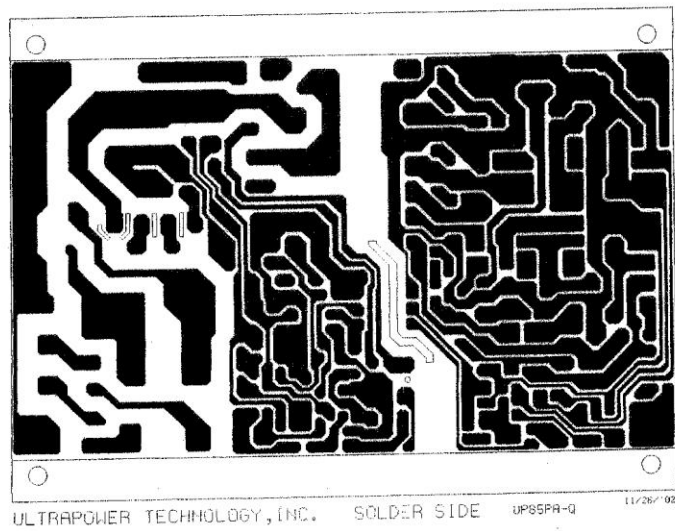
Schematics + PWB ID 05-02



For AL-08K4 multiple output
(UP8SPA)

Enclosures

Schematics + PWB ID 05-02



For AL-085W multiple output
(UP85PA)

Enclosures

Miscellaneous ID 07-01



UL RTP
12 Laboratory Drive
Research Triangle Park, NC 27709

Subject: UL LLC - Letter of Assurance - National Differences

Dear UL:

This document confirms that Green Cubes Technology Corporation Taiwan Branch, will provide the following items needed to the accepting National Certification Bodies (NCBs) along with the CB test report.

Markings and Safety Instructions – Safety instructions and markings in the language suitable for the countries listed in the attached reports will be provided at the same time the CB test report is submitted to the NCB.

EMC Test Report – Where detailed in the National Differences, an EMC test report or Declaration of Conformity will accompany this product when sent to countries that require EMC test results as part of their certification process.

ROHS Directive – We have been advised that we will need to provide evidence that our product complies with ROHS Directive 2011/65/EU. The accepting NCB may obtain this information from Green Cubes Technology Corporation Taiwan Branch by part number upon request.

Daphne Lee
Taiwan Operation Manager
Green Cubes Technology Corporation Taiwan Branch

USA Head Office

2121 East Boulevard
Kokomo, IN 469020
Phone: 502.416.1060
Fax: 708.850.4985

Taiwan R & D Center

8FL, No. 473, Sec. 2, Tiding Blvd,
Neihu District, Taipei 114
Phone: 886 2 2657 9641
Fax: 886 2 2793-7918

Taiwan Factory

7th FL 6 Lane 497 Chung Cheng RD
Hsin Tien Dist New Taipei 231
Phone : 886 2 6629 5815
Fax : 886 2 6629 5818

Malaysia Production and R & D Center

Suite 3.02, 3rd Floor, Dataran Hamodal, Block A
No. 4, Jalan Bersatu 13/4, Sec. 13, 46200
Petaling Jaya Selangor
Phone: 6 03 7954 2493 Fax: 6 03 7954 2494

#

Enclosures

Miscellaneous ID 07-02

Unipower LLC

Dummy Load List

Joe&Frank 12/15/'21

Model Name : AL-070U-S1, AL-070U-S5, AL-070U-T125;
AL-085U-S1, AL-085U-S5, AL085U-Q1245

Vendor	Model/Series	Remark
Green Cubes Technology		

Enclosures

Miscellaneous ID 07-02

Dummy Load List			
Model	Part	Value	Wattage
AL-070U-S1	R18	15 Ω	5W
	C13	47 Ω	2W
AL-070U-S5	R18	1.5K Ω	5W
AL-070U-T125	R17	240 Ω	2W
	R19	47 Ω	2W
	R21	3.6K Ω	2W
AL-085U-S1	N/A	N/A	N/A
AL-085U-S5	N/A	N/A	N/A
AL-085U-Q1245	C15	150 Ω	2W
	R20	150 Ω	2W
	R23	36 Ω	2W
	R25	680 Ω	2W
	R27	1.8K Ω	5W

Enclosures

Marking Plate ID 13-01

THE POWER SOLUTION[®]

MODEL: AL-070U-T122-145 (F)

INPUT AC: 100-240V, 47-63Hz, 2A

OUTPUT DC: +5V/7.5A, +12V/2.5A

-12V/0.65A

MAX:70W

Power Solutions

A Unipower LLC business (G)

THE POWER SOLUTION[®]

MODEL: AL-085U-T122-916 (F)

INPUT AC: 100-240V, 47-63Hz, 3.15A

OUTPUT DC: +5V/10A, +12V/4A

-12V/1.5A

MAX:85W

Power Solutions

A Unipower LLC business (G)