ilac-MRA CNAS 中国认可 国际互认 检测 TESTING CNAS L5775	**Test Report issued under the responsibility of:** GTS

TEST REPORT
IEC 61347-2-13
Part 2: Particular requirements:
Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules

Report Number..... :	GTS202209000207S01
Date of issue ..... :	2022-11-22
Total number of pages ..... :	163 (total)
Testing Laboratory ..... :	**Global United Technology Services Co., Ltd.**
Address.....:	No.123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China
Applicant's name..... :	EMPIRE OF LIGHT PTY LTD
Address ..... :	8 Rowany Cl, Bonnyrigg, 2177, NSW, Australia.
Test specification:	
Standard ..... :	IEC 61347-2-13:2014/AMD1:2016 used in conjunction with IEC 61347-1:2015, AMD1:2017, AS/NZS 61347-2-13:2018, AS/NZS 61347-1:2016/Amdt1:2018
Test procedure..... :	Test report
Non-standard test method……..:	N/A
Test Report Form No. ..... :	IEC61347_2_13G
Test Report Form(s) Originator.... :	Intertek Semko AB
Master TRF ..... :	2017-12-01

Eleven Yang
Project Engineer

Robinson Luo
Technical Director
Safety Laboratory

Test item description..... :	LED POWER SUPPLY
Trade Mark..... :	CERIAN
Manufacturer..... :	Same as applicant.
Address ..... :	Same as applicant.
Model/Type reference..... :	See “**General product information”**
Ratings..... :	Input: 220-240VAC; 50/60Hz; See “**General product information”** Output : See “**General product information”**

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

Attachments No.1: Test report for Heating test;

Attachments No. 2: Test report for IEC 60598-1:2014

Attachment No.3:

Test report for Australia and New Zealand national differences for standard AS/NZS 61347-2-13:2018, AS/NZS 61347-1:2016/Amdt1:2018

Attachment No.4: Photographs of the items tested.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
IEC 61347-1:2015 IEC 61347-1:2015/AMD1:2017 IEC 61347-2-13:2014 IEC 61347-2-13:2014/AMD1:2016 AS/NZS 61347-2-13:2018, AS/NZS 61347-1:2016 /Amdt1:2018 The submitted samples were found to comply with the above specification.	No.123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China

Summary of compliance with National Differences:

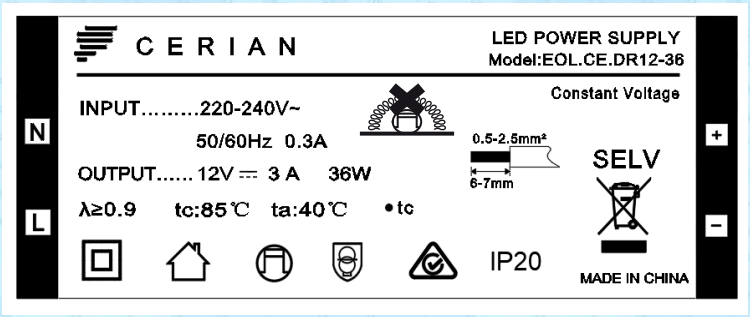
List of countries addressed: - AS/NZS.

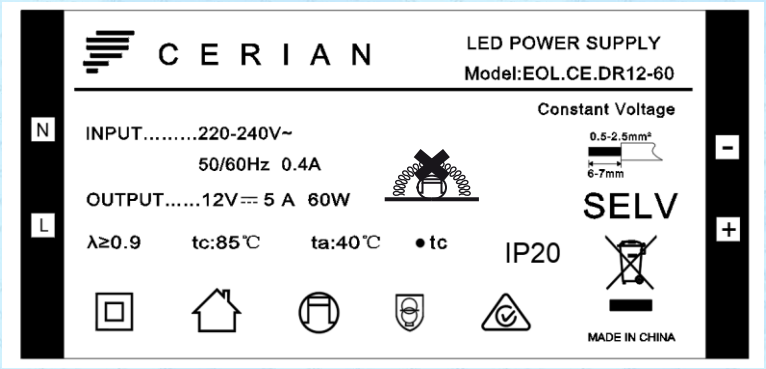
☒ The product fulfils the requirements of below standards:

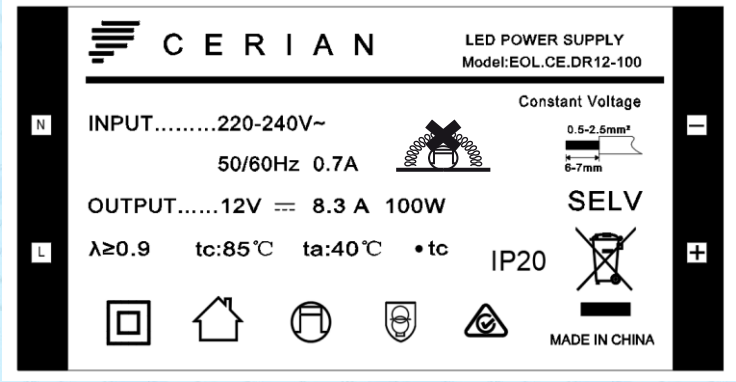
AS/NZS 61347-2-13:2018, AS/NZS 61347-1:2016/Amdt1:2018

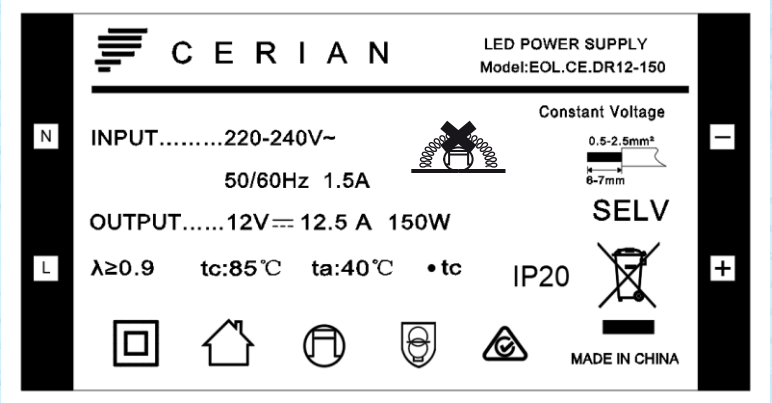
Copy of marking plate

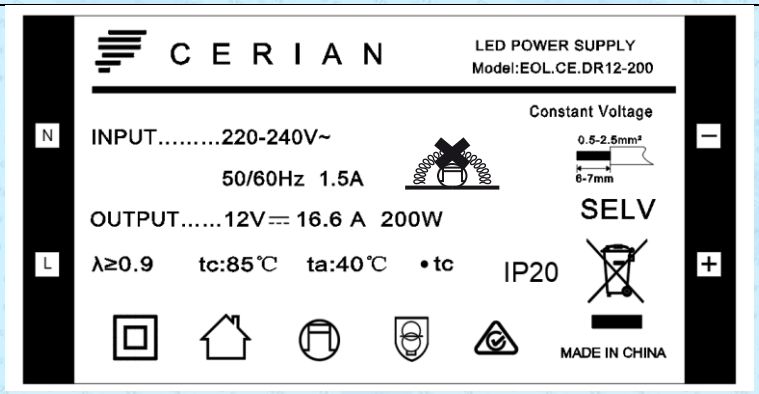
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

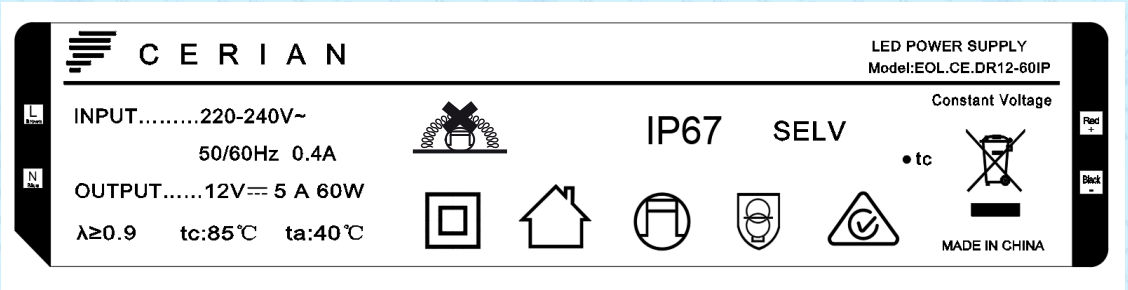












Remark: (height of CE mark at least 5mm, height of WEEE mark at least 7mm, height of letters and numerals at least 2mm, height of other marks at least 5mm)

Test item particulars.....:	LED POWER SUPPLY
Classification of installation and use.....:	Independent
Supply connection .....:	Terminal and power cord with plug
Protection against electric shock.....:	Class II; SELV
Type of output.....:	Constant voltage type
Degree of protection.....:	IP20 and IP67 (See “General product information”)
ta.....:	40°C
tc .....:	85°C
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing:	
Date of receipt of test item.....:	2022-10-05
Date (s) of performance of tests .....:	2022-10-05 to 2022-11-21
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. **Throughout this report a ☒ comma / ☐ point is used as the decimal separator.** **Clause numbers between brackets refer to clauses in IEC 61347-1**	
Manufacturer’s Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	EMPIRE OF LIGHT PTY LTD 8 Rowany Cl, Bonnyrigg, 2177, NSW, Australia.

General product information:

- These LED drivers are suitable for operation with LED modules only

Model list :

Input: 220-240VAC; 50/60Hz; ta: 40°C, tc: 85°C

Model No	Input current(A)	Output voltage (V)	Output current(A)	Output Power(W)	Transformer	PCB Layout	Degree of protection
EOL.CE.DR12-36	0.3	12	3	36	14GP1133	Layout 1	IP20
EOL.CE.DR24-36	0.3	24	1.5	36			
EOL.CE.DR12-60	0.4	12	5	60	14GP0745	Layout 2	IP20
EOL.CE.DR24-60	0.4	24	2.5	60			
EOL.CE.DR12-100	0.7	12	8.33	100	14GP0957	Layout 3	IP20
EOL.CE.DR24-100	0.7	24	4.16	100			
EOL.CE.DR12-150	1.5	12	12.5	150	14GP0970	Layout 4	IP20
EOL.CE.DR24-150	1.5	24	6.25	150			
EOL.CE.DR12-200	1.5	12	16.67	200			
EOL.CE.DR24-200	1.5	24	8.33	200			
EOL.CE.DR12-60IP	0.4	12	5	60	14GP1231	Layout 5	IP67
EOL.CE.DR24-60IP	0.4	24	2.5	60			

There are 5 kinds of PCB layout and 5 kinds of transformer used for above series, the models in each series have the same layout and construction, except that specifications of some components are different.

For all models, reinforced insulation is maintained between live parts (L/N) and SELV parts (output circuit)/ enclosure.

Unless otherwise specified, the models EOL.CE.DR12-36, EOL.CE.DR12-60, EOL.CE.DR12-100, EOL.CE.DR12-150, EOL.CE.DR12-200 and EOL.CE.DR12-60IP were chosen as representative models to perform all tests.

Warnings:

When installing the LED driver and making input and output connections, cross-section area of conductor and wire preparation see ‘Copy of marking plate’ for details.

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	**GENERAL REQUIREMENTS**		—
- (4)	Insulation materials for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of independent controlgear enclosure with IEC 60598-1		P
- (4)	Built-in electronic controlgear with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	SELV controlgear comply with Annex I of this part 2 and Annex L of IEC 61347-1	(see Annex L)	P
4 (-)	Transformer comply with IEC 61558		P
	Dielectric strength test of insulated winding wires is limited to 3 kV if input voltage ⩽ 300 V		P
6 (6)	**CLASSIFICATION**		—
	Built-in controlgear ..... :	Yes ☐ No ☒	—
	Independent controlgear..... :	Yes ☒ No ☐	—
	Integral controlgear ..... :	Yes ☐ No ☒	—
6 (-)	Auto-wound controlgear ..... :	Yes ☐ No ☒	—
	Separating controlgear ..... :	Yes ☐ No ☒	—
	Isolating controlgear ..... :	Yes ☐ No ☒	—
	SELV controlgear ..... :	Yes ☒ No ☐	—
7 (7)	**MARKING**		—
7.1 (7.1)	**Mandatory markings**		P
	a) mark of origin	CERIAN	P
	b) model number or type reference	See the page 2 for details	P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	220-240VAC	P
	supply frequency (Hz)	50/60Hz	P
	supply current (A)	See the page 2 for details	P
	f) earthing symbol		N/A
	k) wiring diagram		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	l) value of t_c	85°C	P
	m) symbol for declared temperature		N/A
	t) LUM earthing symbol		N/A
	u) if not SELV maximum working voltage U_{out} between:		N/A
	- output terminals (V) ..... :		N/A
	- output terminals and earth (V) ..... :		N/A
7.1 (-)	Constant voltage type:	Yes ☒ No ☐	—
	- rated output power P_{rated} (W) ..... :	See the page 2 for details	P
	- rated output voltage U_{rated} (V) ..... :	See the page 2 for details	P
	Constant current type:	Yes ☐ No ☒	—
	- rated output power P_{rated} (W) ..... :		N/A
	- rated output current I_{rated} (A) ..... :		N/A
	Indication if for LED modules only	LED power supply	P
7.1 (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P
7.2 (7.1)	**Information to be provided, if applicable**		P
	h) declaration on protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)	For LED modules use only	P
	s) SELV symbol		P
7.2 (-)	- declaration of mains connected windings		N/A

8 (10)	**PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS**		—
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 kΩ	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 µF: voltage after 1 min (V): < 50 V ..... :	0V after 1s	P
- (10.3)	**Controlgear providing SELV**		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	No connection between output circuit and the body or protective earthing circuit		P
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		P
	SELV outputs separated by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1		P
- (10.4)	**Accessible conductive parts in SELV circuits**		P
	Output voltage under load ≤ 25 V r.m.s. or ≤ 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ..... :		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	Y1 capacitor used	P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A

9 (8)	**TERMINALS**		—
- (8.1)	**Integral terminals**		**P**
	Screw terminals according section 14 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		P
	Separately approved; component list	(see Annex 1)	P
	Part of the controlgear	(see Annex 3)	N/A
- (8.2)	**Terminals other than integral terminals**		**N/A**
	Comply with relevant IEC standard	(see Annex 1)	N/A
	Suit the conditions		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Satisfy additional relevant requirements of this standard		N/A
10 (9)	**PROVISION FOR PROTECTIVE EARTHING**		—
- (9.1)	**Provisions for protective earthing**		N/A
	Terminal complying with clause 8		N/A
	Locked against loosening and not possible to loosen by hand		N/A
	Not possible to loosen clamping means unintentionally on screwless terminals		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A
	Contact surface bare metal		N/A
	Test according 7.2.3 of IEC 60598-1		N/A
- (9.2)	**Provision for functional earthing**		N/A
	Comply with clause 8 and 9.1		N/A
	Functional earth insulated from live parts by double or reinforced insulation		N/A
- (9.3)	**Lamp controlgear with conductors for protective earthing by tracks on printed circuit board**		N/A
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
- (9.4)	**Earthing of built-in lamp controlgear**		N/A
	Earth by means of fixing to earthed metal of luminaire in compliance of 7.2 of IEC 60598-1		N/A
	Earthing terminal only for earthing the built-in controlgear		N/A
- (9.5)	**Earthing via independent controlgear**		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	Looping or through connection, conductor min. 1,5 mm² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: < 0,5 Ω ..... :		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A
11 (11)	**MOISTURE RESISTANCE AND INSULATION**		—
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		P
	For basic insulation ≥ 2 MΩ ..... :	100MΩ	P
	For double or reinforced insulation ≥ 4 MΩ ..... :	100MΩ	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		P
12 (12)	**ELECTRIC STRENGTH**		—
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, 2U + 1000 V	1480V	P
	Supplementary insulation, 2U + 1000 V	1480V	P
	Double or reinforced insulation, 4U + 2000 V	2960V	P
	No flashover or breakdown		P
	Solid or thin sheet insulation for double or reinforced insulation fulfil the requirements in Annex N in IEC 61347-1		P
14 (14)	**FAULT CONDITIONS**		—
- (14.1)	When operated under fault conditions the controlgear:		P
	- does not emit flames or molten material		P
	- does not produce flammable gases		P
	- protection against accidental contact not impaired		P
	Thermally protected controlgear does not exceed the marked temperature value		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.2)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	P
- (14.5)	Short-circuit across electrolytic capacitors	(see appended table)	P
	Short-circuit or interruption of SPDs	(see appended table)	N/A
14 (-)	Reversed voltage polarity if d.c. supplied control gear	(see appended table)	N/A
- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance ≥ 1 MΩ ..... :	100MΩ	P
	No flammable gases		P
	No accessible parts have become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
- (14.7)	Relevant fault condition tests with high-power supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A
15 (-)	**TRANSFORMER HEATING**		—
15.1	**General**		P
	Transformer comply with clause L.6 and L.7 of IEC 61347-1		P
	Output voltage of SELV controlgear not exceed limits in 10.4 of IEC 61347-1 during the test of 15.1 and 15.2		P
15.2 (-)	**Normal operation**		P
	Comply with clause L.6 of IEC 61347-1	(see attachment No. 1)	P
15.3 (-)	**Abnormal operation**		P
	Comply with clause L.7 of IEC 61347-1	(see attachment No. 1)	P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Double LED modules or equivalent load connected in series to the output terminals of constant current type	(see attachment No. 1)	P
15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P
16 (15)	**CONSTRUCTION**		—
- (15.1)	**Wood, cotton, silk, paper and similar fibrous material**		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	**Printed circuits**		P
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	**Plugs and socket-outlets used in SELV or ELV circuits**		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	**Insulation between circuits and accessible parts**		P
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		P
	- another source		N/A
	Voltage in the circuit not higher than ELV		P
	SELV circuits insulated from LV by double or reinforced insulation		P
	SELV circuits insulated from non SELV circuits by double or reinforced insulation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		N/A
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		P
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		P
	Requirements for Class II construction with equipotential bonding for protection against indirect contact with live parts:		N/A
	- all conductive parts are connected together		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- conductive parts are reliably connected together according test of IEC 60598-1 cl. 7.2.3		N/A
	- conductive parts comply with requirements of Annex A in case of insulation fault		N/A
17 (16)	**CREEPAGE DISTANCES AND CLEARANCES**		—
- (16)	Creepage distances and clearances according to 16.2 and 16.3	(see appended table)	P
	Controlgears providing SELV comply with additional requirements in Annex L		P
	Insulating lining of metallic enclosures		N/A
	Controlgear protected against pollution comply with Annex P	(see Annex P)	N/A
- (16.2)	**Creepage distances**		P
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	**Clearances**		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A
18 (17)	**SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS**		—
	Screws, current-carrying parts and connections in compliance with IEC 60598-1 (clause numbers between parentheses refer to IEC 60598-1)		P
(4.11)	**Electrical connections**		P
(4.11.1)	Contact pressure		P
(4.11.2)	**Screws:**		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
(4.11.3)	**Screw locking:**		N/A
	- spring washer		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		P
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		N/A
(4.12)	**Mechanical connections and glands**		P
(4.12.1)	Screws not made of soft metal		P
	Screws of insulating material		N/A
	Torque test: torque (Nm); part .....:	For Layout 3 model: Screw fixing cord anchorage: 0,4Nm	P
	Torque test: torque (Nm); part .....:		N/A
(4.12.2)	Screws with diameter < 3 mm screwed into metal		N/A
(4.12.4)	**Locked connections:**		N/A
	- fixed arms; torque (Nm) .....:		N/A
	- lampholder; torque (Nm) .....:		N/A
	- push-button switches; torque 0,8 Nm .....:		N/A
(4.12.5)	Screwed glands; force (Nm) .....:		N/A

19 (18)	**RESISTANCE TO HEAT, FIRE AND TRACKING**		—
- (18.1)	Ball-pressure test .....:	See Test Table 19 (18.1)	P
- (18.2)	Test of printed boards .....:	See Test Table 19 (18.2)	N/A
- (18.3)	Glow-wire test .....:	See Test Table 19 (18.3)	P
- (18.4)	Needle flame test .....:	See Test Table 19 (18.4)	P
- (18.5)	Tracking test .....:	See Test Table 19 (18.5)	N/A

20 (19)	**RESISTANCE TO CORROSION**		—
	- test according 4.18.1 of IEC 60598-1		N/A
	- adequate varnish on the outer surface		N/A

21 (-)	**MAXIMUM WORKING VOLTAGE (U_{out}) IN ANY LOAD CONDITION**		—
	Not exceed declared maximum working voltage U_{out} in any load condition		P

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Clause	Requirement + Test	Result - Remark	Verdict

14	TABLE: tests of fault conditions	P
Part	Simulated fault	Hazard
Model No: EOL.CE.DR12-36, EOL.CE.DR24-36 Layout 1		
D1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C10	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C6	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (1-4)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (2-3)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (8-10)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q1 (G-S)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (G-D)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (D-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U2 (1-2)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U2 (3-4)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U1(VCC-GND)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
R5	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
C11	220-240V; short-circuited; unit shut down, can be recoverable.	NO
D11	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Output	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Model No: EOL.CE.DR12-60, EOL.CE.DR24-60 layout 2		
D1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C10	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C4	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (1-4)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (2-3)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (8-10)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q1 (G-S)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (G-D)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (D-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U3 (1-2)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U3 (3-4)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U1(VCC-GND)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
R5	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
C11	220-240V; short-circuited; unit shut down, can be recoverable.	NO

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Clause	Requirement + Test	Result - Remark	Verdict

D19	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Output	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Model No: EOL.CE.DR12-100, EOL.CE.DR24-100 layout 3		
VR1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
DB1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (1-4)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (2-3)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (8-10)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q1 (G-S)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (G-D)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (D-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
P1 (1-2)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
P1 (3-4)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U4(VCC-GND)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
C7	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q5(G-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Output	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Model No: EOL.CE.DR12-150 (150W), EOL.CE.DR12-200 (200W) layout 4		
VR1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
DB1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (1-4)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (2-3)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (8-10)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q1 (G-S)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (G-D)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (D-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
P1 (1-2)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
P1 (3-4)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U4(VCC-GND)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
C7	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q5(G-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO

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Clause	Requirement + Test	Result - Remark	Verdict

Output	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Model No: EOL.CE.DR12-60IP, EOL.CE.DR24-60IP layout 5		
D1	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C10	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
C4	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (1-4)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (2-3)	220-240V; short-circuited; unit shut off, Fuse resistor (F1) open immediately.	NO
T1 (8-10)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Q1 (G-S)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (G-D)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
Q1 (D-S)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U3 (1-2)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U3 (3-4)	220-240V; short-circuited; unit shut down, can be recoverable.	NO
U1(VCC-GND)	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
R5	220-240V; short-circuited; unit shut off, fuse (F1) open immediately.	NO
C11	220-240V; short-circuited; unit shut down, can be recoverable.	NO
D20	220-240V; short-circuited; unit shut down, can be recoverable.	NO
Output	220-240V; short-circuited; unit shut down, can be recoverable.	NO

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Clause	Requirement + Test	Result - Remark	Verdict

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Model No: EOL.CE.DR12-36, EOL.CE.DR24-36 Layout 1							
Distance 1:	B	3.1	1,5	9	3.1	2,41	7
Distance 2:	B	2.7	1,5	9	2.7	2,41	7
Distance 3:	R	6.1	3,0	9	6.1	4,82	7
Distance 4:	R	7.7	3,0	9	7.7	4,82	7
Distance 5:	R	6.8	3,0	9	6.8	4,82	7
Distance 6:	R	6.9	3.0	9	6.9	4.82	7
Distance7:	R	8,0	3,0	9	8,0	4,82	7
Working voltage (V) ..... :					240VAC		—
Frequency if applicable (kHz) ..... :					15kHz (for distance 3&4) 50/60Hz for others		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—

Supplementary information:

Distance 1: Different polarities of live parts;
Distance 2: Two ends of fuse;
Distance 3: Transformer T1 primary coil&core to secondary pin;
Distance 4: Primary to secondary track under transformer T1;
Distance 5: Two ends of capacitor (Y-cap:C32);
Distance 6: Optocoupler (U2) primary and secondary;
Distance 7: Live parts to accessible parts.

Remark: minimum measured value recorded

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Model No: EOL.CE.DR12-60, EOL.CE.DR24-60 layout 2							
Distance 1:	B	2.7	1,5	9	2.7	2,41	7
Distance 2:	B	2.7	1,5	9	2.7	2,41	7
Distance 3:	R	8.5	3,0	9	8.5	4,82	7
Distance 4:	R	9.8	3,0	9	9.8	4,82	7
Distance 5:	R	7.0	3,0	9	7.0	4,82	7
Distance 6:	R	6.7	3.0	9	6.7	4.82	7
Distance 7:	R	4.0	3.0	9	6.0	4.82	7
Distance 8:	R	7.0	3,0	9	7.0	4,82	7
Working voltage (V) ..... :					240VAC		—
Frequency if applicable (kHz) ..... :					16.5kHz (for distance 3&4) 50/60Hz for others		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—
Supplementary information: Distance 1: Different polarities of live parts; Distance 2: Two ends of fuse; Distance 3: Transformer T1 primary coil&core to secondary pin; Distance 4: Primary to secondary track under transformer T1; Distance 5: Two ends of capacitor (Y-cap:C32); Distance 6: Optocoupler (U3) primary and secondary Distance 7:core to Sec. components(C7) ; Distance 8: Live parts to accessible parts.							
Remark: minimum measured value recorded ** Insulation type: B – Basic; S – Supplementary; R – Reinforced							

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Model No: EOL.CE.DR12-100, EOL.CE.DR24-100 layout 3							
Distance 1:	B	3.6	1,5	9	3.6	2,41	7
Distance 2:	B	3.1	1,5	9	3.1	2,41	7
Distance 3:	R	8.0	3,0	9	8.0	4,82	7
Distance 4:	R	7.0	3,0	9	7.0	4,82	7
Distance 5:	R	6.8	3,0	9	6.8	4,82	7
Distance 6:	R	6.9	3.0	9	6.9	4.82	7
Distance 7:	R	>6.0	3.0	9	>6.0	4.82	7
Distance 8:	R	>6.5	3.0	9	>6.5	4.82	7
Distance 9:	R	6.8	3,0	9	6.8	4,82	7
Working voltage (V) ..... :					240VAC		—
Frequency if applicable (kHz) ..... :					18,56kHz (for distance 3&4) 50/60Hz for others		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—

Supplementary information:

Distance 1: Different polarities of live parts;
Distance 2: Two ends of fuse;
Distance 3: Transformer T1 primary coil&core to secondary pin;
Distance 4: Primary to secondary track under transformer T1;
Distance 5: Two ends of capacitor (CY3);
Distance 6: Optocoupler (P1) primary and secondary
Distance 7: Pri. Heat sink to Sec. components ;
Distance 8: Sec. Heat sink to Pri. components ;
Distance 9: Live parts to accessible parts.

Remark: minimum measured value recorded

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Model No: EOL.CE.DR12-150 (150W), layout 4							
Distance 1:	B	2.6	1,5	9	2.6	2,41	7
Distance 2:	B	2.5	1,5	9	2.5	2,41	7
Distance 3:	R	5.5	3,0	9	5.5	4,82	7
Distance 4:	R	8.4	3,0	9	8.4	4,82	7
Distance 5:	R	6.7	3,0	9	6.7	4,82	7
Distance 6:	R	5.0	3,0	9	5.0	4,82	7
Distance 7:	R	6.9	3.0	9	6.9	4.82	7
Distance 8:	R	5.1	3.0	9	5.1	4.82	7
Distance 9:	R	5.0	3.0	9	5.0	4.82	7
Distance 10:	R	7.2	3,0	9	7.2	4,82	7
Working voltage (V) ..... :					240VAC		—
Frequency if applicable (kHz) ..... :					12,42kHz (for distance 3&4) 50/60Hz for others		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—

Supplementary information:

Distance 1: Different polarities of live parts;
Distance 2: Two ends of fuse;
Distance 3: Transformer T1 primary coil&core to secondary pin;
Distance 4: Primary to secondary track under transformer T1;
Distance 5: Two ends of capacitor (CY4);
Distance 6: Two ends of capacitor (CY1&CY2)
Distance 7: Optocoupler (U3) primary and secondary
Distance 8: Sec. Heat sink (on PCB) to Pri. components ;
Distance 9: Sec. Heat sink (Bottom) to Pri. components ;
Distance 10: Live parts to accessible parts.

Remark: minimum measured value recorded

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Model No: EOL.CE.DR12-200 (200W) layout 4							
Distance 1:	B	2.6	1,5	9	2.6	2,41	7
Distance 2:	B	2.5	1,5	9	2.5	2,41	7
Distance 3:	R	>8.0	3,0	9	>8.0	4,82	7
Distance 4:	R	8.4	3,0	9	8.4	4,82	7
Distance 5:	R	6.7	3,0	9	6.7	4,82	7
Distance 6:	R	5.0	3,0	9	5.0	4,82	7
Distance 7:	R	6.9	3.0	9	6.9	4.82	7
Distance 8:	R	5.1	3.0	9	5.1	4.82	7
Distance 9:	R	5.0	3.0	9	5.0	4.82	7
Distance 10:	R	7.2	3,0	9	7.2	4,82	7
Working voltage (V) ..... :					240VAC		—
Frequency if applicable (kHz) ..... :					21.3kHz (for distance 3&4) 50/60Hz for others		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—

Supplementary information:

Distance 1: Different polarities of live parts;
Distance 2: Two ends of fuse;
Distance 3: Transformer T1 primary coil&core to secondary pin;
Distance 4: Primary to secondary track under transformer T1;
Distance 5: Two ends of capacitor (CY4);
Distance 6: Two ends of capacitor (CY1&CY2)
Distance 7: Optocoupler (U3) primary and secondary
Distance 8: Sec. Heat sink (on PCB) to Pri. components ;
Distance 9: Sec. Heat sink (Bottom) to Pri. components ;
Distance 10: Live parts to accessible parts.

Remark: minimum measured value recorded

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

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Clause	Requirement + Test	Result - Remark	Verdict

17 (16)	TABLE: clearance and creepage distance measurements (mm)						P
Applicable part of IEC 61347-1 Table 7 – 11*							
Distances	**Insulation type ****	**Measured clearance**	**Required**		**Measured creepage**	**Required**	
			clearance	***Table**		**creepage**	***Table**
Model No: EOL.CE.DR12-60IP, EOL.CE.DR24-60IP layout 5							
Distance 1:	B	5.0	1,5	9	5.0	2,41	7
Distance 2:	B	2.8	1,5	9	2.8	2,41	7
Distance 3:	R	8.5	3,0	9	8.5	4,82	7
Distance 4:	R	6.7	3,0	9	6.7	4,82	7
Distance 5:	R	6.7	3,0	9	6.7	4,82	7
Distance 6:	R	6.7	3.0	9	6.7	4.82	7
Distance 7:	R	>8.0	3,0	9	>8.0	4,82	7
Working voltage (V) ..... :					240VAC		—
Frequency if applicable (kHz) ..... :					15.5kHz (for distance 3&4) 50/60Hz for others		—
PTI ..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :					--		—
Pulse voltage if applicable (kV) ..... :					--		—

Supplementary information:

Distance 1: Different polarities of live parts;
Distance 2: Two ends of fuse;
Distance 3: Transformer T1 primary coil&core to secondary pin;
Distance 4: Primary to secondary track under transformer T1;
Distance 5: Two ends of capacitor (Y-cap:C32);
Distance 6: Optocoupler (U3) primary and secondary;
Distance 7: Live parts to accessible parts.

Remark: minimum measured value recorded

** Insulation type: B – Basic; S – Supplementary; R – Reinforced

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18.1)	TABLE: Ball Pressure Test		P
Allowed impression diameter (mm) .....:		2	—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)
Enclosure	See ANNEX 1	125,0	1,0
Transformer bobbin	See ANNEX 1	130.0	0,8
Terminal	See ANNEX 1	125	0.9
Supplementary information:			

19(18.2)	TABLE: Test of printed boards				—
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
-	-	-	-	-	-
Supplementary information:					

19 (18.3)	TABLE: Glow-wire test			P
Glow wire temperature.....:		See below		—
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Enclosure	See ANNEX 1	No	0	P
Supplementary information:--				

19 (18.4)	TABLE: Needle-flame test				P
Object/ Part No./ Material	Manufacturer/ trademark	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Transformer bobbin	See ANNEX 1	10	No	0	P
PCB	See ANNEX 1	10	No	0	P
Terminal	See ANNEX 1	10	No	0	P
Supplementary information:					

19 (18.5)	TABLE: Proof tracking test	—
Test voltage PTI ..... :	175 V	—

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Clause	Requirement + Test	Result - Remark	Verdict

Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
—	—	—	—	—	—
Supplementary information:					

(A)	**ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK**		—
(A.1)	Comply with A.2 or A.3		P
(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c .....:	Max. 24.3V(all models constant voltage)	P
(A.3)	If voltage > 35 V peak or > 60 V d.c. ; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .....:		N/A
	Comply with Annex G of IEC 60598-1		N/A

(C)	**ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING**		—
(C3)	**GENERAL REQUIREMENTS**		N/A
(C3.1)	Thermal protection means integral with the convertor, protected against mechanical damage		N/A
	Renewable only by means of a tool		N/A
	If function depending on polarity, for cord-connected equipment protection means in both leads		N/A
	Thermal links comply with IEC 60691		N/A
	Electrical controls comply with IEC 60730-2-3		N/A
(C3.2)	No risk of fire by breaking (clause C7)		N/A
(C5)	**CLASSIFICATION**		N/A
	a) automatic resetting type		—
	b) manual resetting type		—
	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description ..:		N/A
(C6)	**MARKING**		N/A
(C6.1)	Symbol for temperature declared thermally protected ballasts		N/A
(C6.2)	Declaration of the type of protection provided		N/A
(C7)	**LIMITATION OF HEATING**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(C7.1)	**Preselection test:**		N/A
	Test sample placed for at least 12 h in an oven having temperature (t_c - 5) K		N/A
	No operation of the protection device		N/A
(C7.2)	**Functioning of protection means:**		N/A
	Normal operation of the sample in a test enclosure according to Annex D at an ambient temperature such that (t_c +0; -5) °C is obtained		N/A
	No operation of the protection device		N/A
	Introducing of the most onerous test condition determined during test of clause 14.2 to 14.5		N/A
	Output of windings connected to the mains supply short-circuited, and other part of the convertor operated under normal conditions		N/A
	Increasing of the current through the windings continuously until operation of the protection means		N/A
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Ballasts according to C5 b) working 6 times		N/A
	Ballasts according to C5 c) and C5) d) working once		N/A
	Highest temperature does not exceed the marked value		N/A
	Any overshoot of 10% over the marked value within 15 min		N/A
	After 15 min value not exceed marked value		N/A

(D)	**ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR**		—
	Tests in C7 performed in accordance with Annex D, if applicable		N/A

(F)	**ANNEX F - DRAUGHT-PROOF ENCLOSURE**		—
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Other design; description		N/A
(H)	**ANNEX H - TESTS**		—
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	**ANNEX I: PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES**		—
(L.3)	**Classification**		P
	Class I	Yes ☐ No ☒	—
	Class II	Yes ☒ No ☐	—
	Class III	Yes ☐ No ☒	—
	non-inherently short circuit proof controlgear	Yes ☒ No ☐	—
	inherently short circuit proof controlgear	Yes ☐ No ☒	—
	fail safe controlgear	Yes ☐ No ☒	—
	non-short-circuit proof controlgear	Yes ☐ No ☒	—
(L.4)	**Marking**		P
	Adequate symbols are used		P
(L.5)	**Protection against electric shock**		P
	Comply with 9.2 of IEC 61558-1		P
(L.6)	**Heating**		P
	No excessive temperatures in normal use	(see attachment No. 1)	P
	Value if capacitor t_c marked .....:	Y capacitor: 125°C X capacitor: 100°C	—
	Winding insulation classified as Class .....:	Class 130 (B)	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
(L.7)	**Short-circuit and overload protection**		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments	(see attachment No. 1)	P
(L.8)	**Insulation resistance and electric strength**		P
(L.8.1)	Conditioned 48 h between 91 % and 95 %		P
(L.8.2)	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ .....:	100MΩ	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ .....:		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ .....:		N/A
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits .....:	3000V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity .....:	1500V	P
	b) live parts and body if intended to be connected to protective earth .....:		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord .....:	1500V	P
	d) live parts and an intermediate metal part .....:		N/A
	e) intermediate metal parts and the body .....:		N/A
	f) each input circuit and all other input circuits ....:		N/A
	3) Over reinforced insulation between the body and live parts .....:	3000V	P
(L.9)	**Construction**		P
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	**Components**		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	**Creepage distances, clearances and distances through insulation**		**P**
	Creepage distances and clearances not less than in Clause 16		P
	Distance through insulation according Table L.5 in IEC 61347-1		P
	1) Basic distance through insulation		N/A
	Required distance (mm) .....:		—
	Measured (mm) .....:		N/A
	Supplementary information		N/A
	2) Supplementary distance through insulation		N/A
	Required distance (mm) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Measured (mm) .....:		N/A
	Supplementary information		N/A
	3) Reinforced distance through insulation		N/A
	Required distance (mm) .....:	1. 0,17 2. 0,83	—
	Measured (mm) .....:	1. 0,2 2. 1,5	P
	Supplementary information	1. models: insulation tape (4layers) between transformer core and output (selv) circuit track 2.For all models: enclosure	P
J (-)	**ANNEX J IN THIS PART 2 – PARTICULAR ADDITIONAL SAFETY REQUIREMENTS FOR A.C., A.C./D.C. OR D.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR EMERGENCY LIGHTING**		—
J.1	**General**		N/A
	Intended for centralized emergency power supply	Yes ☐ No ☐	—
J.2	**Marking**		N/A
J.2.1	Mandatory markings		N/A
	a) symbol EL		N/A
	b) rated emergency supply voltage (V)		N/A
J.2.2	Information to be provided if applicable		N/A
	a) Limits of ambient temperature		N/A
	b) Emergency output factor (EOF_X)		N/A
	c) Information if intended for use in luminaires for high-risk task area lighting		N/A
J.3	General notes on tests		N/A
	Length of output cable in tests.....:		N/A
	Load instead of LED lamps/modules.....:		N/A
J.4	Starting conditions		N/A
	Start rated load in emergency mode without adversely affecting the performance		N/A
J.5	Operating condition		N/A
	Comply with the requirements of 7.2 of IEC 62384 at 90% and 110% of rated emergency supply voltage		N/A
J.6	Emergency supply current		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Emergency supply current not differ more than ±15 %		N/A
	Supply of low impedance and low inductance		N/A
J.7	EMC immunity		N/A
	Comply with the requirements of IEC 61547		N/A
J.8	Pulse voltage from central battery systems		N/A
	Withstand pulses according Table J.1		N/A
J.9	Tests for abnormal conditions		N/A
	Comply with the requirements of 12 of IEC 62384		N/A
J.10	Comply with the requirements of 13 of IEC 62384		N/A
J.11	Functional safety (EOF_x)		N/A
	Declared emergency output factor (EOF_x) achieved during emergency operation		N/A
(N)	**ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION** Remark: For LF-AAD040-1050-42 model		—
(N.4)	**General requirements**		P
(N.4.1)	Material comply with IEC 60085 and IEC 60216 series		N/A
(N.4.2)	**Solid insulation**		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
(N.4.3)	**Thin sheet insulation**		P
(N.4.3.1)	Thickness and composition of thin sheet insulation		P
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		P
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		N/A
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A
	- Separated layers (alternative): Min. 3 layers and 2/3 of the layers fulfil mandrel test of 100N		P
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		P
	Electric strength test after mandrel test:		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		N/A
	- 2/3 of min. 3 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1	5000V	P
	- one of 2 separated layers: min. 5 kV or 1,25 x test voltage in Table N.1		N/A
	No flashover or breakdown occurred		P
(O)	**ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION**		—
(O.6)	**Marking**		N/A
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
(O.7)	**Protection against accidental contact with live parts**		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
(O.8)	**Terminals**		N/A
	Clause 9 (8)	See clause 9	N/A
(O.9)	**Provision for earthing**		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
(O.10)	**Moisture resistance and insulation**		N/A
	Clause 11 (11)	See clause 11	N/A
(O.11)	**Electric strength**		N/A
	Clause 12 (12)	See clause 12	N/A
(O.13)	**Fault conditions**		N/A
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

(O.14)	**Construction**		N/A
	Clause 17 (15)	See clause 17	N/A
	Accessible metal parts insulated from live parts by double or reinforced insulation		N/A
	Live part insulated from supporting surface in contact with external faces by double or reinforced insulation		N/A
(O.15)	**Creepage distances and clearances**		N/A
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
(O.16)	**Screws, current-carrying parts and connections**		N/A
	Clause 19 (17)	See clause 19	N/A
(O.17)	**Resistance to heat and fire**		N/A
	Clause 20 (18)	See clause 20	N/A
(O.18)	**Resistance to corrosion**		N/A
	Clause 21 (19)	See clause 21	N/A

(P)	**Creepage distances and clearances and distance through isolation (DTI) for lamp controlgear which are protected against pollution by the use of coating or potting**		—
(P.1)	**General**		N/A
	P.2 applies if creepage distances less than the minimum in Table 7 and 8		N/A
	P.3 applies if clearance less than the minimum in Table 9, 10 and 11		N/A
(P.2)	**Creepage distances**		N/A
(P.2.2)	Minimum creepage distances for working voltages and rated voltages with frequencies up to 30 kHz (Table P.1)		N/A
	Basic or supplementary insulation:		N/A
	Required creepage .....:		—
	Measured .....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Required creepage .....:		—
	Measured .....:		N/A
	Supplementary information		—

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Clause	Requirement + Test	Result - Remark	Verdict
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV .....:		—
	Frequency .....:		—
	Required distance .....:		—
	Measured .....:		N/A
	Supplementary information		—
(P.2.4)	Compliance with the required creepage distances		N/A
(P.2.4.1)	Compliance in accordance with 16.3.3 and test according P.2.4.2		N/A
(P.2.4.3)	Electrical tests after conditioning		N/A
(P.2.4.3.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3)	**Distance through isolation**		N/A
(P.3.4)	Electrical tests after conditioning		N/A
(P.3.4.1)	Insulation resistance and electric strength according Clause 11 and 12		N/A
(P.3.4.2)	Impulse voltage dielectrical test		N/A
	Basic or supplementary insulation:		N/A
	Working/rated voltage .....:		—
	Impulse voltage.....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage .....:		—
	Impulse voltage.....:		N/A
	Supplementary information		—

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1	TABLE: Critical components information					P
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
For model : EOL.CE.DR12-36, EOL.CE.DR24-36, layout 1						
Input terminal	B	TIANLI ELECTRICAL MACHINERY. (NINGBO)Co.,Ltd	TL203	250V,16A	IEC/EN 60998-2-1 IEC/EN 60998-1	VDE (40026926)
Plug	B	Ningbo Qiaopu Electrical Co., Ltd.	D05	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	SAA-170389-EA
Alternative	B	Shangyu Jintao Electrical Co., Ltd.	A2-7	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	ESO170417
Supply cord	B	Ningbo Qiaopu Electrical Co., Ltd.	H03VVH2-F2X	2*0.5mm²	AS/NZS 3191: 2008.	NSW18298
Plastic Enclosure	B	SABIC INNOVATIVE PLASTICS B V	PC 940 (f1)	V-0, 120°C, min. thickness: 1.5mm	UL94	UL (E45329) + tested with appliance
X-capacitor (C1，C2)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.22μF max, 275VAC , 40/100/21 or40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.22μF max, 250/275/300 /305/310VA C , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.22μF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.22µF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)
Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)
Fuse (F1)	B	Shanghai Fullness Electrical Co. Ltd.	TSP	250 Vac, T1.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (R 50315914)
Alternative	B	Dongguan Hongda Electronic	2009	250 Vac, T1.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40028260)
Alternative	B	Xiamen Set Electronics Co. Ltd.	SPT478	250 Vac, T1.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40049409)
Alternative	B	Dongguan Chevron Electronic	SET	250 Vac, T1.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40038565)
Alternative	B	ZHONG SHAN LANBAO ELECTRICAL APPLIANCES CO LTD	TR/TB	250 Vac, T1.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (J 50420445)
Alternative	B	Dongguan Better Electronics	932	250 Vac, T1.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40033369)

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Clause	Requirement + Test	Result - Remark	Verdict

Transformer (T2)	B	NINGHAI YINGJIAO ELECTRICAL CO., LTD.	14GP1133	Class B	IEC 61347-1 IEC61347-2-13	tested with appliance
-Bobbin	B	Chang Chun Plastics Co., Ltd.d	T375J	Phenolic, V-0, 150°C, Min thickness: 0.8mm	UL94	UL(E59481) + tested with appliance
-Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	UL510A	UL (E165111) + tested with appliance
(Alternative)	B	JINGJIANG FUWEI ADHESIVE PRODUCT CO LTD	WF101	130°C	UL510A	UL (E302608) + tested with appliance
(Alternative)	B	JINGJIANG JINGYANG INSULATING PRODUCT CO LTD	JY-133	130°C	UL510A	UL E309872 + tested with appliance
(Alternative)	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT (b)(g)	130°C	UL510A	UL E165111 + tested with appliance
-Magnet Wire	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	xUEW/155, QA-x/155	155°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	ZHEJIANG HONGBO TECHNOLOGY CO LTD	xUEW/130, QA-x/130	130°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	HUZHOU HUIFENG ELECTRICIAN TECHNOLOGY CO LTD	QA/155	155℃	UL1446	UL(E499393) + tested with appliance

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	NINGBO JINTIAN NEW MATERIAL CO LTD	xUEWN/155, QA/X-x/155	155℃	UL1446	UL(E227047) + tested with appliance
-Triple Insulation Wire	B	Great Leoflon Industrial Co., Ltd.	TRW(B)-M	130°C	IEC/EN 62368	VDE (136581)
Alternative	B	Hangzhou Fuyang Youheng Cable Co., Ltd	GY-F	155°C	IEC/EN 62368	VDE (40041248)
-Tube	B	DONGGUAN CITY CHANGJIE METALS &PLASTIC PRODUCTS CO LTD	CJ-TT-L CJ-TT-T	150V 200℃	UL510A	UL (E338209) + tested with appliance
Alternative	B	FLUO TECH INDUSTRIES CO LTD	TFT	300 V, 200°C	UL510A	UL (E175982) +tested with appliance
Varnish	B	JOHN C DOLPH CO	BC-359	155°C	UL1446	UL (E317427) + tested with appliance
Alternative	B	HANG CHEUNG COATINGS (HUIYANG) LTD	8562(a)	155°C	UL1446	UL (E200154) + tested with appliance
Alternative	B	ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD	E962	130℃	UL1446	UL (E335405) + tested with appliance
Y capacitor (C32)	B	Jya-Nay Co., Ltd.	JN	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	TUV (R 50232059)
Alternative	B	Jyh HSU(JEC) Electronic Co., Ltd.	JD	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40038642)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	CT7	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40041523)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	AR	500Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40043989)
Alternative	B	Shenzhen Teruixiang Electronic Co, Ltd.	TY	400Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40031733)
PCB	B	CHENGHUIXING ELECTRONICS (HUIZHOU) CO., LTD.	FG-109，FG-115，FG-114	V-0, 130°C	UL94	UL (E78769) + tested with appliance
Alternative	B	DONGGUAN ZHIHAN ELECTRONIC CO LTD	ZH-M, ZH-AL, ZH-D	V-0, 130°C	UL94	UL (E485751) + tested with appliance
Alternative	B	GOLDWAN ELECTRONIC LTD	GW800	V-0, 130°C	UL94	UL (E156176) + tested with appliance
Alternative	B	Wenzhou Juyi Electronic Technology Co., Ltd.	JY-D	V-0, 130°C	UL94	UL (E1492597) + tested with appliance
Alternative	B	interchangeable	interchangeable	V-0, 130°C	UL94	UL+ tested with appliance
For Model : EOL.CE.DR12-60, EOL.CE.DR24-60, layout 2						
Plug	B	Ningbo Qiaopu Electrical Co., Ltd.	D05	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	SAA-170389-EA
Alternative	B	Shangyu Jintao Electrical Co., Ltd.	A2-7	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	ESO170417
Supply cord	B	Ningbo Qiaopu Electrical Co., Ltd.	H03VVH2-F2X	2*0.5mm²	AS/NZS 3191: 2008.	NSW18298
Terminal	B	TIANLI ELECTRICAL MACHINERY. (NINGBO)Co.,Ltd	TL203	250V,16A	IEC/EN 60998-2-1 IEC/EN 60998-1	VDE (40026926)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	JIANGSU CHANGHE ELECTRONICS CO.,LTD	CA350-04-500	250V,24A	IEC/EN 60998-2-1 IEC/EN 60998-1	TUV (R50328685)
Plastic Enclosure	B	SABIC INNOVATIVE PLASTICS B V	PC 940 (f1)	V-0, 120°C, min. thickness: 1.5mm	UL94	UL (E45329) + tested with appliance
X-capacitor (CX1)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.33µF max, 275VAC , 40/100/21 or40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.33µF max, 250/275/300/305/310VAC , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.33µF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.33µF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.33µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.33µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)
Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.33µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Sichuan Sincerity Technology Co., Ltd.	MPX/MKP	X2 type, Rated 0.33μF max, 275/280/300/ 320VAC , 40/110/56	IEC/EN 60384-14 UL 60384-14	VDE (4028812)
X-capacitor (CX2)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.22μF max, 275VAC , 40/100/21 or40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.22μF max, 250/275/300/305/310VAC , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.22μF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.22μF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.22μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.22μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)
Alternative	B	Sichuan Sincerity Technology Co., Ltd.	MPX/MKP	X2 type, Rated 0.22µF max, 275/280/300/ 320VAC , 40/110/56	IEC/EN 60384-14 UL 60384-14	VDE (4028812)
Fuse (F1)	B	Shanghai Fullness Electrical Co. Ltd.	TSP	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (R 50315914)
Alternative	B	Dongguan Hongda Electronic	2009	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40028260)
Alternative	B	Xiamen Set Electronics Co. Ltd.	SPT478	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40049409)
Alternative	B	Dongguan Chevron Electronic	SET	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40038565)
Alternative	B	ZHONG SHAN LANBAO ELECTRICAL APPLIANCES CO LTD	TR/TB	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (J 50420445)
Alternative	B	Dongguan Better Electronics	932	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40033369)
Transformer (T2)	B	NINGHAI YINGJIAO ELECTRICAL CO., LTD.	14GP0745	Class B	IEC61347-1, IEC61347-2-13	tested with appliance
-Bobbin	B	Chang Chun Plastics Co., Ltd	T375J	Phenolic, V-0, 150°C, Min thickness: 0.8mm	UL94	UL(E59481) + tested with appliance

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

-Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	UL510A	UL (E165111) + tested with appliance
(Alternative)	B	JINGJIANG FUWEI ADHESIVE PRODUCT CO LTD	WF101	130°C	UL510A	UL (E302608) + tested with appliance
(Alternative)	B	JINGJIANG JINGYANG INSULATING PRODUCT CO LTD	JY-133	130°C	UL510A	UL E309872 + tested with appliance
(Alternative)	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT *(b)(g)	130°C	UL510A	UL E165111 + tested with appliance
-Magnet Wire	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	xUEW/155, QA-x/155	155°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	ZHEJIANG HONGBO TECHNOLOGY CO LTD	xUEW/130, QA-x/130	130°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	HUZHOU HUIFENG ELECTRICIAN TECHNOLOGY CO LTD	QA/155	155℃	UL1446	UL(E499393) + tested with appliance
Alternative	B	NINGBO JINTIAN NEW MATERIAL CO LTD	xUEWN/155, QA/X-x/155	155℃	UL1446	UL(E227047) + tested with appliance
-Triple Insulation Wire	B	Great Leoflon Industrial Co., Ltd.	TRW(B)-M	130°C	IEC/EN 60950	VDE (136581)
Alternative	B	Hangzhou Fuyang Youheng Cable Co., Ltd	GY-F	155°C	IEC/EN 62368	VDE (40041248)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

-Tube	B	DONGGUAN CITY CHANGJIE METALS &PLASTIC PRODUCTS CO LTD	CJ-TT-L CJ-TT-T	150V 200℃	UL510A	UL (E338209) + tested with appliance
Alternative	B	FLUO TECH INDUSTRIES CO LTD	TFT	300 V, 200°C	UL510A	UL (E175982) +tested with appliance
Varnish	B	JOHN C DOLPH CO	BC-359	155°C	UL1446	UL (E317427) + tested with appliance
Alternative	B	HANG CHEUNG COATINGS (HUIYANG) LTD	8562(a)	155°C	UL1446	UL (E200154) + tested with appliance
Alternative	B	ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD	E962	130℃	UL1446	UL (E335405) + tested with appliance
Y capacitor (C32)	B	Jya-Nay Co., Ltd.	JN	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	TUV (R 50232059)
Alternative	B	Jyh HSU(JEC) Electronic Co., Ltd.	JD	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40038642)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	CT7	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40041523)
Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	AR	500Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40043989)
Alternative	B	Shenzhen Teruixiang Electronic Co, Ltd.	TY	400Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40031733)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Optocoupler (U3)	B	Everlight Electronics Co., Ltd.	EL817	Cr>=7.6 mm Cl>=7.6mm dti>=0.4mm UIOTM =6000V 55/110/21	IEC/EN 60747 -5-5 IEC/EN 60950-1 IEC/EN 60065	VDE (132249)
Alternative	B	Bright Led Electronics Corp.	BPC-817	Cr>=7.6 mm Cl>=7.6mm UIOTM =5000V 30/100/21	IEC/EN 60747-5-2 IEC/EN 60950-1	VDE (40007240)
Alternative	B	Shenzhen Orient Components Co. Ltd.	OR817	Cr>=7.6 mm Cl>=7.6mm UIOTM =4000V 30/100/21	IEC/EN 60747-5-2 IEC/EN 60950-1	VDE (40029733)
Alternative	B	FUJIAN LIGHTNING OPTOELECTRONIC CO.,LTD	TD817	Cr>=7.6 mm Cl>=7.6mm UIOTM =6000V	IEC 60747-5-5: 2007 IEC 60747-5-5: 2007/AMD1:2013 DIN EN 60747-5-5 (VDE 0884-5): 2015-11; EN 60747-5-5: 2011+A1:2015	VDE (40048885)
PCB	B	CHENGHUIXING ELECTRONICS (HUIZHOU) CO., LTD.	FG-109，FG-115，FG-114	V-0, 130°C	UL94	UL (E78769) + tested with appliance
Alternative	B	DONGGUAN ZHIHAN ELECTRONIC CO LTD	ZH-M, ZH-AL, ZH-D	V-0, 130°C	UL94	UL (E485751) + tested with appliance
Alternative	B	GOLDWAN ELECTRONIC LTD	GW800	V-0, 130°C	UL94	UL (E156176) + tested with appliance
Alternative	B	Wenzhou Juyi Electronic Technology Co., Ltd.	JY-D	V-0, 130°C	UL94	UL (E1492597) + tested with appliance
Alternative	B	interchangeable	interchangeable	V-0, 130°C	UL94	UL+ tested with appliance

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

For Model : EOL.CE.DR12-100, EOL.CE.DR24-100, layout 3						
Plug	B	Ningbo Qiaopu Electrical Co., Ltd.	D05	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	SAA-170389-EA
Alternative	B	Shangyu Jintao Electrical Co., Ltd.	A2-7	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	ESO170417
Supply cord	B	Ningbo Qiaopu Electrical Co., Ltd.	H03VVH2-F2X	2*0.5mm²	AS/NZS 3191: 2008.	NSW18298
Terminal	B	Cixi Kaifeng Electronic Co., Ltd.	KF635	450V,41A	IEC/EN 60998-2-1	VDE (40037253)
Alternative	B	Degson Electronics Co. Ltd.	DG 635-6.35	450V,32A	DIN EN 60998-2-1	VDE (40022128)
Alternative	B	NINGBO MAX ELECTRONIC TECHNOLOGY CO LTD	MX635-6.35	450V,32A	IEC/EN 60998-2-1 IEC/EN 60998-1	TUV （B004887 0001）
Alternative	B	JIANGSU CHANGHE ELECTRONICS CO.,LTD	CT350-06-635	250V,32A	IEC/EN 60998-2-1 IEC/EN 60998-1	TUV (R50316923)
Plastic Enclosure	B	NINGBO SHUANGJIAWEI PLASTIC CO., LTD.	PC	min.thickness: 1.5mm	UL94	tested with appliance
Alternative	B	SABIC INNOVATIVE PLASTICS B V	PC 940 (f1)	V-0, 120°C, min. thickness: 1.5mm	UL94	UL (E45329) + tested with appliance
X-capacitor (CX1,CX2)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.22µF max, 275VAC , 40/100/21 or40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.22µF max, 250/275/300/305/310VAC , 40/110/56	IEC/EN60384-14	VDE (40044985)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.22µF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.22µF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)
Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)
Varistor (VR1)	B	Brightking (Shenzhen) Co., Ltd	10D471K/471 KD10	300Vac, 385Vdc 40/85/56	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (40027827)
Alternative	B	BestBright Electronics Co. Ltd	10D471K/471 KD10	300Vac, 385Vdc 40/85/56	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (40050493)
Alternative	B	Thinking Electronic Industrial Co., Ltd.	TVR10471	300Vac, 385Vdc 40/85/56	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (005944)
Alternative	B	CERGLASS MFG INC	10D471k	300Vac, 385Vdc 40/85/21	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (40028836)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	10D471k	300Vac, 385Vdc 40/85/21	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (40050909)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	V-471K-10 DEH	300Vac, 385Vdc	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (40043880)
Alternative	B	Xiamen Sino Faith Electronic	V-471K-10	300Vac, 385Vdc	IEC/EN 61051-1 IEC/EN 61051-2 IEC/EN 61051-2-2	VDE (40047368)
Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	V-471K-10 D	Min.300V, V-0, 85°C, fulfil with 6KV/3KA, pulse test, , coating V-0	IEC 61051-1 IEC 61051-2 IEC 61051-2-2 UL 1449	VDE (40043880) E480104
Fuse (F1)	B	Shanghai Fullness Electrical Co. Ltd.	TSP	250 Vac, T3.15A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (R 50315914)
Alternative	B	Dongguan Hongda Electronic	2009	250 Vac, T3.15A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40028260)
Alternative	B	Xiamen Set Electronics Co. Ltd.	SPT478	250 Vac, T3.15A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40049409)
Alternative	B	Dongguan Chevron Electronic	SET	250 Vac, T3.15A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40038565)
Alternative	B	ZHONG SHAN LANBAO ELECTRICAL APPLIANCES CO LTD	TR/TB	250 Vac, T3.15A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (J 50420445)
Alternative	B	Dongguan Better Electronics	932	250 Vac, T3.15A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40033369)
Transformer (T1)	B	NINGHAI YINGJIAO ELECTRICAL CO., LTD.	14GP0957	Class B	IEC/EN 61347-1 IEC/EN 61347-2-13	tested with appliance
-Bobbin	B	Chang Chun Plastics Co., Ltd.d	T375J	Phenolic, V-0, 150°C, Min thickness: 0.8mm	UL94	UL(E59481) + tested with appliance

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

-Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	UL510A	UL (E165111) + tested with appliance
(Alternative)	B	JINGJIANG FUWEI ADHESIVE PRODUCT CO LTD	WF101	130°C	UL510A	UL (E302608) + tested with appliance
(Alternative)	B	JINGJIANG JINGYANG INSULATING PRODUCT CO LTD	JY-133	130°C	UL510A	UL E309872 + tested with appliance
(Alternative)	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT (b)(g)	130°C	UL510A	UL E165111 + tested with appliance
-Magnet Wire	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	xUEW/155, QA-x/155	155°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	ZHEJIANG HONGBO TECHNOLOGY CO LTD	xUEW/130, QA-x/130	130°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	HUZHOU HUIFENG ELECTRICIAN TECHNOLOGY CO LTD	QA/155	155℃	UL1446	UL(E499393) + tested with appliance
Alternative	B	NINGBO JINTIAN NEW MATERIAL CO LTD	xUEWN/155, QA/X-x/155	155℃	UL1446	UL(E227047) + tested with appliance
-Triple Insulation Wire	B	Great Leoflon Industrial Co., Ltd.	TRW(B)-M	130°C	IEC/EN 60950	VDE (136581)
Alternative	B	Hangzhou Fuyang Youheng Cable Co., Ltd	GY-F	155°C	IEC/EN 62368	VDE (40041248)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

-Tube	B	DONGGUAN CITY CHANGJIE METALS &PLASTIC PRODUCTS CO LTD	CJ-TT-L CJ-TT-T	150V 200℃	UL510A	UL (E338209) + tested with appliance
Alternative	B	FLUO TECH INDUSTRIES CO LTD	TFT	300 V, 200°C	UL510A	UL (E175982) +tested with appliance
Varnish	B	JOHN C DOLPH CO	BC-359	155°C	UL1446	UL (E317427) + tested with appliance
Alternative	B	HANG CHEUNG COATINGS (HUIYANG) LTD	8562(a)	155°C	UL1446	UL (E200154) + tested with appliance
Alternative	B	ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD	E962	130℃	UL1446	UL (E335405) + tested with appliance
Y capacitor (CY3)	B	Jya-Nay Co., Ltd.	JN	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	TUV (R 50232059)
Alternative	B	Jyh HSU(JEC) Electronic Co., Ltd.	JD	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40038642)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	CT7	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40041523)
Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	AR	500Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40043989)
Alternative	B	Shenzhen Teruixiang Electronic Co, Ltd.	TY	400Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40031733)
PCB	B	CHENGHUIXING ELECTRONICS (HUIZHOU) CO., LTD.	FG-109， FG-115， FG-114	V-0, 130°C	IEC/EN 61347-1 IEC/EN 61347-2-13	UL (E78769) + tested with appliance

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	DONGGUAN ZHIHAN ELECTRONIC CO LTD	ZH-M, ZH-AL, ZH-D	V-0, 130°C	IEC/EN 61347-1 IEC/EN 61347-2-13	UL (E485751) + tested with appliance
Alternative	B	GOLDWAN ELECTRONIC LTD	GW800	V-0, 130°C	IEC/EN 61347-1 IEC/EN 61347-2-13	UL (E156176) + tested with appliance
Alternative	B	Wenzhou Juyi Electronic Technology Co., Ltd.	JY-D	V-0, 130°C	IEC/EN 61347-1 IEC/EN 61347-2-13	UL (E1492597) + tested with appliance
Alternative	B	interchangeable	interchangeable	V-0, 130°C	IEC/EN 61347-1 IEC/EN 61347-2-13	UL+ tested with appliance
For Model : EOL.CE.DR12-150, EOL.CE.DR24-150, EOL.CE.DR12-200, EOL.CE.DR24-200, layout 4						
Plug	B	Ningbo Qiaopu Electrical Co., Ltd.	D05	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	SAA-170389-EA
Alternative	B	Shangyu Jintao Electrical Co., Ltd.	A2-7	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	ESO170417
Supply cord	B	Ningbo Qiaopu Electrical Co., Ltd.	H03VVH2-F2X	2*0.5mm²	AS/NZS 3191: 2008.	NSW18298
Terminal	B	Cixi Kaifeng Electronic Co., Ltd.	KF635	450V,41A	IEC/EN 60998-2-1	VDE (40037253)
Alternative	B	Degson Electronics Co. Ltd.	DG 635-6.35	450V,32A	DIN EN 60998-2-1	VDE (40022128)
Alternative	B	NINGBO MAX ELECTRONIC TECHNOLOGY CO LTD	MX635-6.35	450V,32A	IEC/EN 60998-2-1 IEC/EN 60998-1	TUV （B004887 0001）
Alternative	B	JIANGSU CHANGHE ELECTRONICS CO.,LTD	CT350-06-635	250V,32A	IEC/EN 60998-2-1 IEC/EN 60998-1	TUV (R50316923)
Plastic Enclosure	B	SABIC INNOVATIVE PLASTICS B V	PC 940 (f1)	V-0, 120°C, min. thickness: 1.5mm	UL94	UL (E45329) + tested with appliance

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

X-capacitor (CX1)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.33μF max, 275VAC , 40/100/21 or40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.33μF max, 250/275/300/305/310VAC , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.33μF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.33μF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.33μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.22μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)
Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.33μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Sichuan Sincerity Technology Co., Ltd.	MPX/MKP	X2 type, Rated 0.33μF max, 275/280/300/ 320VAC , 40/110/56	IEC/EN 60384-14 UL 60384-14	VDE (4028812)
X-capacitor (CX2)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.22μF max, 275VAC , 40/100/21 or40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.22μF max, 250/275/300/305/310VAC , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.22μF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.22μF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.22μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.22μF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)
Alternative	B	Sichuan Sincerity Technology Co., Ltd.	MPX/MKP	X2 type, Rated 0.22µF max, 275/280/ 300/ 320VAC , 40/110/5 6	IEC/EN 60384-14 UL 60384-14	VDE (4028812)
Fuse (F1)	B	Shanghai Fullness Electrical Co. Ltd.	TSP	250 Vac, T5.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (R 50315914)
Alternative	B	Dongguan Hongda Electronic	2009	250 Vac, T5.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40028260)
Alternative	B	Xiamen Set Electronics Co. Ltd.	SPT478	250 Vac, T5.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40049409)
Alternative	B	Dongguan Chevron Electronic	SET	250 Vac, T5.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40038565)
Alternative	B	ZHONG SHAN LANBAO ELECTRICAL APPLIANCES CO LTD	TR/TB	250 Vac, T5.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (J 50420445)
Alternative	B	Dongguan Better Electronics	932	250 Vac, T5.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40033369)
Transformer (T1)	B	NINGHAI YINGJIAO ELECTRICAL CO., LTD.	14GP0970	Class B	IEC/EN 61347-1 IEC/EN 61347-2-13	tested with appliance
-Bobbin	B	Chang Chun Plastics Co., Ltd.d	T375J	Phenolic, V-0, 150°C, Min thickness: 0.8mm	UL94	UL(E59481) + tested with appliance

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict

-Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	UL510A	UL (E165111) + tested with appliance
(Alternative)	B	JINGJIANG FUWEI ADHESIVE PRODUCT CO LTD	WF101	130°C	UL510A	UL (E302608) + tested with appliance
(Alternative)	B	JINGJIANG JINGYANG INSULATING PRODUCT CO LTD	JY-133	130°C	UL510A	UL E309872 + tested with appliance
(Alternative)	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT (b)(g)	130°C	UL510A	UL E165111 + tested with appliance
-Magnet Wire	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	xUEW/155, QA-x/155	155°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	ZHEJIANG HONGBO TECHNOLOGY CO LTD	xUEW/130, QA-x/130	130°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	HUZHOU HUIFENG ELECTRICIAN TECHNOLOGY CO LTD	QA/155	155℃	UL1446	UL(E499393) + tested with appliance
Alternative	B	NINGBO JINTIAN NEW MATERIAL CO LTD	xUEWN/155, QA/X-x/155	155℃	UL1446	UL(E227047) + tested with appliance
-Triple Insulation Wire	B	Great Leoflon Industrial Co., Ltd.	TRW(B)-M	130°C	IEC/EN 60950	VDE (136581)
Alternative	B	Hangzhou Fuyang Youheng Cable Co., Ltd	GY-F	155°C	IEC/EN 62368	VDE (40041248)

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Clause	Requirement + Test	Result - Remark	Verdict

-Tube	B	DONGGUAN CITY CHANGJIE METALS &PLASTIC PRODUCTS CO LTD	CJ-TT-L CJ-TT-T	150V 200℃	UL510A	UL (E338209) + tested with appliance
Alternative	B	FLUO TECH INDUSTRIES CO LTD	TFT	300 V, 200°C	UL510A	UL (E175982) +tested with appliance
Varnish	B	JOHN C DOLPH CO	BC-359	155°C	UL1446	UL (E317427) + tested with appliance
Alternative	B	HANG CHEUNG COATINGS (HUIYANG) LTD	8562(a)	155°C	UL1446	UL (E200154) + tested with appliance
Alternative	B	ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD	E962	130℃	UL1446	UL (E335405) + tested with appliance
Y capacitor (CY1,CY2)	B	Jya-Nay Co., Ltd.	JN	250Vac min, 470pF max, 125℃,Y1	IEC/EN 60384-14	TUV (R 50232059)
Alternative	B	Jyh HSU(JEC) Electronic Co., Ltd.	JD	250Vac min, 470pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40038642)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	CT7	250Vac min, 470pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40041523)
Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	AR	500Vac min, 470pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40043989)
Alternative	B	Shenzhen Teruixiang Electronic Co, Ltd.	TY	400Vac min, 470pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40031733)
Y capacitor (CY4)	B	Jya-Nay Co., Ltd.	JN	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	TUV (R 50232059)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Jyh HSU(JEC) Electronic Co., Ltd.	JD	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40038642)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	CT7	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40041523)
Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	AR	500Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40043989)
Alternative	B	Shenzhen Teruixiang Electronic Co, Ltd.	TY	400Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40031733)
PCB	B	CHENGHUIXING ELECTRONICS (HUIZHOU) CO., LTD.	FG-109，FG-115，FG-114	V-0, 130°C	UL94	UL (E78769) + tested with appliance
Alternative	B	DONGGUAN ZHIHAN ELECTRONIC CO LTD	ZH-M, ZH-AL, ZH-D	V-0, 130°C	UL94	UL (E485751) + tested with appliance
Alternative	B	GOLDWAN ELECTRONIC LTD	GW800	V-0, 130°C	UL94	UL (E156176) + tested with appliance
Alternative	B	interchangeable	interchangeable	V-0, 130°C	UL94	UL+ tested with appliance
Epoxy glue(for 200W)	B	CHENGDU TALY TECHNOLOGY CO LTD	GA-0230-2 A/B	V-0,150°C	UL94	UL(E224183) + tested With appliance
Insulation sheet	B	CHENGDU KANGLONGXIN PLASTICS CO LTD	KLX FRPC-1860B-YM	V-0, 125°C, min thickness 0.4mm natural or black color	UL94	UL(E315185) + tested With appliance
For Model : EOL.CE.DR12-60IP, EOL.CE.DR24-60IP, Layout 5						
Power cord	B	Ningbo Qiaopu Electrical Co., Ltd.	H05RN-F	2*0.75mm²	AS/NZS IEC 60245.4:2020	ESV160467

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Clause	Requirement + Test	Result - Remark	Verdict

Power plug	B	Ningbo Qiaopu Electrical Co., Ltd.	D05	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	SAA-170389-EA
Alternative	B	Shangyu Jintao Electrical Co., Ltd.	A2-7	AC250V 7.5A	AS/NZS 3112:2011 Inc A1-3 AS/NZS 3100:2009 Inc A1-4	ESO170417
Plastic Enclosure	B	SABIC INNOVATIVE PLASTICS B V	PC 940 (f1)	V-0, 120°C, min. thickness: 1.5mm		UL (E45329) + tested with appliance
X-capacitor (C1)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MPX	X2 type, Rated 0.33µF max, 275VAC , 40/100/21 or 40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.33µF max, 250/275/300/305/310VAC , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.33µF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.33µF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.33µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)
Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.33µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.33µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)
Alternative	B	Sichuan Sincerity Technology Co., Ltd.	MPX/MKP	X2 type, Rated 0.33µF max, 275/280/ 300/ 320VAC , 40/110/5 6	IEC/EN 60384-14 UL 60384-14	VDE (4028812)
X-capacitor (C2)	B	DAIN ELECTRONICS CO LTD	MEX/NPX/MP X	X2 type, Rated 0.22µF max, 275VAC , 40/100/21 or 40/110/21	IEC/EN60384-14	VDE (40018798)
Alternative	B	JYH HSU (JEC) ELECTRONICS LTD	MPX	X2 type, Rated 0.22µF max, 250/275/300 /305/310VA C , 40/110/56	IEC/EN60384-14	VDE (40044985)
Alternative	B	CHANGZHOU JIAGUAN ELECTRONICS CO., LTD.	MKP	X2 type, Rated 0.22µF max, 275/300VAC , 40/110/21	IEC/EN60384-14	VDE (40037250)
Alternative	B	Guangdong JURCC electronics	MPX/MKP	X2 type, Rated 0.22µF max, 275/305/310 VAC , 40/110/56	IEC/EN60384-14	VDE (40034920)
Alternative	B	Dongguan Weiqing	MPX	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40040406)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Dongguan Champion Electronic, Technology Co., Ltd	MPX	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40044148)
Alternative	B	Dongguan QNC Electronics Co., Ltd	MPX/MKP Series	X2 type, Rated 0.22µF max, 275VAC min , 40/110/56	IEC/EN 60384-14	VDE (40053305)
Alternative	B	Sichuan Sincerity Technology Co., Ltd.	MPX/MKP	X2 type, Rated 0.22µF max, 275/280/ 300/ 320VAC , 40/110/5 6	IEC/EN 60384-14 UL 60384-14	VDE (4028812)
Fuse (F1)	B	Shanghai Fullness Electrical Co. Ltd.	TSP	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (R 50315914)
Alternative	B	Dongguan Hongda Electronic	2009	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40028260)
Alternative	B	Xiamen Set Electronics Co. Ltd.	SPT478	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40049409)
Alternative	B	Dongguan Chevron Electronic	SET	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40038565)
Alternative	B	ZHONG SHAN LANBAO ELECTRICAL APPLIANCES CO LTD	TR/TB	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	TUV (J 50420445)
Alternative	B	Dongguan Better Electronics	932	250 Vac, T2.0A	IEC/EN 60127-1 IEC/EN 60127-3	VDE (40033369)
Transformer (T2)	B	NINGHAI YINGJIAO ELECTRICAL CO., LTD.	14GP1231	Class B	IEC/EN 61347-1 IEC/EN 61347-2-13	tested with appliance

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Clause	Requirement + Test	Result - Remark	Verdict

-Bobbin	B	Chang Chun Plastics Co., Ltd.d	T375J	Phenolic, V-0, 150°C, Min thickness: 0.8mm	UL94	UL(E59481) + tested with appliance
-Insulation tape	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ* (b)	130°C	UL510A	UL (E165111) + tested with appliance
(Alternative)	B	JINGJIANG FUWEI ADHESIVE PRODUCT CO LTD	WF101	130°C	UL510A	UL (E302608) + tested with appliance
(Alternative)	B	JINGJIANG JINGYANG INSULATING PRODUCT CO LTD	JY-133	130°C	UL510A	UL E309872 + tested with appliance
(Alternative)	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT (b)(g)	130°C	UL510A	UL E165111 + tested with appliance
-Magnet Wire	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	xUEW/155, QA-x/155	155°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	ZHEJIANG HONGBO TECHNOLOGY CO LTD	xUEW/130, QA-x/130	130°C	UL1446	UL(E221719) + tested with appliance
Alternative	B	HUZHOU HUIFENG ELECTRICIAN TECHNOLOGY CO LTD	QA/155	155℃	UL1446	UL(E499393) + tested with appliance
Alternative	B	NINGBO JINTIAN NEW MATERIAL CO LTD	xUEWN/155, QA/X-x/155	155℃	UL1446	UL(E227047) + tested with appliance

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Clause	Requirement + Test	Result - Remark	Verdict

-Triple Insulation Wire	B	Great Leoflon Industrial Co., Ltd.	TRW(B)-M	130°C	IEC/EN 60950	VDE (136581)
Alternative	B	Hangzhou Fuyang Youheng Cable Co., Ltd	GY-F	155°C	IEC/EN 62368	VDE (40041248)
-Tube	B	DONGGUAN CITY CHANGJIE METALS &PLASTIC PRODUCTS CO LTD	CJ-TT-L CJ-TT-T	150V 200℃	UL510A	UL (E338209) + tested with appliance
Alternative	B	FLUO TECH INDUSTRIES CO LTD	TFT	300 V, 200°C	UL510A	UL (E175982) +tested with appliance
Varnish	B	JOHN C DOLPH CO	BC-359	155°C	UL1446	UL (E317427) + tested with appliance
Alternative	B	HANG CHEUNG COATINGS (HUIYANG) LTD	8562(a)	155°C	UL1446	UL (E200154) + tested with appliance
Alternative	B	ZHUHAI CHANGXIAN NEW MATERIALS TECHNOLOGY CO LTD	E962	130℃	UL1446	UL (E335405) + tested with appliance
Y capacitor (C32)	B	Jya-Nay Co., Ltd.	JN	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	TUV (R 50232059)
Alternative	B	Jyh HSU(JEC) Electronic Co., Ltd.	JD	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40038642)
Alternative	B	Dongguan City Dafu Electronics Co. Ltd.	CT7	250Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40041523)
Alternative	B	Guangdong Huiwan Electronics Technology Co.,LTD.	AR	500Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40043989)

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	Shenzhen Teruixiang Electronic Co, Ltd.	TY	400Vac min, 1000pF max, 125℃,Y1	IEC/EN 60384-14	VDE (40031733)
Optocoupler (U3)	B	Everlight Electronics Co., Ltd.	EL817	Cr>=7.6 mm Cl>=7.6mm dti>=0.4mm UIOTM =6000V 55/110/21	IEC/EN 60747 -5-5 IEC/EN 60950-1 IEC/EN 60065	VDE (132249)
Alternative	B	Bright Led Electronics Corp.	BPC-817	Cr>=7.6 mm Cl>=7.6mm UIOTM =5000V 30/100/21	IEC/EN 60747-5-2 IEC/EN 60950-1	VDE (40007240)
Alternative	B	Shenzhen Orient Components Co. Ltd.	OR817	Cr>=7.6 mm Cl>=7.6mm UIOTM =4000V 30/100/21	IEC/EN 60747-5-2 IEC/EN 60950-1	VDE (40029733)
PCB	B	CHENGHUIXING ELECTRONICS (HUIZHOU) CO., LTD.	FG-109，FG-115，FG-114	V-0, 130°C	UL94	UL (E78769) + tested with appliance
Alternative	B	DONGGUAN ZHIHAN ELECTRONIC CO LTD	ZH-M, ZH-AL, ZH-D	V-0, 130°C	UL94	UL (E485751) + tested with appliance
Alternative	B	GOLDWAN ELECTRONIC LTD	GW800	V-0, 130°C	UL94	UL (E156176) + tested with appliance
Alternative	B	interchangeable	interchangeable	V-0, 130°C	UL94	UL+ tested with appliance
Alternative	B	Wenzhou Juyi Electronic Technology Co., Ltd.	JY-D	V-0, 130°C	UL94	UL (E1492597) + tested with appliance
Output wire	B	Xingda Electronics wire &cable CO LTD	2468/2464/1185	300 Vac, 80°C , 16-24AWG	UL758	UL(E187208) + tested with appliance
Alternative	B	3Q WIRE & CABLE CO LTD	2468/2464/1185	300 Vac, 80°C , 16-24AWG	UL758	UL (E341104) + tested with appliance

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Clause	Requirement + Test	Result - Remark	Verdict

Alternative	B	HAIY ADS special CABLE CO LTD	2468/2464/1185	300 Vac, VW-1 80 °C , 16-24AWG	UL758	UL(E363968) + tested with appliance
Alternative	B	SUZHOU DAOWANG ELECTRONIC ECHNOLOGY CO LTD	2468/2464/1185	300 Vac, 80°C , 16-24AWG	UL758	UL(E352430) + tested With appliance
Alternative	B	DONGGUAN JIAPENG(SaiPeng) INDUSTRIAL CO LTD	2468/2464/1185	300 Vac, 80°C , 16-24AWG	UL758	UL(E330104) + tested With appliance
Epoxy glue	B	CHENGDU TALY TECHNOLOGY CO LTD	GA-0230-2 A/B	V-0,150°C	UL94	UL(E224183) + tested With appliance

Supplementary information:

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

The codes above have the following meaning:

A- The component is replaceable with another one, also certified, with equivalent characteristics

B- The component is replaceable if authorised by the test house

C- Integrated component tested together with the appliance

D- Alternative component

*License available upon request

#Please refer summary of testing in TRF for the test standard publication year

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Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 2	**screw terminals (part of the luminaire)**	N/A

(14)	**SCREW TERMINALS**		—
(14.2)	Type of terminal .....:		—
	Rated current (A) .....:		—
(14.3.2.1)	One or more conductors		N/A
(14.3.2.2)	Special preparation		N/A
(14.3.2.3)	Terminal size		N/A
	Cross-sectional area (mm²) .....:		N/A
(14.3.3)	Conductor space (mm) .....:		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread)..:	M	N/A
	External wiring		N/A
	No soft metal		N/A
(14.4.5)	Corrosion		N/A
(14.4.6)	Nominal diameter of thread (mm) .....:		N/A
	Torque (Nm).....:		N/A
(14.4.7)	Between metal surfaces		N/A
	Lug terminal		N/A
	Mantle terminal		N/A
	Pull test; pull (N).....:		N/A
(14.4.8)	Without undue damage		N/A

ANNEX 3	Screwless terminals (part of the luminaire)	P

(15)	**SCREWLESS TERMINALS**		N/A
(15.2)	Type of terminal ..... :		—
	Rated current (A)..... :		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

(15.3.4)	Unprepared conductors		N/A
(15.3.5)	Pressure on insulating material		N/A
(15.3.6)	Clear connection method		N/A
(15.3.7)	Clamping independently		N/A
(15.3.8)	Fixed in position		N/A
(15.3.10)	Conductor size		N/A
	Type of conductor		N/A
(15.5)	Terminals and connections for internal wiring		N/A
(15.5.1)	Mechanical tests		N/A
(15.5.1.1.1)	Pull test spring-type terminals (4 N, 4 samples) ..... :		N/A
(15.5.1.1.2)	Pull test pin or tab terminals (4 N, 4 samples) ..... :		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.1.2)	Permanent connections: pull-off test (20 N)		N/A
(15.5.2)	Electrical tests		N/A
	Voltage drop (mV) after 1 h (4 samples)..... :		N/A
	Voltage drop of two inseparable joints		N/A
	Number of cycles:		—
	Voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... :		N/A
	Voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... :		N/A
	After ageing, voltage drop (mV) after 10th alt. 25th cycle (4 samples) ..... :		N/A
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) ..... :		N/A
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A
15.6.2	Mechanical tests		N/A
(15.6.2.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) ..... :		N/A
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N) ..... :		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

(15.6.3.1) (15.6.3.2)	**TABLE: Contact resistance test / Heating tests**										N/A
	Voltage drop (mV) after 1 h										—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)											
	Voltage drop of two inseparable joints										N/A
	Voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV) .....:	15									—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)											
	Voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV) .....:										—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)		-	-	-	-	-	-	-	-	-	-
	Continued ageing: voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV) .....:	15									—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)											
	Continued ageing: voltage drop after 50th alt. 100th cycle										N/A
	Max. allowed voltage drop (mV) .....:										—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)		-	-	-	-	-	-	-	-	-	-
Supplementary information:											

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: transformer heating---normal operation		P
	Type reference ..... :	EOL.CE.DR12-36 EOL.CE.DR24-36 (Layout 1)	—
	Lamp used ..... :	LED modules(rating load)	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test voltage 2 Test (°C)	Test voltage 2 Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-36	EOL.CE.DR24-36	
Power cord	49.4	43.1	80
Terminal (CN1)	50.6	49.1	70
L1 winding	82.4	75.2	130
X-cap(C1 body)	73.5	70.9	100
X-cap(C2 body)	68.4	66.9	100
L3 winding	79.6	76.9	130
PCB near D1	88.5	81.8	130
C10 body	76.9	76.0	105
PCB near Q1	91.3	88.5	130
T1A winding	110.7	98.3	130
T1 winding	95.3	92.5	130
T2 winding(Transformer)	106.8	102.6	110
T1 core	101.5	97.1	110
Y-cap(C32 body)	88.3	81.4	125
U2 body	76.5	75.3	100
PCB near D19	99.7	91.4	130
C11 body	84.6	78.2	105
Output terminal (inside)	53.5	49.1	Ref.
Enclosure (inside, top near T1)	78.6	73.6	Ref.
Enclosure (inside, bottom near T1)	77.5	74.5	Ref.
Enclosure (outside, top near T1) tc	70.7	70.0	85
Enclosure (outside, bottom near T1)	69.7	64.9	85
Output wire (outside)	55.2	48.8	80
Supports	66.3	61.2	Ref.
Ambient	40.0	40.0	--

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: transformer heating---normal operation		P
	Type reference ..... :	EOL.CE.DR12-60 EOL.CE.DR24-60 (Layout 2)	—
	Lamp used ..... :	LED modules(rating load)	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test voltage 2 Test (°C)	Test voltage 2 Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-60	EOL.CE.DR24-60	
Power cord	49.1	48.6	80
Terminal (CN1)	60.5	50.3	Ref.
L3 winding	81.3	79.2	130
X-cap(CX1 body)	67.7	67.3	100
X-cap(CX2 body)	64.8	64.2	100
L1 winding	88.9	86.9	130
PCB near D1	99.2	97.7	130
C10 body	91.5	90.4	105
PCB near Q1	105.7	101.8	130
T1 winding	99.8	97.5	130
L2 winding	96.8	94.2	130
T2 winding(Transformer)	98.1	97.5	110
T2 core	97.7	97.1	110
Y-cap(C32 body)	78.9	78.5	125
U3 body	77.3	76.9	100
PCB near D20	109.2	103.1	130
C11 body	79.8	79.0	105
Output terminal (inside)	76.8	65.8	Ref.
Enclosure (inside, top near T1)	80.1	80.1	Ref.
Enclosure (inside, bottom near T1)	85.6	79.5	Ref.
Enclosure (outside, top near T1) tc	80.2	75.4	85
Enclosure (outside, bottom near T1)	79.5	74.9	85
Output wire (outside)	66.8	61.0	80
Supports	78.5	74.1	Ref.
Ambient	40.0	40.0	--

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: transformer heating---normal operation		P
	Type reference ..... :	EOL.CE.DR12-100 EOL.CE.DR24-100 (layout 3)	—
	Lamp used ..... :	LED modules(rating load)	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test voltage 2 Test (°C)	Test voltage 2 Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-100	EOL.CE.DR24-100	
Power cord	50.9	48.5	80
Terminal (CN1)	62.3	55.1	Ref.
RV1 body	57.3	55.7	125
L1 winding	62.5	61.9	130
X-cap(CX1 body)	84.6	84.1	100
X-cap(CX2 body)	81.3	80.9	100
L2 winding	80.1	79.3	130
PCB near BD1	100.6	99.5	130
EC1 body	92.0	91.4	105
PCB near Q2	101.5	100.5	130
L4 winding	89.6	89.1	130
L3 winding	86.4	85.8	130
L5 winding	76.8	74.3	130
T1 winding(Transformer)	104.8	103.8	110
T1 core	99.2	98.5	110
Y-cap(CY3 body)	93.0	90.3	125
P1 body	95.6	91.2	100
PCB near Q6	106.2	99.8	130
C7 body	94.3	90.1	105
Output terminal (inside)	86.5	75.3	Ref.
Enclosure (inside, top near T1)	83.6	81.3	Ref.
Enclosure (inside, bottom near T1)	82.4	80.7	Ref.
Enclosure (outside, top near T1) tc	81.6	78.6	85
Enclosure (outside, bottom near T1)	80.3	77.1	85
Output wire (outside)	77.7	65.5	80
Supports	79.8	70.3	Ref.
Ambient	40.0	40.0	--

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: transformer heating---normal operation		P
	Type reference ..... :	EOL.CE.DR12-150 EOL.CE.DR24-150 (Layout 4)	—
	Lamp used ..... :	LED modules(rating load)	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test voltage 2 Test (°C)	Test voltage 2 Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-150	EOL.CE.DR24-150	
Power cord	56.8	52.6	80
Terminal (CN1)	62.3	56.3	Ref.
FL2 winding	92.6	70.4	130
X-cap(CX1 body)	83.8	72.0	100
X-cap(CX2 body)	79.5	70.1	100
FL1 winding	88.5	67.5	130
PCB near BD1	98.5	85.8	130
EC1 body	99.0	80.4	105
PCB near Q2	104.2	99.7	130
L1 winding	92.4	81.1	130
L2 winding	88.7	80.0	130
T2 winding	107.4	88.8	130
T1 winding(Transformer)	105.2	92.3	110
T1 core	98.4	82.1	110
Y-cap(CY4 body)	104.3	79.9	125
Y-cap(CY1&CY2 body)	85.7	60.2	125
U3 body	98.5	82.9	100
PCB near Q5	115.2	95.8	130
C7 body	88.1	70.8	105
Output terminal (inside)	86.2	68.5	Ref.
Enclosure (inside, top near T1)	87.9	75.9	Ref.
Enclosure (inside, bottom near T1)	85.8	73.6	Ref.
Enclosure (outside, top near T1) tc	83.4	69.8	85
Enclosure (outside, bottom near T1)	80.6	65.3	85
Output wire (outside)	76.4	62.4	80
Supports	78.9	67.5	Ref.
Ambient	40.0	40.0	--

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: transformer heating---normal operation		P
	Type reference ..... :	EOL.CE.DR12-200 EOL.CE.DR24-200 (Layout 4)	—
	Lamp used ..... :	LED modules(rating load)	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test voltage 2 Test (°C)	Test voltage 2 Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-200	EOL.CE.DR24-200	
Power cord	61.1	51.4	80
Terminal (CN1)	65.3	55.7	Ref.
FL2 winding	72.5	70.4	130
X-cap(CX1 body)	84.1	82.5	100
X-cap(CX2 body)	80.2	79.4	100
FL1 winding	88.7	87.6	130
PCB near BD1	96.8	95.8	130
EC1 body	91.8	90.5	105
PCB near Q2	102.6	99.7	130
L1 winding	83.5	82.1	130
L2 winding	86.0	94.8	130
T2 winding	76.8	73.6	130
T1 winding(Transformer)	100.7	99.8	110
T1 core	93.9	90.2	110
Y-cap(CY4 body)	97.7	92.6	125
Y-cap(CY1&CY2 body)	81.3	80.6	125
U3 body	96.2	93.7	100
PCB near Q5	110.8	103.8	130
C7 body	85.3	81.7	105
Output terminal (inside)	96.7	79.2	Ref.
Enclosure (inside, top near T1)	84.8	81.4	Ref.
Enclosure (inside, bottom near T1)	83.1	79.7	Ref.
Enclosure (outside, top near T1) tc	80.2	77.6	85
Enclosure (outside, bottom near T1)	79.6	75.3	85
Output wire (outside)	78.9	70.5	80
Supports	78.1	68.4	Ref.
Ambient	40.0	40.0	--

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: transformer heating---normal operation		P
	Type reference	EOL.CE.DR12-60IP EOL.CE.DR24-60IP (Layout 5)	—
	Lamp used	LED modules(rating load)	—
	Mounting position	As in normal use	—
	Test voltage.....	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test voltage 2 Test (°C)	Test voltage 2 Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-60IP	EOL.CE.DR24-60IP	
Power cord	54.9	49.2	80
L3 winding	71.3	68.4	130
X-cap(C2 body)	58.2	56.3	100
X-cap(C1 body)	56.3	54.5	100
L2 winding	82.4	80.8	130
PCB near D1	59.2	57.5	130
C10 body	65.0	63.5	105
PCB near Q1	75.7	72.1	130
T1 winding	69.8	66.3	130
L3 winding	63.6	60.5	130
T2 winding(Transformer)	82.4	80.5	110
T2 core	80.0	78.4	110
Y-cap(C32 body)	78.5	75.5	125
U3 body	75.3	71.3	100
PCB near D20	69.2	61.2	130
C11 body	62.8	58.6	105
Enclosure (inside, top near T1)	72.6	69.5	Ref.
Enclosure (inside, bottom near T1)	70.5	68.7	Ref.
Enclosure (outside, top near T1) tc	67.6	63.5	85
Enclosure (outside, bottom near T1)	66.3	61.8	85
Output wire (outside)	73.6	62.8	80
Supports	63.4	60.8	Ref.
Ambient	40.0	40.0	--

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference ..... :	EOL.CE.DR12-36 EOL.CE.DR24-36 (Layout 1)	—
	Condition ..... :	ta: 40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage(V) ..... :	1. 0,9x220V=198V; 2. 1,1x240V=264.0V	—

Temperature (°C) of part	Test (°C) (Max. value recorded)	Test (°C) (Max. value recorded)	Limit (°C)
Model :	EOL.CE.DR12-36	EOL.CE.DR24-36	
Supply cord	51,5	45.6	85
Transformer winding	118.1	110.8	175
Output cord	61.9	52.3	85
External enclosure	73.6	72.5	105
Supports	69.8	67.5	105
Remark: --			

15.2 & L.6	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference ..... :	EOL.CE.DR12-60 EOL.CE.DR24-60 (Layout 2)	—
	Condition ..... :	ta: 40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage(V) ..... :	1. 0,9x220V=198V; 2. 1,1x240V=264.0V	—

Temperature (°C) of part	Test (°C) (Max. value recorded)	Test (°C) (Max. value recorded)	Limit (°C)
Model :	EOL.CE.DR12-60	EOL.CE.DR24-60	
Supply cord	56.7	52.3	85
Transformer winding	108.9	105.3	175
Output cord	68.9	64.7	85
External enclosure	83.6	78.8	105
Supports	80.2	79.5	105
Remark: --			

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference ..... :	EOL.CE.DR12-100 EOL.CE.DR24-100 (layout 3)	—
	Condition ..... :	ta: 40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage(V) ..... :	1. 0,9x220V=198V; 2. 1,1x240V=264.0V	—

Temperature (°C) of part	Test (°C) (Max. value recorded)	Test (°C) (Max. value recorded)	Limit (°C)
Model :	EOL.CE.DR12-100	EOL.CE.DR24-100	
Supply cord	57.6	54.3	85
Transformer winding	120.3	118.6	175
Output cord	80.5	70.6	85
External enclosure	86.3	83.4	105
Supports	83.5	81.2	105
Remark: --			

15.2 & L.6	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference ..... :	EOL.CE.DR12-150 EOL.CE.DR24-150 (Layout 4)	—
	Condition ..... :	ta: 40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage(V) ..... :	1. 0,9x220V=198V; 2. 1,1x240V=264.0V	—

Temperature (°C) of part	Test (°C) (Max. value recorded)	Test (°C) (Max. value recorded)	Limit (°C)
Model :	EOL.CE.DR12-150	EOL.CE.DR24-150	
Supply cord	65.9	60.4	85
Transformer winding	123.5	121.8	175
Output cord	80.6	73.6	85
External enclosure	86.4	82.1	105
Supports	81.6	79.8	105
Remark: --			

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

15.2 & L.6	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference ..... :	EOL.CE.DR12-200 EOL.CE.DR24-200 (Layout 4)	—
	Condition ..... :	ta: 40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage(V) ..... :	1. 0,9x220V=198V; 2. 1,1x240V=264.0V	—

Temperature (°C) of part	Test (°C) (Max. value recorded)	Test (°C) (Max. value recorded)	Limit (°C)
Model :	EOL.CE.DR12-200	EOL.CE.DR24-200	
Supply cord	66.9	59.7	85
Transformer winding	124.6	122.8	175
Output cord	82.6	76.3	85
External enclosure	88.5	84.3	105
Supports	85.3	82.7	105
Remark: --			

15.2 & L.6	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference ..... :	EOL.CE.DR12-60IP EOL.CE.DR24-60IP (Layout 5)	—
	Condition ..... :	ta: 40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage(V) ..... :	1. 0,9x220V=198V; 2. 1,1x240V=264.0V	—

Temperature (°C) of part	Test (°C) (Max. value recorded)	Test (°C) (Max. value recorded)	Limit (°C)
Model :	EOL.CE.DR12-60IP	EOL.CE.DR24-60IP	
Supply cord	58.7	52.3	85
Transformer winding	101.5	98.9	175
Output cord	77.6	66.8	85
External enclosure	80.3	78.5	105
Supports	75.4	72.3	105

IEC 61347_2_13G ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

Remark: --

15.3	TABLE: transformer heating–abnormal condition (double LED modules)		P
	Type reference ..... :	EOL.CE.DR12-36 EOL.CE.DR24-36 EOL.CE.DR12-60 EOL.CE.DR24-60 EOL.CE.DR12-100 EOL.CE.DR24-100 EOL.CE.DR12-150 EOL.CE.DR24-150 EOL.CE.DR12-200 EOL.CE.DR24-200 EOL.CE.DR12-60IP EOL.CE.DR24-60IP	—
	Condition ..... :	ta:40°C	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1: 0,9x220V=198V; 2: 1,1x240V=264V	—

Temperature (°C) of part	Test (°C)	Limit(°C)
Transformer primary coil	—	—
Output cable	—	—
External enclosure	—	—

Remark:
1. Double LED modules or equivalent load connected in series to the output terminals for constant current type.
2. Output shut down immediately after abnormal test, the temperature rise of components are lower than temperature rise of components at normal heating test, so no temperature rise are recorded..

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Clause	Requirement + Test	Result - Remark	Verdict
0	**GENERAL TEST REQUIREMENTS**		—
0.1	Information for luminaire design considered	Yes ☒ No ☐	—
0.3	More sections applicable .....:	Yes ☐ No ☒	—
2	**CLASSIFICATION**		—
2.2	Type of protection	Class II	—
2.3	Degree of protection	IP20(Layout 1-4) and IP67(layout 5)	—
2.4	Luminaire suitable for direct mounting on normally flammable surfaces.....	Yes ☒ No ☐	—
2.5	Luminaire for normal use .....:	Yes ☒ No ☐	—
	Luminaire for rough service .....:	Yes ☐ No ☒	—
3	**MARKING**		—
3.2	Mandatory markings		P
	Position of the marking		P
	Format of symbols/text		P
3.3	Additional information		P
	Language of instructions	English	P
3.3.1	Combination luminaires		N/A
3.3.2	Nominal frequency in Hz	50/60Hz	P
3.3.3	Operating temperature		N/A
3.3.4	Symbol or warning notice		N/A
3.3.5	Wiring diagram		N/A
3.3.6	Special conditions		N/A
3.3.7	Metal halide lamp luminaire – warning		N/A
3.3.8	Limitation for semi-luminaires		N/A
3.3.9	Power factor and supply current		N/A
3.3.10	Suitability for use indoors		N/A
3.3.11	Luminaires with remote control		N/A
3.3.12	Clip-mounted luminaire – warning		N/A
3.3.13	Specifications of protective shields		N/A
3.3.14	Symbol for nature of supply	~	P
3.3.15	Rated current of socket outlet		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.3.16	Rough service luminaire		N/A
3.3.17	Mounting instruction for type Y, type Z and some type X attachments	Type Y	P
3.3.18	Non-ordinary luminaires with PVC cable		N/A
3.3.19	Protective conductor current in instruction if applicable		N/A
3.3.20	Provided with information if not intended to be mounted within arm's reach		N/A
3.3.21	Non-replaceable and non-user replaceable light sources information provided		N/A
	Cautionary symbol		N/A
3.3.22	Controllable luminaires, classification of insulation provided		N/A
3.4	Test with water		P
	Test with hexane		P
	Legible after test		P
	Label attached		P
4	**CONSTRUCTION**		—
4.2	Components replaceable without difficulty		N/A
4.3	Wireways smooth and free from sharp edges		P
4.4	Lampholders		N/A
4.4.1	Integral lampholder		N/A
4.4.2	Wiring connection		N/A
4.4.3	Lampholder for end-to-end mounting		N/A
4.4.4	Positioning		N/A
	- pressure test (N) .....:		N/A
	After test the lampholder comply with relevant standard sheets and show no damage		N/A
	After test on single-capped lampholder the lampholder have not moved from its position and show no permanent deformation		N/A
	- bending test (N) .....:		N/A
	After test the lampholder have not moved from its position and show no permanent deformation		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.4.5	Peak pulse voltage		N/A
4.4.6	Centre contact		N/A
4.4.7	Parts in rough service luminaires resistant to tracking		N/A
4.4.8	Lamp connectors		N/A
4.4.9	Caps and bases correctly used		N/A
4.4.10	Light source for lampholder or connection according IEC 60061 not connected another way		N/A
4.5	Starter holders		N/A
	Starter holder in luminaires other than class II		N/A
	Starter holder class II construction		N/A
4.6	Terminal blocks		N/A
	Tails		N/A
	Unsecured blocks		N/A
4.7	Terminals and supply connections		P
4.7.1	Contact to metal parts		N/A
4.7.2	Test 8 mm live conductor		N/A
	Test 8 mm earth conductor		N/A
4.7.3	Terminals for supply conductors		P
4.7.3.1	Welded connections:		N/A
	- stranded or solid conductor		N/A
	- spot welding		N/A
	- welding between wires		N/A
	- Type Z attachment		N/A
	- mechanical test according to 15.8.2		N/A
	- electrical test according to 15.9		N/A
	- heat test according to 15.9.2.3 and 15.9.2.4		N/A
4.7.4	Terminals other than supply connection		N/A
4.7.5	Heat-resistant wiring/sleeves		N/A
4.7.6	Multi-pole plug		N/A
	- test at 30 N		N/A
4.8	Switches:		N/A
	- adequate rating		N/A
	- adequate fixing		N/A
	- polarized supply		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- compliance with 61058-1 for electronic switches		N/A
4.9	Insulating lining and sleeves		N/A
4.9.1	Retainment		N/A
	Method of fixing.....:		—
4.9.2	Insulated linings and sleeves		N/A
	Resistant to a temperature > 20 °C to the wire temperature or		N/A
	a) & c) Insulation resistance and electric strength		N/A
	b) Ageing test. Temperature (°C).....:		N/A
4.10	Insulation of Class II luminaires		P
4.10.1	No contact, mounting surface – accessible metal parts – wiring of basic insulation		P
	Safe installation fixed luminaires		N/A
	Capacitors and switches		P
	Interference suppression capacitors according to IEC 60384-14		P
4.10.2	Assembly gaps:		N/A
	- not coincidental		N/A
	- no straight access with test probe		N/A
4.10.3	Retainment of insulation:		P
	- fixed		N/A
	- unable to be replaced; luminaire inoperative		P
	- sleeves retained in position		N/A
	- lining in lampholder		N/A
4.10.4	Protective impedance device		P
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor	Y1 capacitor used	P
	Y1 or Y2 capacitors comply with IEC 60384-14		P
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
4.11	Electrical connections		P
4.11.1	Contact pressure		N/A
4.11.2	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.11.3	Screw locking:		N/A
	- spring washer		N/A
	- rivets		N/A
4.11.4	Material of current-carrying parts		P
4.11.5	No contact to wood or mounting surface		P
4.11.6	Electro-mechanical contact systems		N/A
4.12	Mechanical connections and glands		N/A
4.12.1	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: torque (Nm); part .....:		N/A
	Torque test: torque (Nm); part .....:		N/A
	Torque test: torque (Nm); part .....:		N/A
4.12.2	Screws with diameter < 3 mm screwed into metal		N/A
4.12.4	Locked connections:		N/A
	- fixed arms; torque (Nm) .....:		N/A
	- lampholder; torque (Nm) .....:		N/A
	- push-button switches; torque 0,8 Nm .....:		N/A
4.12.5	Screwed glands; force (Nm) .....:		N/A
4.13	Mechanical strength		P
4.13.1	Impact tests:		P
	- fragile parts; energy (Nm) .....:		N/A
	- other parts; energy (Nm).....:	Enclosure: 0,5Nm	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
4.13.3	Straight test finger		N/A
4.13.4	Rough service luminaires		N/A
	- IP54 or higher		N/A
	a) fixed		N/A
	b) hand-held		N/A
	c) delivered with a stand		N/A
	d) for temporary installations and suitable for mounting on a stand		N/A
4.13.6	Tumbling barrel		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.14	Suspensions and adjusting devices		N/A
4.14.1	Mechanical load:		N/A
	A) four times the weight		N/A
	B) torque 2,5 Nm		N/A
	C) bracket arm; bending moment (Nm) .....:		N/A
	D) load track-mounted luminaires		N/A
	E) clip-mounted luminaires, glass-shelve. Thickness (mm) .....:		N/A
	Metal rod. diameter (mm) .....:		N/A
	Fixed luminaire or independent control gear without fixing devices		N/A
4.14.2	Load to flexible cables		N/A
	Mass (kg) .....:		N/A
	Stress in conductors (N/mm²) .....:		N/A
	Mass (kg) of semi-luminaire .....:		N/A
	Bending moment (Nm) of semi-luminaire .....:		N/A
4.14.3	Adjusting devices:		N/A
	- flexing test; number of cycles .....:		N/A
	- strands broken		N/A
	- electric strength test afterwards		N/A
4.14.4	Telescopic tubes: cords not fixed to tube; no strain on conductors		N/A
4.14.5	Guide pulleys		N/A
4.14.6	Strain on socket-outlets		N/A
4.15	Flammable materials:		N/A
	- glow-wire test 650 °C		N/A
	- spacing ≥ 30 mm		N/A
	- screen withstanding test of 13.3.1		N/A
	- screen dimensions		N/A
	- no fiercely burning material		N/A
	- thermal protection		N/A
	- electronic circuits exempted	Electronic lamp controlgear is exempted from this requirement	N/A
4.15.2	Luminaires made of thermoplastic material with lamp control gear		N/A
	a) construction		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) temperature sensing control		N/A
	c) surface temperature		N/A
4.16	Luminaires for mounting on normally flammable surfaces		N/A
	No lamp control gear	Electronic lamp controlgear is exempted from this requirement	N/A
4.16.1	Lamp control gear spacing:		N/A
	- spacing 35 mm		N/A
	- spacing 10 mm		N/A
4.16.2	Thermal protection:		N/A
	- in lamp control gear		N/A
	- external		N/A
	- fixed position		N/A
	- temperature marked lamp control gear		N/A
4.16.3	Design to satisfy the test of 12.6	(see clause 12.6)	N/A
4.17	Drain holes		N/A
	Clearance at least 5 mm		N/A
4.18	Resistance to corrosion:		N/A
4.18.1	- rust-resistance		N/A
4.18.2	- season cracking in copper		N/A
4.18.3	- corrosion of aluminium		N/A
4.19	Ignitors compatible with ballast		N/A
4.20	Rough service vibration		N/A
4.21	Protective shield:		N/A
4.21.1	Shield fitted		N/A
	Shield of glass if tungsten halogen lamps		N/A
4.21.2	Particles from a shattering lamp not impair safety		N/A
4.21.3	No direct path		N/A
4.21.4	Impact test on shield		N/A
	Glow-wire test on lamp compartment		N/A
4.22	Attachments to lamps		N/A
4.23	Semi-luminaires comply Class II		N/A
4.24	Photobiological hazards		N/A
4.24.1	No excessive UV radiation if tungsten halogen lamps and metal halide lamps (Annex P)		N/A
4.24.2	Retinal blue light hazard		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Class of risk group assessed according to IEC/TR 62778		N/A
	Luminaires with E_{thr} :		—
	a) Fixed luminaires		N/A
	- distance x m, borderline between RG1 and RG2 .		N/A
	- marking and instruction according 3.2.23		N/A
	b) Portable and handheld luminaires		N/A
	- marking according 3.2.23 if RG1 exceeded at 200 mm according to IEC/TR 62778		N/A
	Portable luminaires for children IEC 60598-2-10 and Mains socket outlet nightlights IEC 60598-2-12 not exceed RG1 at 200 mm according to IEC/62778		N/A
4.25	Mechanical hazard		P
	No sharp point or edges		P
4.26	Short-circuit protection		N/A
4.26.1	Adequate means of uninsulated accessible SELV parts		N/A
4.26.2	Short-circuit test with test chain according 4.26.3		N/A
	Test chain not melt through		N/A
	Test sample not exceed values of Table 12.1 and 12.2		N/A
4.27	Terminal blocks with integrated screwless earthing contacts		N/A
	Test according Annex V		N/A
	Pull test of terminal fixing (20 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Pull test of mechanical connection (50 N)		N/A
	After test, resistance < 0,05 Ω		N/A
	Voltage drop test, resistance < 0,05 Ω		N/A
4.28	Fixing of thermal sensing control		N/A
	Not plug-in or easily replaceable type		N/A
	Reliably kept in position		N/A
	No adhesive fixing if UV radiations from a lamp can degrade the fixing		N/A
	Not outside the luminaire enclosure		N/A
	Test of adhesive fixing:		N/A
	Max. temperature on adhesive material (°C)		—
	100 cycles between t min and t max		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Temperature sensing control still in position		N/A
4.29	Luminaires with non-replaceable light source		N/A
	Not possible to replace light source		N/A
	Live part not accessible after parts have been opened by hand or tools		N/A
4.30	Luminaires with non-user replaceable light source		N/A
	If protective cover provide protection against electric shock and marked with “caution, electric shock risk” symbol:		N/A
	Minimum two fixing means		N/A
4.31	Insulation between circuits		P
	Circuits insulated from LV supply fulfil requirements according 4.31.1 – 4.31.3		P
	Controllable luminaires requiring same level of insulation for all components, the insulation between control terminals and LV supply fulfil requirements according 4.31.1 – 4.31.3		N/A
4.31.1	SELV circuits		P
	Used SELV source		P
	Voltage ≤ ELV		P
	Insulating of SELV circuits from LV supply		P
	Insulating of SELV circuits from other non SELV circuits		N/A
	Insulating of SELV circuits from FELV		N/A
	Insulating of SELV circuits from other SELV circuits		N/A
	SELV circuits insulated from accessible parts according Table X.1		P
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Plugs and socket-outlets does not have protective conductor contact		N/A
4.31.2	FELV circuits		N/A
	Used FELV source		N/A
	Voltage ≤ ELV		N/A
	Insulating of FELV circuits from LV supply		N/A
	FELV circuits insulated from accessible parts according Table X.1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Plugs not able to enter socket-outlets of other voltage systems		N/A
	Socket outlets does not admit plugs of other voltage systems		N/A
	Socket-outlets does not have protective conductor contact		N/A
4.31.3	Other circuits		N/A
	Other circuits insulated from accessible parts according Table X.1		N/A
	Class II construction with equipotential bonding for protection against indirect contacts with live parts:		N/A
	- conductive parts are connected together		N/A
	- test according 7.2.3 of above		N/A
	- conductive part not cause an electric shock in case of an insulation fault		N/A
	- equipotential bonding in master/slave applications		N/A
	- master luminaire provided with terminal for accessible conductive parts of slave luminaires		N/A
	- slave luminaire constructed as class I		N/A
4.32	**Overvoltage protective devices**		N/A
	Comply with IEC 61643-11		N/A
	External to control gear and connected to earth:		N/A
	- only in fixed luminaires		N/A
	- only connected to protective earth		N/A

11	**CREEPAGE DISTANCES AND CLEARANCES**		—
11.2	Creepage distances and clearances	(see appended table 17(16) of IEC 61347-2-13)	P
	Impulse withstand category (Normal category II) (Category III Annex U)	Category II ☒ Category III ☐	—

7	**PROVISION FOR EARTHING**		—
7.2.1 + 7.2.3	Accessible metal parts		N/A
	Metal parts in contact with supporting surface		N/A
	Resistance < 0,5 Ω		N/A
	Self-tapping screws used		N/A
	Thread-forming screws		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Thread-forming screw used in a grove		N/A
	Earth makes contact first		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
	Protective earthing of the luminaire not via built-in control gear		N/A
1.8 (7.2.2 + 7.2.3	Earth continuity in joints, etc.		N/A
1.8 (7.2.4	Locking of clamping means		N/A
	Compliance with 4.7.3		N/A
	Terminal blocks with integrated screwless earthing contacts tested according Annex V		N/A
7.2.5	Earth terminal integral part of connector socket		N/A
7.2.6	Earth terminal adjacent to mains terminals		N/A
7.2.7	Electrolytic corrosion of the earth terminal		N/A
7.2.8	Material of earth terminal		N/A
	Contact surface bare metal		N/A
7.2.10	Class II luminaire for looping-in		N/A
	Double or reinforced insulation to functional earth		N/A
7.2.11	Earthing core coloured green-yellow		N/A
	Length of earth conductor		N/A
14	**SCREW TERMINALS**		—
	Separately approved; component list	(see Annex 1)	N/A
	Part of the luminaire	(see Annex 3)	N/A
15	**SCREWLESS TERMINALS AND ELECTRICAL CONNECTIONS**		—
	Separately approved; component list	(see Annex 1 of IEC 61347-2-13)	N/A
	Part of the luminaire	(see Annex 4)	N/A
5	**EXTERNAL AND INTERNAL WIRING**		—
5.2	Supply connection and external wiring		P
5.2.1	Means of connection.....:	Supply cord with plug	P
	Outdoor luminaire has not PVC insulated external wiring if not class III or SELV ≤ 25 V a.c./60 V d.c. or protected from outdoor environment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.2.2	Type of cable.....:		P
	Nominal cross-sectional area (mm^2).....:	H03VVH2-F	P
	Cables equal to IEC 60227 or IEC 60245		P
5.2.3	Type of attachment, X, Y or Z	Y	P
5.2.5	Type Z not connected to screws		N/A
5.2.6	Cable entries:		N/A
	- suitable for introduction		N/A
	- adequate degree of protection		N/A
5.2.7	Cable entries through rigid material have rounded edges		N/A
5.2.8	Insulating bushings:		N/A
	- suitably fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- tubes or guards made of insulating material		N/A
5.2.9	Locking of screwed bushings		N/A
5.2.10	Cord anchorage:		N/A
	- covering protected from abrasion		N/A
	- clear how to be effective		N/A
	- no mechanical or thermal stress		N/A
	- no tying of cables into knots etc.		N/A
	- insulating material or lining		N/A
5.2.10.1	Cord anchorage for type X attachment:		N/A
	a) at least one part fixed		N/A
	b) types of cable		N/A
	c) no damaging of the cable		N/A
	d) whole cable can be mounted		N/A
	e) no touching of clamping screws		N/A
	f) metal screw not directly on cable		N/A
	g) replacement without special tool		N/A
	Glands not used as anchorage		N/A
	Labyrinth type anchorages		N/A
5.2.10.2	Adequate cord anchorage for type Y and type Z attachment	P	P
5.2.10.3	Tests:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- impossible to push cable; unsafe		P
	- pull test: 25 times; pull (N) .....:	60N	P
	- torque test: torque (Nm).....:	0.25Nm	P
	- displacement ≤ 2 mm		P
	- no movement of conductors		P
	- no damage of cable or cord		P
	- function independent of electrical connection		P
5.2.11	External wiring passing into luminaire		N/A
5.2.12	Looping-in terminals		N/A
5.2.13	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
5.2.14	Mains plug same protection		N/A
	Class III luminaire plug		N/A
5.2.16	Appliance inlets (IEC 60320)		N/A
	Installation couplers (IEC 61535)		N/A
	Other appliance inlet or connector according relevant IEC standard		N/A
5.2.17	No standardized interconnecting cables properly assembled		N/A
5.2.18	Used plug in accordance with		N/A
	- IEC 60083		N/A
	- other standard		N/A
5.3	Internal wiring		P
5.3.1	Internal wiring of suitable size and type		N/A
	Through wiring		N/A
	- not delivered/ mounting instruction		N/A
	- factory assembled		N/A
	- socket outlet loaded (A) .....:		N/A
	- temperatures.....:		N/A
	Green-yellow for earth only		N/A
5.3.1.1	Internal wiring connected directly to fixed wiring		N/A
	Cross-sectional area (mm^2) .....:		N/A
	Insulation thickness		N/A
	Extra insulation added where necessary		N/A
5.3.1.2	Internal wiring connected to fixed wiring via internal current-limiting device		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Adequate cross-sectional area and insulation thickness		P
5.3.1.3	Double or reinforced insulation for class II		P
5.3.1.4	Conductors without insulation		N/A
5.3.1.5	SELV current-carrying parts		P
5.3.1.6	Insulation thickness other than PVC or rubber		N/A
5.3.2	Sharp edges etc.		P
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		P
5.3.3	Insulating bushings:		N/A
	- suitable fixed		N/A
	- material in bushings		N/A
	- material not likely to deteriorate		N/A
	- cables with protective sheath		N/A
5.3.4	Joints and junctions effectively insulated		N/A
5.3.5	Strain on internal wiring		P
5.3.6	Wire carriers		N/A
5.3.7	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		P
8	**PROTECTION AGAINST ELECTRIC SHOCK**		—
8.2.1	Live parts not accessible		P
	Basic insulated parts not used on the outer surface without appropriate protection		P
	Basic insulated parts not accessible with standard test finger on portable, settable and adjustable luminaires		P
	Basic insulated parts not accessible with Ø 50 mm probe from outside, other types of luminaires		N/A
	Lampholders and starterholders in portable and adjustable luminaires comply with double or reinforced insulation requirements		N/A
	Basic insulation only accessible under lamp or starter replacement		N/A
	Protection in any position		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Double-ended tungsten filament lamp		N/A
	Insulation lacquer not reliable		N/A
	Double-ended high pressure discharge lamp		N/A
	Relevant warning according to 3.2.18 fitted to the luminaire		N/A
8.2.2	Portable luminaire adjusted in most unfavourable position		N/A
8.2.3.a	Class II luminaire:		N/A
	- basic insulated metal parts not accessible during starter or lamp replacement		N/A
	- basic insulation not accessible other than during starter or lamp replacement		N/A
	- glass protective shields not used as supplementary insulation		N/A
8.2.3.b	BC lampholder of metal in class I luminaires shall be earthed		N/A
8.2.3.c	SELV circuits with exposed current carrying parts:		N/A
	Ordinary luminaire:		N/A
	- voltage under load (V)		N/A
	- no-load voltage (V)		N/A
	- touch current if applicable (mA)		N/A
	One conductive part insulated if required		N/A
	Other than ordinary luminaire:		N/A
	- nominal voltage		N/A
	Class III luminaire only for connection to SELV		N/A
	Class III luminaire not provided with means for protective earthing		N/A
8.2.4	Portable luminaires have protection independent of supporting surface		P
8.2.5	Compliance with the standard test finger or relevant probe		P
8.2.6	Covers reliably secured		P
8.2.7	Luminaire other than below with capacitor $> 0,5\ \mu F$ not exceed 50 V 1 min after disconnection		N/A
	Portable luminaire with capacitor $> 0,1\ \mu F$ (0,25) not exceed 34 V 1 s after disconnection		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Other luminaires with capacitor > 0,1 μF (0,25) with plug and track adaptors not exceed 60 V 5 s after disconnection	0V Max.	P
12	**ENDURANCE TEST AND THERMAL TEST**		—
12.3	Endurance test:		P
	- mounting-position .....:	As in normal use	—
	- test temperature (°C) .....:	50°C	—
	- total duration (h).....:	240h	—
	- supply voltage: Un factor; calculated voltage (V):	264V	—
	- lamp used .....:	LED modules	—
12.3.2	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P
12.4	Thermal test (normal operation)	(see attachment no.1)	P
12.5	Thermal test (abnormal operation)	Short circuit output of LED driver, unit shut down immediately, the temperature rise of components are lower than temperature rise of components at normal heating test, so no temperature rise is recorded.	P
12.6	Thermal test (failed lamp control gear condition):		N/A
12.6.1	Through wiring or looping-in wiring loaded by a current of (A) .....:		—
	- case of abnormal conditions.....:		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .:		—
	- measured mounting surface temperature (°C) at 1,1 Un.....:		N/A
	- calculated mounting surface temperature (°C) ..:		N/A
	- track-mounted luminaires		N/A
12.6.2	Temperature sensing control		N/A
	- case of abnormal conditions.....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) ...:		N/A
	- track-mounted luminaires		N/A
12.7	Thermal test (failed lamp control gear in plastic luminaires):		N/A
12.7.1	Luminaire without temperature sensing control		N/A
12.7.1.1	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex V .....:		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions		—
	- Ballast failure at supply voltage (V) .....:		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex V:		N/A
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un..:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C).....:		N/A
	- part tested; temperature (°C).....:		N/A
12.7.1.2	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions		—
	- measured winding temperature (°C): at 1,1 Un..:		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un.....:		—
	- calculated temperature of fixing point/exposed part (°C).....:		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C).....:		N/A
12.7.1.3	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions		—

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Clause	Requirement + Test	Result - Remark	Verdict
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
12.7.2	Luminaire with temperature sensing control		N/A
	- thermal link	Yes ☐ No ☐	—
	- manual reset cut-out	Yes ☐ No ☐	—
	- auto reset cut-out	Yes ☐ No ☐	—
	- case of abnormal conditions		—
	- highest measured temperature of fixing point/exposed part (°C): ..... :		—
	Ball-pressure test:		N/A
	- part tested; temperature (°C) ..... :		N/A
	- part tested; temperature (°C) ..... :		N/A

9	**RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE**		—
9.2	Tests for ingress of dust, solid objects and moisture:		P
	- classification according to IP ..... :	For Layout1-4:IP20 For Layout 5: IP67	—
	- mounting position during test ..... :	As in normal use	—
	- fixing screws tightened; torque (Nm) ..... :	--	—
	- tests according to clauses ..... :	Clause 9.2.0-9.2.6	—
	- electric strength test afterwards		P
	a) no deposit in dust-proof luminaire	For Layout 5: IP67	P
	b) no talcum in dust-tight luminaire	For Layout 5: IP67	P
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard	For Layout 5: IP67	P
	c.1) For luminaires without drain holes – no water entry		P
	c.2) For luminaires with drain holes – no hazardous water entry		N/A
	d) no water in watertight or pressure watertight luminaire		N/A
	e) no contact with live parts (IP 2X)	For Layout1-4:IP20	P
	e) no entry into enclosure (IP 3X and IP 4X)		N/A
	e) no contact with live parts through drain holes and ventilation slots (IP3X and IP4X)		N/A
	f) no trace of water on part of lamp requiring protection from splashing water		P

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Clause	Requirement + Test	Result - Remark	Verdict
	g) no damage of protective shield or glass envelope		N/A
9.3	Humidity test 48 h	25°C; 93%R.H.	P
10	**INSULATION RESISTANCE AND ELECTRIC STRENGTH**		—
10.2.1	Insulation resistance test		P
	Cable or cord covered by metal foil or replaced by a metal rod of mm Ø .....:		—
	Insulation resistance (MΩ)		—
	SELV:		P
	- between current-carrying parts of different polarity.....		N/A
	- between current-carrying parts and mounting surface	100MΩ (required: 1MΩ)	P
	- between current-carrying parts and metal parts of the luminaire.....	100MΩ (required: 1MΩ)	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV:		P
	- between live parts of different polarity		N/A
	- between live parts and mounting surface	100MΩ (required 4MΩ)	P
	- between live parts and metal parts	100MΩ (required 4MΩ)	P
	- between live parts of different polarity through action of a switch.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts	100MΩ (required 2MΩ)	P
	- Insulation bushings as described in Section 5		N/A
10.2.2	Electric strength test		P
	Dummy lamp		N/A
	Luminaires with ignitors after 24 h test		N/A
	Luminaires with manual ignitors		N/A
	Test voltage (V):		—
	SELV:		P
	- between current-carrying parts of different polarity.....		N/A

IEC 60598-1:2014			
Clause	Requirement + Test	Result - Remark	Verdict
	- between current-carrying parts and mounting surface	500V	P
	- between current-carrying parts and metal parts of the luminaire.....	500V	P
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
	Other than SELV:		P
	- between current-carrying parts of different polarity.....		N/A
	- between current-carrying parts and mounting surface	2960V	P
	- between live parts and plastic parts.....	L-N and output terminal : L-N and plastic enclosure: 2960V	P
	- between live parts of different polarity through action of a switch.....		N/A
	- between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible metal parts		N/A
	- Insulation bushings as described in Section 5		N/A
10.3	Touch current (mA) .....:	For layout 1: Max.0,11mA For layout 2: Max.0,13mA For layout 3: Max.0,17mA For layout 4: Max.0,17mA For layout 5: Max.0,14mA (limit 0,7mA)	P
	Protective conductor current (mA) .....:		N/A

13	**RESISTANCE TO HEAT, FIRE AND TRACKING**		—
13.2.1	Ball-pressure test	(see Test Table 19 (18.1) of IEC 61347-2-13)	P
13.3.1	Needle-flame test (10 s).....	(see Test Table 19 (18.4) of IEC 61347-2-13)	P
13.3.2	Glow-wire test (650°C).....	(see Test Table 19 (18.3) of IEC 61347-2-13)	P
13.4	Proof tracking test (IEC 60112).....	(see Test Table 19 (18.5) of IEC 61347-2-13)	N/A

Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 61347-1
Australia and New Zealand NATIONAL DIFFERENCES

Lamp controlgear –
Part 1: General and safety requirements

Differences according to..... AS/NZS 61347.1:2016/Amdt 1:2018 compared to IEC 61347-1:2015

	Preface	—
1	Delete the third paragraph and replace with the following: This Standard is an adoption with national modifications as shown in Appendix ZZ and has been reproduced from IEC 61347-1, Ed.3.0 (2015), Lamp controlgear, Part 1: General and safety requirements, and has been varied as indicated to take account of Australian/New Zealand conditions.	—
2	Add the following text after the third paragraph: Amendment 1 to this Standard adds requirements for lamp controlgear to address safety issues identified where lamp controlgear is used in close proximity to or under building thermal insulation. These requirements take into account requirements from AS/NZS 60598.2.2, Luminaires, Part 2.2: Particular requirements—Recessed luminaires (IEC 60598-2-2, Ed. 3.0 (2011) MOD), which apply to recessed luminaires when used in conjunction with building thermal insulation.	—
3	Add the following text after the ninth paragraph: Amendment 1 adds additional requirements and test procedures for lamp controlgear used in close proximity to or under building thermal insulation. These are shown in— (a) Appendix ZZ; and (b) Appendix ZA. The variations listed in Appendix ZZ and Appendix ZA include the following: (i) Classifications and definitions of independent lamp controlgear for use near, or being covered with, building elements or thermal insulation, or both. (ii) Tests, including ingress protection tests and thermal tests for normal and abnormal operating conditions, and marking and instructional requirements for the different classifications, with standardized test box, temperature limits, and requirements for any thermal protection. AS/NZS 61347.1:2016 in its unamended form will also remain current for 12 months. After this time it will be superseded by AS/NZS 61347.1:2016 incorporating Amendment 1. Regulatory authorities that reference this standard in regulation may apply these requirements at a different time. Users of this standard should consult with these authorities to confirm their requirements.	—

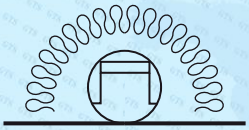
Clause	Requirement + Test	Result - Remark	Verdict
4	Delete the following two paragraphs: Variations made to IEC 61347-1, Ed.3.0 (2015) form the Australian and New Zealand variations for the purpose of the IECEE CB Scheme for recognition of testing to standards for safety of electrical equipment (the CB Scheme). They are listed in Appendix ZZ. The national differences described in AS/NZS 61347.1:2002 (IEC edition 1.0) will apply to the IEC edition 1.0, 2.0 and 2.1.		—
5	Add the following text before the last paragraph: Standards Australia Limited and The Crown in right of New Zealand, administered by the New Zealand Standards Executive thank the International Electrotechnical Commission (IEC) for permission to reproduce symbols in Figures 701 and 702 with modification from IEC 60598-1:2014 and IEC 61347-1:2015. IEC 60598-1:2014 and IEC 61347-1:2015 are the copyright of IEC, Geneva, Switzerland. All rights reserved. Further information on the IEC is available from www.iec.ch. IEC has no responsibility for the placement and context in which the extracts and contents are reproduced by Standards Australia Limited and The Crown in right of New Zealand, administered by the New Zealand Standards Executive, nor is IEC in any way responsible for the other content or accuracy therein.		—
ZZ	Appendix ZZ: Variations to IEC 61347-1:2015 for Australia and New Zealand		—
1	At the end of the existing variation to Clause 1, add the following text: Amendment 1 specifies additional safety requirements for independent lamp controlgear to provide adequate protection in respect of the fire risk associated with the combination of independent lamp controlgear used with recessed luminaires, flammable building elements, flammable debris and building insulation.		N/A
2	Add the following new normative references to the variations to Clause 2: AS 60529, Degrees of protection provided by enclosures (IP Code) AS/NZS 4859.1, Materials for the thermal insulation of buildings—General criteria and technical provisions AS/NZS 61347, Lamp controlgear (all parts)		—

Clause	Requirement + Test	Result - Remark	Verdict
3.1.2	Add the following text: Independent lamp controlgear includes lamp controlgear permanently connected and lamp controlgear able to be disconnected from the light source. Independent lamp controlgear able to be disconnected are considered “separate to the luminaire”. NOTE Separate excludes cutting connection wires. Hereafter, “lamp controlgear” will be shown as “controlgear”.		N/A
	Add new Clause 3.101 and Clause 3.102 as follows:		—
3.101	**Do-not-cover classification** An independent controlgear that can be used where normally flammable materials, including building insulation, are or may be present, but cannot be abutted against any material and cannot be covered in normal use.		P
3.102	**IC classification** An independent controlgear that can be abutted against normally flammable materials, including building insulation, and can be covered in normal use. Building elements, building insulation or debris have restricted access to the heated parts of the controlgear.		N/A
3.103	**Non IC classification** An independent controlgear that cannot be abutted against or covered by normally flammable materials or used in installations where building insulation or debris is, or may be, present in normal use. NOTE This classification is not suitable for residential installations.		N/A
4	GENERAL REQUIREMENTS		P
4.101	Supply connection wiring		P

Clause	Requirement + Test	Result - Remark	Verdict
	Independent lamp controlgeal shall be provided with only one of the following means of connection to the LV supply, the means of connection shall be on the following: a) Device for the connection of controlgears b) Terminals. c) Connecting lead (tails) d) Supply cord and plug e) Adapter for engagement with supply tracks f) Appliance inlet or inlet plug g) Installation coupler h) Luminaire coupler i) Integral pins for insertion into socket outlets		N/A
	In Australia, Equipment with supply cords which are not fitted with a plug shall be marked with a cord tag with the symbol for “must be installed by a licensed electrician”. (Refer to Figure ZZ1).		N/A
4.102	General		N/A
	The resistance to dust and solid object provisions of Section 9 of AS/NZS 60598.1 apply, excluding the humidity test, along with the following: a) For independent controlgear with an IP classification greater than IP20, the tests and compliance criteria of Section 9 of AS/NZS 60598.1 shall be applied. b) For independent controlgear with an IC classification, the IP4X probe or IP rating tests of Clause 4.103 and compliance shall be applied.		N/A
4.103	Ingress test for IC classified controlgear		N/A
	Solid foreign objects shall have restricted access to the hot surfaces of IC classified controlgear. The IP4X probe of AS 60529 shall be applied to the controlgear without appreciable force and shall not enter any area where the temperature of any part or surface exceeds the temperature limit for ‘mounting surface: normally flammable surface’ of AS/NZS 60598.1, when the surface is measured while the controlgear is operated in accordance with the thermal test conditions of Paragraph ZA1. NOTE This test is intended to ensure fine flammable insulation material or debris is unlikely to enter controlgear and cause a fire.		N/A
5	General notes on test		P
	For Australia, the rated supply voltage is 240 V/400 V +10%,-6% and for testing according to this Standard, the rated test voltage shall be 240 V/415 V.		P

Clause	Requirement + Test	Result - Remark	Verdict
5.102	Independent controlgear for use near or in contact with building material or insulation Independent controlgear shall be— a) classified, marked and tested for suitability for use near building materials or insulation and classified “Do not Cover”, or b) classfied, marked and tested for suitability for use in contact with building materials and coverable with insulation, and classified as “IC”.	Do not Cover	P
5.103	Thermal tests for “Do-not-Cover” classified controlgear		P
5.103.1	“Do not-Cover” controlgear, normal operation test		P
	Controlgear classified as “Do not Cover” shall be tested in accordance with the requirements of Clause 5.5.		P
5.103.2	“Do-not-Cover” classified controlgear, abnormal operation test	See appended table 5.103.2)	P
	Controlgear classified as “Do not Cover” shall be tested in accordance with the requirements of Paragraph ZA3. When the “Do not Cover” controlgear is tested in accordance with Paragraph ZA3, no temperature shall exceed— a) 90 °C on the mounting surface of the test box; and b) 130 °C on outer surface of the controlgear. There shall be no damage to the controlgear such as scorching, deformation or melting. During the test, thermal protective devices or electronic controls within the controlgear may operate to limit temperatures.		P
5.104	**Thermal tests for “IC” controlgear**		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	Controlgear classified as “IC” shall be tested in accordance with the requirements of Paragraph ZA3. When the “IC” controlgear is tested in accordance with Paragraph ZA3, no temperature shall exceed a) 90°C on the controlgear mounting surface; and b) the lesser of t_c or 90 °C on the outside surface of the controlgear or other places accessible to the relevant test probe of Clause 4.103. There shall be no damage to the controlgear such as scorching, deformation or melting. During the test, no thermal protection device, or electronic control that fully turns off the controlgear shall operate.		N/A
6	Classification		P
6.101	**Independent controlgear classification**		P
	Independent controlgear shall be classified as one of the following: A)Do-not-cover. b)IC. c) Non IC.	Do not Cover	P
7	Marking		P
7.1	In Australia and New Zealand, information, instructions and other texts required by this Standard shall be written in English.		P
	The marking of the rated voltage or rated voltage range shall include 240V for Australia and 230V for New Zealand.		P
	FELV control terminals shall be marked with the warning symbol “Risk of electric shock”		N/A
7.2	Information to be provided, if applicable		N/A
	FELV terminals marked “Risk of electric shock” are not safe to touch		N/A
	Circuit connected to any FELV control terminal shall be insulated for the LV voltage of the controlgear and any terminals connected to the FELV circuit shall be protected against accidental contact.		N/A
7.101	**Controlgear classification symbol**		P

Clause	Requirement + Test	Result - Remark	Verdict
	Independent controlgear shall be marked with the symbol shown in the appropriate figure of this clause and the meaning explained in the instructions provided with the controlgear. Controlgear classified as “Non IC” does not require to be marked. Controlgear classified as “Do not Cover” shall be marked with the symbol shown in Figure 701.  FIGURE 701 REQUIRED SYMBOL FOR DO-NOT-COVER CONTROLGEAR Controlgear classified as “IC” shall be marked with the symbol shown in Figure 702.  FIGURE 702 REQUIED SYMBOL FOR IC CONTROLGEAR		P
7.102	**Additional information to be supplied with the controlgear**		P

Clause	Requirement + Test	Result - Remark	Verdict
	"Do-not-cover" and "Non-IC" classified controlgear shall be supplied with instructions and diagrams showing all dimensions for safe installation and include, as appropriate, the following: (a) The minimum clearance distance from the top and sides of the controlgear to normally flammable building elements. (b) If the minimum clearance distances from each side of the controlgear are different, or there are different minimum clearance distances for various types of normally flammable building element or building insulation, then each minimum clearance distance shall be stated separately. (c) Where controlgear is required to be mounted on a specific surface or has additional installation requirements,for example,use in non-combustible sealing to maintain its IP rating, the relevant information shall be supplied with the controlgear. NOTE Installation in a non-combustible enclosed space may include installation in a rebate in a concrete slab, ceiling or wall.		P
7.103	Independent controlgear		P
	For independent controlgear not supplied with, but intended for use with, a separate lamp or light source container or head, for example, a remote mounted floodlight, the instructions supplied shall specify the independent controlgear parameters for use by the luminaire assembler.		P
7.104	Location and durability of marking		P
	The marking required by Clause 7.101 shall be a minimum size of 5 mm x 5 mm.		P
7.105	Compliance with Clauses 7.101 to 7.104 is checked by inspection.		P
15.101	Power factor correction capacitor		N/A
	Power factor correction capacitors incorporated into controlgear shall be of a type to ensure that any capacitor failure results in a failsafe outcome		N/A
	Not less than Type B capacitors with metal body and break action protection in according with IEC 61048 and AS/NZS 61049		N/A
	Capacitors shall have a minimum voltage rating of 250V at temperature rating of 85^{o}C or 280V at temperature rating of 100^{o}C		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	Capacitors likely to be permanently subjected to the supply voltage and used for radio interference suppression or for voltage dividing, shall comply with IEC 60384-14		N/A
18.2	Resistance to flame and ignition		P
18.2.1	Parts of non-metallic material shall be resistant to flame and ignition. For materials other than ceramic, compliance is checked by the test of 18.2.2, 18.2.3, 18.2.4 and 18.2.5 as appropriate. This requirement does not apply to decorative trims, knobs, wiring insulation and other parts not likely to be ignited or to propagate flames from inside the luminaire. This Clause applies to all parts, including components, even if they have been tested to their own standard.		P
18.2.2	Parts of non-metallic material supporting connections shall withstand the following test: Parts are subject to a test using a nickel-chromium glow-wire. The test apparatus and test procedure shall be those described in AS/NZS 60695.2.10. The glow wire is heated to 750 °C and applied to the test sample for 30 s. For all tests, any flame or glowing of the sample shall extinguish within 30 s of withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 4.187 of ISO 4046-4:2002, spread out horizontally 200 mm ± 5 mm below the sample.	Transformer bobbin; PCB; terminal	P
18.2.3	All other parts of non-metallic material shall withstand the following test: Parts are subject to a test using a nickel-chromium glow-wire. The test apparatus and test procedure shall be those described in AS/NZS 60695.2.10. The glow wire is heated to 650 °C and applied to the test sample for 30 s. For all tests, any flame or glowing of the sample shall extinguish within 30 s of withdrawing the glow-wire, and any burning or molten drop shall not ignite a single layer of tissue paper specified in 4.187 of ISO 4046-4:2002, spread out horizontally 200 mm ± 5 mm below the sample.		N/A

Clause	Requirement + Test	Result - Remark	Verdict
18.2.4	During the application of the 750 °C glow wire test of Clause 13.3.1, if a flame is produced that persists for longer than 2 s, the luminaire is further tested as follows: The needle-flame test of AS/NZS 60695.11.5 is applied to non-metallic parts that encroach within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm above the point of application of the glow wire. The needle flame is applied to the test sample for 30 s. Parts shielded by a barrier that meets the needle-flame test of AS/NZS 60695.11.5 are not tested. NOTE This requires the needle flame to be applied to all parts likely to be impinged upon by the glow-wire flame within the hypothetical envelope of a vertical cylinder positioned above the point of application of the glow-wire. This applies to all parts unless there is a barrier that passes the needle-flame test and is within the cylinder and would protect the part from the glow-wire flame. The duration of burning shall not exceed 30 s after removal of the test flame and any burning drop shall not ignite the underlying parts or tissue paper specified in 4.187 of ISO 4046-4:2002, spread out horizontally 200 mm ± 5 mm below the sample. The needle-flame test is not carried out on parts that are made of material classified as V-0 or V-1 according to AS/NZS 60695.11.10. The sample of material classified in accordance with AS/NZS 60695.11.10 shall be no thicker than the relevant part.	No flame	P
18.2.5	PCBs in luminaires shall be subject to the needle-flame test of AS/NZS 60695.11.5. The needle flame shall be applied for 30 seconds to an edge of the PCB at least 10 mm from a corner. The duration of burning shall not exceed 15 s after removal of the needle flame and any burning droplets shall not ignite the tissue paper placed underneath the PCB. The needle-flame test is not carried out on PCBs made of material that is V-0 rated according to AS/NZS 60695.11.10.	PCB	P

Clause	Requirement + Test	Result - Remark	Verdict
18.3	Lamp controlgear intended for building into luminaires other than ordinary, independent lamp controlgear, and lamp controlgear having insulation subject to starting voltages with a peak value higher than 1500 V shall be resistant to tracking.	Transformer bobbin; PCB, terminal	P

5.103.2	TABLE : Do not Cover classified controlgear, abnormal operation test		P
	Type reference ..... :	EOL.CE.DR12-36 EOL.CE.DR24-36 (Layout 1)	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test (°C)	Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-36	EOL.CE.DR24-36	
Outer surface of controlgear obver transformer	112.3	111.9	130
Mounting surface of controlgear	71.3	69.8	90
Ambient	40,0	40	--

Remark:
Maximum values were recorded.
During the test ,electronic controls within the controlgear operate to limit temperatures :

Figure ZA1

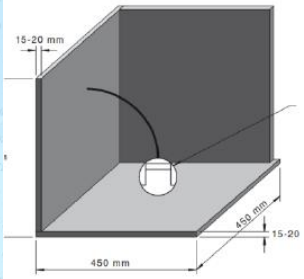
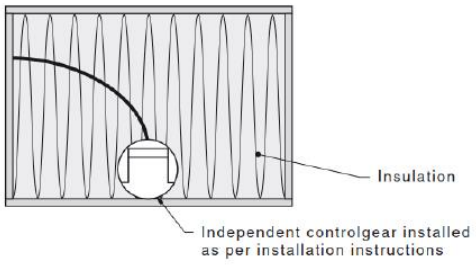


Figure ZA2



5.103.2	TABLE : Do not Cover classified controlgear, abnormal operation test		P
	Type reference ..... :	EOL.CE.DR12-60 EOL.CE.DR24-60 (Layout 2)	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test (°C)	Test (°C)	Limit(°C)

Clause	Requirement + Test	Result - Remark	Verdict

Model :	EOL.CE.DR12-60	EOL.CE.DR24-60	
Outer surface of controlgear obver transformer	109.6	108.5	130
Mounting surface of controlgear	83.5	81.4	90
Ambient	40,0	40	--
Remark: Maximum values were recorded.			

5.103.2	TABLE : Do not Cover classified controlgear, abnormal operation test		P
	Type reference ..... :	EOL.CE.DR12-100 EOL.CE.DR24-100 (layout 3)	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test (°C)	Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-100	EOL.CE.DR24-100	
Outer surface of controlgear obver transformer	118.3	117.5	130
Mounting surface of controlgear	85.7	84.5	90
Ambient	40,0	40	--
Remark: Maximum values were recorded.			

5.103.2	TABLE : Do not Cover classified controlgear, abnormal operation test		P
	Type reference ..... :	EOL.CE.DR12-150 EOL.CE.DR24-150 (Layout 4)	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test (°C)	Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-150	EOL.CE.DR24-150	
Outer surface of controlgear obver transformer	118.5	115.6	130
Mounting surface of controlgear	87.8	85.7	90
Ambient	40,0	40.0	--

Clause	Requirement + Test	Result - Remark	Verdict

Remark:
Maximum values were recorded.

5.103.2	TABLE : Do not Cover classified controlgear, abnormal operation test		P
	Type reference ..... :	EOL.CE.DR12-200 EOL.CE.DR24-200 (Layout 4)	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test (°C)	Test (°C)	Limit(°C)
Model :	EOL.CE.DR 12-200	EOL.CE.DR24-200	
Outer surface of controlgear obver transformer	115.6	113.7	130
Mounting surface of controlgear	85.5	84.9	90
Ambient	40,0	40	--

Remark:
Maximum values were recorded.

5.103.2	TABLE : Do not Cover classified controlgear, abnormal operation test		P
	Type reference ..... :	EOL.CE.DR12-60IP EOL.CE.DR24-60IP (Layout 5)	—
	Lamp used..... :	LED modules	—
	Mounting position ..... :	As in normal use	—
	Test voltage..... :	1. 0,94x220V=206.8V; 2. 1,06x240V=254,4V	—

Temperature (°C) of part	Test (°C)	Test (°C)	Limit(°C)
Model :	EOL.CE.DR12-60IP	EOL.CE.DR24-60IP	
Outer surface of controlgear obver transformer	105.1	104.9	130
Mounting surface of controlgear	70.5	70.1	90
Ambient	40,0	40	--

Remark:
Maximum values were recorded.

Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 61347-2-13
Australia and New Zealand NATIONAL DIFFERENCES

Lamp controlgear

Part 2.13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules

Differences according to .....: AS 61347.2.13:2018 compared to IEC 61347-2-13:2014, IEC 61347-2-13:2014/AMD1:2016

	Appendix ZZ: VARIATIONS TO IEC 61347-2-13:2016 FOR APPLICATION IN AUSTRALIA (Normative)	--
ZZ1	SCOPE This Appendix sets out variations between this Standard and IEC 61347-2-13:2016 and additional requirements to cover issues that have not been addressed by the International Standard. These variations indicate national variations for the purposes of the IECEE CB Scheme and will be published in the IECEECB Bulletin.	P
ZZ2	VARIATIONS The following variations are required in Australia:	P
2	1. After the first paragraph,addthe following: Where IEC normative references are replaced in AppendixZZ by Australian or Australian/New Zealand Standards, all references in the source text to those IEC normative references shall be replaced by references to the corresponding Australian/New Zealand Standards.	P
	2. Delete ‘IEC 61347-1Lamp controlgear—and requirements' and replace with: AS/NZS 61347.1, Lamp controlgear, Part 1: General and safety requirements (IEC 61347-1:2015, MOD)	P
	3. Delete ‘IEC 61558-2-6:2009 Safety of transformers, reactors, power supply unitsand similar products for supply voltages up to 1 100 V — Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers' and replace with: AS/NZS 61558.2.6,Safety of transformers, similar products for supply voltages up to 1 100 V, Part 2.6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers (IEC 61558-2-6 Ed.2, MOD)	P
	4. Delete ‘IEC 61558-2-16:2009, Safety of transformers, reactors, power supply units and similar products for supply 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' and replace with: AS/NZS 61558.2.16:2010, 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	P
4	At the end of the clause, add the following: -Where the controlgear has accessible outputs, the controlgear shall be SELV output and conform with Annex I.	P

Clause	Requirement + Test	Result - Remark	Verdict
8	Delete text andreplace with the following: The requirements of Clause 10 of IEC 61347-1 apply except that the text of Clause 10.4 shall be deleted and replaced with the following:		P
	Output circuits of SELV controlgear with accessible outputs shall not exceed 25 V r.m.s. or 60 V d.c. ripple-free d.c. under load except as indicated below.		P
	If the voltage exceeds 25 V r.m.s. or 60 V ripple-free d.c., the output shall comply with the following:		N/A
	a) the touch current shall not exceed: - for a.c.: 0,7 mA (peak); - for d.c.: 2,0 mA;		N/A
	b) the no-load output shall not exceed 35 V peak or 60 V ripple-free d.c.		N/A
	NOTE: The limits given are based on IEC 60364-4-41.		N/A
	For controlgears with more than one supply voltage, the requirements are applicable for each of the rated supply voltages. Controlgear with an output greater than the limits above shall have insulated terminals. Conformance is checked by measuring the output voltage when steady conditions are established, the controlgear being connected to rated supply voltage and rated frequency. For the test under load, controlgear is loaded with a resistance which would give rated output (current or wattage respectively) at rated output voltage. The touch current is checked by measurement in accordance with Annex G of IEC 60598-1.		N/A
	Accessible conductive parts separated by double or reinforced insulation, e.g. live parts and the body or primary and secondary circuits, may be bridged (conductive bridged) by resistors or Y2 capacitors provided they consist of at least two separate components of the same rated value (resistance or capacitance) and are rated for the total working voltage and whose impedance is unlikely to change significantly during the individual lifetime of the controlgear. In addition, accessible conductive parts separated by double or reinforced insulation from live parts, as above, may be bridged by a single Y1 capacitor with qualification approval as specified in IEC 60384-14. Y1 or Y2 capacitors shall comply with relevant requirements of IEC 60384-14 and if resistors are used they shall comply with the requirements of test a) in 14.1 of IEC 60065:2001. NOTE "Ripple-free" is conventionally an r.m.s. ripple voltage not more than 10 % of the d.c. component.		P
21	After the first sentence, add the following:		P
	For SELV controlgear, the voltage at the output terminals shall not exceed the SELV limits of Clause10.4 of IEC 61347-1 as modified by Clause8 of this Standard (AS 61347.2.13:2018).		P

Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 60598-1
Australia and New Zealand NATIONAL DIFFERENCES

Differences according to ..... AS/NZS 60598.1:2017 compared to IEC 60598-1:2014

	APPENDIX ZZ VARIATIONS TO IEC 60598-1, Ed 8.0(2014) FOR AUSTRALIA AND NEW ZEALAND (Normative)	—
ZZ1	SCOPE This Appendix sets out variations between this Standard and IEC 60598-1 Ed.8.0(2014) and additional requirements to cover issues that have not been addressed by the International Standard. These variations indicate national variations for the purposes of the IECEE CB Scheme and will be published in the IECEE CB Bulletin.	P
ZZ2	VARIATIONS The following modifications are required for Australian/New Zealand conditions:	--
0.1	At the end of the Clause, insert the following text: Where the term "lamp" is used in this Standard. it is taken to include all electric light sources. LED light sources are subject to the same test parameters as" other discharge lamps". NOTE Portable rechargeable battery operated luminaires should comply with Annex B, 'Appliances powered by rechargeable batteries' of AS/NZS 60335.1, Household and simila electrical appliances-safety, Part 1: General requirements (IEC 60335-1 ED. 5, MOD). In addition, portable, rechargeable, battery-operated luminaires with lithium ion batteries should have overvoltage protection.	--

Clause	Requirement + Test	Result - Remark	Verdict
0.2	Add the following new normative references: IEC 61048, Auxilaries for lamps Capacitors for use in tubular fluorescent and other discharge lamp circuits-general and safety requirements IEC 61049, Auxilaries for lamps-capac for use in tubular fluorescent and other discharge lamp circuits-performan requirements IEC61995-1, Devices for the connection of luminaires for household and similar purposes-part 1: General ISO 8124-1, Safety of toys-Part 1: Safety aspects related to mechanical and physical properties AS/NZS 3112, Approval and test specification and socket-outlets AS/NZS 3120, Approval and test specification extension sockets AS/NZS 3133, Approval and test specificatio switches AS/NZS 3191, Electric flexible cords AS/NZS 60335.2. 29, Household and similar electrical appliances-safety, Part 2.29: Particular requirements for battery chargers AS/NZS 60669, Switches for household and similar fixed electrical installations (series) AS/NZS 60695.2.11, Fire hazard testing Part 2.11: Glowing/hot wire based test methods-glow-wire flammability test method for end-products (EC 60695-2-11: 2000, MOD) AS/NZS 60695. 11.5, Fire hazard testing, Part 11. 5: Test flames-needle test method-apparatus, confirmatory test arrangement and guidance AS/NZS 60884.1, Plugs and socket-outlets for household and similar purposes, Part 1: General requirements AS/NZS 61058.1, Switches for appliances, Part 1: General requirements IEC 61058-1, ed. 3.1(2000), MOD) AS/NZS 61347, Lamp controlgear (series) AS/NZS 61558, Safety of transformers reactors, power supply units and similar products for voltages up to 1 100 V (series)		--
0.4.2	After the first paragraph, insert the following text: In Australia, for equipment, other than class lll equipment, that is intended for connection to the supply mains and not marked with: - a rated voltage of at least 240 V for single-phase equipment or a rated voltage of at least 415 V for three-phase equipment; or - a rated voltage range that includes 240 V for single-phase equipment or a rated voltage range that includes 415 V for three-phase equipment, the rated voltage is equal to 240 V for single-phase equipment and 415 V for three-phase equipment, and the upper limit of the voltage range is equal to 240V for single-phase equipment and 415 V for three-phase equipment.		--
0.5	Insert the following text as the first paragraph: Throughout this document, where there is a relevant Australian/New Zealand Standard, it replaces the IEC Standard unless otherwise specified.		--

Clause	Requirement + Test	Result - Remark	Verdict
0.5.101 (new)	After Clause 0.5.4 add new Clause 0.5.101 as follows: 0.5.101 capacitors Capacitors shall be of a type to ensure that any capacitor failure results in a failsafe outcome (i. e. the capacitor type will fail in the open-circuit mode only and is protected against fire or shock hazard). Capacitors (other than those incorporated in control gear that comply with the relevant standard) shall comply with one of the following: - Capacitors likely to be permanently subjected to the supply voltage, used for radio interference suppression or for voltage dividing shall comply with IEC 60384-14. - Other capacitors shall be not less than Type B capacitors with metal body and break action protection in accordance with IEC 61048 and IEC 61049. A capacitor complying with EIA-456-A, Metallized Film Dielectric Capacitors for Alternating Current Applications shall comply with IEC61049 and IEC 61048: 2006 excluding the endurance test of 18.1.1. NOTE Capacitors of Class S2 (formerly referred to as P2) of IEC 60252 (all parts) do not meet the safety requirements of a Type B capacitor. In addition, capacitors shall have a minimum voltage rating of 250V at a temperature rating of 100C or 280 V at a temperature rating of 85C.	--
0.5.102 (new)	After Clause 0.5.101 add new Clause 0.5.102 as follows:	--
	0.5.102 Control gear Power supplies shall comply with the relevant part 2 of the AS/NZS 61558 series. Control gear shall comply with the relevant part 2 of the AS/NZS 61347 series. Battery chargers used for lighting other than emergency lighting shall comply with AS/NZS 60335.2.29.	--
	Sensor switches and similar control circuits, including those incorporated in other equipment, are considered electronic switches (see Clause 4.8)	--
1.2.101 (new)	After Clause 1. 2.91, add the following definitions:	--
	1.2.101 installation coupler connecting device consisting of an installation female connector and an installation male connector provided with retaining means for permanent connection not intended to be engaged or disengaged under load nor to be engaged or disengaged other than during first installation, during maintenance of the wiring system or during re-configuration of the wiring system **1.2.103 installation male connector** load side portion of an installation coupler which contains the male contacts **1.2.104 installation female connector** supply side portion of an installation coupler which contains the female contacts **1.2.105 installation coupler system** family of installation couplers consisting of one or more installation female connectors compatible by mechanical coding features with one or more installation male connectors, with the same ratings produced according to the specification of one manufacturer	--

Clause	Requirement + Test	Result - Remark	Verdict
2.2	At the end of the Clause, insert the following text: Class 0 luminaires are not permitted in Australia or New Zealand.		--
3.1	After the first paragraph, insert the following text: In Australia and New Zealand, instructions and other texts required by this Standard shall at least be written in English. Compliance is checked by inspection.		N/A
3.2	Delete the second paragraph beginning with 'Marking may be on ballast provided...'.		N/A
TABLE 3.1	1 Second column, second row, delete Item 3.2.21.		N/A
	2 Third column, second row, add the following new item:		N/A
	3.2.21 The relevant symbol for luminaires not suitable for covering with thermally insulating material.		N/A
3.2.3	Delete the text ‘, if other than 25 °C’.		N/A
3.2.12	At the end of the Clause, insert the following text:		N/A
	In Australia, luminaires for household use and similar with supply cords that are not fitted with a plug shall be marked with a cord tag with the symbol for ‘must be installed by a licensed electrician’. (Refer to Figure ZZ1.)		N/A
3.2.23	At the end of the Clause, insert the following text:		N/A
	The additional information shall include the symbol "Do not stare at the operating light source" (see Figure 1) along with an explanation of the symbol.		N/A
3.3.7	Delete Clause and replace with the following		N/A
	3.3.7 Luminaires for use with metal halide lamps shall be provided with instructions that state the substance of the following:		N/A
	To avoid potential unsafe lamp failure, the luminaire shall be switched off for at least 10 minutes at least once a week. In addition, the luminaire shall be operated: — complete with its protective shield; or — with a double jacketed lamp.		N/A
3.3.18	Delete the text ‘, i.e. for indoor use only’.		N/A
3.3.21	Delete the text ‘Caution, risk of electric shock’ and the symbol.		N/A
3.3.101 and 3.3.102 (new)	After Clause 3.3.22, add new Clauses 3.3.101 and 3.3.102 as follows:		—
3.3.101	The instructions shall contain details of the components in the luminaire that require replacement as part of a maintenance program		N/A

Clause	Requirement + Test	Result - Remark	Verdict
3.3.102	The instructions for luminaires, including for remotes or other accessories containing coin/button cell batteries and batteries designated R1, shall include the safety warnings below. Equipment containing one or more coin/button cell/R1 batteries shall have the safety warnings in the instructions accompanying the equipment. The safety warnings are not required where these batteries are not intended to be replaced or are only accessible after damaging the equipment. The safety warnings shall be as follows: – CAUTION: Do not ingest battery—Chemical burn hazard [or equivalent wording]. – [The remote control supplied with] this product contains a coin/button cell battery. If the coin/button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. – Keep new and used batteries away from children. – If the battery compartment does not close securely, stop using the product and keep it away from children. – If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention. NOTE 1 Coin/button cell batteries are small, single cell devices having a diameter greater than their height. NOTE 2 Battery designations are specified in IEC 60086-2.		N/A
4.7.2	Delete the first paragraph and replace with the following:		N/A
	4.7.2 Terminals shall be located or shielded in such a way that, if a wire of a stranded conductor escapes from a terminal when the conductors are fitted, there is no risk of contact between live parts and metal parts that can be touched with the standard test finger, nor shall it be possible to touch a live free wire with the standard test finger when the luminaire is fully assembled for use or open for the replacement of replaceable light sources or starters.		N/A
4.8	1. After the third paragraph, insert the following text:		N/A
	Switches shall comply with AS/NZS 3133, the AS/NZS 60669 series or AS/NZS 61058.1. Switches that indicate an off position shall have contacts with an air break and comply with AS/NZS 3133, AS/NZS 60669.1 or AS/NZS 61058.1.		N/A
	2. Fourth paragraph, delete the text ‘IEC 61058-1’ and replace with ‘AS/NZS 60669.2.1 or IEC 61058-1 classified for 10,000 operating cycles’.		N/A
4.10.4	First paragraph, delete the last sentence and replace with the following:		P

Clause	Requirement + Test	Result - Remark	Verdict
	If the working voltage does not exceed the rated voltage of the capacitor, accessible conductive parts separated from live parts by double or reinforced insulation, as above, may be bridged by a single Y1 capacitor with qualification approval as specified in IEC 60384-14.		P
4.14.6	After the first paragraph, insert the following text:		N/A
	A fixed socket-outlet complying with AS/NZS 3112 or AS/NZS 60884.1 is used for the following test.		N/A
4.32	At the end of the Clause, insert the following text:		P
	Metal oxide varistors shall comply with the requirements of AS/NZS 3100 for metal oxide varistors incorporated in accessories. NOTE The test and assessment is conducted on any circuits connected between phases (between actives and between actives and neutral) and circuits connected between phases and earth (actives-to-earth and neutral-to-earth).	The varistor in the LED driver have additionally comply with Annex Q of IEC 60950-1 which is same requirement of AS/NZS 3100, see VDE certificate	P
4.101 (new)	After Clause 4.32, add new Clauses as follows:		N/A
4.101.1	**Small batteries**		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	Batteries that fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1 shall not be removable without the aid of a tool. Luminaires intended for children under the age of three, or parts of such luminaries that contain batteries, shall not fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1. For luminaires or parts of luminaires containing batteries that fit wholly within the small parts cylinder as specified in Clause 5.2 of ISO 8124-1, the batteries shall not be accessible without the aid of a tool. Compliance is checked by inspection and by the following test. A force is applied without jerks for 10 s in the most unfavourable direction to parts likely to be weak. The force is as follows: – push force, 50 N; – pull force; 30 N; – if the shape of the part is such that the fingertips cannot easily slip off, 50 N; – if the projection of the part that is gripped is less than 10 mm in the direction of removal, 30 N. The push force is applied by test probe 11 of IEC 61032. The pull force is applied by a suitable means, such as a suction cup, so that the test results are not affected. While the force is being applied, the test fingernail of Figure 7 of AS/NZS 60335.1 is inserted in any aperture or joint with a force of 10 N. The fingernail is then slid sideways with a force of 10 N but is not twisted or used as a lever. If the shape of the part is such that an axial pull is unlikely, the pull force is not applied but the test fingernail is inserted in any aperture or joint with a force of 10 N and is then pulled for 10 s by means of the loop with a force of 30 N in the direction of removal. If the part is likely to be twisted, the following torque is applied at the same time as the pull or push force: – 2 Nm, for major dimensions up to 50 mm. – 4 Nm, for major dimensions over 50 mm. This torque is also applied when the test fingernail is pulled by means of the loop. If the projection of the part that is gripped is less than 10 mm, the torque is reduced by 50 %. NOTE The types and dimensions of batteries are specified in IEC 60086-2.		N/A
4.101.2	**Battery compartment fasteners**		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	If screws or similar fasteners are used to secure a door or cover providing access to the battery compartment, the screw or similar fastener shall be captive to ensure that it remains with the door, cover or equipment. Compliance is checked by inspection and by the following test. A force of 20 N is applied to the screw or similar fastener without jerks for a duration of 10 s in any direction.		N/A
5.2.1	1. Delete the first paragraph and replace with the following:		N/A
	Luminaires shall be provided with only one of the following means of connection and isolation to the supply. Fixed luminaires: – device for the connection of luminaires; – terminals; – plug for engagement with socket-outlets; – connecting leads (tails) in accordance with Clause 4.6 requirements; – supply cord; – supply cord and plug; – adapter for engagement with supply tracks; – appliance inlet; – installation coupler; – luminaire coupler. Portable luminaires: – supply cord with plug; – appliance inlet; – inlet plug complying with AS/NZS 3120. Track-mounted luminaires: – adaptor; – connector.		N/A
	2. Delete the second and third paragraphs.		N/A
	3. After Note 3, insert the following text:		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	In Australia, non-portable luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112 or a coupler complying with the relevant standard, except where the luminaire has markings and instructions that comply with Clause 3.2.12, in which case, a plug or coupler is not required. For other than portable luminaires a plug is not required if the luminaire has markings and instructions in accordance with Clause 3.2.12. The plug portion of a luminaire with integral pins shall comply with the relevant requirements of AS/NZS 3112. NOTE 4 PVC-insulated connection cords should not be used with outdoor luminaires in cold alpine locations.		N/A
5.2.2	1. Delete the first paragraph and replace with the following: Supply cords used as a means of connection to the supply, when supplied by the luminaire manufacturer shall be at least equal in their mechanical and electrical properties to those specified in IEC 60227 and IEC60245, as indicated in Table 5.1, or in AS/NZS 3191, and shall be capable of withstanding, without deterioration, the highest temperature to which they may be exposed under normal conditions of use.		N/A
	2. Delete the fourth paragraph and replace with the following: To provide adequate mechanical strength, the nominal cross-sectional area of the conductors shall be not less than: - 0,75mm^2; - 1,0 mm^2 for portable rough service luminaires.		N/A
TABLE 5.2.2	1. Delete Table 5.1 and replace with the following:		N/A
	Table 5.1 — Supply cord Luminaire | Rubber | PVC | No insulation Ordinary class I luminaires | 60245 IEC 51S [c] | 60227 IEC 52 [c] | Ordinary class II luminaires | 60245 IEC 53 [c] | 60227 IEC 52 [c] | Luminaires which are other than ordinary class I and II | 60245 IEC 57 [c] | 60227 IEC 53 [ac] | Portable rough service luminaires | 60245 IEC 66 [c] | PVC insulated and sheathed heavy duty flexible cord | Class III or with SELV circuits luminaires (up to 25 V a.c./60 V d.c.) | | Un-insulated conductor [b] Class III or with SELV circuits luminaires (above 25 V a.c./60 V d.c.), including 50 V a.c./120 V d.c. | Unsheathed basic insulated conductor | [a] For indoor use only. [b] AS/NZS 3000 may restrict the use of un-insulated conductors in certain special installations. [c] For supply voltages greater than 250 V, higher voltage grade cables and cords than those given in the above table may be necessary.		N/A
5.2.16	At the end of the Clause, insert the following text:		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	Class II luminaires for fixed wiring incorporating an appliance coupler shall not have means to allow further luminaires to be connected by cascading including connection by looping-in. Luminaire couplers incorporated with the luminaire shall comply with IEC 61995-1. Luminaires incorporating installation couplers may have means to allow further luminaires to be connected by cascading provided the through wiring is rated for the current rating of the installation coupler.		N/A
5.2.18	Delete Clause and replace with the following:		N/A
	All portable luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112. Other luminaires with a supply cord shall be fitted with a plug complying with AS/NZS 3112, unless they have the warning specified by Clause 3.2.12.		N/A
5.3.1	Delete the third paragraph and replace with the following:		P
	making protective earth connections only. Functional earth connections shall not be made by wires coloured green, yellow or green/yellow combination. NOTE 101 Internal wires of other colours are not precluded from making protective earthing connections.		P
5.3.1.3	Delete Clause and replace with the following:		N/A
	In class II luminaires, where the internal wiring has a live conductor and the wiring insulation may touch accessible metal parts under normal operating conditions, the insulation, at least at the places of contact, shall comply with the requirements for double or reinforced insulation, e.g. by applying sheathed cables or sleeves.		N/A
7.2.11	Delete the third paragraph and replace with the following:		P
	All conductors, whether internal or external, coloured green, yellow or green/yellow combination, shall only be connected to an earthing terminal.		P
8.2.1	1. Delete the first two paragraphs including Note 1 and replace with the following:		P

Clause	Requirement + Test	Result - Remark	Verdict
	Luminaires shall be so constructed that their live parts and basic insulation are not accessible when the luminaire has been installed and wired as in normal use. Live parts shall not be accessible when the luminaire is opened as necessary for user cleaning or maintenance, or for replacement of lamps, replaceable light sources or (replaceable) starters, even if the operation cannot be achieved by hand. Luminaires with non-replaceable light sources are subjected to the tests of Clause 4.29 prior to applying the tests and inspections of Section 8 of this Standard. NOTE 1 Examples of parts with basic insulation are cables intended for internal wiring, controlgear for building-in, etc. This does not apply to the non-current-carrying parts of lamp caps that comply with the relevant IEC safety standard.		P
	2. Delete the ninth paragraph beginning with 'Covers in fixed luminaires that cannot be removed…'		P
9.2	After Note 1, insert the following new Note:		N/A
	NOTE 101 A designation of IPX7 or IPX8 is considered unsuitable for exposure to water jets (designated by IPX5 or IPX6) and may not comply with requirements for second numeral 5 or 6 unless it is dual coded.		N/A
TABLE 10.3	1. Delete the second row beginning with 'Class I luminaires rated up to and including 16 A…'.		N/A
	2. First column, third row, delete the word 'Metal'.		N/A
TABLE 12.1	1. First column, first row, delete the text—		P
	'Case (of capacitor, starting device, electronic ballast or convertor, etc.)' and replace with the following: 'Case (of control gear, capacitor, starting device, electronic ballast or convertor, etc.)'		P
	2. Add the following new Note after Table 12.1:		N/A
	NOTE 101 Luminaire manufacturers should consider the maximum ambient air temperature in the vicinity of components such as starting devices and electronic ballasts or converters. Component performance specifications advise manufacturers to mark or supply life data as maximum ambient air temperature based on 50,000 h. This t-life is often marked as ta and is the temperature of the air in the vicinity of the component and is not related to the luminaire ta. As such, luminaire manufacturers should measure air temperature in the vicinity of such components, within the luminaire, as even those complying with their tc point measurements can still fail prematurely if t-life is exceeded.		N/A

Clause	Requirement + Test	Result - Remark	Verdict
13.3	Delete Clause and replace with the following:		P
	Resistance to flame and ignition		P
	Parts of non-metallic material shall be resistant to flame and ignition. For materials other than ceramic, compliance is checked by the tests of 13.3.1 and 13.3.2, and 13.3.3 as appropriate. This requirement does not apply to decorative trims, knobs, wiring insulation and other parts not likely to be ignited or to propagate flames from inside the luminaire. This Clause applies to all parts, including components, even if they have been tested to their own IEC or equivalent standard.		P
13.3.1	Parts of non-metallic material supporting connections that could become an ignition source, and parts of non-metallic material within a distance of 3 mm of such connections, shall withstand the glow wire test. Welded connections, soldered connections on printed circuit boards and other connections carrying less than 0.2 A during normal operation are not considered to be an ignition source. The test apparatus, test procedure and criteria shall be those specified in AS/NZS 60695.2.11. The glow wire is heated to 750 °C and applied to one test sample for 30 s.	transformer bobbin; PCB; Inlet	P
13.3.2	All other parts of non-metallic material which do not support connections that could become an ignition source, but provide protection against electric shock or maintain creepage and clearances, shall withstand the glow wire test. The test apparatus, test procedure and criteria shall be those specified in AS/NZS 60695.2.11. The glow wire is heated to 650 °C and applied to one test sample for 30 s.		N/A

Clause	Requirement + Test	Result - Remark	Verdict
13.3.3	During the application of the glow wire test of Clause 13.3.1 and 13.3.2, if a flame is produced that persists for longer than 2 s, the luminaire is further tested as follows: The needle-flame test of AS/NZS 60695.11.5 is applied to non-metallic parts that encroach within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm above the point of application of the glow wire. Parts shielded by a barrier that meets the needle-flame test of AS/NZS 60695.11.5 are not tested. NOTE This requires the needle flame to be applied to all parts likely to be impinged upon by the glow-wire flame within the hypothetical envelope of a vertical cylinder positioned above the point of application of the glow-wire. This applies to all parts unless there is a barrier that passes the needle-flame test and is within the cylinder and would protect the part from the glow-wire flame.	No flame	P
Bibliography	Add the following new informative references: IEC 60252, AC motor capacitors (all parts) AS/NZS 60335.1, Household and similar electrical appliances-safety, Part 1: General requirements(IEC 60335-1 Ed. 5, MOD)		--

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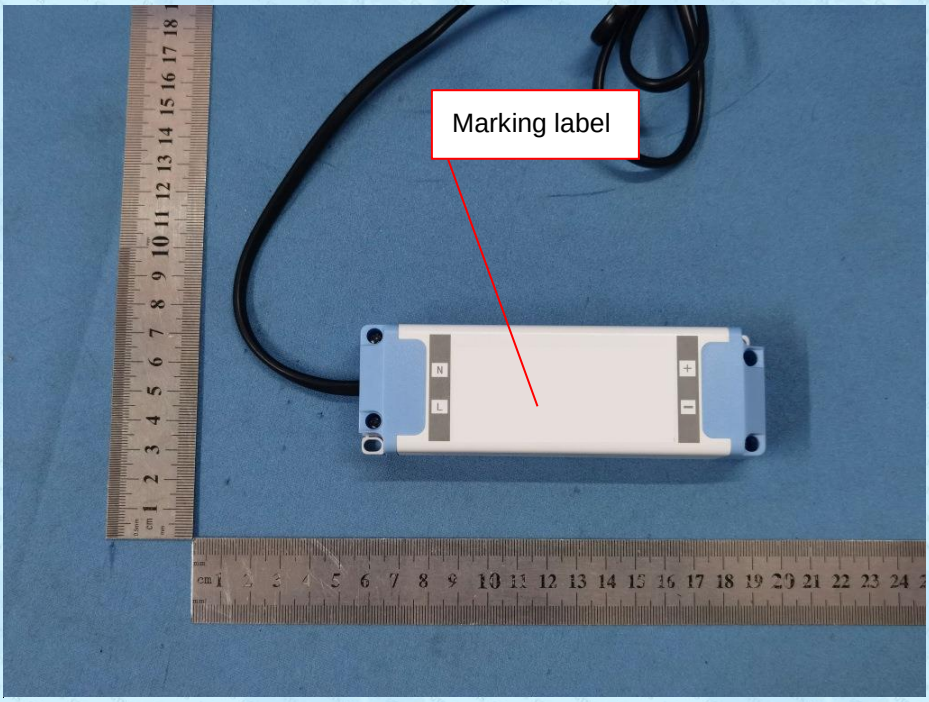

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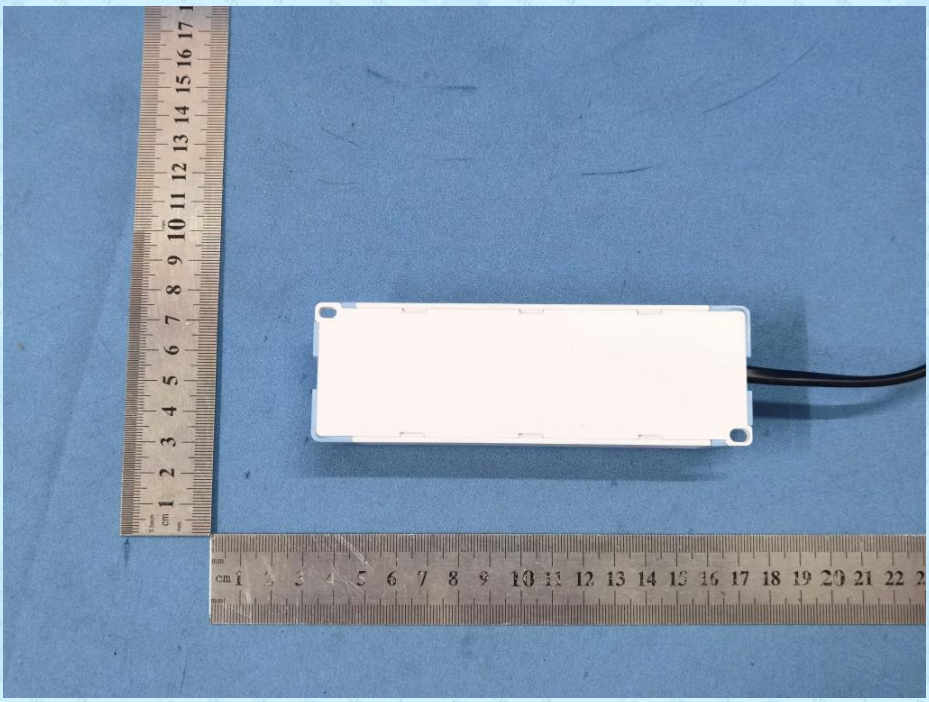

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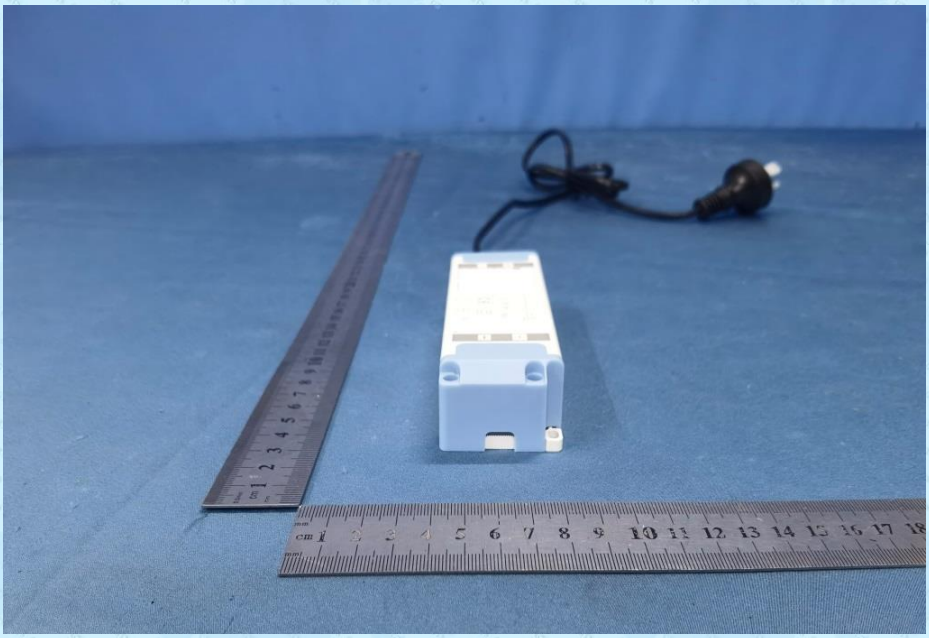

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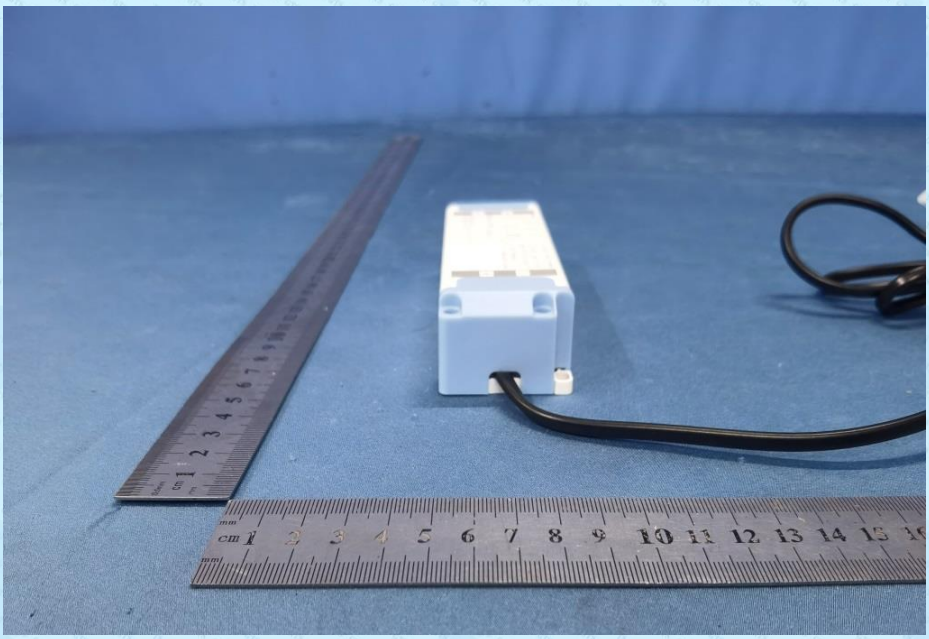

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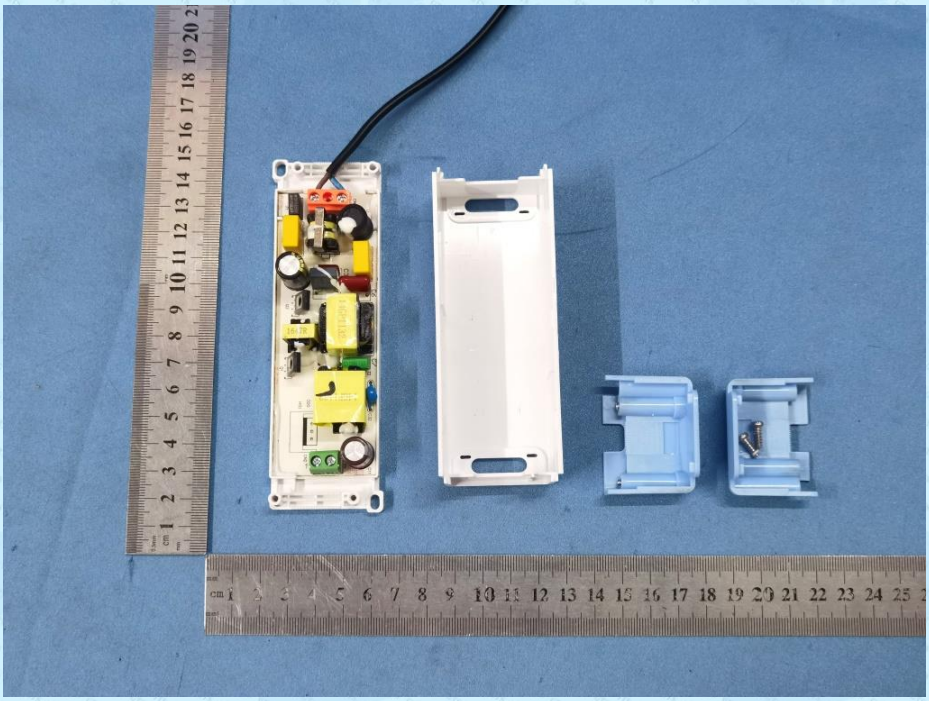

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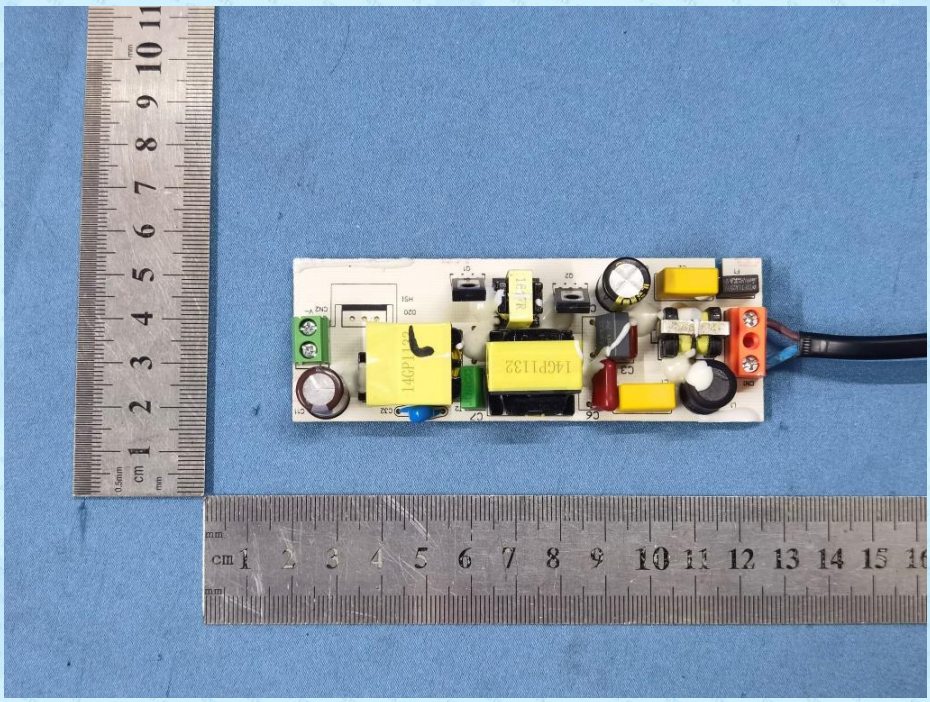

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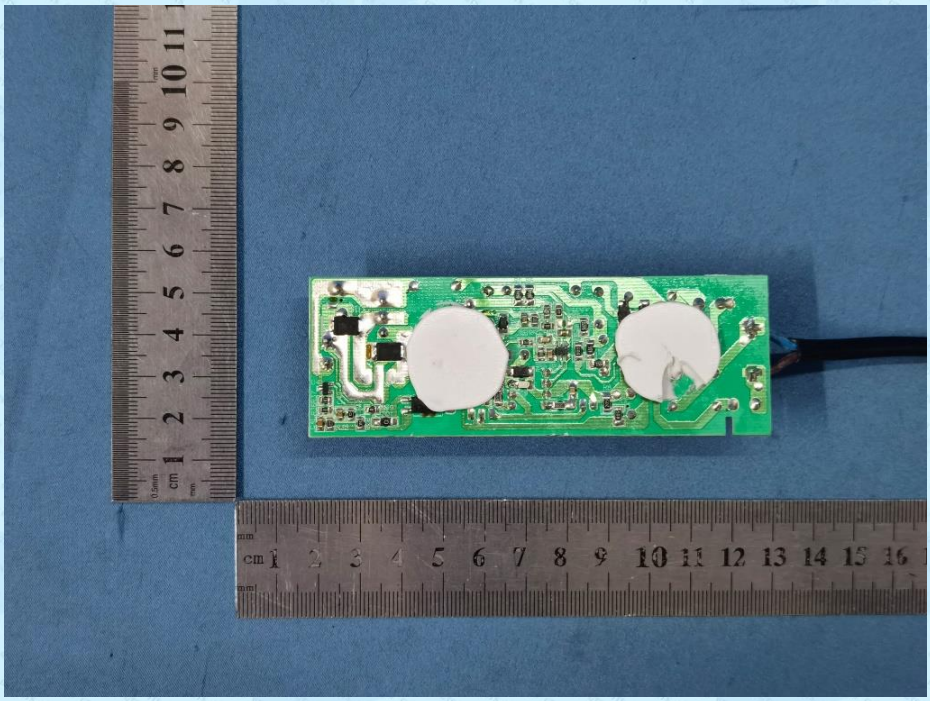

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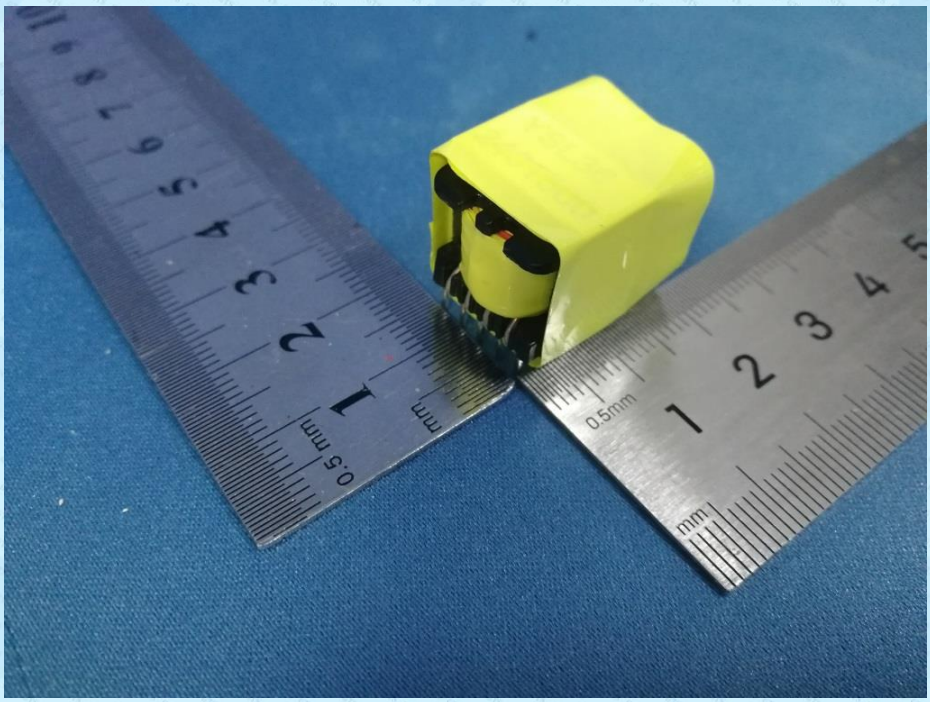

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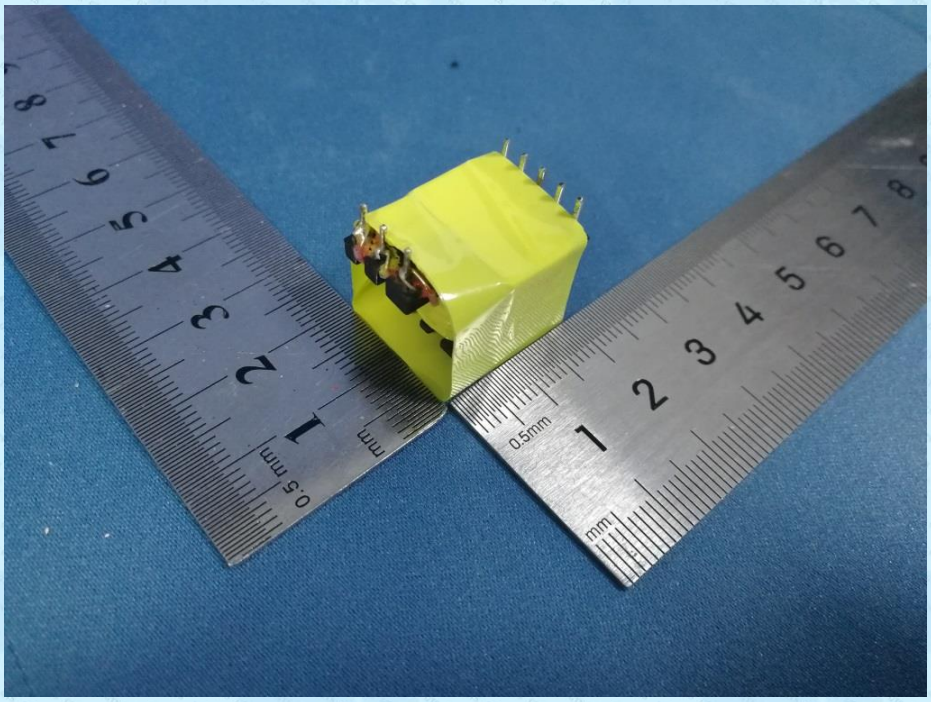

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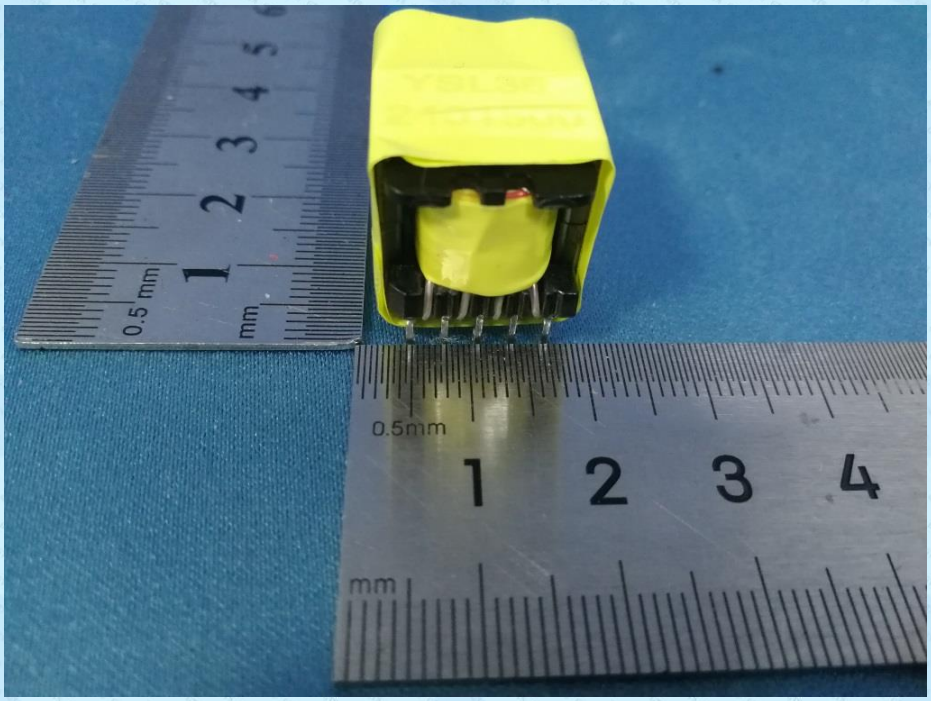

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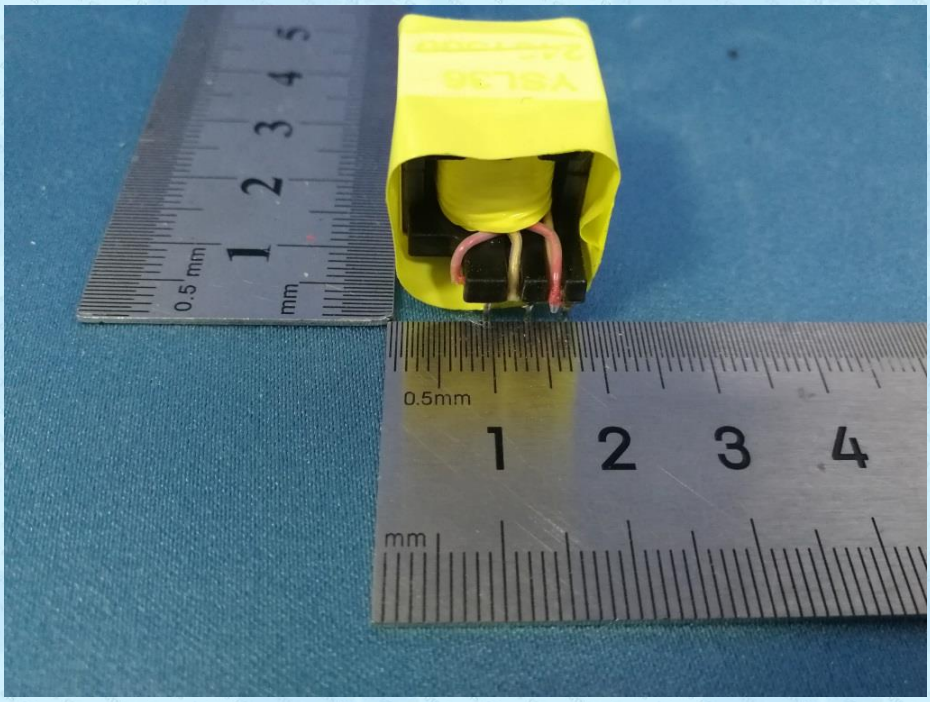

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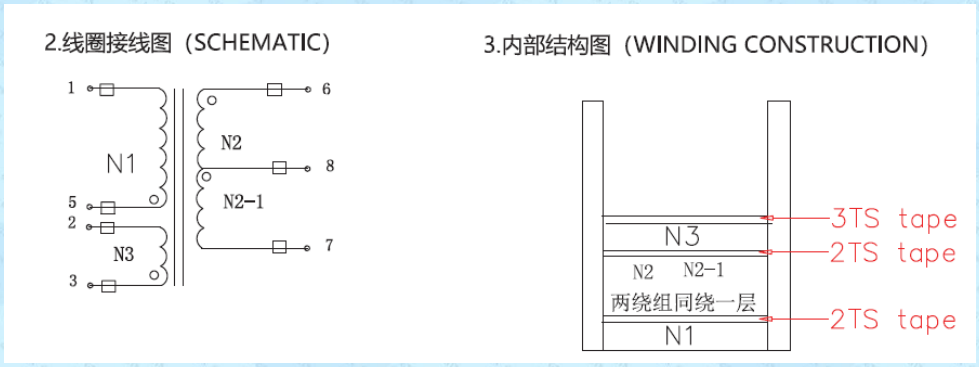

Details of: Layout 2-60W

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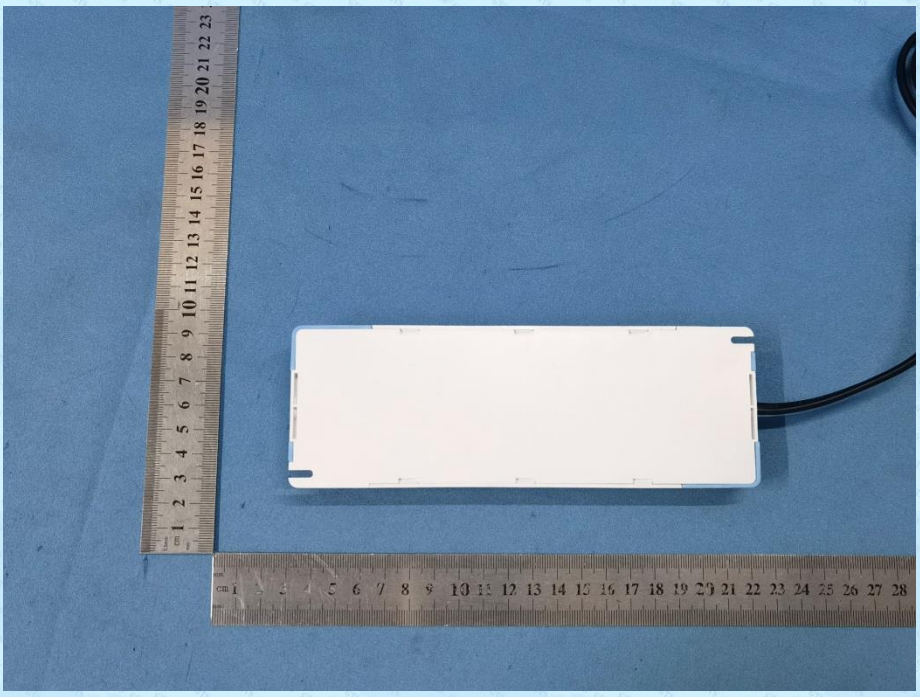

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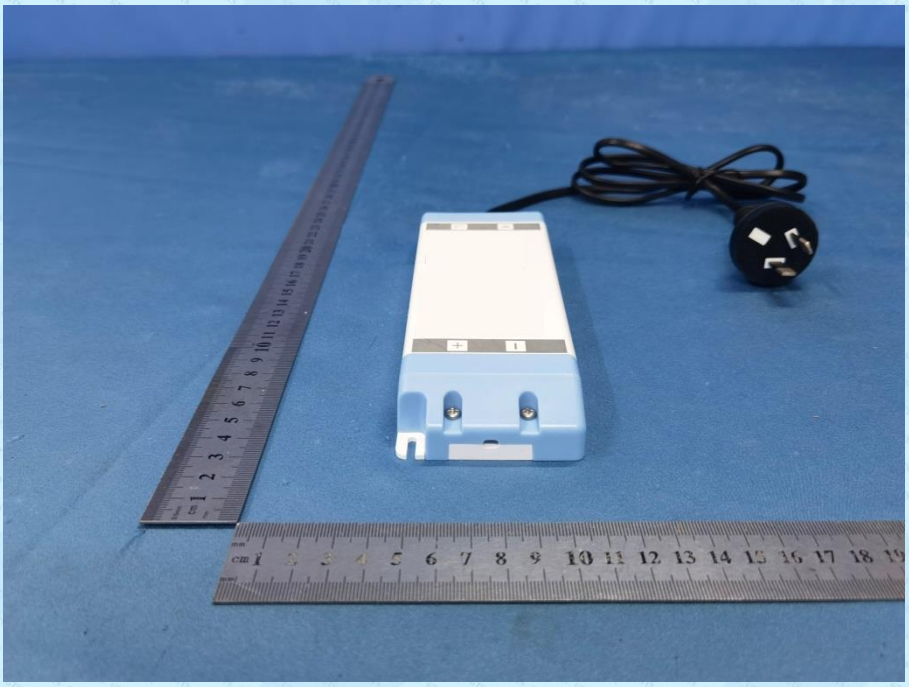

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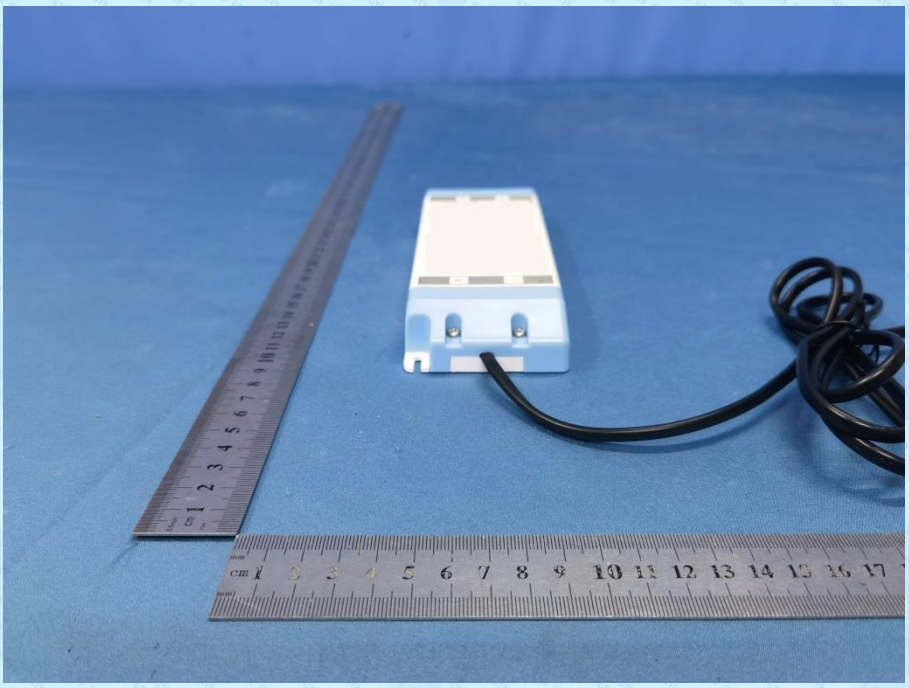

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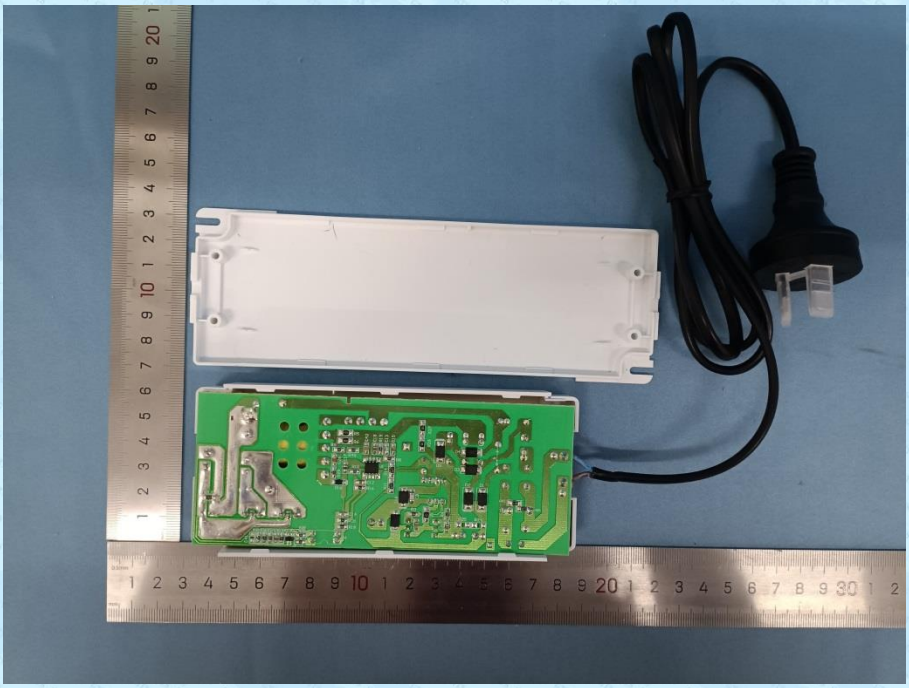

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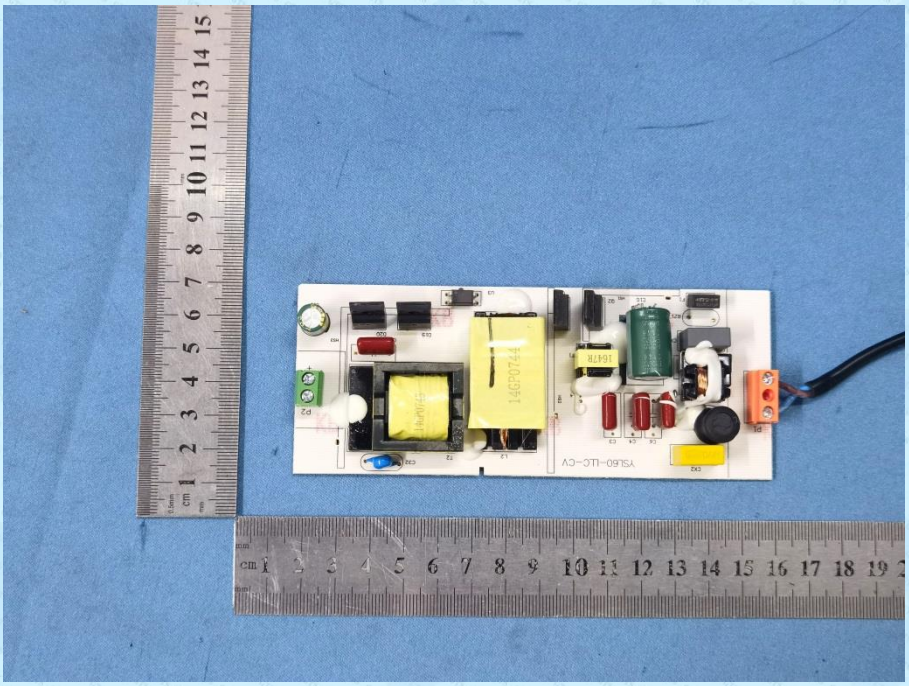

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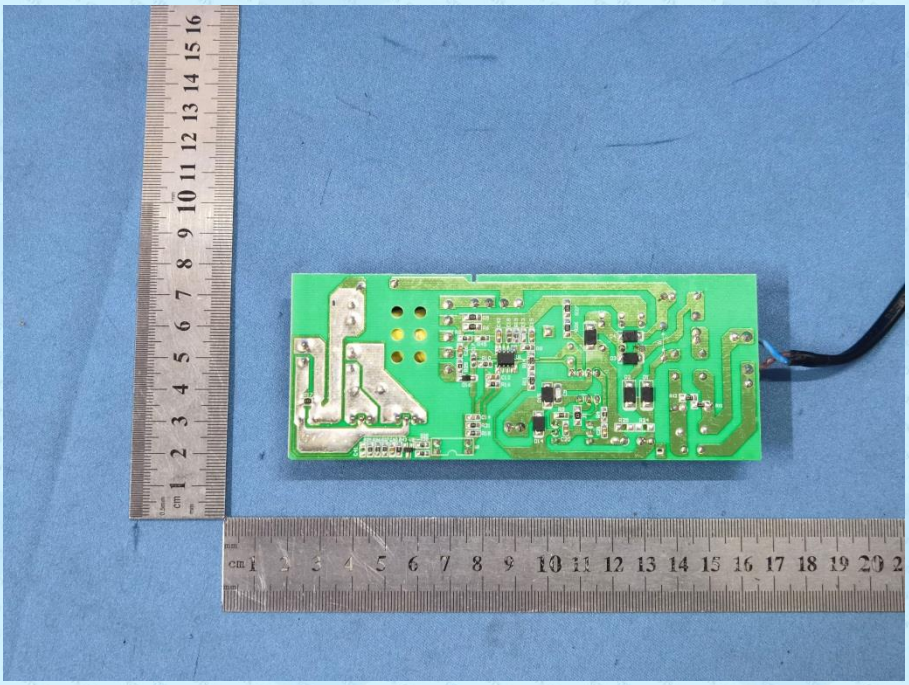

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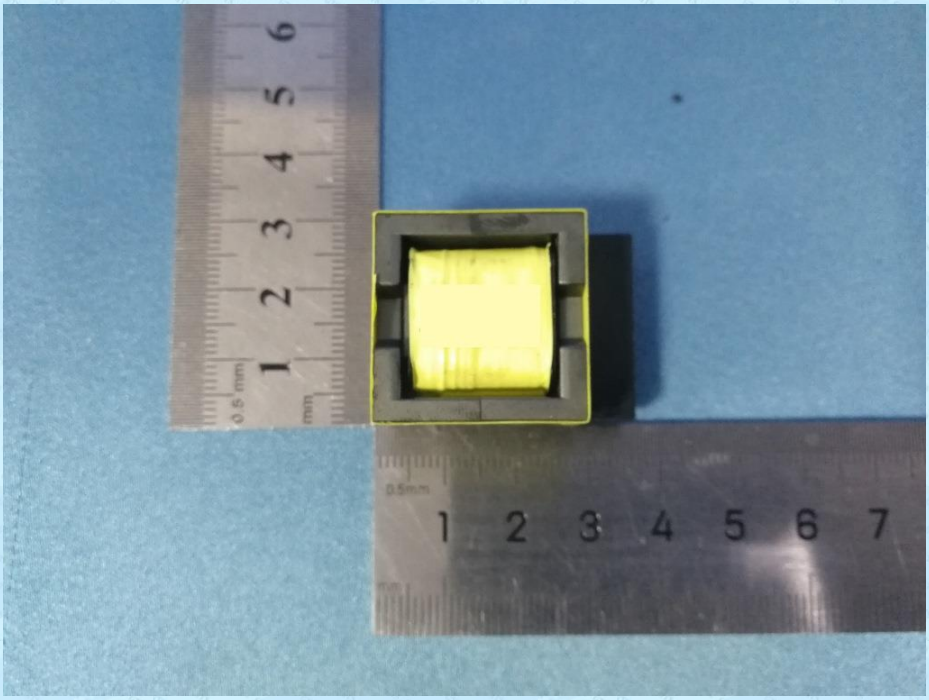

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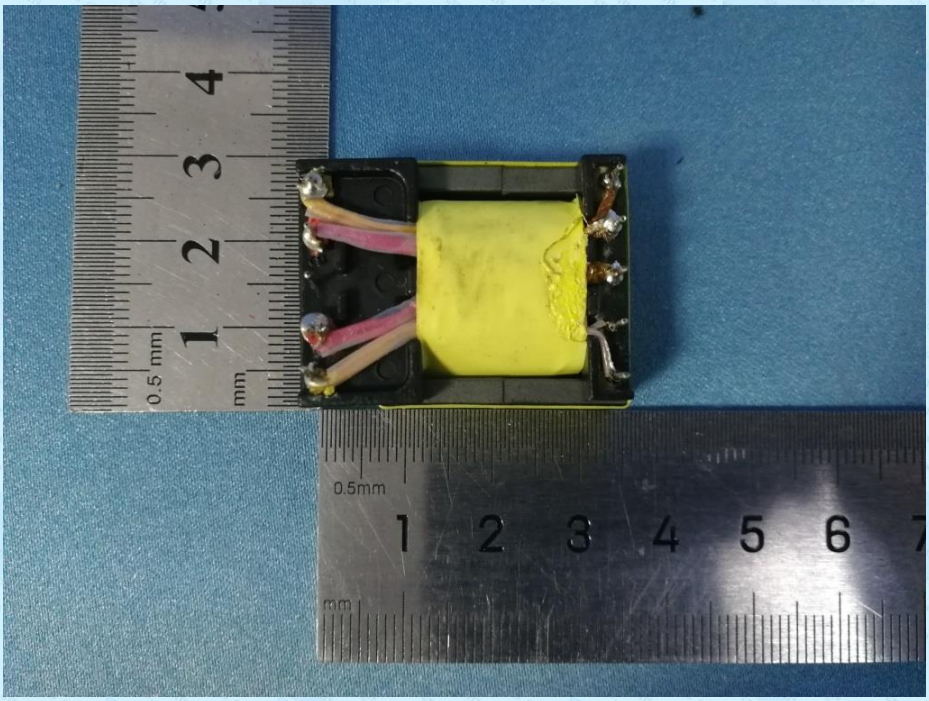

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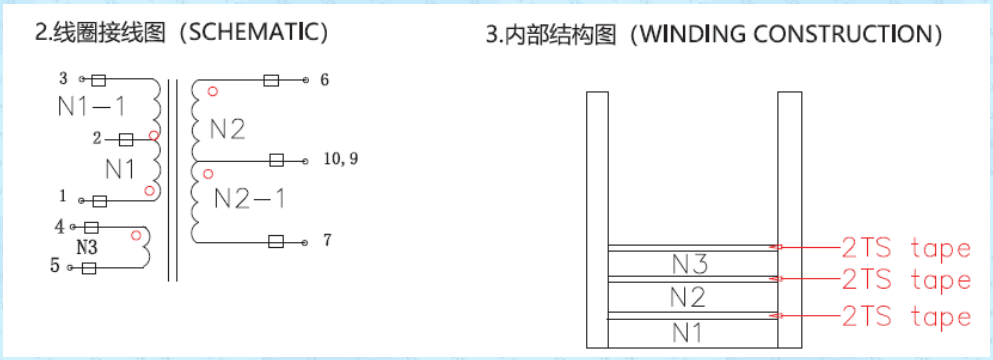

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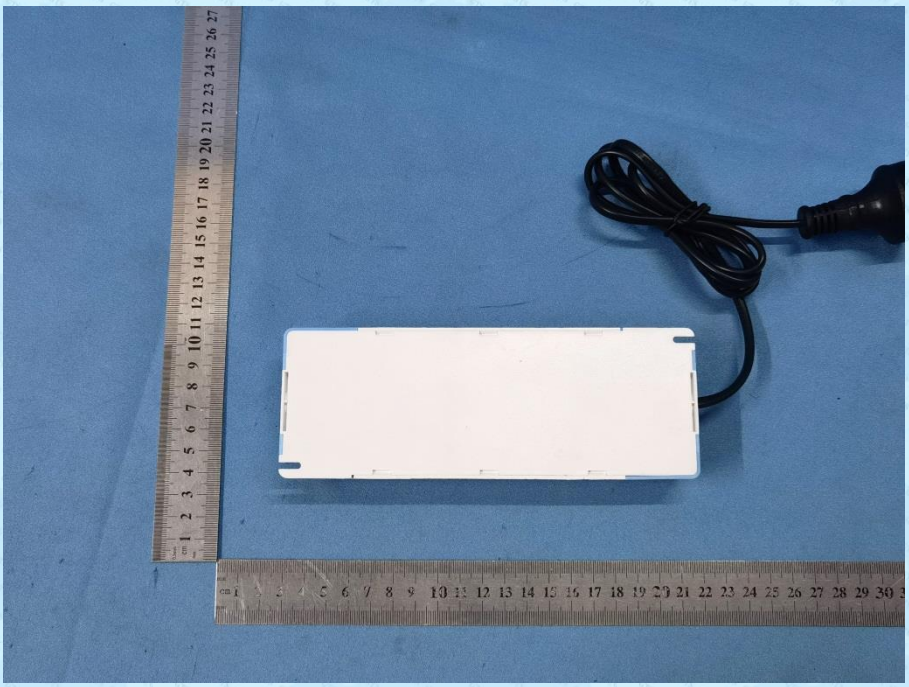

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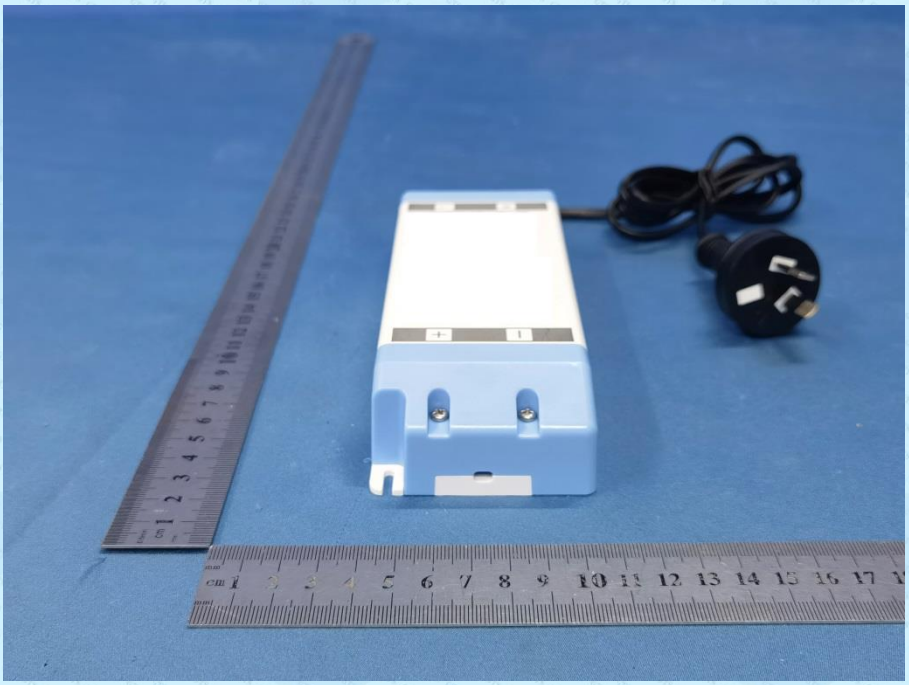

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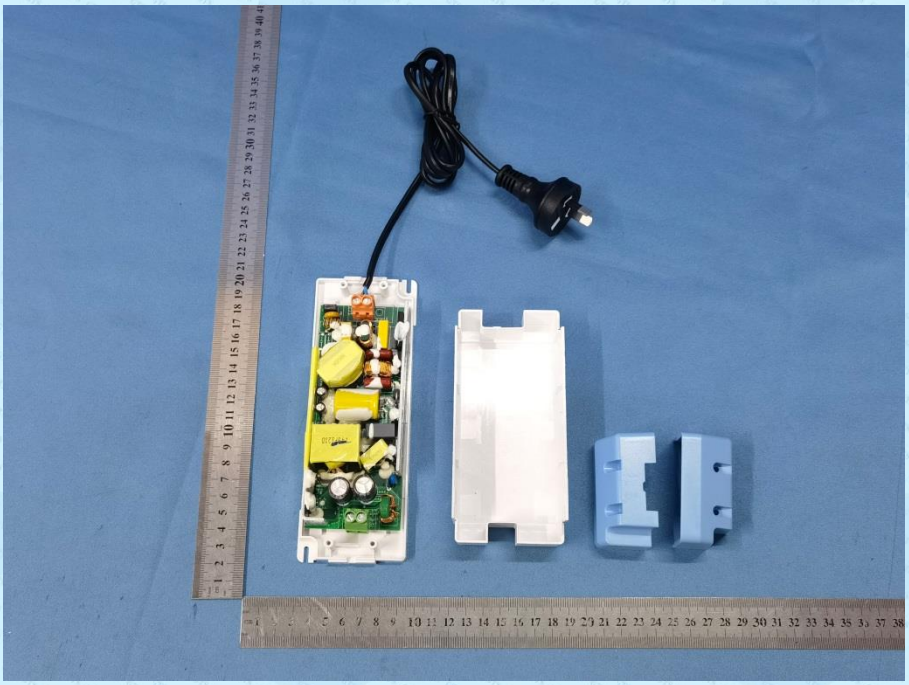

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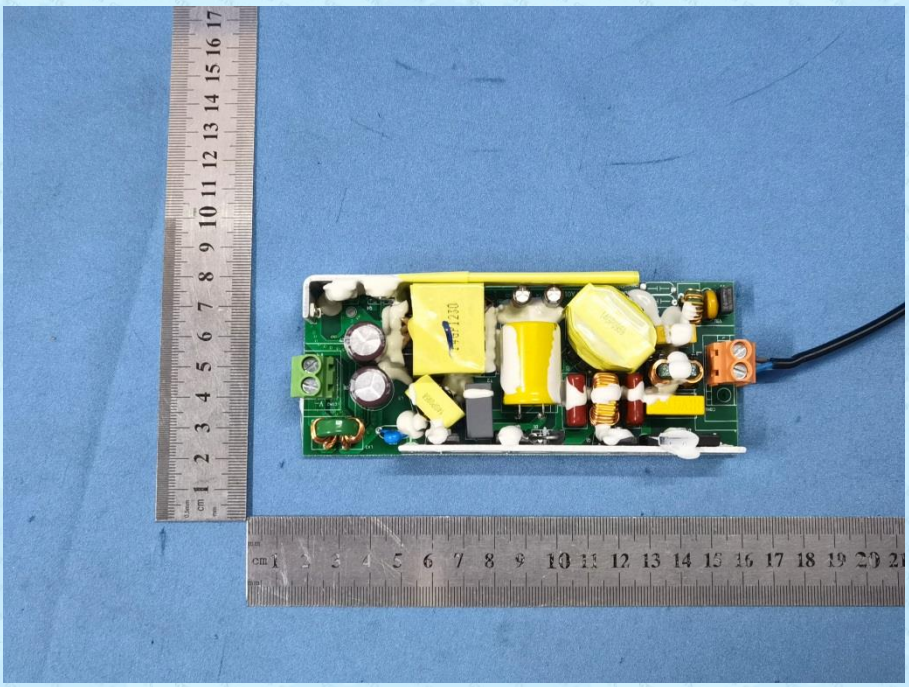

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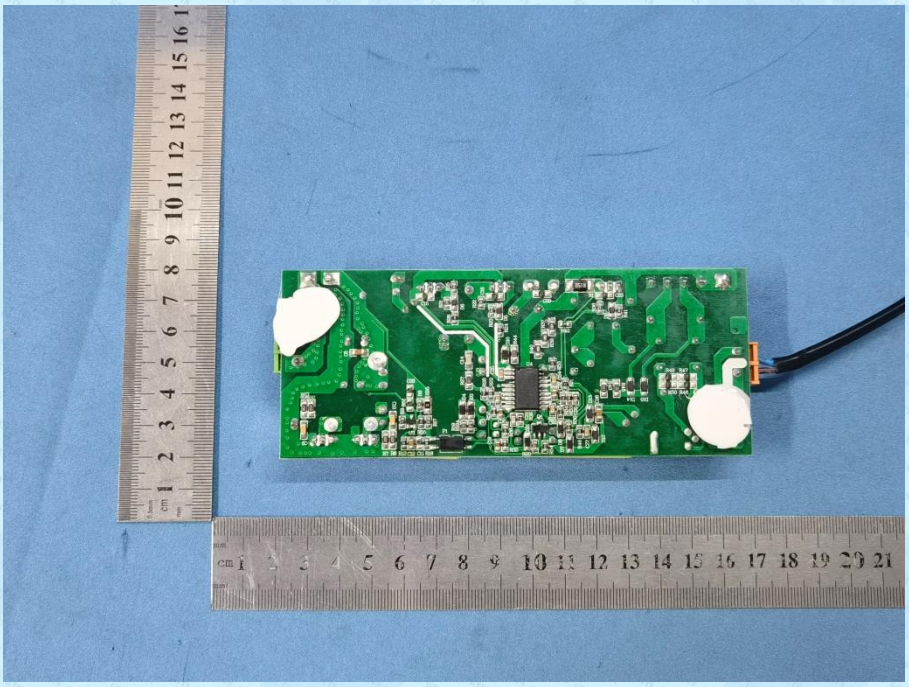

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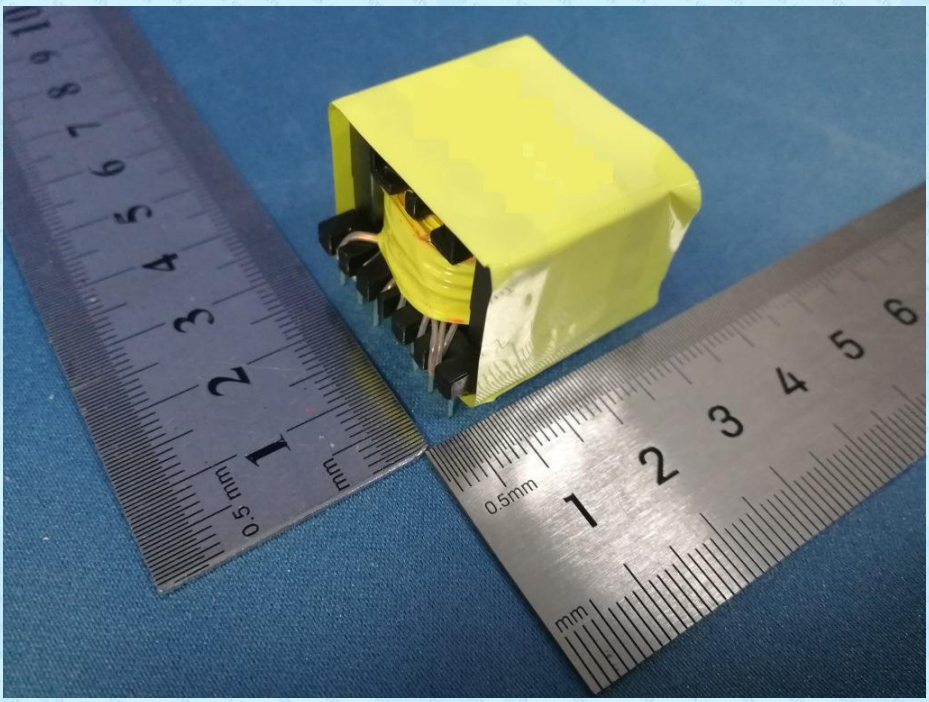

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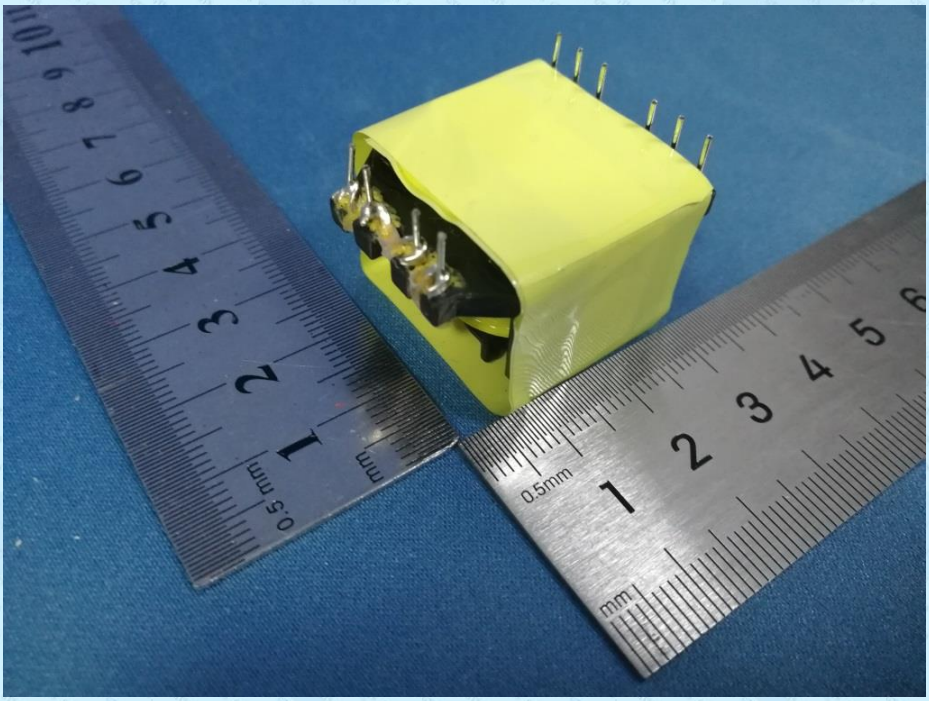

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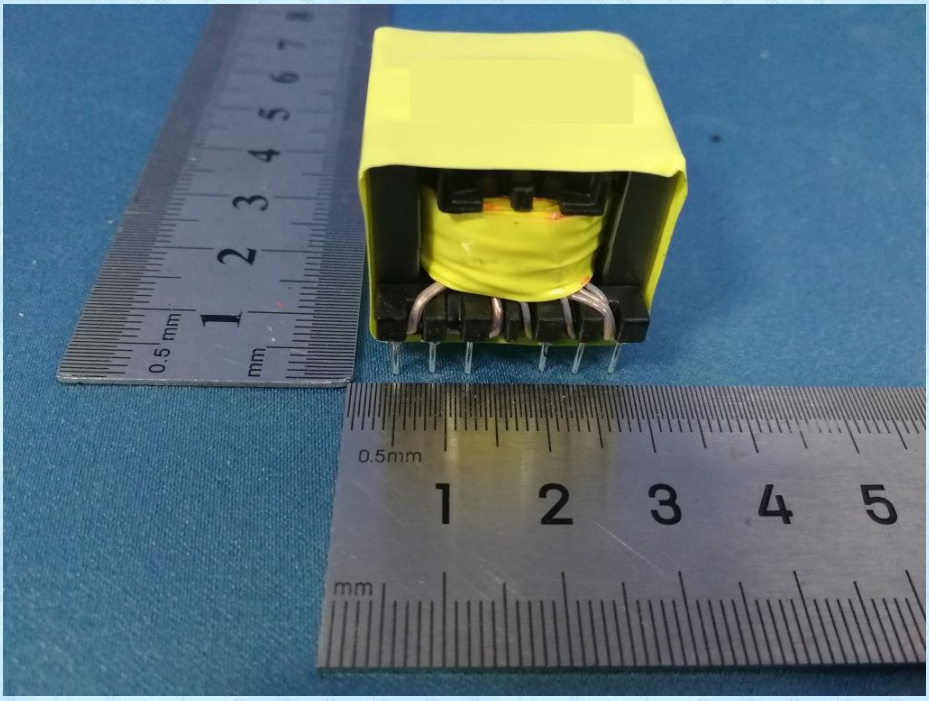

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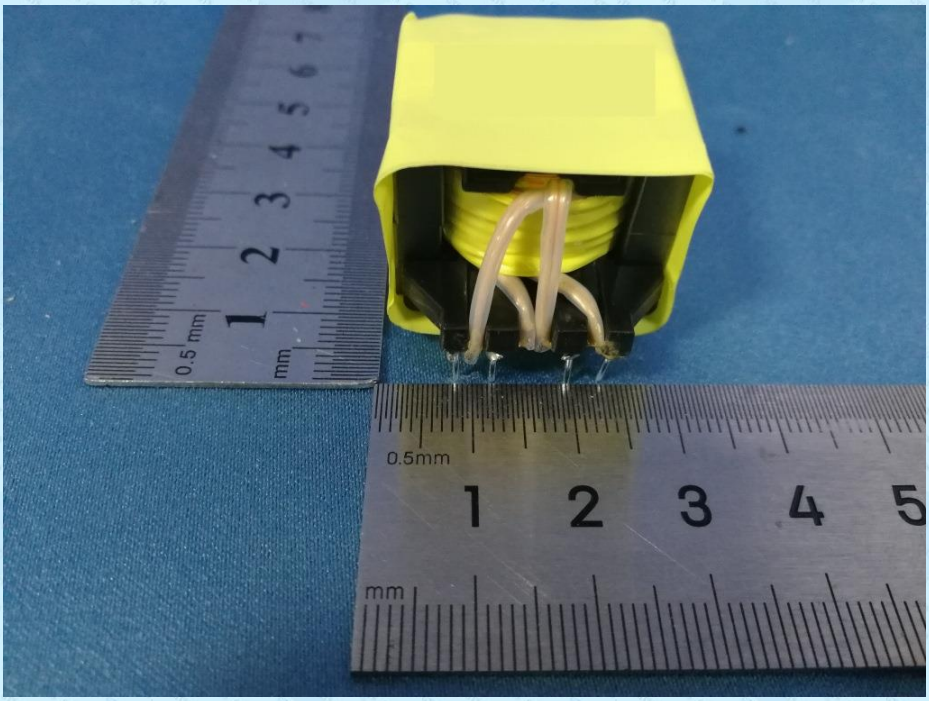

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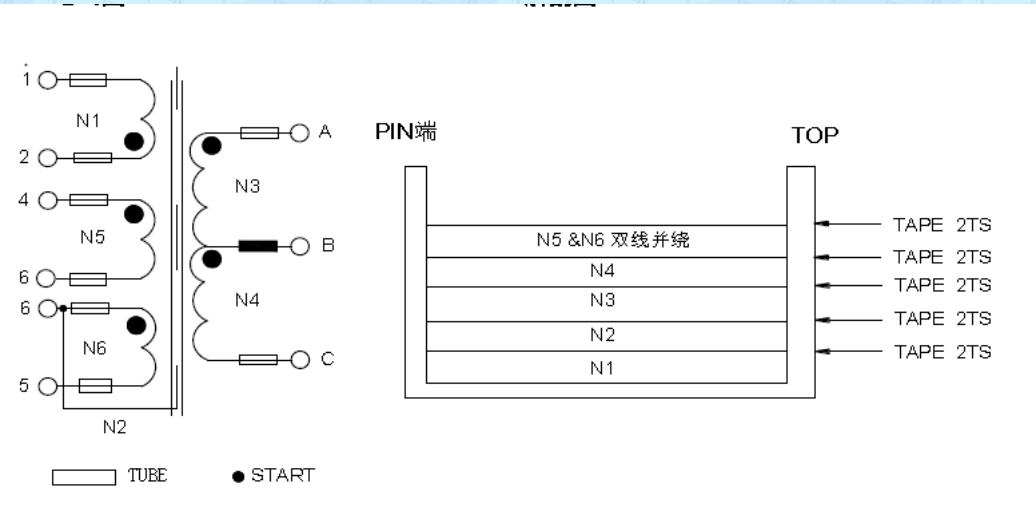

Details of: Layout 4-150W

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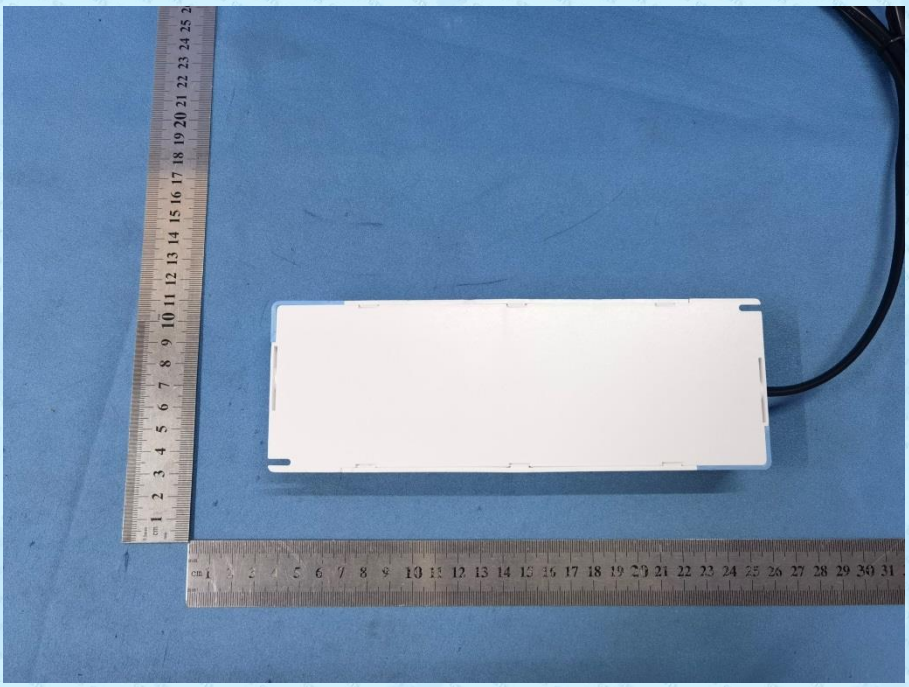

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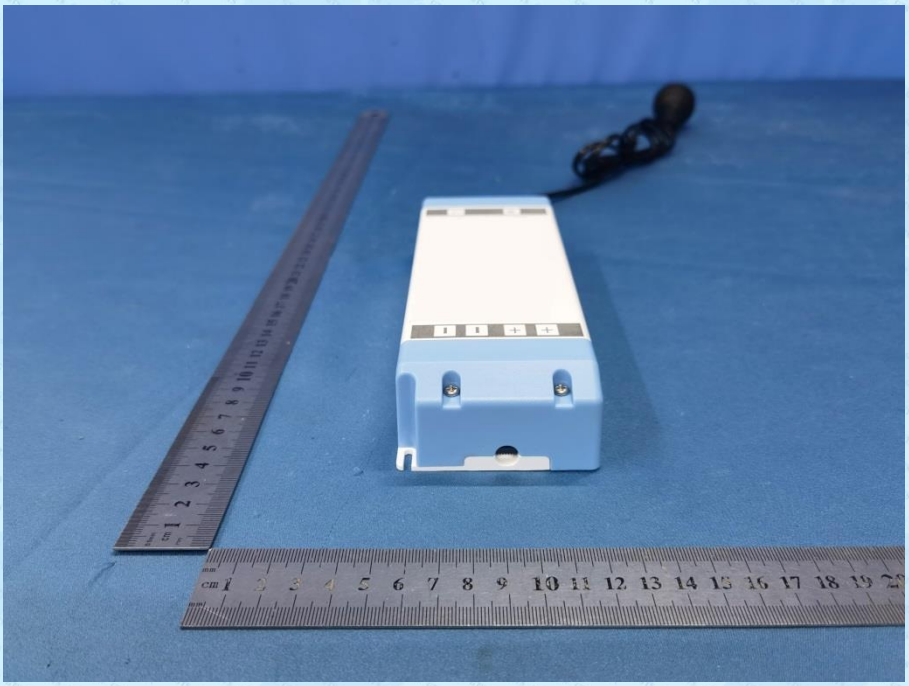

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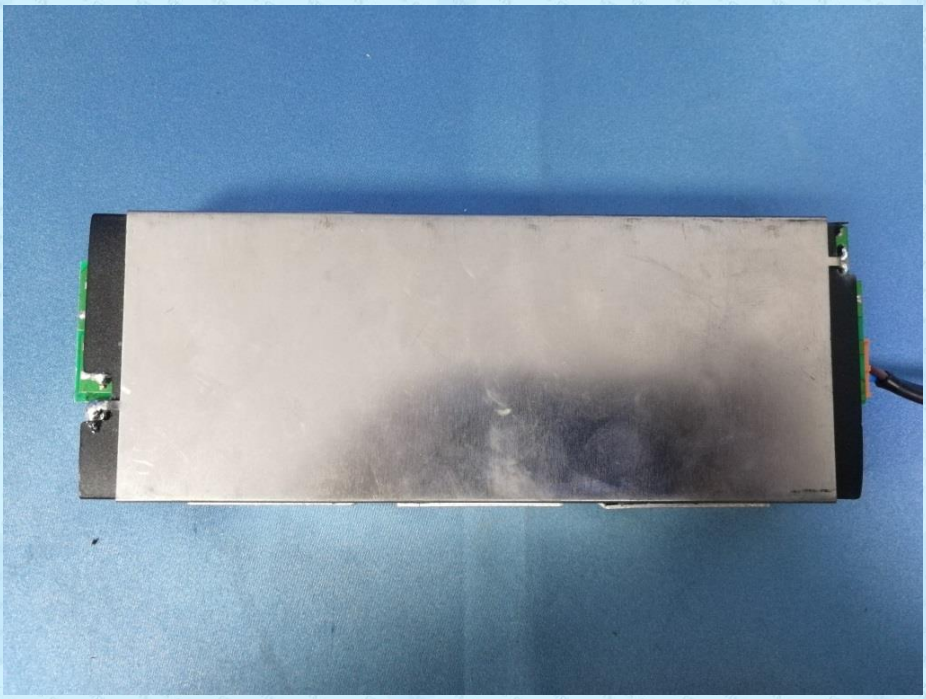

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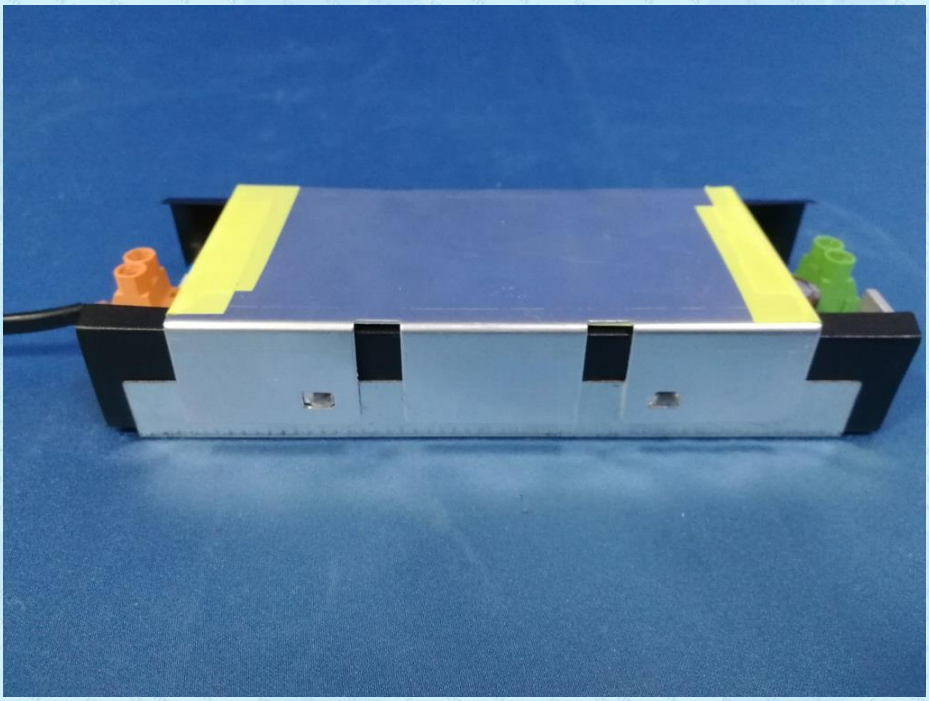

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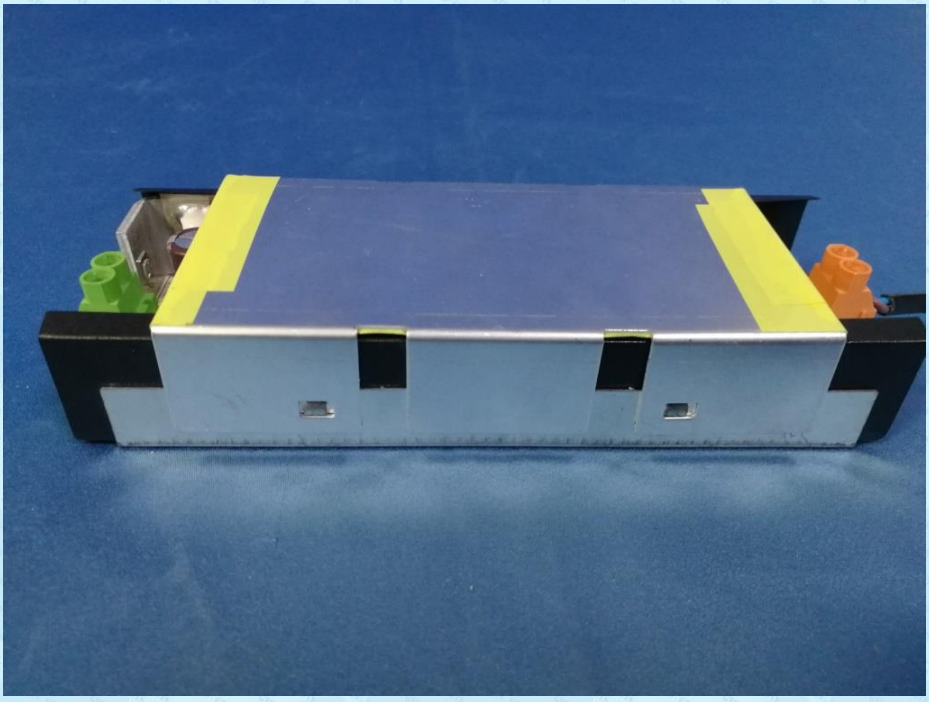

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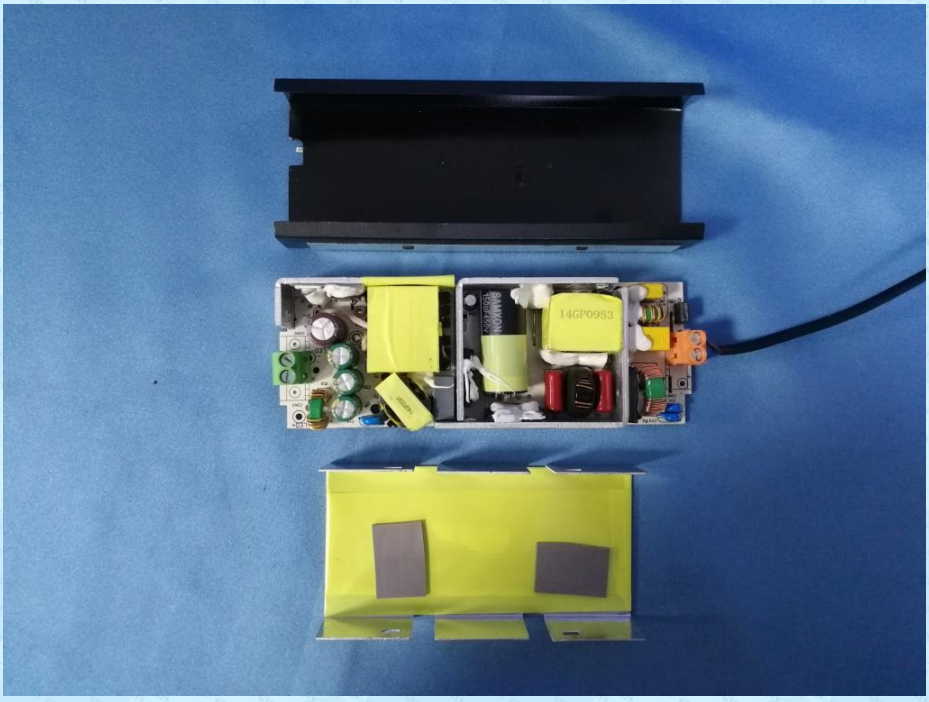

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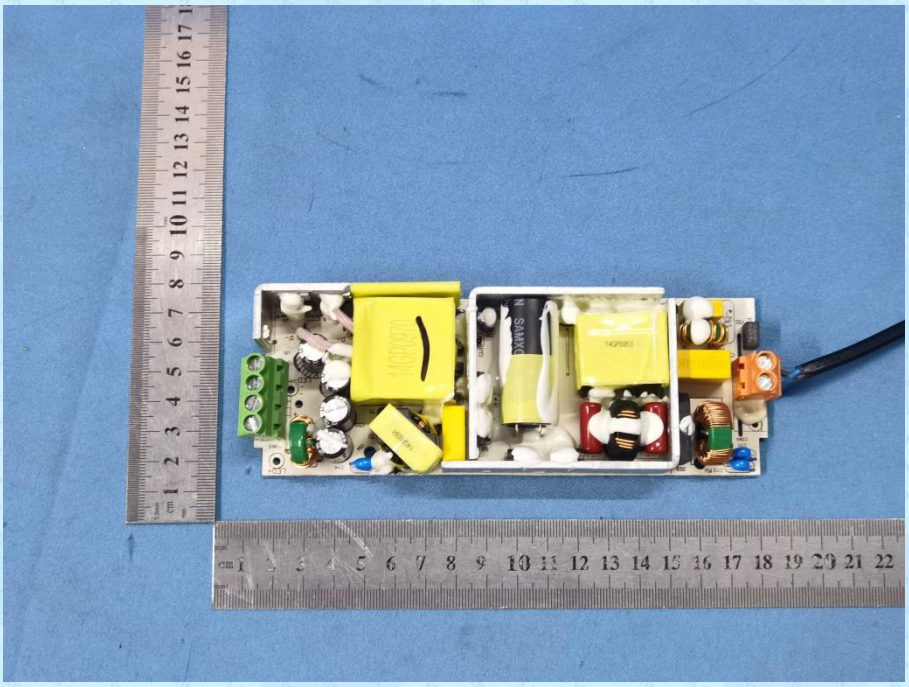

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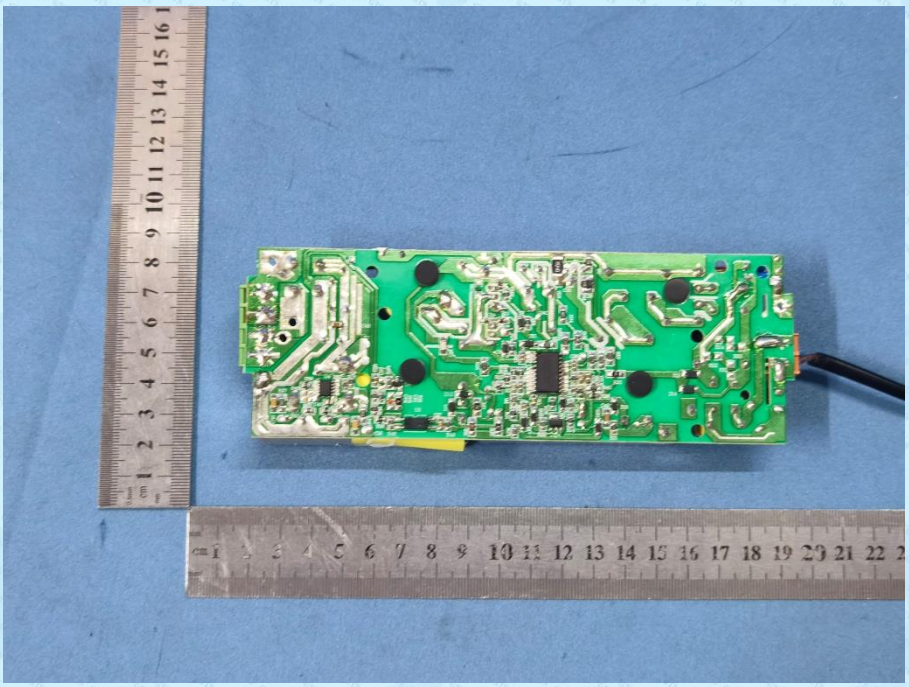

Details of: Layout 4-200W

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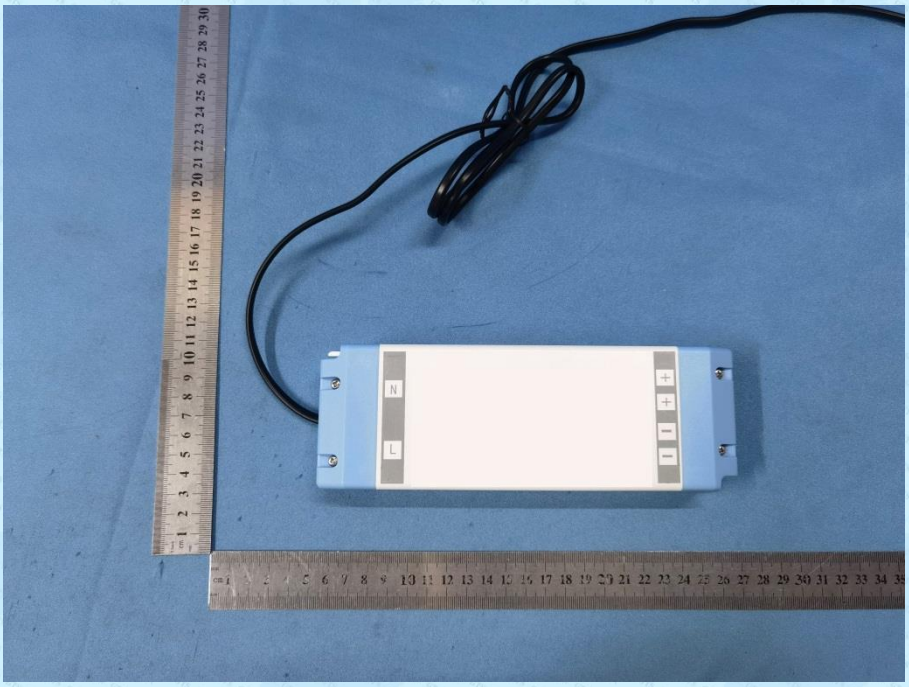

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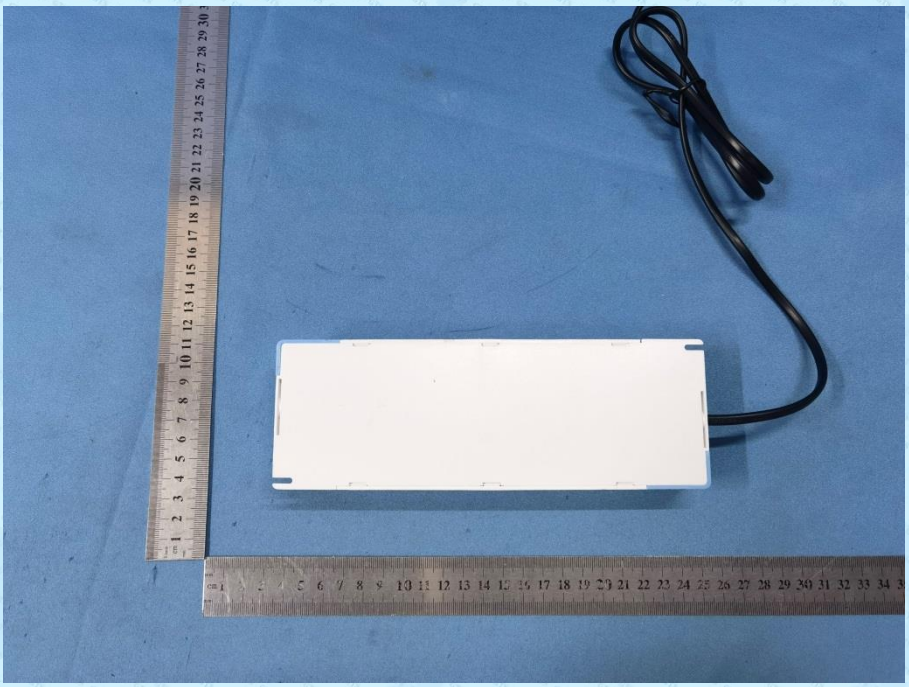

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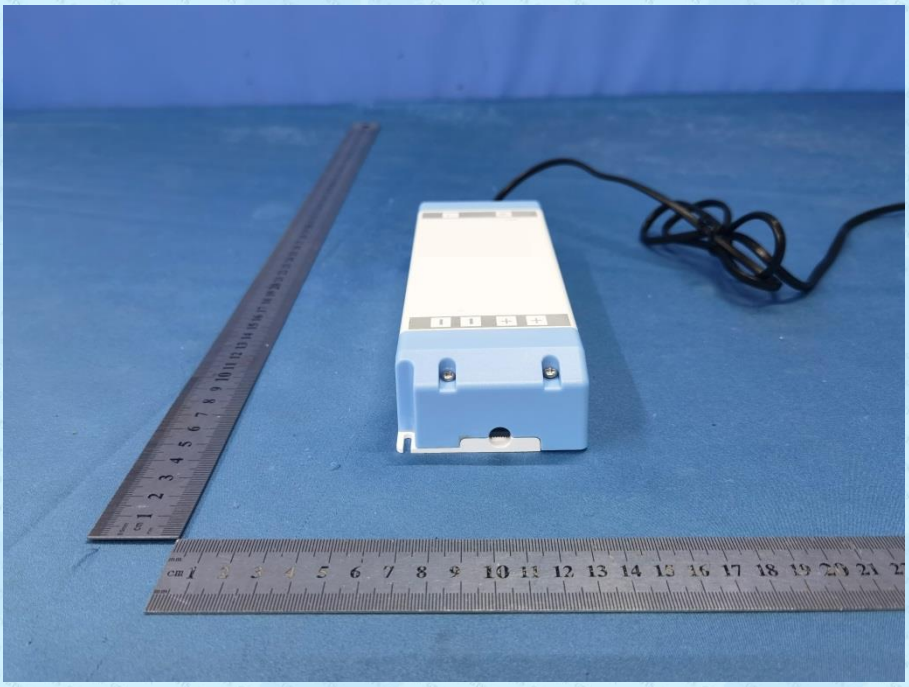

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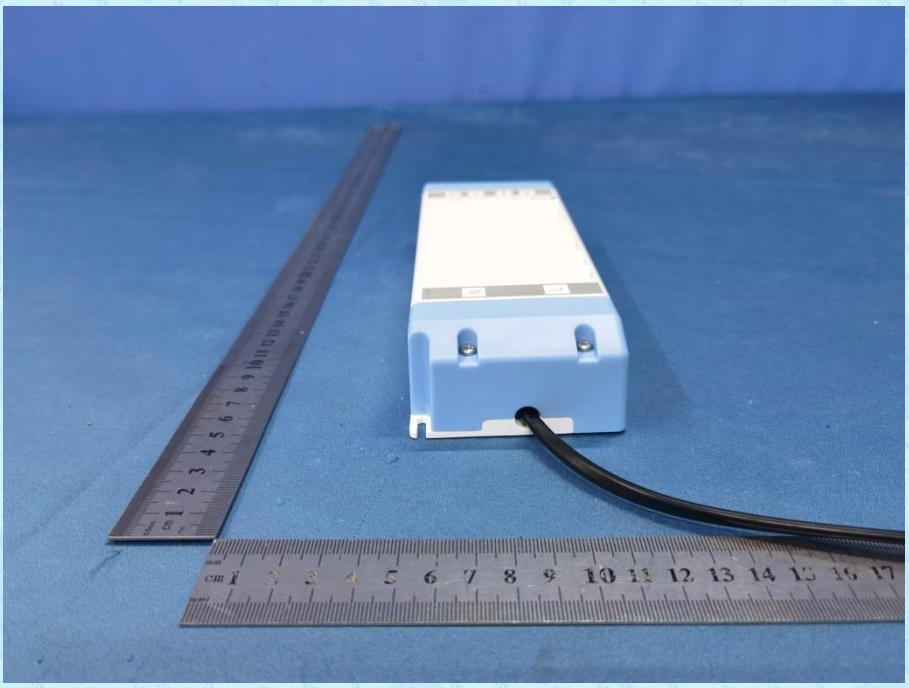

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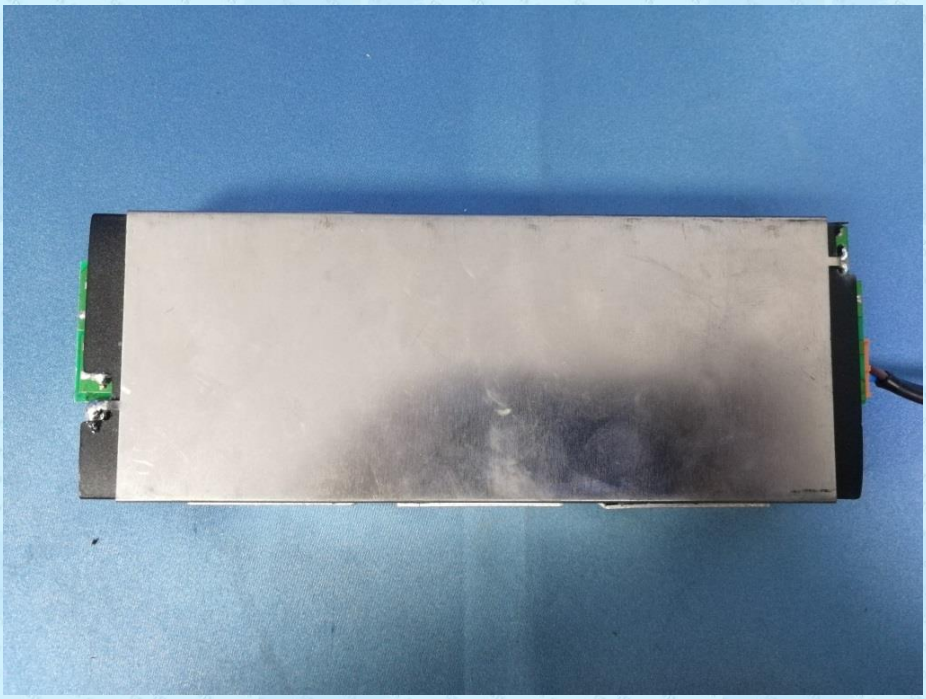

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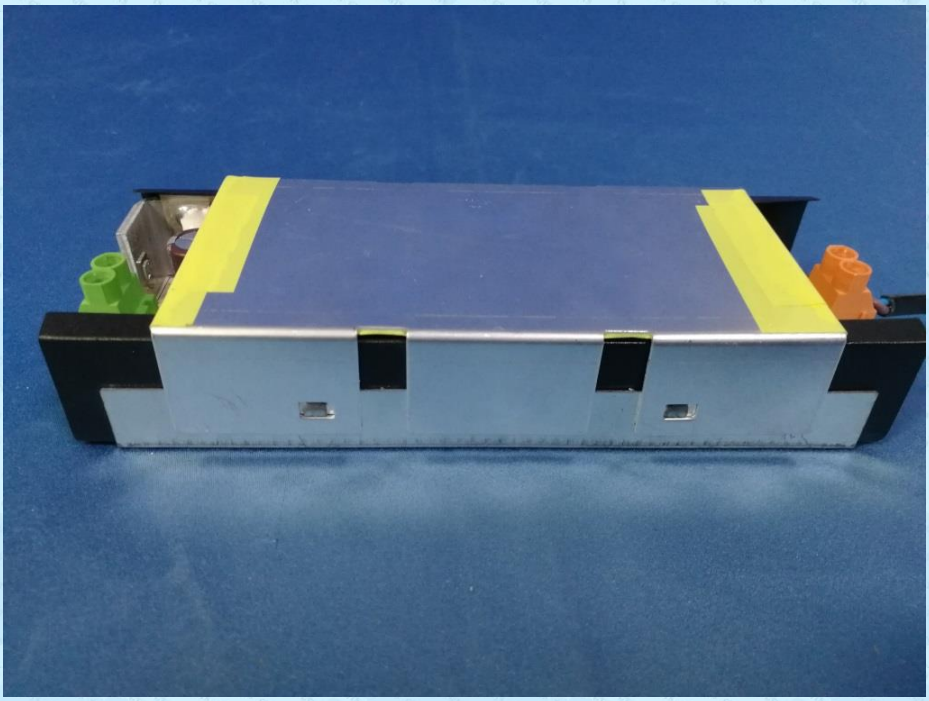

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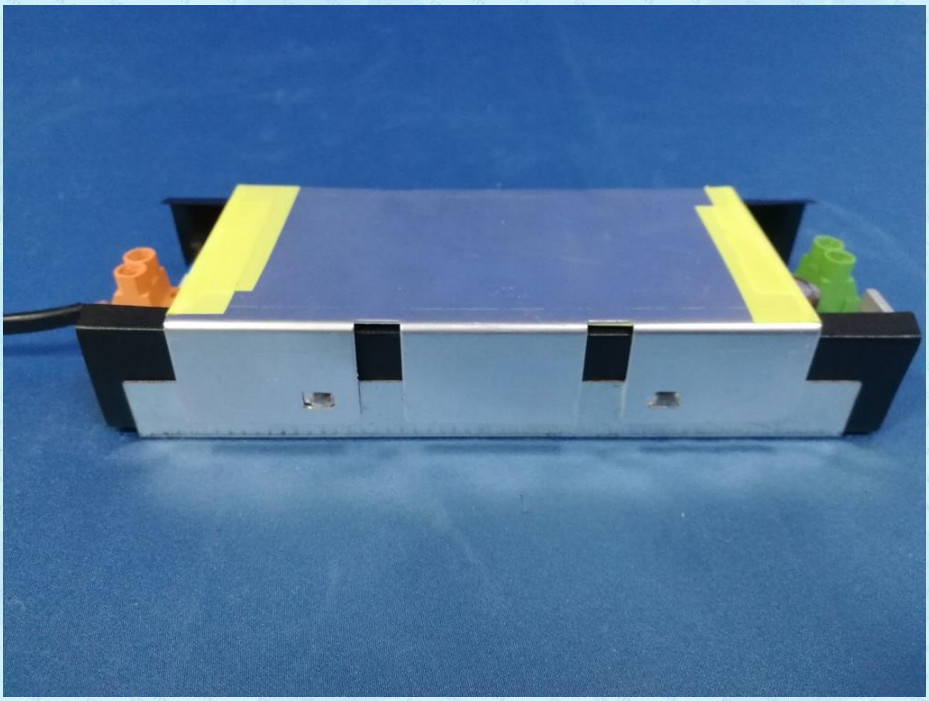

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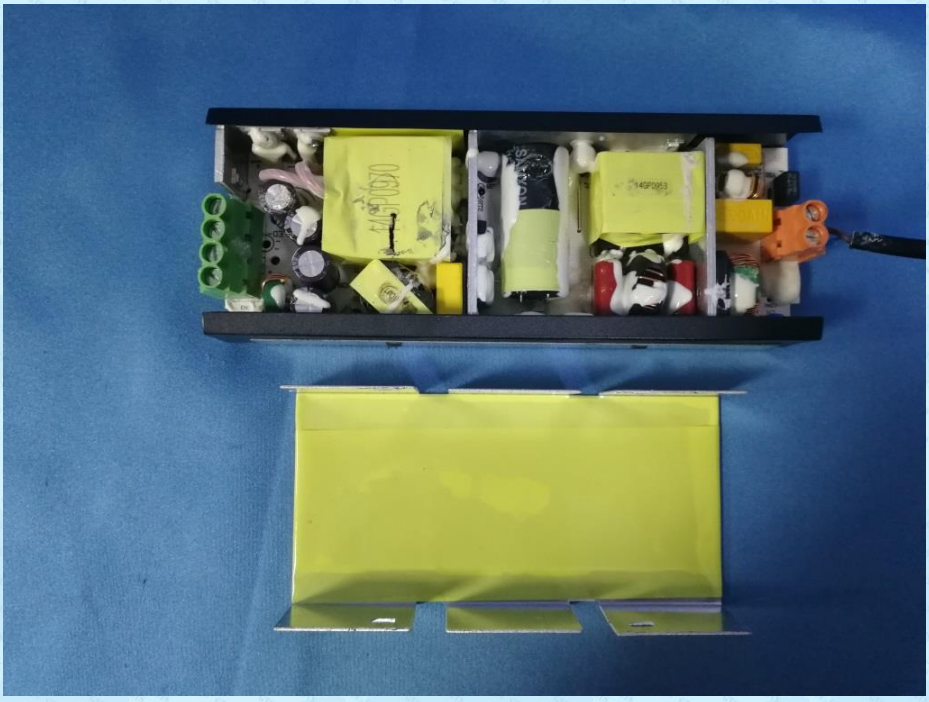

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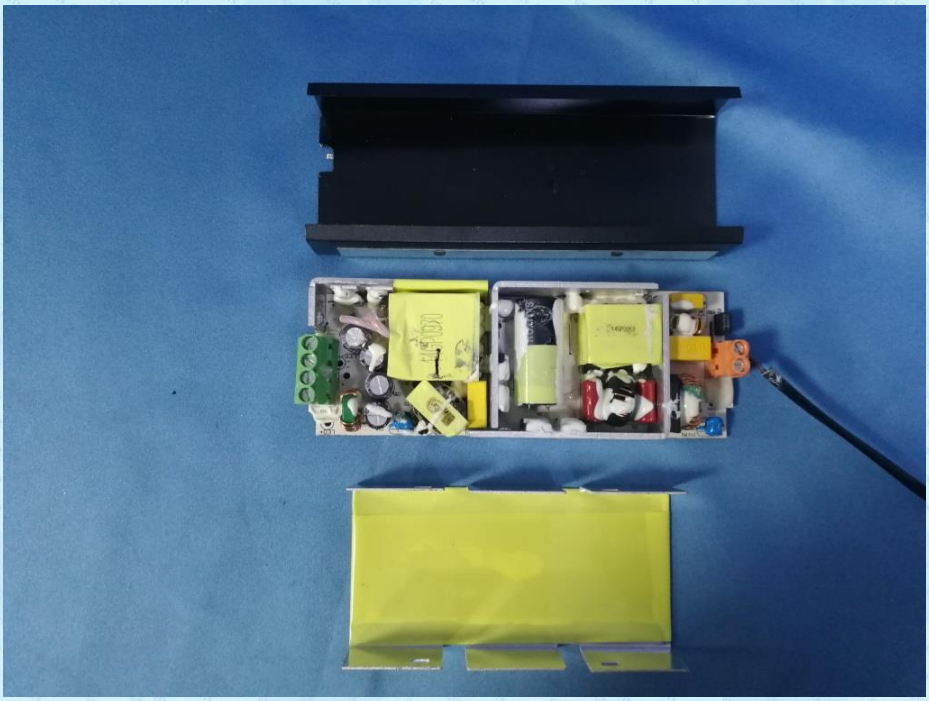

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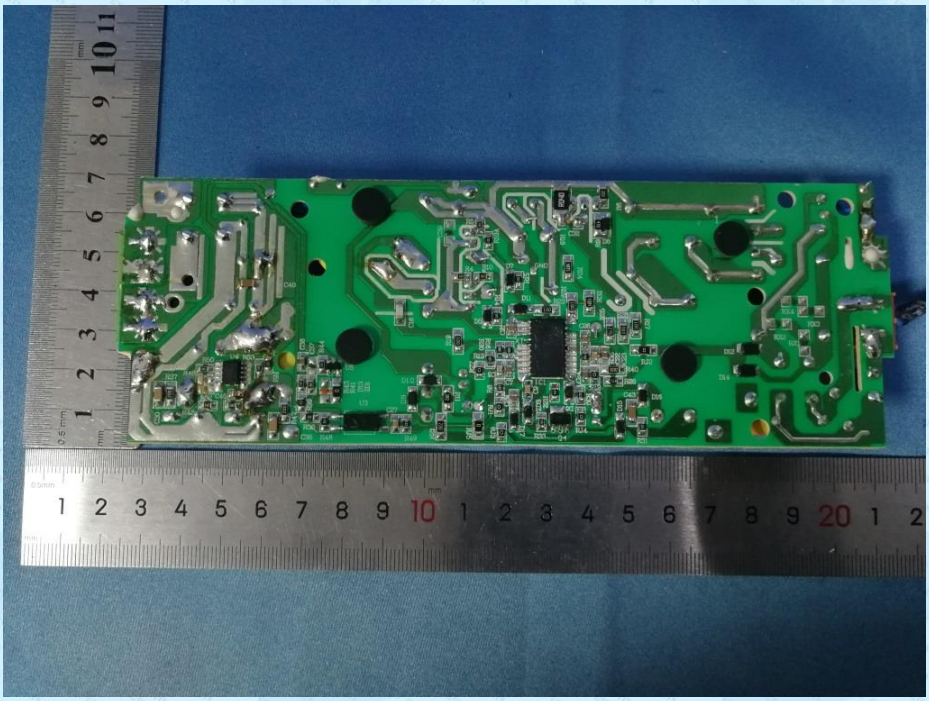

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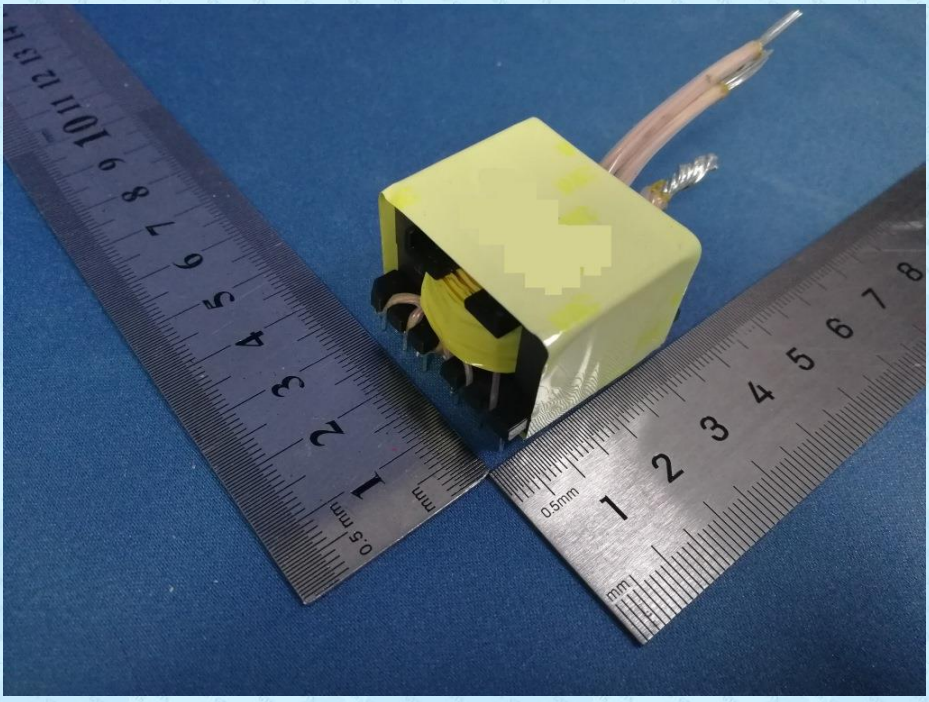

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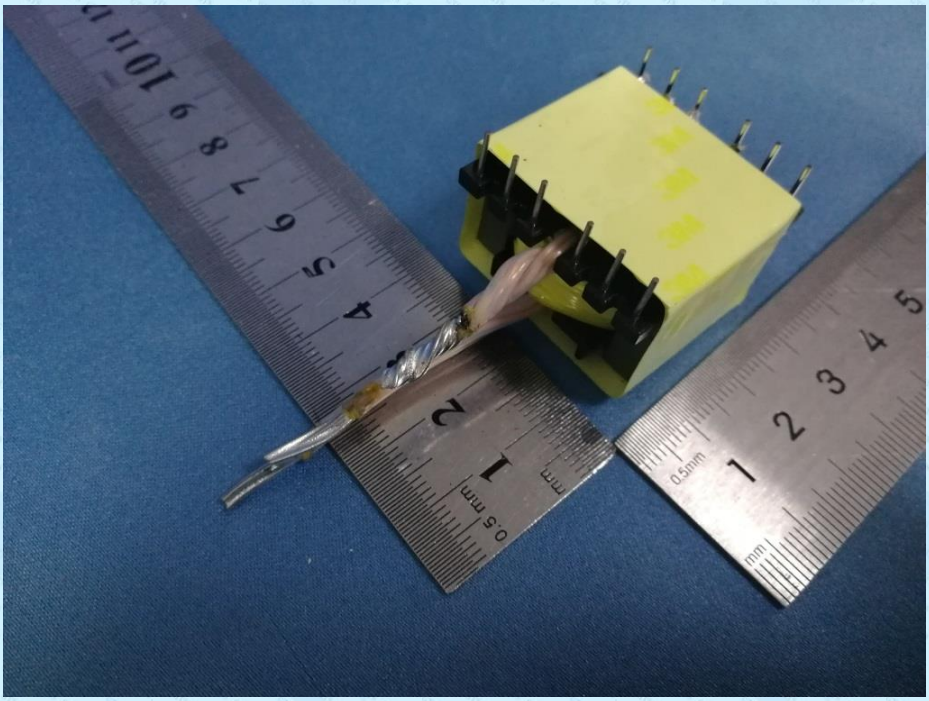

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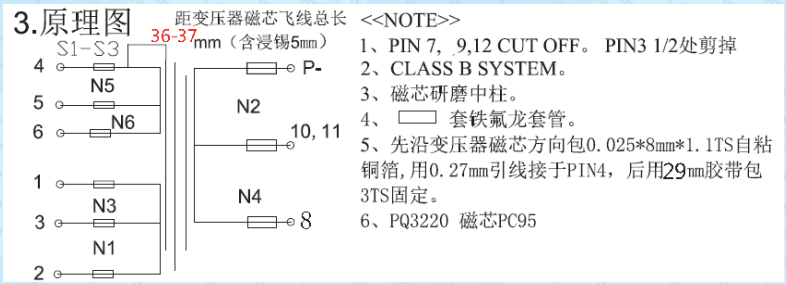

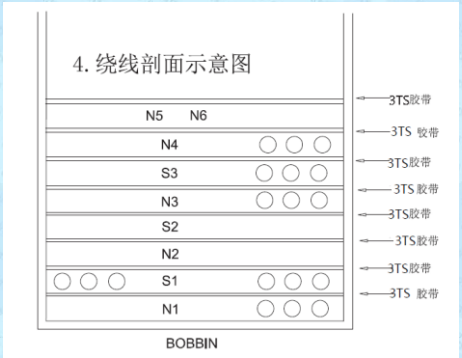

Details of: Layout 5-60W

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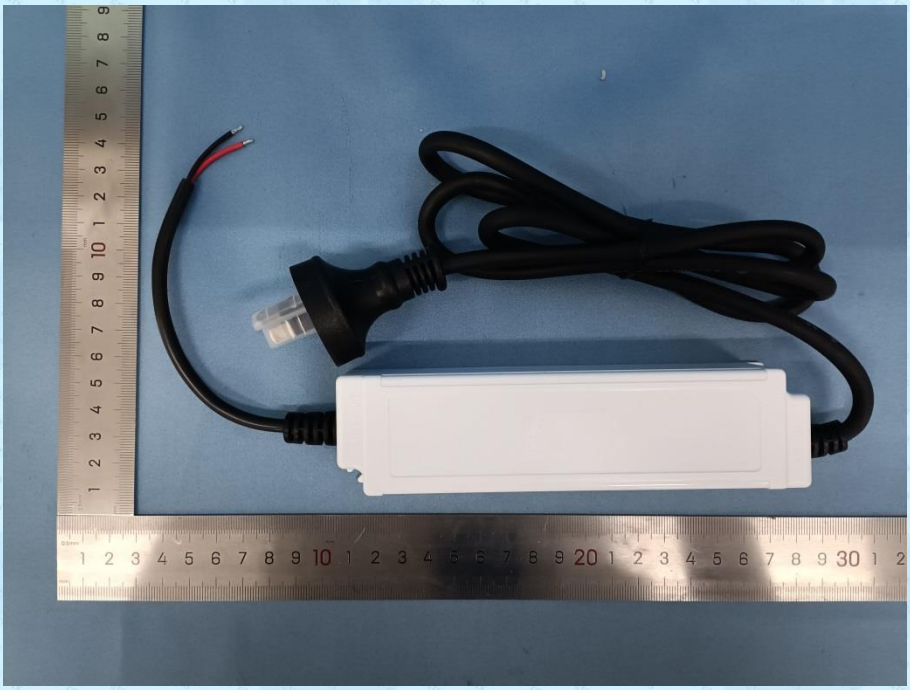

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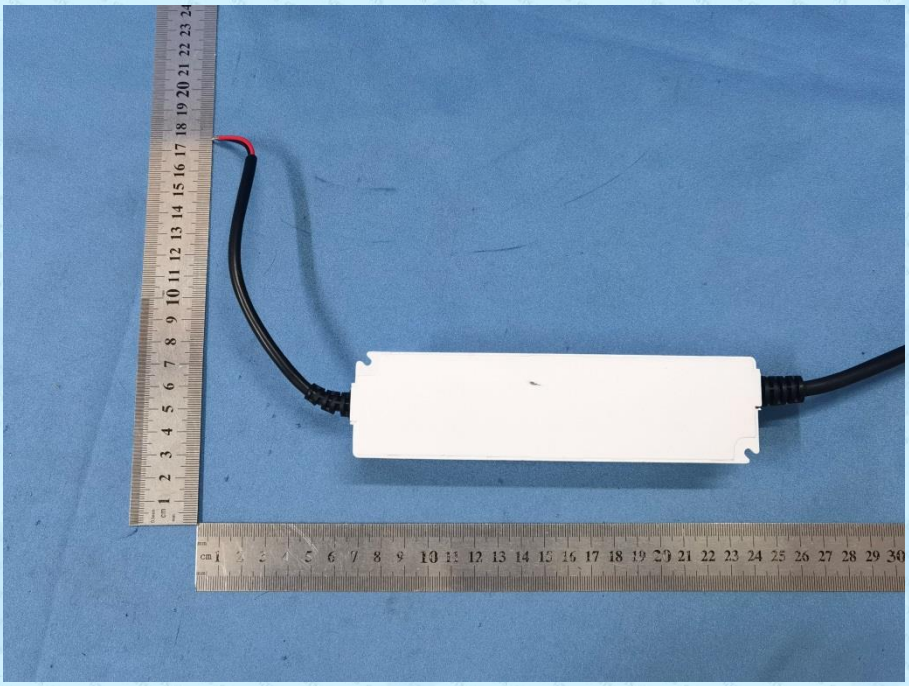

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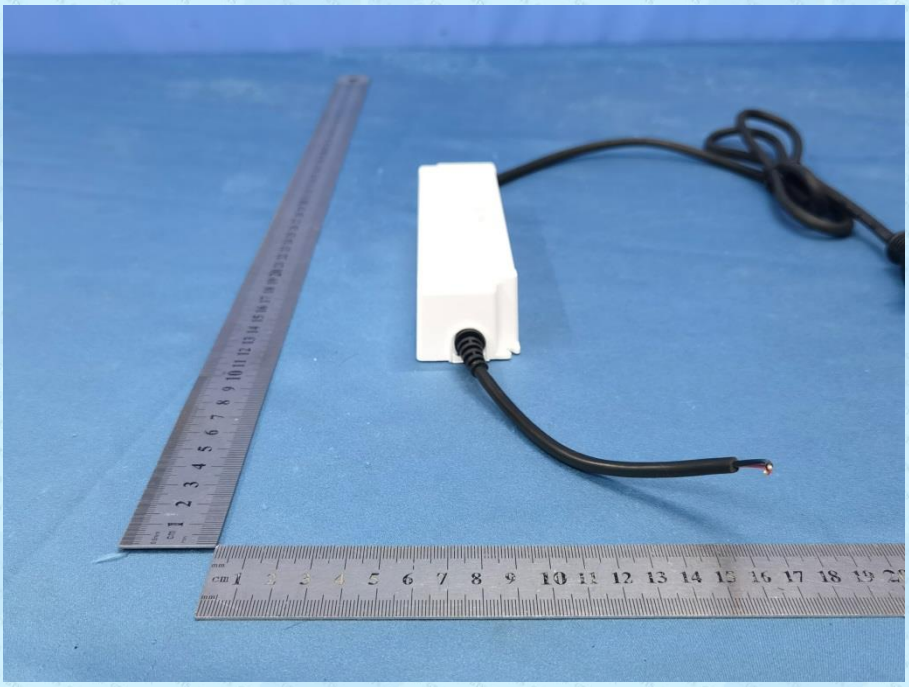

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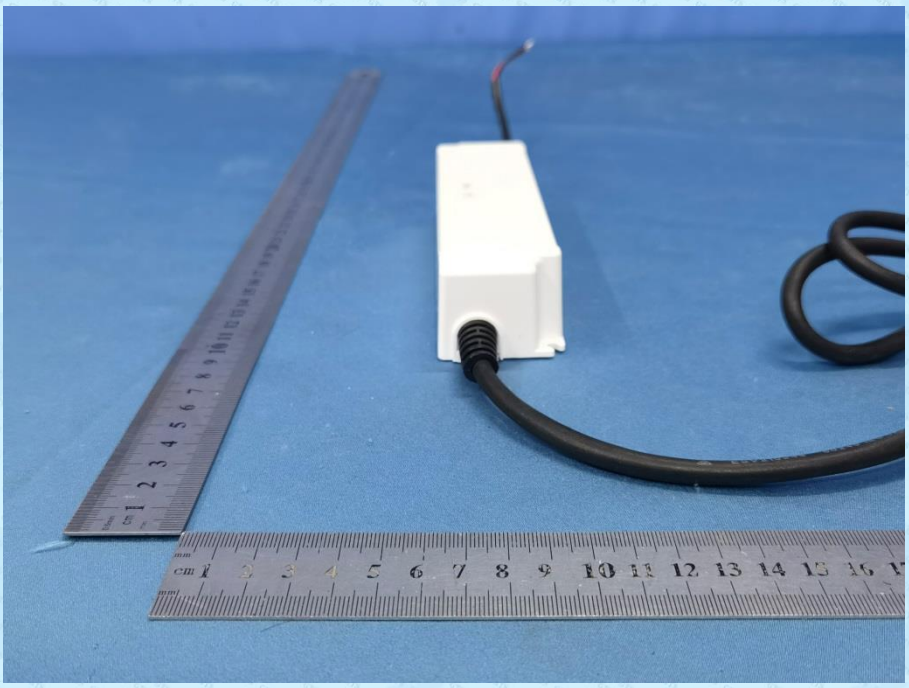

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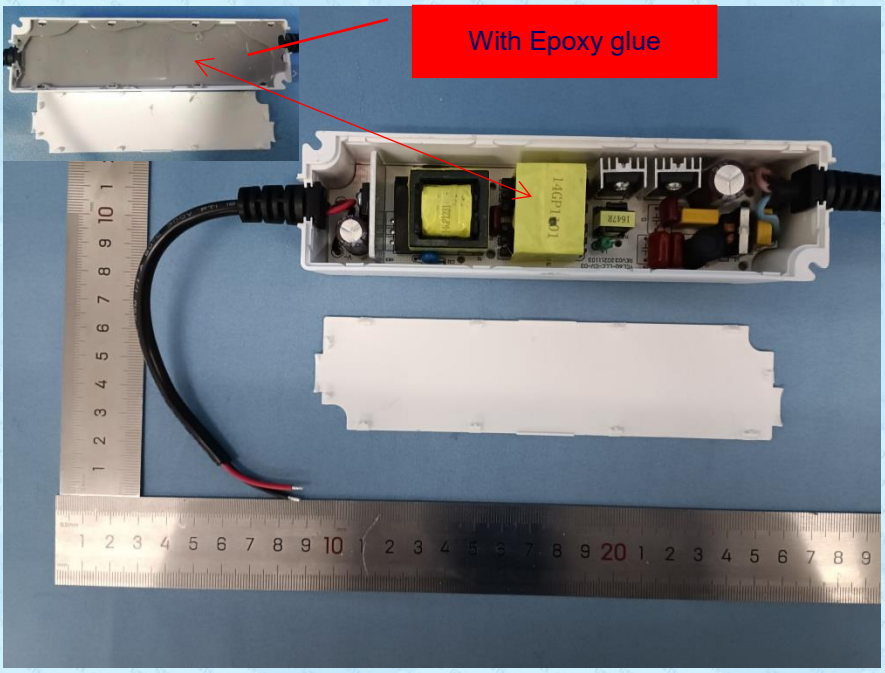

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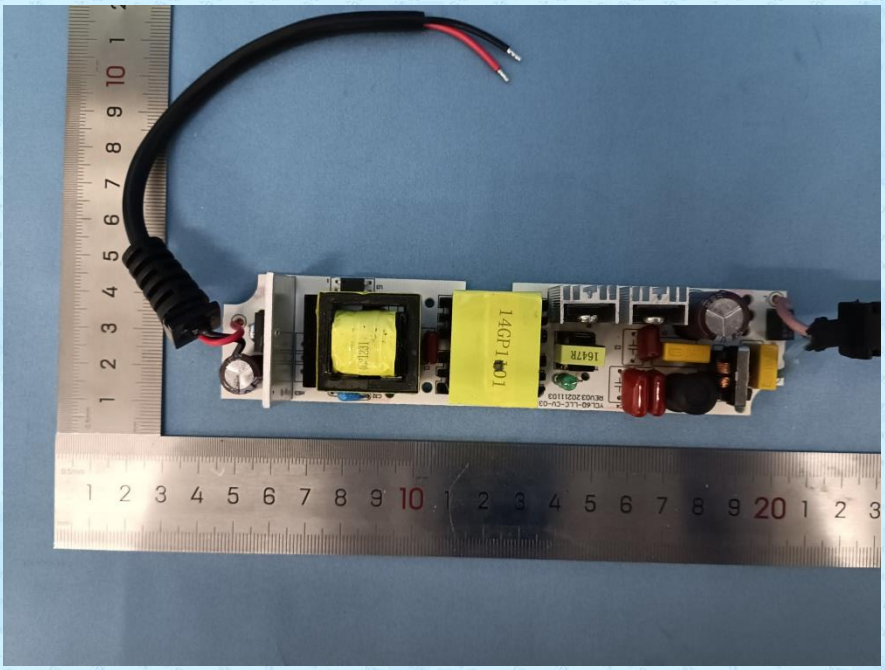

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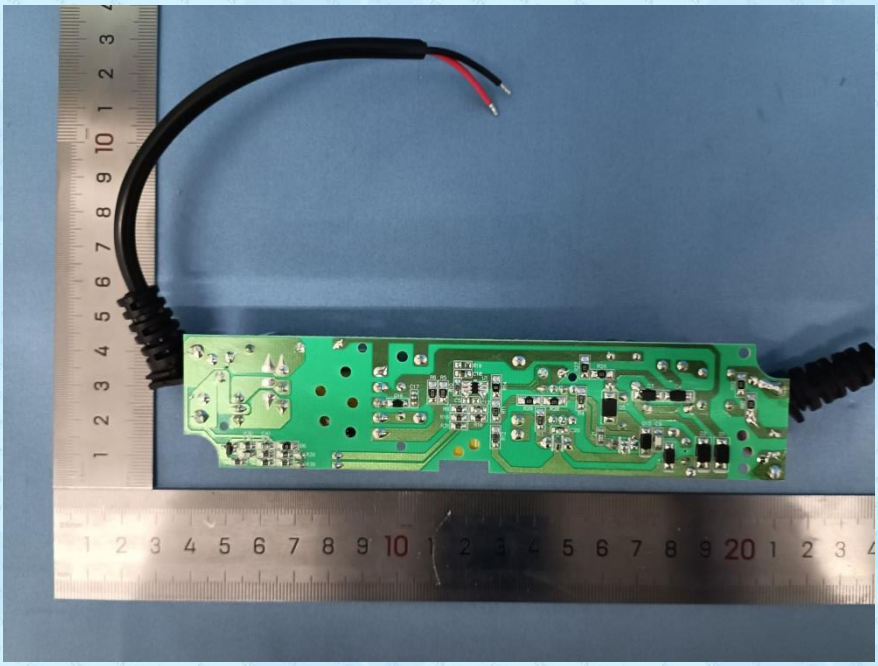

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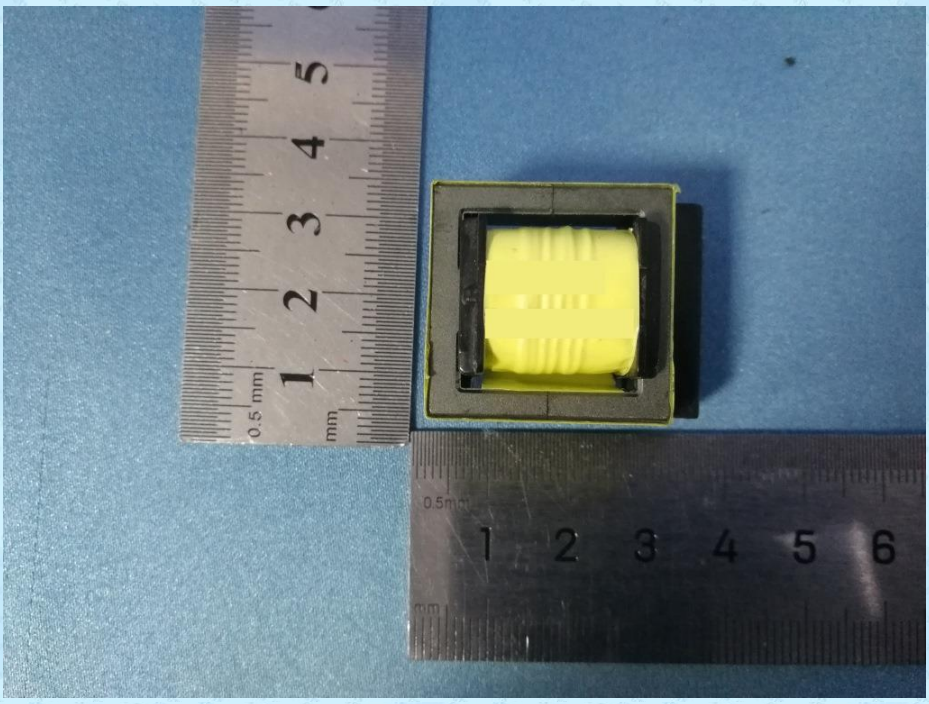

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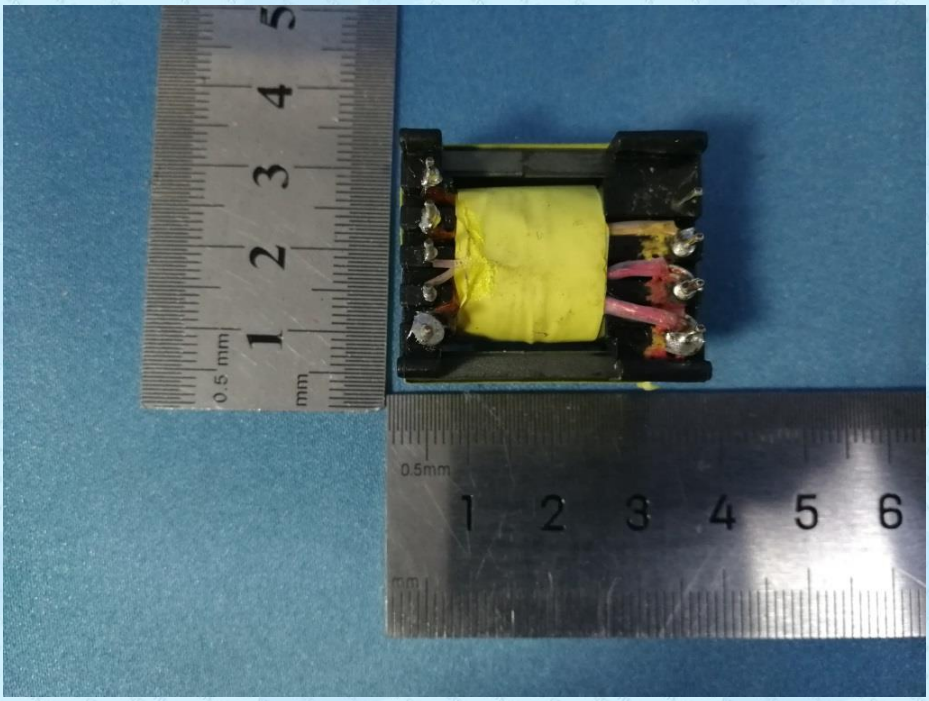

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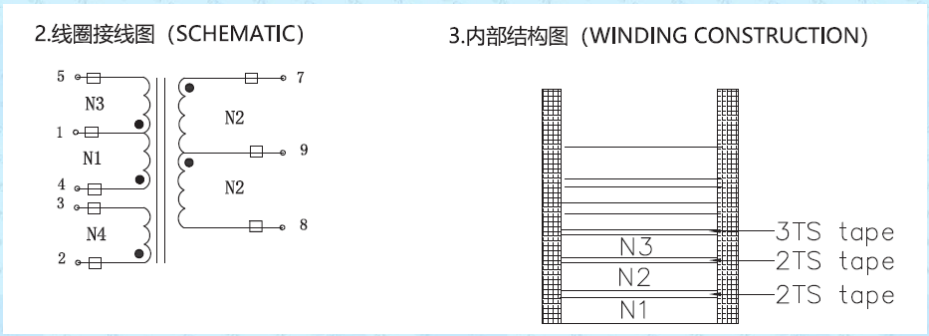

*** End of report***