



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

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Name of Testing Laboratory preparing the Report..... : Shenzhen AOCE Electronic Technology Service Co., Ltd
Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China

Applicant's name..... : JORDAN ZARA FOR ELECTRICAL TOOLS & MANUFACTURING
CO LTD, GOLDEN ZARA FOR TRADING ELECTRICAL TOOLS

Address : JABAL AL-HUSSEIN-AS'AD KALIL ST.,AMMAN,JORDAN

Test specification:

Standard : ☒ IEC 61347-2-13:2024
☒ IEC 61347-1:2024

Test procedure..... : Type testing

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

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Test item description	LED POWER SUPPLY	
Trade Mark	LAVA, GOLDEN ZARA , JORDAN ZARA, TRM, RIOLED, RIOVANCE	
Manufacturer.....	JORDAN ZARA FOR ELECTRICAL TOOLS & MANUFACTURING CO LTD, GOLDEN ZARA FOR TRADING ELECTRICAL TOOLS JABAL AL-HUSSEIN-AS'AD KALIL ST.,AMMAN,JORDAN	
Model/Type reference.....	See Model List	
Ratings	Input: 180-265VAC, 50/60Hz Output: DC 24 V, 16.5A, 400W Class I, IP 20, Independent controlgear	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	Testing Laboratory:	Shenzhen AOCE Electronic Technology Service Co., Ltd
Testing location/ address		Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China
Tested by (name, function, signature)		ZhiCong Xian Technical Engineer <i>ZhiCong Xian</i>
Approved by (name, function, signature) :		Robin Liu Technical Manager <i>Robin. Liu</i>
Testing procedure: CTF Stage 1:		
☐	N/A	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) :		
Testing procedure: CTF Stage 2:		
☐	N/A	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) :		
Approved by (name, function, signature) :		
Testing procedure: CTF Stage 3:		
☐	N/A	
Testing procedure: CTF Stage 4:		
☐	N/A	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) :		
Approved by (name, function, signature) :		
Supervised by (name, function, signature):		

List of Attachments (including a total number of pages in each attachment):**Attachment No.1:** Test cl.4, cl.5 & cl.9 for IEC 60598-1.**Attachment No.2:** Photo document.**Summary of testing:****Tests performed (name of test and test clause):**

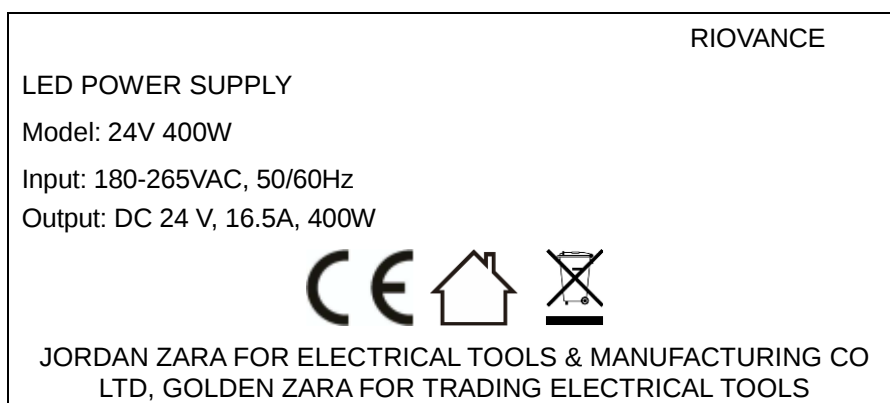
Full tests are carry out on model 24V 400W

Testing location:Shenzhen AOCE Electronic Technology Service Co., Ltd
Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China**Summary of compliance with National Differences:**

N/A

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.



Test item particulars	
Classification of installation and use	Independent controlgear and use indoor
Supply Connection	Terminal block
Possible test case verdicts:	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement.....	F (Fail)
Testing	
Date of receipt of test item	2025-08-22
Date (s) of performance of tests	2025-08-22 to 2025-09-15
General remarks:	
The tested sample(s) and the sample information are provided by the client. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Note: EN Group Differences together with National Differences and Special National Conditions, if any, are in the Appendix to the main body of this TRF. Throughout this report a ☐ comma / ☒ point is used as the decimal separator. Clause numbers between brackets refer to clauses in IEC 61347-1 Note: clauses marked '*' not included in CNAS scope. The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid. When determining for test conclusion, measurement uncertainty of tests has been considered.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61347-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	☐ Yes ☒ Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	Same as manufacturer

General product information:

MODEL	AC INPUT	DC output	watt
12V 60W	180-265V	12V	60
24V 60W	180-265V	24V	60
12V 100W	180-265V	12V	100
24V 100W	180-265V	24V	100
12V 200W	180-265V	12V	200
24V 200W	180-265V	24V	200
12V 300W	180-265V	12V	300
24V 300W	180-265V	24V	300
12V 400W	180-265V	12V	400
24V 400W	180-265V	24V	400
12V 36W	180-265V	12V	36
12V 48W	180-265V	12V	48
12V 60W	180-265V	12V	60
12V 72W	180-265V	12V	72
24V 36W	180-265V	24V	36
24V 48W	180-265V	24V	48
24V 60W	180-265V	24V	60
24V 72W	180-265V	24V	72
12V 50W	180-265V	12V	50
12V 150W	180-265V	12V	150
12V 250W	180-265V	12V	250
12V 350W	180-265V	12V	350
24V 50W	180-265V	24V	50
24V 150W	180-265V	24V	150
24V 250W	180-265V	24V	250
24V 350W	180-265V	24V	350
24V 400W	180-265V	24V	400

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
4 (4)	GENERAL REQUIREMENTS		P
- (4)	<u>Insulation materials</u> for double or reinforced insulation according requirements in Annex N of IEC 61347-1	(see Annex N)	P
- (4)	Compliance of <u>independent controlgear enclosure</u> with IEC 60 598-1	See Attachment No.2	P
- (4)	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
4 (4)	<u>SELV controlgear</u> 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		P
	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		P
7.1 (7.1)	Mandatory markings		P
	a) mark of origin		P
	b) model number or type reference	See copy of marking plate	P
	c) symbol for independent controlgear, if applicable	See copy of marking plate	P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)		P

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Clause	Requirement + Test	Result - Remark	Verdict
	supply frequency (Hz)		P
	supply current (A)		P
	f) earthing symbol		P
	k) wiring diagram		N/A
	l) value of t_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)		P
	- rated output voltage U_{rated} (V)		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		N/A
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 of protection against accidental contact		N/A
	i) cross-section of conductors (mm ²)		N/A
	j) number, type and wattage of lamp(s)		P
	s) SELV symbol		P
7.2 (-)	- declaration of mains connected windings		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		P
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 k Ω	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device		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 μ F: voltage after 1 min (V): < 50 V		P
- (10.3)	Controlgear providing SELV		P
	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		N/A
	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		P
	ELV conductive parts insulated as live parts		N/A
	Tests according Annex L of IEC 61347-1	(see Annex L)	P
- (10.4)	Accessible conductive parts in SELV circuits		P
	Output voltage under load $\leq$ 25 V r.m.s. or $\leq$ 60 V d.c.		P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output $\leq$ 35 V peak or $\leq$ 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

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Clause	Requirement + Test	Result - Remark	Verdict
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		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		N/A
- (8.1)	Integral terminals		N/A
	Screw terminals according section 14 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	Part of the controlgear	(see Annex 2)	N/A
	Screwless terminals according section 15 of IEC 60598-1:		N/A
	Separately approved; component list	(see Annex 1)	N/A
	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
	Satisfy additional relevant requirements of this standard		N/A

10 (9)	PROVISION FOR PROTECTIVE EARTHING		P
- (9.1)	Provisions for protective earthing		P
	Terminal complying with clause 8		P
	Locked against loosening and not possible to loosen by hand		P
	Not possible to loosen clamping means unintentionally on screwless terminals		P
	All parts of material minimizing the danger of electrolytic corrosion		P
	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

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Clause	Requirement + Test	Result - Remark	Verdict

- (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 or earthing contact and each of the accessible metal parts; measured resistance (Ω) at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		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		P
- (9.5.1)	Earth connection to other equipment		P
	Looping or through connection, conductor min. 1,5 mm ² and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7 of IEC 60598-1		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance (Ω) between earthing terminal or earthing contact and each of the accessible metal parts at ≥ 10 A according 7.2.3 of IEC 60598-1: $< 0,5 \Omega$		N/A
	Output earthing terminal marked as in 7.1 t) of IEC 61347-1		N/A

11 (11)	MOISTURE RESISTANCE AND INSULATION		P
- (11)	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance:		P
	For basic insulation $\geq 2 \text{ M}\Omega$	100M Ω > 2 M Ω	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$	100M Ω > 4 M Ω	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		N/A

12 (12)	ELECTRIC STRENGTH		P
- (12)	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		P
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, $2U + 1000$ V		P
	Supplementary insulation, $2U + 1000$ V		N/A
	Double or reinforced insulation, $4U + 2000$ V		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		P
- (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
	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 (after any reduction in 14.2 - 14.5)	(see appended table)	P
- (14.3)	Short-circuit or interruption of semiconductor devices	(see appended table)	P

Tel: (86)755-85277785

Fax: (86)755-23705230

E-mail: postmaster@aoc-cert.comWebsite: [Http://www.aoc-cert.com](http://www.aoc-cert.com)

No. IEC61347_2_13G

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	N/A
- (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 $\geq 1 \text{ M}\Omega$	$100 \text{ M}\Omega > 1 \text{ M}\Omega$	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 a.c. supply and in turn to a d.c. supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		N/A

15 (-)	TRANSFORMER HEATING		P
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		N/A
15.2 (-)	Normal operation		P
	Comply with clause L.6 of IEC 61347-1		P
15.3 (-)	Abnormal operation		P
	Comply with clause L.7 of IEC 61347-1		P
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		P
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type		N/A

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

15 (-)	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P
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16 (15)	CONSTRUCTION		P
- (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		P
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		P
	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	SELV circuits insulated from FELV circuits by supplementary insulation		N/A
	SELV circuits insulated from other SELV circuits by basic insulation		P
	SELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
- (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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	- 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		P
- (16.1)	General		P
	Creepage distances and clearances according to 16.2 and 16.3		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

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
	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
	- 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

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Clause	Requirement + Test	Result - Remark	Verdict

19 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
- (18.1)	Ball-pressure test	See Test Table 19 (18.1)	P
- (18.2)	Test of printed boards	See Test Table 19 (18.2)	P
- (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)	P

20 (19)	RESISTANCE TO CORROSION		N/A
	- 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		N/A
	Not exceed declared maximum working voltage U_{out} in any load condition		N/A

14	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
BD1	short circuit - current fuse opened, unrecoverable		YES/NO
U1 pin 5-1	short circuit - current fuse opened, unrecoverable		YES/NO
EC1	short circuit - current fuse opened, unrecoverable		YES/NO
R8	short circuit - fuse open, no flame, no flammable gas, no molten parts, no hazard		YES/NO
output	short circuit - unit shut down immediately, recoverable		YES/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
Distance 1:	B	2.8	1.5	9	2.8	2.5	7
Working voltage (V)					265 V		—
Frequency if applicable (kHz)					< 30 kHz		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					-		—
Pulse voltage if applicable (kV)					2.5 kV		—
Supplementary information: Between L and N							
Distance 2:	B	2.7	1.5	9	2.7	2.5	7
Working voltage (V)					265 V		—
Frequency if applicable (kHz)					< 30 kHz		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					-		—
Pulse voltage if applicable (kV)					2.5 kV		—
Supplementary information: Two pole of fuse							
Distance 3:	R	5.3	3.0	9	5.3	5.0	7
Working voltage (V)					265 V		—
Frequency if applicable (kHz)					< 30 kHz		—
PTI					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV)					-		—
Pulse voltage if applicable (kV)					2.5 kV		—
Supplementary information: Between live parts and accessible parts;							

** 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)	
PCB	See annex 1	125	0.9	
Transformer bobbin	See annex 1	125	1.5	
Plastic enclosure	See annex 1	125	1.1	
Supplementary information:-				

19 (18.2)	TABLE: Test of printed boards				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
PCB	See annex 1	30s	No	0s	pass
Supplementary information:					

19 (18.3)	TABLE: Glow-wire test				P
Glow wire temperature :			650 °C		—
Object/ Part No./ Material	Manufacturer/ trademark		Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Plastic enclosure	See annex 1		No	0s	pass
Supplementary information:					

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Clause	Requirement + Test			Result - Remark	Verdict
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	10s	No	0s	pass
PCB	See annex 1	30s	No	0s	pass
Supplementary information:-					

19 (18.5)	TABLE: Proof tracking test				P
Test voltage PTI :			175 V		—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
Plastic enclosure	See annex 1	Yes	Yes	Yes	pass
Transformer bobbin	See annex 1	Yes	Yes	Yes	pass
PCB	See annex 1	Yes	Yes	Yes	pass
Supplementary information:					

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Clause	Requirement + Test	Result - Remark	Verdict

(A)	ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		P
(A.1)	Comply with A.2 or A.3		P
(A.2)	Voltage ≤ 35 V peak or ≤ 60 V d.c. :		P
(A.3)	If voltage measured according Clause A.2 exceeds the limit value; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :		N/A
	Comply with Annex G.2 of IEC 60598-1		N/A

(C)	ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING		N/A
(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 .. :		—
(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

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Clause	Requirement + Test	Result - Remark	Verdict
(C7)	LIMITATION OF HEATING		N/A
(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 controlgear 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

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Clause	Requirement + Test	Result - Remark	Verdict
(D)	ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR		N/A
	Tests in C7 performed in accordance with Annex D, if applicable		N/A
(F)	ANNEX F – DRAUGHT-PROOF ENCLOSURE		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
(H)	ANNEX H - TESTS		P
	All tests performed in accordance with the advice given in Annex H, if applicable		P
I (L)	ANNEX I IN THIS PART 2 – PARTICULAR ADDITIONAL REQUIREMENTS FOR SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEARS FOR LED MODULES		P
(L.3)	Classification		N/A
	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 clause 9.2 of IEC 61558-1		P
(L.6)	Heating		P
	No excessive temperatures in normal use		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Value if capacitor t_c marked	105 °C	—
	Winding insulation classified as Class	Class 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		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 M Ω	100 M Ω > 5 M Ω	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 M Ω	100 M Ω > 5 M Ω	P
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 M Ω	100 M Ω > 2 M Ω	P
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits	3750 V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity	1875 V	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		N/A
	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	3750 V	P
(L.9)	Construction		P

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Clause	Requirement + Test	Result - Remark	Verdict
(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		N/A
(L.10)	Components		N/A
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
(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		N/A
	1) Basic distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		P
	Required distance (mm)	0.81 mm	—
	Measured (mm)		P
	Supplementary information		—

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		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
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
	Emergency supply current not differ more than $\pm 15\%$		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		N/A
(N.4)	General requirements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
(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 % to 5,5 kV or 1,5 x test voltage in Table N.1		N/A
(N.4.3)	Thin sheet insulation		N/A
(N.4.3.1)	Thickness and composition of thin sheet insulation		N/A
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		N/A
	- 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		N/A
(N.4.3.2)	Mandrel test (electric strength test during mechanical stress)		N/A
	Electric strength test after mandrel test:		N/A
	- 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		N/A
	- 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		N/A
(O)	ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION		N/A
(O.6)	Marking		N/A
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 according clause 12 reduced to 35 % of values according Table 3 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
(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

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Clause	Requirement + Test	Result - Remark	Verdict
(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		N/A
(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		—
(P.2.3)	Creepage distances for working voltages with frequencies above 30 kHz (Table P.2)		N/A
	Voltage $\hat{U}_{out}$ kV		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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: List of critical components				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹
Plastic enclosure	SABIC INNOVATIVE PLASTICS B V	940(f1)	V-0, 120°C, Min. thickness: 1.5mm	UL 94, UL 746C	UL E45329
Plug holder	SABIC INNOVATIVE PLASTICS B V	940(f1)	V-0, 120°C	UL 94, UL 746C	UL E45329
(Alternative)	Interchangeable	Interchangeable	Min. V-0, min. 130°C	UL 94, UL 796	UL
Enclosure	Shenzhen Shengxin Plastic Hardware Co., Ltd	940(f2)	PC; 120°C; V-0	EN 62368-1 EN 61558-2-16	UL E45587
Fuse(F1)	Dongguan Luoyi Electronic Technology Co., Ltd	2.2R 1WS or T1AL250V SAT for VDE; SAT, SAF, SBT, SBF for UL	2.2R/1W Max	EN 60127-1 EN 60127-3	VDE 40037299 E330127
Fusible resistor (RF1)	SHENZHEN GREAT ELECTRONIC CSCO LTD	RXF-1W Series (for UL) RXF (for VDE)	2.2Ω or 10Ω, 1W	UL 1412, EN 60065	UL E301541, VDE 40026608
(Alternative)	DONGGUAN HONGDA ELECTRONIC TECHNOLOGY CO LTD	RXF (RX21) (for UL) RXF series (for VDE)	2.2Ω or 10Ω, 1W	UL 1412, EN 60065	UL E359590, VDE 40036858
Current fuse (RF1)	XC Electronics(Shenzhen)Corp. Ltd	3T	T2A, 250VAC	IEC/EN 60127-1, IEC/EN 60127-3, UL 248	VDE 40031879 UL E249609

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Clause	Requirement + Test	Result - Remark	Verdict

(Alternative)	Dongguan Reomax Electronics Co., LTD	TBP	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40032053 UL E340427
(Alternative)	HONG HUBLUELIGHT ELECTRONIC Co.LTD	L3T	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40026874 UL E324232
(Alternative)	XC Electronics (Shen Zhen) Corp. Ltd.	3T	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40019614 UL E249609
(Alternate)	Smart ElectronicsInc.	SPT250TE	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40014285 UL E238986
(Alternate)	Dongguan Hongda Electronic Technology Co., Ltd	31 TD	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40030816 UL E318938
(Alternate)	Shenzhen Lanson Electronics Co. Ltd.	3K	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40010682 UL 518103
(Alternate)	Ever Island ElectricCo., Ltd.	2010	T2A, 250VAC	IEC/EN 601271-1, IEC/EN 60127-3, UL 248	VDE 40018781 UL E220181
Y1 capacitor	Shenzhen New Daya Electronics Co., Ltd	JEC	102M/400V MIN	IEC/EN 60384-14	VDE 40050021 UL E466405
Y1 capacitor	Shenzhen New Daya Electronics Co., Ltd	CH	102M/400V MIN	IEC/EN 60384-14	VDE 40047520
Y1 capacitor	Shenzhen Ketuo Electronic Components Co., Ltd	RM	102M/400V MIN	IEC/EN 60384-14	VDE 40041523

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Clause	Requirement + Test		Result - Remark		Verdict
Y1 capacitor	Dongguan Ruifu Electronics Co., Ltd	JD	102M/400V MIN	IEC/EN 60384-14	UL E187963 VDE 137027
Y1 capacitor	Shenzhen Quanbosheng Technology Co., Ltd	X7R	102M/400V MIN	IEC/EN 60384-14	E481614
Y1 capacitor	Shenzhen Kaite Electronics Co., Lt	KM/GF/BD/K T	102M/400V MIN	IEC/EN 60384-14	VDE 40022942 UL E252221
Y-capacitor (CY1)	Shaanxi Huaxing Electronic Development Co.Ltd.	CT7Y1	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40015542, UL E217400
(Alternative)	Dongguan Easy-gather Electronic Co., Ltd.	DCF	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40015758, VDE 40022942, UL E252221
(Alternative)	Zhi Wei Electronics Co. Ltd.	DJ-series	Max. 1000pF, min. 250VAC, min. 105°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40032789, UL E330260
(Alternative)	Hsuan Tai Electronic Co. Ltd.	CY	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40008912, UL E199069
(Alternative)	Shenzhen Haotian Electronic Co., Ltd.	HT	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40029300, UL E326483
(Alternative)	Shen Zhen Shi Zhc Technology Co. Ltd.	CD Series	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40042268, UL E467226
(Alternative)	Shantou High-NewTechnology Dev.Zone Songtian Enterprise Co., Ltd.	CD-Series	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384-14, UL 60384-14	VDE 40025754, UL E208107

IEC 61347-2-13					
Clause	Requirement + Test		Result - Remark		Verdict
(Alternative)	JYH HSU (JEC) ELECTRONI CSLTD	JD	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384- 14, UL 60384-14	VDE 40038642, UL E356696
(Alternative)	Jyh Chung Electronic Co., Ltd.	JD	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384- 14, UL 60384-14	VDE 137027, UL E187963
(Alternative)	Xiangtai Electronic (Shenzhen) Co., Ltd.	YO	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384- 14, UL 60384-14	VDE 40036880, UL E319473
(Alternative)	Success Electronics Co., Ltd.	SB	Max. 1000pF, min. 250VAC, min. 125°C, Y1 type	IEC/EN 60384- 14, UL 60384-14	VDE 40020001, UL E114280
PCB	Dongguan Lingnian Electronics Co., Ltd	TY1906- B1/B2	V-0, 130°C; Min. thickness: 1.4MM	EN 61558-1 EN 61558-2-16	UL E141940
PCB	KAIMAU ELECTRONI CSCO LTD	2V0 TY1906-A1 TY1906-A2	V-0, 130°C	UL 94, UL796	UL E237305
PCB	Yingde Yongxin Electronics Co., Ltd	94V-0	V-0, 130°C; Min. thickness: 1.4MM	EN 61558-1 EN 61558-2-16	UL E141940
Line choke (L1)	Interchangeable	Interchangea ble	Min. 130°C	EN 62368-1	Tested with appliance
Electrolytic capacitor(C1, C2)	Interchangeable	Interchangea ble	Rated 4.7-10uF, min. 400 V, 105°C	EN 62368-1	Tested with appliance
Insulation sheet	SABIC INNOVATIV EPLASTICS B V	FR60	V-0, 125°C, min. 0.4mm thickness	UL 94, UL746	UL E45329
Transformer (T1)	Dongguan shi PuHang ElectronicCo., Ltd.	TY1906- 0502400- A1	Class B	EN 62368-1	Tested with appliance

IEC 61347-2-13					
Clause	Requirement + Test		Result - Remark		Verdict
(Alternative)	ShenZhen Fu Er Sheng Electronic Technology Co., Ltd.	TY1840-0502100-A0 TY1906-0502400-A1TY2239-AO	Class B	EN 62368-1	Tested with appliance
(Alternative)	ShenZhen Gao Chang Sheng Electronic Technology Co., Ltd.	TY1840-0502100-A0	Class B	EN 62368-1	Tested with appliance
- Insulation system	CHOU SEN ELECTRONICS (SHENZHEN) CO LTD	Chou Sen-1	Class B	UL 1446	UL
- Bobbin	Sumitomo BakeliteCo., Ltd	PM-9820, PM- 9630	Phenolic, V-0,150°C	UL 94	UL
(Alternative)	Dongguan Jinbihui Electronics Co., Ltd	TY2239-AO	V-0, 150°C	EN 61558-1 EN 61558-2-16	UL E59481
(Alternative)	Chang Chun Plastics Co., Ltd	T375HF	Phenolic, V-0,150°C	UL 94	UL
- Insulation tape	Jingjiang Yahua Pressure SensitiveGlue Co Ltd	PZ	130°C	UL 510	UL
(Alternative)	SYMBIO INC	35660	130°C	UL 510	UL
(Alternative)	3m Company Electrical MarketsDiv (Emd)	1350F-1	130°C	UL 510	UL
(Alternative)	Interchangeable	Interchangeable	Min. 130°C	UL 510	UL
- Triple insulated wire	Furukawa ElectricCo., Ltd.	TEX-E	Reinforced insulation, Class B	EN 62368-1	VDE
(Alternative)	COSMOLINK CO. Ltd.	TIW-M	Reinforced insulation, Class B	EN 62368-1	VDE

IEC 61347-2-13					
Clause	Requirement + Test		Result - Remark		Verdict
(Alternative)	Young Chang Silicone Co., Ltd.	STW-B	Reinforced insulation, Class B	EN 62368-1	VDE
(Alternative)	Yingde Yongxin Electronics Co., Ltd	94V-0	V-0, 130°C; Min. thickness: 1.4MM	EN 61558-1 EN 61558-2-16	UL E123995
(Alternative)	Dongguan Lingnian Electronics Co., Ltd	TY1906-B1 TY1906-B2	V-0, 130°C; Min. thickness: 1.4MM	EN 61558-1 EN 61558-2-16	UL E141940
- Magnet wire	Huizhou GoldenOcean MagnetWire Factory	UEW	130°C	UL 1446	UL
(Alternative)	Pacific Electric Wire & Cable (Shenzhen) Co Ltd	UEW/U	130°C	UL 1446	UL
(Alternative)	Interchangeable	Interchangeable	Min. 130°C	UL 1446	UL
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039. ²⁾ Description line content is optional. Main line description needs to clearly detail the component used for testing					

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 2	Screw terminals (part of the luminaire)		N/A
(14)	SCREW TERMINALS		N/A
(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 (mm ²).....:		—
(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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	Screwless terminals (part of the luminaire)		N/A
(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
(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

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

(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									
	Voltage drop after 10th alt. 25th cycle									
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									
	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									
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									
	Max. allowed voltage drop (mV) :									—
terminal	1	2	3	4	5	6	7	8	9	10

IEC 61347-2-13										
Clause	Requirement + Test					Result - Remark				Verdict
voltage drop (mV)										
Supplementary information:										

Attachment No.1**EN 60598-1 - ATTACHMENT**

Clause	Requirement + Test	Result - Remark	Verdict
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	EN 60598-1		P
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4.13	Mechanical strength		P
4.13.1	Impact tests:		P
	- fragile parts; energy (Nm)		N/A
	- other parts; energy (Nm).....	0.5	P
	1) live parts		P
	2) linings		N/A
	3) protection		P
	4) covers		P
4.13.2	Metal parts have adequate mechanical strength		N/A
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		P

5	EXTERNAL AND INTERNAL WIRING		N/A
5.2	Supply connection and external wiring		N/A
5.2.1	Means of connection		N/A
	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
5.2.2	Type of cable		N/A
	Nominal cross-sectional area (mm ²)		N/A
	Cables equal to IEC 60227 or IEC 60245		N/A
5.2.3	Type of attachment, X, Y or Z		N/A
5.2.5	Type Z not connected to screws		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
5.2.10.3	Tests:		N/A
	- impossible to push cable; unsafe		N/A
	- pull test: 25 times; pull (N):		N/A

Attachment No.1**EN 60598-1 - ATTACHMENT**

Clause	Requirement + Test	Result - Remark	Verdict
	- torque test: torque (Nm).....:		N/A
	- displacement ≤ 2 mm		N/A
	- no movement of conductors		N/A
	- no damage of cable or cord		N/A
	- function independent of electrical connection		N/A
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
	No unsafe compatibility		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		N/A
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.....:	(see Annex 2)	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 (mm)		N/A

Attachment No.1**EN 60598-1 - ATTACHMENT**

Clause	Requirement + Test	Result - Remark	Verdict
	Extra insulation added where necessary		N/A
5.3.1.2	Internal wiring connected to fixed wiring via internal current-limiting device		N/A
	Cross-sectional area (mm ²)		N/A
5.3.1.3	Double or reinforced insulation for class II		N/A
5.3.1.4	Conductors without insulation		N/A
5.3.1.5	SELV current-carrying parts		N/A
5.3.1.6	Insulation thickness other than PVC or rubber		N/A
5.3.2	Sharp edges etc.		N/A
	No moving parts of switches etc.		N/A
	Joints, raising/lowering devices		N/A
	Telescopic tubes etc.		N/A
	No twisting over 360°		N/A
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		N/A
5.3.6	Wire carriers		N/A
5.3.7	Wire ends not tinned		N/A
	Wire ends tinned: no cold flow		N/A
5.4	Test to determine suitability of conductors having a reduced cross-sectional area		N/A
	Under test the temperature of the luminaire wiring insulation not exceed the limits stated in Table 12.2	(see Annex 2)	N/A
	No damage to luminaire wiring after test		N/A

9	RESISTANCE TO DUST AND MOISTURE	P
(-)	If IP > IP 65 the order of tests as specified in clause 1.12	N/A
9.2	Tests for ingress of dust, solid objects and moisture:	P

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Clause	Requirement + Test	Result - Remark	Verdict
	- classification according to IP:	IP 65	—
	- mounting position during test.....:	Normal mounting	—
	- fixing screws tightened; torque (Nm):		—
	- tests according to clauses:		—
	- electric strength test afterwards		N/A
	a) no deposit in dust-proof luminaire		N/A
	b) no talcum in dust-tight luminaire		N/A
	c) no trace of water on current-carrying parts or on insulation where it could become a hazard		N/A
	c.1) For luminaires without drain holes – no water entry		N/A
	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)		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		N/A
	g) no damage of protective shield or glass envelope		N/A
9.3	Humidity test 48 h	25°C, 93% R.H.	P

Attachment No.1

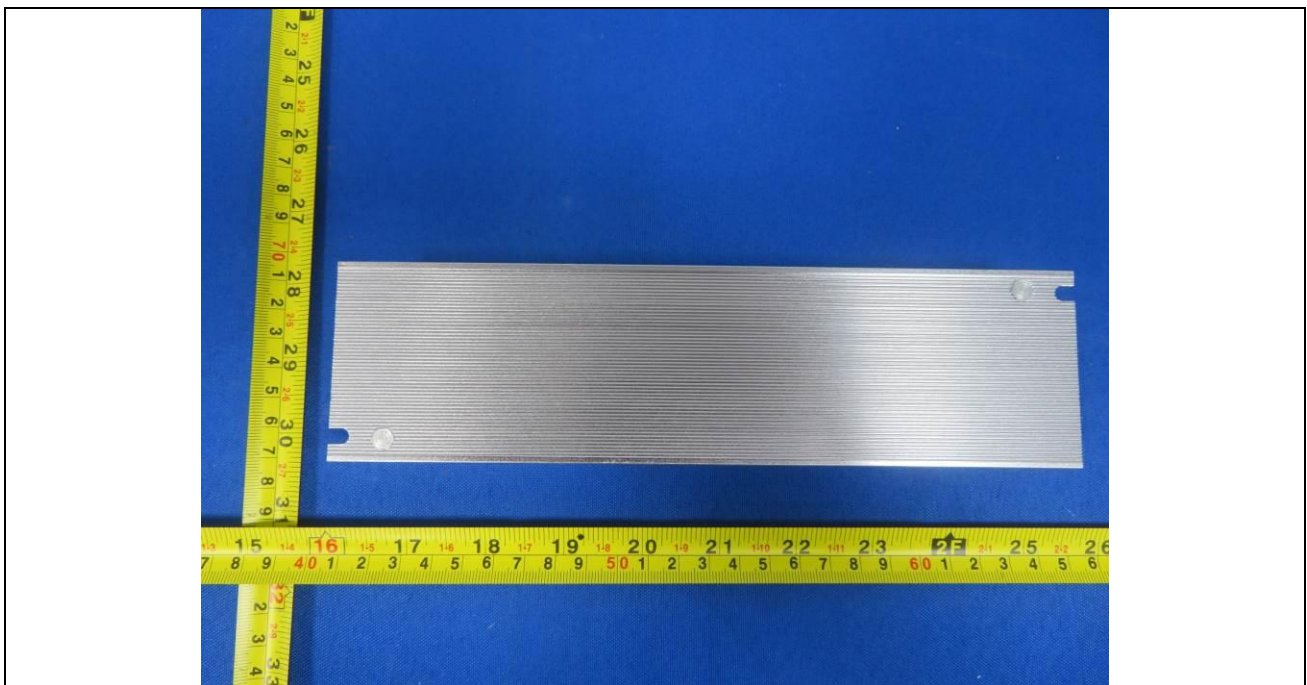
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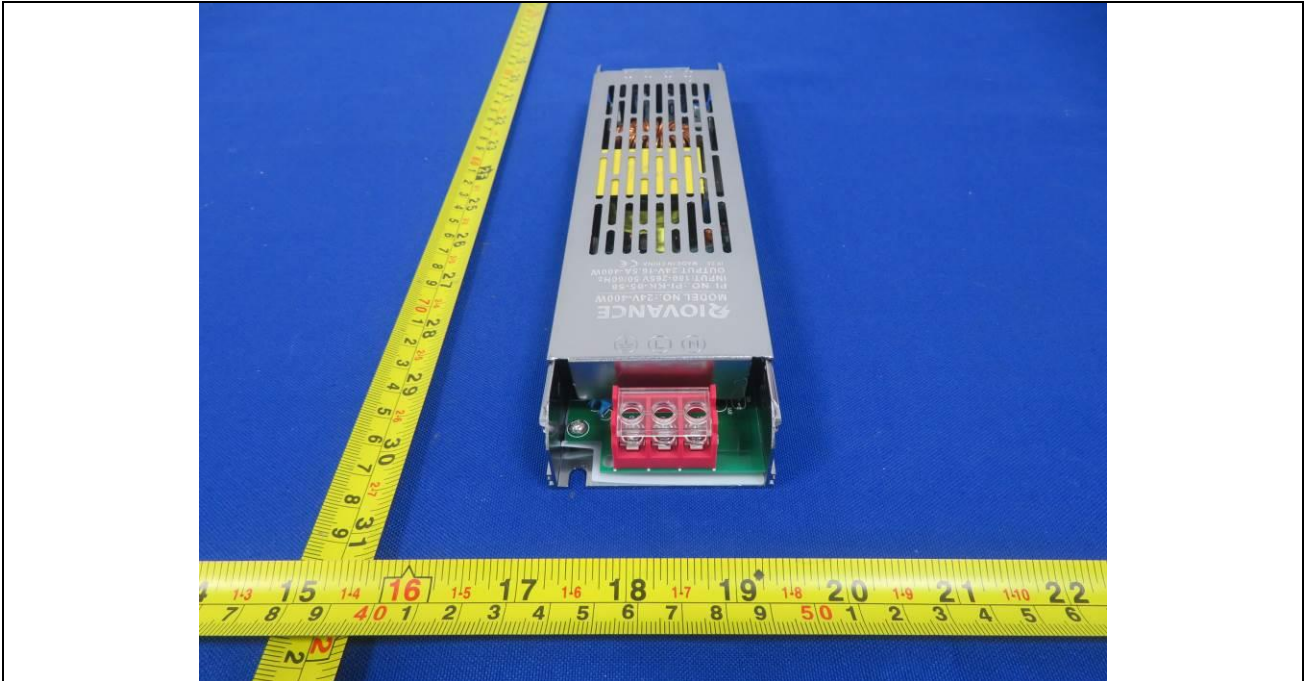
Clause	Requirement + Test	Result - Remark	Verdict				
NNEX 4	TABLE: Thermal tests of Section 12		P				
	Type reference :	24V 400W	—				
	Lamp used :	-	—				
	Lamp control gear used :	-	—				
	Mounting position of luminaire..... :	-	—				
	Supply wattage (W) :	-	—				
	Supply current (A)..... :		—				
	Temperatures in test 1 - 4 below are corrected for ta (°C) :	45 °C	—				
	- abnormal operating mode :	Overload	—				
1.12 (12.4)	- test 1: rated voltage :		—				
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current :	1.06 × 240V	—				
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage :		—				
	Through wiring or looping-in wiring loaded by a current of A during the test :		—				
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current :	1.1 × 240V (overload)	—				
Temperature measurements (°C)							
Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Plastic outside	45	-	71.2	-	75	-	-
Plastic inside	45	-	97.3	-	Cl.18.1	-	-
Inductance	45	-	131.5	-	155	-	-
T1 primary winding	45	-	121.4	-	145	-	-
T1 secondary winding	45	-	131.1	-	145	-	-
T1 Bobbin	45	-	118.6	-	Cl.18.1	-	-
PCB	45	-	114.4	-	155	-	-
Opto-coupler	45		121.5		125	-	-

Attachment No.1

EN 60598-1 - ATTACHMENT

Clause	Requirement + Test			Result - Remark			Verdict
Y-capacitor	45	-	124.4	-	150	-	-
Driver output wire	45	-	102.8	-	100	-	-
Plastic enclosure inside abvoe T1	45	-	107.2	-	Cl.18.1	-	-
Mounting surface	45	-	102.3	-	115	-	-

Attachment No.2**Product Photos**Details of: Fig. 1Details of: Fig. 2

Attachment No.2**Product Photos**Details of: Fig. 3Details of: Fig. 4**- End of test report -**