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

Report Number.....:	21ZCTS1215005SP
Date of issue.....:	2021-12-21
Total number of pages.....	39 pages
Name of Testing Laboratory preparing the Report..... :	Shenzhen ZCT Technology Co., Ltd.
Applicant's name.....:	**Xuzhou Eagled Electronic Technology CO.,LTD**
Address.....:	B7 Building, National Security Science and Technology Park, Lijiang Road, Tongshan District, Xuzhou City, Jiangsu Province, China
Test specification:	
Standard..... :	EN 61347-2-13:2014/A1:2017 used in conjunction with EN 61347-1:2015
Test procedure.....:	CE-LVD
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 DRIVER
Trade Mark.....:	EAGLED
Manufacturer.....:	Xuzhou Eagled Electronic Technology CO.,LTD
Address.....:	B7 Building, National Security Science and Technology Park, Lijiang Road, Tongshan District, Xuzhou City, Jiangsu Province, China
Model/Type reference.....:	ZF120A-1202000 ZF120A-5W, ZF120A-10W, ZF120A-18W, ZF120A-35W, ZF120A-50W
Ratings.....:	Input:100-240V~, 50/60Hz Output:12Vdc, 25W ta:25℃ tc:75℃

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☐	**Testing Laboratory:**	Shenzhen ZCT Technology Co., Ltd.
Testing location/ address.....:		3/F., Building 5, Hongsheng Industrial Zone, Bao'an Road, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China.
Tested by (name, function, signature).....:		Mage Li
Reviewer by (name + signature).....:		Wilson Wei
Approved by (name, function, signature)...:		Tomy Wu
☐	**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:**	
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): Photos of the product (1 pages).
Summary of testing:

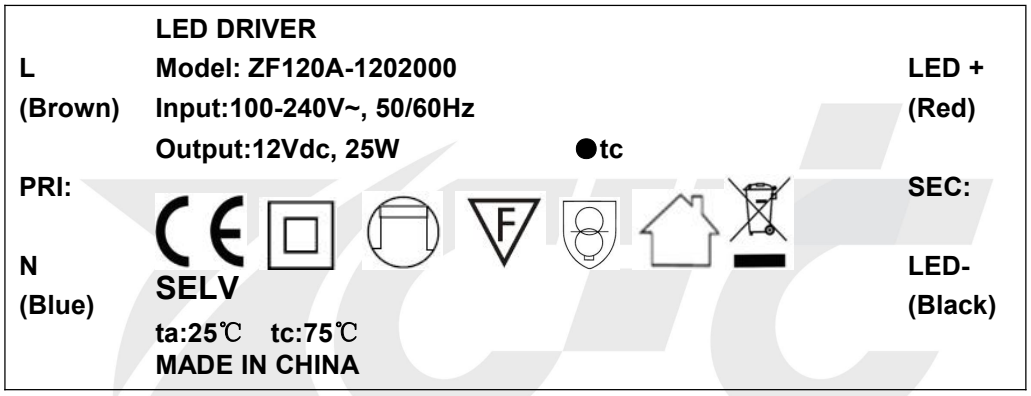
Tests performed (name of test and test clause):	**Testing location:**
EN 61347-2-13:2014/A1:2017 EN 61347-1:2015	Shenzhen ZCT Technology Co., Ltd. 3/F., Building 5, Hongsheng Industrial Zone, Bao'an Road, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China.

Summary of compliance with National Differences:

European group differences and national differences according to EN 61347-2-13:2014/A1:2017 used in conjunction with EN 61347-1:2015

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.



Remarks:

1. Representative markings of ZF120A-1202000, markings of all models are identical except for the model name and rating.

2. Height of CE mark at least 5mm, height of WEEE symbol should not less than 7mm, height of other marks at least 5mm, height of letters and numerals at least 2mm.

Test item particulars :	
Classification of installation and use.....:	Independent LED driver
Supply Connection.....:	terminal
Protection Class.....:	Class II
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.....:	2021-12-06
Date (s) of performance of tests.....:	2021-12-06 to 2021-12-21

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/EN 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) .....:	Xuzhou Eagled Electronic Technology CO.,LTD B7 Building, National Security Science and Technology Park, Lijiang Road, Tongshan District, Xuzhou City, Jiangsu Province, China

General product information:

- All models have similar schematic circuit diagram except the parameters of some parts are difference.
- All models are independent SELV driver, constant current output.
- Unless otherwise specified, the model ZF120A-1202000 was chosen as representative model to perform all test.

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Clause	Requirement – Test	Result - Remark	Verdict

4 (4)	**GENERAL REQUIREMENTS**		**P**
- (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**		**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 page 2	P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	See page 2	P
	supply frequency (Hz)	See page 2	P
	supply current (A)	See page 2	P
	f) earthing symbol		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	k) wiring diagram		P
	l) value of tc	tc:75℃	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) .....:		N/A
	- rated output voltage U_{rated} (V) .....:		N/A
	Constant current type:	Yes ☒ No ☐	—
	- rated output power P_{rated} (W) .....:		N/A
	- rated output current I_{rated} (A) .....:		P
	Indication if for LED modules only		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 of protection against accidental contact		N/A
	i) cross-section of conductors (mm²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	s) SELV symbol		P
7.2 (-)	- declaration of mains connected windings		P

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 kΩ	(see Annex A)	P
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impendance device	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P

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Clause	Requirement – Test	Result - Remark	Verdict
- (10.2)	Capacitors > 0,5 μF: 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		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	(see Annex L)	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. ..... :		P
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V	500V	P
	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

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Clause	Requirement – Test	Result - Remark	Verdict
- (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**		N/A
- (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 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 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

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Clause	Requirement – Test	Result - Remark	Verdict
	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 Ω .....:		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 ≥ 2 MΩ .....:	See Annex L	P
	For double or reinforced insulation ≥ 4 MΩ .....:	See Annex L	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1	See Annex L	P
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		N/A
	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	See Annex L	P
	Supplementary insulation, 2U + 1750V		N/A
	Double or reinforced insulation, 4U + 2000 V	See Annex L	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	See Annex L	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

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Clause	Requirement – Test	Result - Remark	Verdict
	- 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)	N/A
- (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)	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 ≥ 1 MΩ ..... :	>1 MΩ	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		P

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		P
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

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Clause	Requirement – Test	Result - Remark	Verdict
	Double LED modules or equivalent load connected in parallel to the output terminals of constant voltage type		N/A
	Double LED modules or equivalent load connected in serial to the output terminals of constant current type		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**		**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**		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:		--
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		P
	- controlgear providing SELV in accordance with relevant part 2 of IEC 61347		N/A
	- 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		N/A
	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:		
	- 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		--

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Clause	Requirement – Test	Result - Remark	Verdict
	Accessible conductive parts insulated from active parts of electric circuits by insulating according Table 6		N/A
	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**		N/A
- (16.2.2)	Minimum creepage distances for working voltages		N/A
	Creepage distances according to Table 7	(see appended table)	N/A
- (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**		N/A
- (16.3.2)	Clearances for working voltages		N/A
	Clearances distances according to Table 9	(see appended table)	N/A
- (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**		**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**

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Clause	Requirement – Test	Result - Remark	Verdict
(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		N/A
(4.11.5)	No contact to wood or mounting surface		P
(4.11.6)	Electro-mechanical contact systems		P
(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

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)	N/A

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

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Clause	Requirement – Test	Result - Remark	Verdict

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 (14)	**TABLE: tests of fault conditions**	**P**
Part	Simulated fault	Hazard
DB1(2-4)	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
C1	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
U2(1-5)	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
U2(2-4)	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
U2(3-7)	Shut down, unrecoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
EC1	Fuse open, no flame, no flammable gas, no molten parts, no hazard.	NO
EC2	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
D5	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
T2(2-6)	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO
Output	Shut down, recoverable, no flame, no flammable gas, no molten parts, recoverable, no hazard.	NO

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	>3.5	3.0	3	>5.5	5.0	3
Working voltage (V)..... :					240V		—
Frequency if applicable (kHz)..... :							—
PTI..... :					< 600 ☒ ≥ 600 ☐		—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) ..... :							—
Pulse voltage if applicable (kV) ..... :					2.5		—
Supplementary information:							

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Clause	Requirement – Test	Result - Remark	Verdict

Distance 2:	S	>5.5	3.0	3	>5.5	5.0	3
Working voltage (V)..... :					240V		—
Frequency if applicable (kHz)..... :							—
PTI..... :					< 600 ☒	≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:					2.5		—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information:							
Distance 3:	R	>5.5	3.0	3	>5.5	5.0	3
Working voltage (V)..... :					240V		—
Frequency if applicable (kHz)..... :							—
PTI..... :					< 600 ☒	≥ 600 ☐	—
Peak value of the working voltage $\hat{U}_{out}$ if applicable (kV) .....:					2.5		—
Pulse voltage if applicable (kV) ..... :							—
Supplementary information:							

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

11 (11)	**TABLE: MOISTURE RESISTANCE AND INSULATION**			P
Test Location	Working voltage	Measured (MΩ)	Required (MΩ)	Verdict
Insulation between L/N	100-240V~	500 MΩ	>2 MΩ	Pass
Insulation between current-carrying parts and accessible parts	100-240V~	500 MΩ	>4 MΩ	Pass
Insulation between input and output circuits	100-240V~	500 MΩ	>5 MΩ	Pass
Insulation between primary winding and secondary winding of transformer	100-240V~	500 MΩ	>5 MΩ	Pass
Insulation between core and secondary winding of transformer	100-240V~	500 MΩ	>5 MΩ	Pass

12 (12)	**TABLE: ELECTRIC STRENGTH**	P

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Clause	Requirement – Test	Result - Remark	Verdict

Test Location	Working voltage	Measured voltage (V)	Result	Verdict
Insulation between L/N	100-240V~	1480V	No breakdown	Pass
Insulation between current-carrying parts and accessible parts	100-240V~	2960V	No breakdown	Pass
Insulation between input and output circuits	100-240V~	2960V	No breakdown	Pass
Insulation between primary winding and secondary winding of transformer	100-240V~	2960V	No breakdown	Pass
Insulation between core and secondary winding of transformer	100-240V~	2960V	No breakdown	Pass

19 (18.1)	**TABLE: Ball Pressure Test**		**P**
Allowed impression diameter (mm)..... :	2		—
Object/ Part No./ Material	Test temperature (°C)	Impression diameter (mm)	
Bobbin of Transformer	125	1,1	
PCB	125	0,9	
Plastics enclosure	75	1,3	
Supplementary information:			

19 (18.2)	**TABLE: Test of printed boards**			**P**
Object/ Part No./ Material	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
PCB	10	No	0	P
Bobbin of Transformer	10	No	0	P
Supplementary information:				

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Clause	Requirement – Test	Result - Remark	Verdict

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

19 (18.4)	TABLE: Needle-flame test			P
Object/ Part No./ Material	Duration of application of test flame (s)	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict
Transformer copper tube	10	No	0	P
PCB	10	No	0	P
Supplementary information:				

19 (18.5)	TABLE: Proof tracking test				N/A
Test voltage PTI .....:		175 V			—
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens			Verdict
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 .....:		N/A
(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. .....:	0,32mA	P
	Comply with Annex G.2 of IEC 60598-1		P

(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
(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

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Clause	Requirement – Test	Result - Remark	Verdict
	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
(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 ENCOSURE**		P
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A

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Clause	Requirement – Test	Result - Remark	Verdict

(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**		**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 clause 9.2 of IEC 61558-1		P
(L.6)	**Heating**		P
	No excessive temperatures in normal use		P
	Value if capacitor t_c marked ..... :		—
	Winding insulation classified as Class ..... :		—
	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 MΩ ..... :		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 MΩ ..... :		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ ..... :		P
(L.8.3)	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits .....:		P
	2) Over basic or supplementary insulation between:		--
	a) live parts having different polarity .....:		P
	b) live parts and body if intended to be connected to protective earth .....:		P
	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 .....:		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		P
	Required distance (mm) .....:		—
	Measured (mm) ..... :		P
	Supplementary information		—
	2) Supplementary distance through insulation		P
	Required distance (mm) .....:		—
	Measured (mm) ..... :		P
	Supplementary information		—
	3) Reinforced distance through insulation		P

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Clause	Requirement – Test	Result - Remark	Verdict
	Required distance (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
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 ±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

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Clause	Requirement – Test	Result - Remark	Verdict
	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**		P
(N.4)	**General requirements**		**N/A**
(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**		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		P
	- 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

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Clause	Requirement – Test	Result - Remark	Verdict

(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
	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)		
	Voltage $\hat{U}_{out}$ kV .....:		—
	Frequency.....:		—
	Required distance..... :		—
	Measured.....:		N/A
	Supplementary information		—

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Clause	Requirement – Test	Result - Remark	Verdict

(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 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 (mm²).....:		—
(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

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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
Enclosure	B	LOTTE CHEMICAL CORPORATION	PC-1100(+)	PC; V-2	UL 94 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E85371* + Tested with appliance#
LED driver PCB	B	KINGBOARD LAMINATES HOLDINGS LTD	KB-3150; KB-5150A; KB-6150C	Industrial laminates; V-0; 130°C	UL 94 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E123995* + Tested with appliance#
Terminal block (input&output)	B	Dongguan Changhe Electronics Co., Ltd.	CS200-00-350	Screw type; 0,5…2,5mm^2 250V; 10A; T110	DIN EN 60998-2-1 DIN EN 60998-1	UL E256644*
X2 capacitor (CX1)	B	Fuxin Pan Ocean Electronic Ltd.	MPX-X2	X2 type; 310V; 0.22uF; T110	IEC/EN 60384-14	UL E352735*
Fuse (F2)	B	Shenzhen Lanson Electronics Co. Ltd.	SMT	T2A; 300V	IEC/EN 60127-1 IEC/EN 60127-3	UL E82636
Varistor (MOV1)	B	Hongzhi Enterprises Ltd.	HEL10D471K HEL10D511K	470V; T85/ 510V; T85	IEC/EN 61051-1 IEC 61051-2 IEC 61051-2-2	UL E324904*
Y1 capacitor (CY1)	B	Haohua Electronic Co., Ltd.	CT 7	Y1 type; 400V; 2,2nF; T125	IEC/EN 60384-14	UL E315719
Y1 capacitor (CY2)	B	SHENZHEN TERUIXIANG ELECTRONIC CO LTD	TRX	Y1 type; 400V; 2,2nF; T125	IEC/EN 60384-14	UL E315719

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Clause	Requirement – Test	Result - Remark	Verdict

Input Inductance (L1)	B	MAHUI INTELLIGENT POWER CO.,LTD	T9*5*3	30uH,130°C	IEC/EN 61347-2-13 IEC/EN 61347-1	Tested with appliance#
-Bobbin	B	Sumitomo Bakelite Co Ltd	PM-9820; PM-9823	PF; V-0	UL 94 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E41429* + Tested with appliance#
- Magnet Wire	B	SHENZHEN CHENGWEI INDUSTRY CO LTD	(x)UEW-F-(&)-(*)	130°C	UL 1446 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E227475* + Tested with appliance#
- Triple insulated winding Wire	B	Dah Jin Technology Co., Ltd	TLW-B	130°C	IEC/EN 62368-1	VDE 40008834*
I-shaped inductor (L2)	B	MAHUI INTELLIGENT POWER CO.,LTD	Φ8*10	1.57mH,130°C	IEC/EN 61347-2-13 IEC/EN 61347-1	Tested with appliance#
TUBE	B	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	RSFR	125°C	UL 1446 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E203950* + Tested with appliance#
- Magnet Wire	B	SHENZHEN CHENGWEI INDUSTRY CO LTD	(x)UEW-F-(&)-(*)	130°C	UL 1446 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E227475* + Tested with appliance#
Transformer (T1)	B	MAHUI INTELLIGENT POWER CO LTD	EE1310-HEZ1 2500-230	2.5mH Class 130	IEC/EN 61347-2-13 IEC/EN 61347-1	Tested with appliance#

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Clause	Requirement – Test	Result - Remark	Verdict

- Bobbin	B	Sumitomo Bakelite Co Ltd	PM-9820; PM-9823	PF; V-0	UL 94 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E41429* + Tested with appliance#
- Magnet Wire	B	SHENZHEN CHENGWEI INDUSTRY CO LTD	(x)UEW-F-(&)-(*)	130°C	UL 1446 + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E227475* + Tested with appliance#
- Insulation tape	B	XINYU SHENGDAFENG ELECTRIC MATERIAL CO LTD	SDF-312	PET; 130°C	UL 510A + IEC/EN 61347-2-13 IEC/EN 61347-1	UL E317896* + 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 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
(15.6)	Terminals and connections for external wiring		N/A
(15.6.1)	Conductors		N/A
	Terminal size and rating		N/A

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Clause	Requirement – Test	Result - Remark	Verdict

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

ANNEX 4	**TABLE: Temperature measurements, thermal tests of Section 12**		P
	Type reference..... :	ZF120A-1202000	—
	Load used..... :		—
	Mounting position of luminaire..... :	On the black testing board	—
	Ta..... :	25°C	—
	- test 1: rated voltage..... :	100-240VAC	—
	- test 2: test voltage(normal)..... :	1)Input: 1,06*100=106V 2)Input: 1,06*240=254.4V	—
	- test 3: test voltage(abnormal)..... :	1. Fault condition shut down immediately 2. Double the LED modules or equivalent load connected 1,1U=264V 3. The output terminals shall be short-circuited. 1,1U=264V 4.Over load: U=284,3V	—

Normal operation

temperature (°C) of part	Normal			Abnormal	
	test 1	test 2	limit	test 3	limit
Plastic enclosure outside above T1	54,4	52,2	85	--	--

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Clause	Requirement – Test	Result - Remark	Verdict

Plastic enclosure inside above T1	62,4	64,5	Ref,	--	--
tc point	72,9	70,5	75	--	--
Plastic enclosure inside under T1	65,4	66,5	Ref,	--	--
Input terminal	38,3	37,4	Ref,	--	--
Output terminal	42,7	43,5	Ref,	--	--
F1(fuse)	56,7	54,8	Ref,	--	--
MOV1	62,4	60,3	85	--	--
NT1	62,8	59,6	85	--	--
CX1	77,5	67,3	110	--	--
L1	58,6	58,2	120	--	--
L2	68,6	67,3	120	--	--
BD1	83,7	76,6	Ref.	--	--
C1	78,2	80,6	Ref.	--	--
T1 primary winding	67,9	59,9	120	--	--
T1 bobbin	96,6	88,7	Ref,	--	--
U2	96,4	88,8	Ref,	--	--
T2 primary winding	88,5	83,4	120	--	--
T2 secondary winding	78,2	76,8	120	--	--
T2 bobbin	97,8	81,9	Ref,	--	--
PCB under T1	89,2	72,9	Ref.	--	--
EC1	75,7	76,9	105	--	--
CY1	56,0	57,4	125	--	--
CY2	63,5	65,4	125	--	--
EC2	63,7	50,6	105	--	--
Ambient	25	25	--	--	--
Fault condition					
temperature (°C) of part	Normal			Abnormal	
	test 1	test 2	limit	test 3	limit

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Clause	Requirement – Test	Result - Remark	Verdict

Unit operated until the case temperature at tc, then applied the fault condition, continued until stable condition are obtained, after the tests, no impairing safety nor smoke or flammable gases produced.

Short output

temperature (°C) of part	Normal			Abnormal	
	test 1	test 2	limit	test 3	limit
tc point	--	--	--	77,9	105
L1	--	--	--	58,7	175
L2	--	--	--	57,8	175
T2 primary winding	--	--	--	65,7	175
T2 secondary winding	--	--	--	65,2	175

Double the LED modules or equivalent load

temperature (°C) of part	Normal			Abnormal	
	test 1	test 2	limit	test 3	limit
tc point	--	--	--	76,8	105
L1	--	--	--	57,4	175
L2	--	--	--	58,4	175
T2 primary winding	--	--	--	64,1	175
T2 secondary winding	--	--	--	63,8	175

Over load condition

temperature (°C) of part	Normal			Abnormal	
	test 1	test 2	limit	test 3	limit
tc point	--	--	--	70,8	105
L1	--	--	--	98,6	175
L2	--	--	--	101,9	175
T2 primary winding	--	--	--	133,8	175
T2 secondary winding	--	--	--	132,3	175
Input terminal	--	--	--	58,5	85
Output terminal	--	--	--	63,9	85
Mounting surface	--	--	--	67,5	105

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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)											N/A
	Voltage drop of two inseparable joints										N/A
	Voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV).....:										—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)											N/A
	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)											N/A
	Continued ageing: voltage drop after 10th alt. 25th cycle										N/A
	Max. allowed voltage drop (mV).....:										—
terminal		1	2	3	4	5	6	7	8	9	10
voltage drop (mV)											N/A
	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:											

Attachment No.1

ATTACHMENT TO TEST REPORT IEC 61347-2-13
EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES

Part 2: Particular requirements

Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules

Differences according to.....:	EN 61347-2-13:2014/A1:2017 used in conjunction with EN 61347-1:2015
Attachment Form No..... :	EU_GD_IEC61347_2_13E
Attachment Originator.....:	IMQ SpA
Master Attachment..... :	Date 2015-03

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	CENELEC COMMON MODIFICATIONS (EN)	P
	No Common modifications	P

Photos of the product

Photo 1

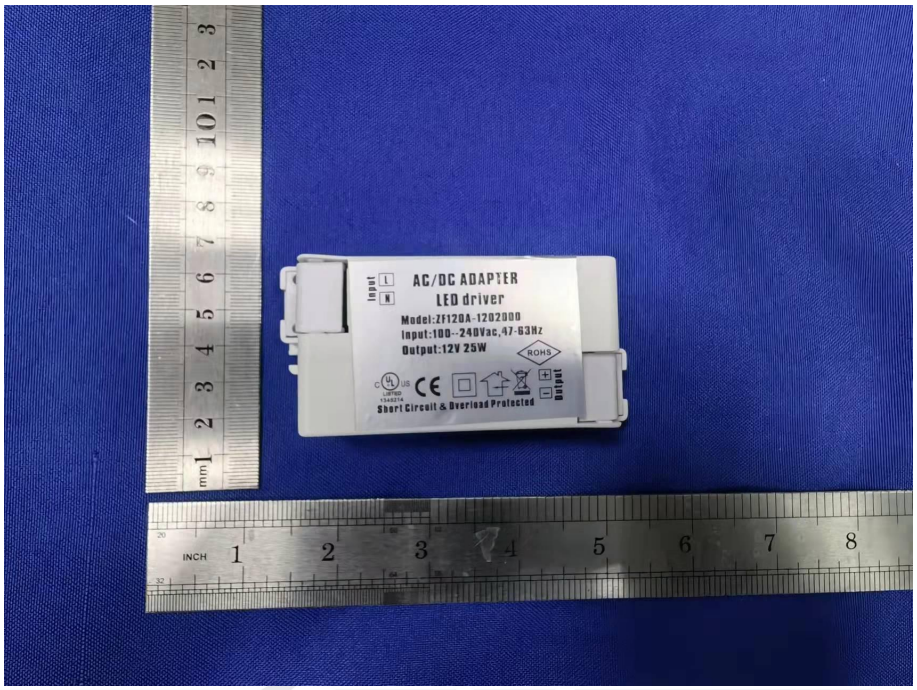
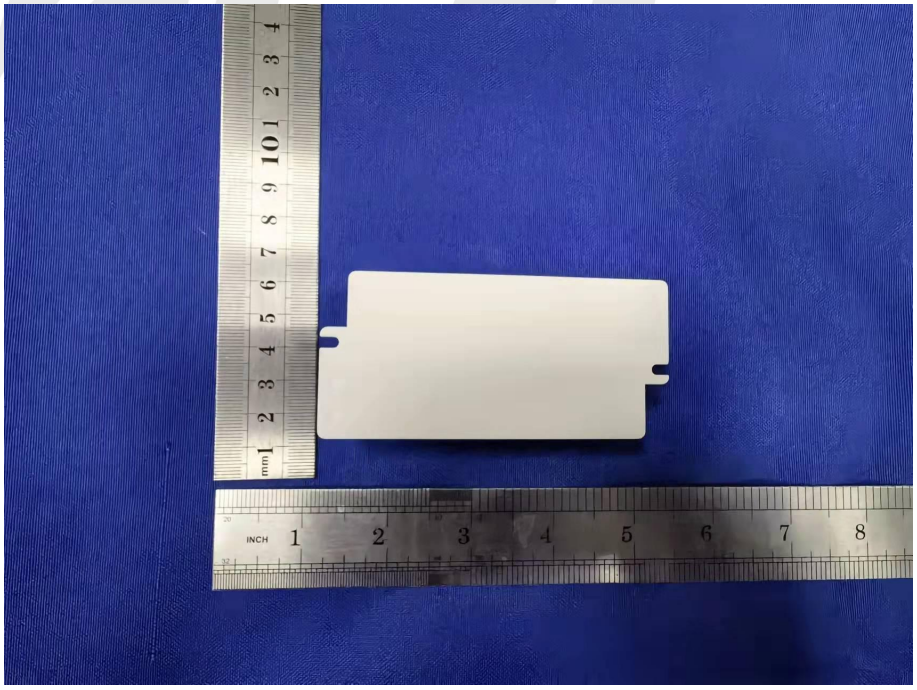


Photo 2



--End of report--