

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

Report Number.....: UNIA25050807SR-02
Edited by: Zane Mo
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Applicant's name.....: Nirrau electronics design and manufacturing co., Ltd.
Address.....: ROOM 2310&2312, 23/F WAYSON COMMERCIAL BUILDING
 28 CONNAUGHT RD WEST SHEUNG WAN HK

Test specification:
Standard.....: IEC 61347-2-13:2014+A1:2016 used in conjunction with
 IEC 61347-1:2015+A1: 2017
Test procedure.....: IEC Scheme
Non-standard test method.....: N/A

Test Report Form No.....: IEC61347_2_13G
Test Report Form(s) Originator.....: Intertek Semko AB
Master TRF.....: Dated 2017-12

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

Test item particulars	FONTE DE TENSÃO 12V 1.25A
Classification of installation and use	Class II ; use with LED loads
Supply Connection	Lead cord
Possible test case verdicts:	
- test case does not apply to the test object or not test.....	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	May 08, 2025
Date (s) of performance of tests	May 08, 2025 to May 17, 2025
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory. 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.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in IEC 61347-1. 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test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.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.</p>	
General product information:	
<ul style="list-style-type: none"> - These products are Independent control gear non-inherently short-circuit proof safety isolating control gear; they are Constant voltage output type and the load can only be LED modules. - Unless otherwise specified, tests carried out on model 020204F019 were considered representative, the model testing can cover all additional models. - The maximum ambient temperature is 25°C and tc is 80°C. - The tested sample complied with the requirements of the test specification. Series models are no other difference except for model name and rating output, So all models complied with the requirements of the test specification - IP66 see the test report RKEYS250610053. - Items with * are not in the range of A2LA. - This report updated photos on the original report number UNIA25050807SR-01, which does not affect the safety performance and does not need to be re-tested. 	

IEC 61347-2-13			
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)	N/A
- (4)	Compliance of independent controlgear enclosure with IEC 60598- 1		N/A
- (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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	—
	Independent controlgear.....	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	—
	Integral controlgear	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	—
6 (-)	Auto-wound controlgear	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	—
	Separating controlgear	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	—
	Isolating controlgear	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	—
	SELV controlgear	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	—

7 (7)	MARKING		P
7.1 (7.1)	Mandatory markings		P
	a) mark of origin		P
	b) model number or type reference		P
	c) symbol for independent controlgear, if applicable		P
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	85-265V~	P
	supply frequency (Hz)	50/60Hz	P
	supply current (A)		P
	f) earthing symbol		N/A
	k) wiring diagram		N/A
	l) value of tc	80°C	P
	m) symbol for declared temperature		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	- rated output power P_{rated} (W)	15.6W	P
	- rated output voltage U_{rated} (V)	12.5-13V max.	P
	Constant current type:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- rated output power P_{rated} (W)		N/A
	- rated output current I_{rated} (A)		N/A
	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		P
	i) cross-section of conductors (mm ²)		N/A
	j) number, type and wattage of lamp(s)		N/A
	s) SELV symbol		P
7.2 (-)	- declaration of mains connected windings		N/A

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)	N/A
- (A3)	Voltage > 35 V peak or > 60 V d.c. or protective impedance device	(see Annex A)	N/A
- (10.1)	Lacquer or enamel not used for protection or insulation		P
	Adequate mechanical strength on parts providing protection		P
- (10.2)	Capacitors > 0,5 μ F: voltage after 1 min (V): < 50 V	<6.0V	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

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Clause	Requirement + Test	Result - Remark	Verdict
	No possibility of connection between output circuit and the body or protective earthing circuit through other conductive parts		N/A
	SELV outputs separated by at least basic insulation		N/A
	ELV conductive parts insulated as live parts		P
	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.	38VDC	P
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output ≤ 35 V peak or ≤ 60 V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. :		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		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		N/A
- (9.1)	Provisions for protective earthing		N/A
	Terminal complying with clause 8		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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: $< 0,5 \Omega$		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		N/A
- (9.5.1)	Earth connection to other equipment		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
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 $\geq 2 \text{ M}\Omega$	> 500 M Ω	P
	For double or reinforced insulation $\geq 4 \text{ M}\Omega$	> 500 M Ω	P
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1		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 $\leq 50 \text{ V}$, test voltage 500 V		N/A
	Working voltage $> 50 \text{ V} \leq 1000 \text{ V}$, test voltage (V):		P
	Basic insulation, $2U + 1000 \text{ V}$	1530V	P
	Supplementary insulation, $2U + 1000 \text{ V}$		N/A
	Double or reinforced insulation, $4U + 2000 \text{ V}$	3060V	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		N/A

*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
*- (14.4)	Short-circuit across insulation consisting of lacquer, enamel or textile	(see appended table)	P

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Clause	Requirement + Test	Result - Remark	Verdict
*- (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)	P
*- (14.6)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$		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		P
15.2 (-)	Normal operation		P
	Comply with clause L.6 of IEC 61347-1		P
15.3 (-)	Abnormal operation		N/A
	Comply with clause L.7 of IEC 61347-1		N/A
	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		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
	Printed circuits used as internal connections complies with clause 14		P
- (15.3)	Plugs and socket-outlets used in SELV or ELV circuits		N/A
	No dangerous compatibility between output socket-outlet and a plug for socket-outlets for input circuit in relation to installation rules, voltages and frequencies		N/A
	Plugs and socket-outlets for SELV comply with IEC 60906-3 and IEC 60884-2-4		N/A
	Plugs and socket-outlets for SELV ≤ 3 A, ≤ 25 V r.m.s. or ≤ 60 V d.c. and ≤ 72 W comply with IEC 60906-3 and IEC 60884-2-4 or:		N/A
	- plugs not able to enter socket-outlets of other standardised system		N/A
	- socket-outlets not admit plugs of other standardised system		N/A
	- socket-outlets without protective earth		N/A
- (15.4)	Insulation between circuits and accessible parts		P
- (15.4.2)	SELV circuits		P
	Source used to supply SELV circuits:		P
	- safety isolating transformer in accordance with relevant part 2 of IEC 61558		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
	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		P
- (15.4.3)	FELV circuits		N/A
	Source used to supply FELV circuits:		N/A
	- separating transformer in accordance with relevant part 2 of IEC 61558		N/A
	- separating controlgear providing basic insulation between input and output circuits in accordance with relevant part 2 of IEC 61347		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- another source		N/A
	- source in circuits separated by the LV supply by basic insulation		N/A
	Voltage in the circuit not higher than ELV		N/A
	FELV circuits insulated from LV supply by at least basic insulation		N/A
	FELV circuits insulated from other FELV circuits if functional purpose		N/A
	FELV circuits insulated from accessible conductive parts according Table 6 in 15.4.5		N/A
	Plugs and socket-outlets for FELV system comply with:		N/A
	- plugs not able to enter socket-outlets of other voltage systems		N/A
	- socket-outlets not admit plugs of other voltage systems		N/A
	- socket-outlets have a protective conductor contact		N/A
- (15.4.4)	Other circuits		N/A
	Insulation between circuits other than SELV or FELV and accessible conductive parts in according Table 6 in 15.4.5.		N/A
- (15.4.5)	Insulation between circuits and accessible conductive parts		N/A
	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

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Clause	Requirement + Test	Result - Remark	Verdict
- (16.2.2)	Minimum creepage distances for working voltages		P
	Creepage distances according to Table 7	(see appended table)	P
- (16.2.3)	Creepage distances for working voltages with frequencies above 30 kHz		N/A
	Creepage distances according to Table 8	(see appended table)	N/A
- (16.3)	Clearances		P
- (16.3.2)	Clearances for working voltages		P
	Clearances distances according to Table 9	(see appended table)	P
- (16.3.3)	Clearances for ignition voltages and working voltages with higher frequencies		N/A
	Clearances distances for basic or supplementary insulation according to Table 10	(see appended table)	N/A
	Clearances distances for reinforced insulation according to Table 11	(see appended table)	N/A

18 (17)	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		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

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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)	N/A
- (18.3)	Glow-wire test	See Test Table 19 (18.3)	P
- (18.4)	Needle flame test	See Test Table 19 (18.4)	P
- (18.5)	Tracking test	See Test Table 19 (18.5)	N/A

20 (19)	RESISTANCE TO CORROSION		P
	- test according 4.18.1 of IEC 60598-1		P
	- adequate varnish on the outer surface		P
21 (-)	MAXIMUM WORKING VOLTAGE (U_{out}) IN ANY LOAD CONDITION		P
	Not exceed declared maximum working voltage U_{out} in any load condition		P

*14	TABLE: tests of fault conditions		P
Part	Simulated fault		Hazard
EC1	Short circuit, fuse copper foil open, no flame, no smoke, no flammable gas, no molten parts		NO
EC2	Short circuit, fuse copper foil open, no flame, no smoke, no flammable gas, no molten parts		NO
Y1	Short circuit, fuse copper foil open, no flame, no smoke, no flammable gas, no molten parts		NO
T1(1-2)	Short circuit, fuse copper foil open, no flame, no smoke, no flammable gas, no molten parts		NO
T1(3-4)	Short circuit, fuse copper foil open, no flame, no smoke, no flammable gas, no molten parts		NO
Output +/-	Short circuit, unit shut down, no flame, no smoke, no flammable gas, no molten parts		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	>3	1.5	9	>3.5	2.65	7	
Working voltage (V).....					265V~		—	
Frequency if applicable (kHz).....					-		—	
PTI.....					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					-		—	
Pulse voltage if applicable (kV)					-		—	
Supplementary information: L and N								
Distance 2:	R	>6	3	9	6.5	5.0	7	
Working voltage (V).....					265V~		—	
Frequency if applicable (kHz).....					-		—	
PTI.....					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)					-		—	
Pulse voltage if applicable (kV)					-		—	
Supplementary information: Live part and enclosure								
Distance 3:	R	>6	3.0	9	6.5	5.0	7	
Working voltage (V).....					265V~		—	
Frequency if applicable (kHz).....					-		—	
PTI.....					< 600 <input checked="" type="checkbox"/> ≥ 600 <input type="checkbox"/>		—	
Peak value of the working voltage \hat{U}_{out} if applicable (kV)							—	
Pulse voltage if applicable (kV)							—	
Supplementary information: Pri. circuit to Sec. circuit								

** 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)..... :		2mm		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
PCB	1)	125 °C	1.01 mm	
Enclosure	1)	75 °C	1.02 mm	
Transform bobbin	1)	125 °C	0.98 mm	
Supplementary information: 1) See ANNEX 2				

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

Supplementary information:

19 (18.3)	TABLE: Glow-wire test				P
Glow wire temperature..... :		650°C		—	
Object/ Part No./ Material	Manufacturer/ trademark	Ignition of specified layer Yes/No	Duration of burning (s)	Verdict	
Enclosure	1)	No	0s	PASS	
Supplementary information:1) See ANNEX 2					

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
PCB	1)	10s	No	0s	PASS
Transform bobbin	1)	10s	No	0s	PASS

Supplementary information:1) See ANNEX 2

19 (18.5)	TABLE: Proof tracking test			N/A
Test voltage PTI		175 V		—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
Object/ Part No./ Material	Manufacturer/ trademark	Withstand 50 drops without failure on three places or on three specimens	
Supplementary information:			

(A)	ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK	N/A
(A.1)	Comply with A.2 or A.3	N/A
(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.	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
(C7)	LIMITATION OF HEATING	N/A
(C7.1)	Preselection test:	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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
(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		N/A
	Draught-proof enclosure in accordance with the description		N/A
	Dimensions of the enclosure		N/A
	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 <input type="checkbox"/> No <input type="checkbox"/>	—
	Class II	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Class III	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
(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		N/A
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		N/A
(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	:	P
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	1) Between live parts of input circuits and live parts of output circuits	3000V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity	1500V	P
	b) live parts and body if intended to be connected to protective earth		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord		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	3000V	P
(L.9)	Construction		P
(L.9.1)	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		P
(L.10)	Components		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		P
(L.11)	Creepage distances, clearances and distances through insulation		P
	Creepage distances and clearances not less than in Clause 16		P
	Distance through insulation according Table L.5 in IEC 61347-1		P
	1) Basic distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	2) Supplementary distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		N/A
	Supplementary information		—
	3) Reinforced distance through insulation		N/A
	Required distance (mm)		—
	Measured (mm)		P
	Supplementary information		—

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Clause	Requirement + Test	Result - Remark	Verdict
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 <input type="checkbox"/> No <input type="checkbox"/>	—
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
	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

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Clause	Requirement + Test	Result - Remark	Verdict
(N)	ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION		N/A
(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		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
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
(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

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Clause	Requirement + Test	Result - Remark	Verdict
(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		—
	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		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Impulse voltage.....:		N/A
	Supplementary information		—
	Reinforced insulation:		N/A
	Working/rated voltage		—
	Impulse voltage.....:		N/A
	Supplementary information		—

L.6	TABLE: transformer heating---normal operation		P
	Type reference.....:	020204F019	—
	Lamp used.....:	LED modules	—
	Mounting position.....:	As in normal use	—
	Test voltage.....:	1.06 x 265V~	—
Temperature (°C) of part		Test 1 (°C)	Limit (°C)
Capacitor RV1		54.8	105
NTC		53.2	125
Capacitor EC1		59.4	105
Capacitor EC2		60.2	105
Transformer primary coil		72.7	110
Transformer secondary core		70.4	110
Capacitor CY1		64.4	105
Capacitor EC3		64.7	105
PCB		73.4	130
Input wire		26.1	90
Output wire		33.5	90
Enclosure inside		67.0	80
Enclosure outside		49.6	80
Support		49.9	90
Ambient		25.0	-

L.7	TABLE: Heating - abnormal operation (short-circuit and over-loads)		P
	Type reference.....:	020204F019	—
	Condition.....:	ta:25°C	—
	Lamp used.....:	LED modules	—
	Mounting position.....:	As in normal use	—
	Test voltage (V)	1.1 x 265V~	—
Temperature (°C) of part		Test (°C) max.	Limit (°C)

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Clause	Requirement + Test	Result - Remark	Verdict
	Transformer primary coil	62.8	175
	Transformer secondary core	61.4	175
	External enclosure	58.2	105
	Support	47.3	105

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Clause	Requirement + Test	Result - Remark	Verdict

15.3	TABLE: transformer heating—abnormal condition (double LED modules)		N/A
	Type reference.....:	-	—
	Condition.....:		—
	Lamp used		—
	Mounting position.....:		—
	Test voltage		—
Temperature (°C) of part	Test (°C)		Limit(°C)
Transformer primary coil	—		—
Transformer secondary coil	—		—
Input wire	—		—
Output cable	—		—
External enclosure	—		—
Support	—		—
Remark: 1. Double LED modules or equivalent load connected in parallel to the output of constant current type. 2. Output shut down immediately after abnormal test, the temperature rise of components are lower than temperature rise of components at normal heating test, so no temperature rise are recorded.			

IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
ANNEX 1	TABLE: Critical components information					P
Object / part No.	Code	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Input wire	B	Shenzhen Runqi Wire Co Ltd	1672	22AWG, 80°C, 300V, VW-1	UL 758	UL E495994
Output wire	B	Shenzhen Runqi Wire Co Ltd	1015	22AWG, 80°C, 300V, VW-1	UL 758	UL E495994
Fuse FR1	B	Dongguan Hongda Electronic Technology Co., Ltd.	9232	AC250V; 5A	IEC/EN 60127-1; IEC/EN 60127-3	VDE 40033369
Y Capacitor Y1	B	Shantou High-New Technology Dev. Zone Songtian Enterprise Co., Ltd.	CD-Series	Y1;AC400V;125C;	IEC/EN60384-14	VDE 40025754
PCB	B	Shenzhen Jia Li Chuang Technology Development Co LTD	KB-2151	V-0, 1.6mm	EN 60950-1	UL E479892
Plastic enclosure	B	SICHUAN DONGFANG INSULATING MATERIAL CO LTD	DFR3A(d); DFR3713 A(d)	PP; V-0; 110C	UL94+ IEC/EN61347-1; IEC/EN 61347-2-13	UL E199019
Transformer	ZHiP UZHi	ZF-1050S-S1007	Class B	EN 60950-1	CE	UL
-Bobbin	B	SHENZHEN BOJUN PLASTICS CO.,LTD	PQ3220	V-0, 150°C	UL 94 UL 746B	UL E520679
-Magnet wire	B	SHENZHEN CITY DENGGAO ELECTROTECH CO., LTD.	(2UEW 130°C) ØTEX0.5 mm, Ø0.4 mm, Ø0.2mm	130°C	UL 1446	UL E253843
-Triple insulated wire for T1	B	Cosmolink Co., Ltd.	TIW-M	130°C	EN 60950-1	VDE
-Insulating tape for T1	B	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO., LTD.	PZ-280, 10.5mm	Min. 130°C	UL 510A	UL E165111

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Clause	Requirement + Test	Result - Remark	Verdict

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

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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 (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

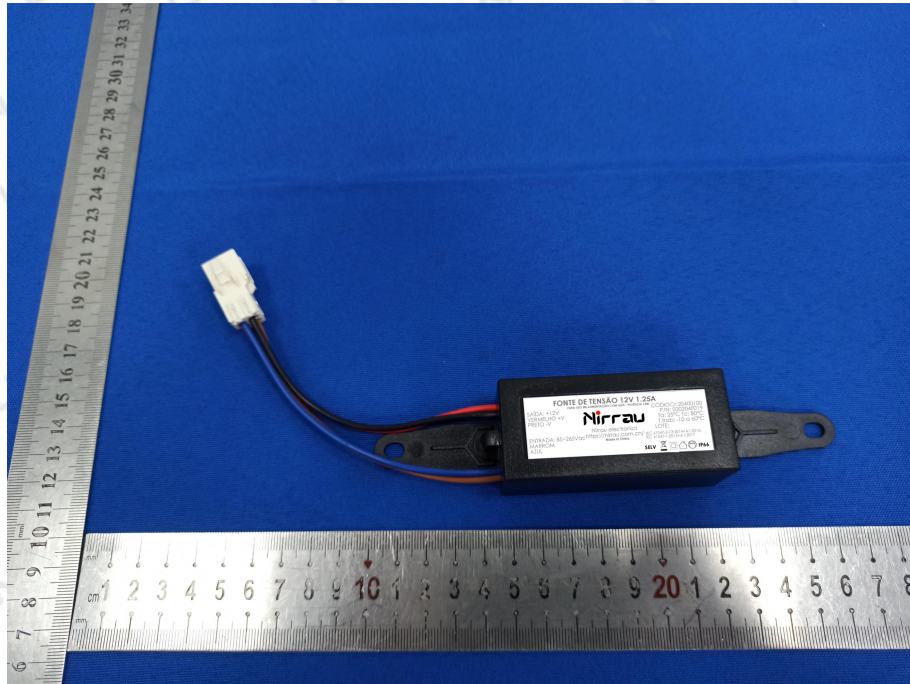
IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX 3	Screwless terminals (part of the luminaire)		N/A
(15)	SCREWLESS TERMINALS		N/A
(15.2)	Type of terminal.....:		—
	Rated current (A).....:		—
(15.3.1)	Material		N/A
(15.3.2)	Clamping		N/A
(15.3.3)	Stop		N/A
(15.3.4)	Unprepared 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
(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

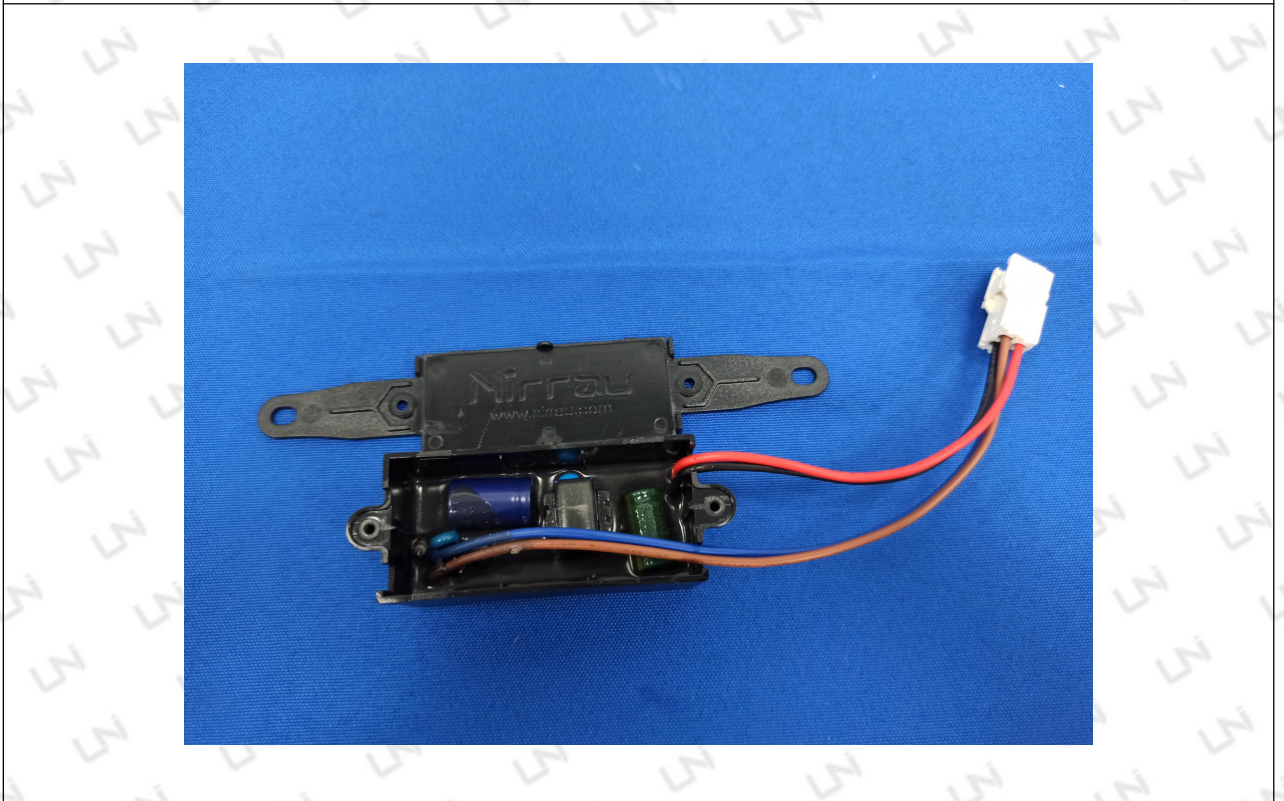
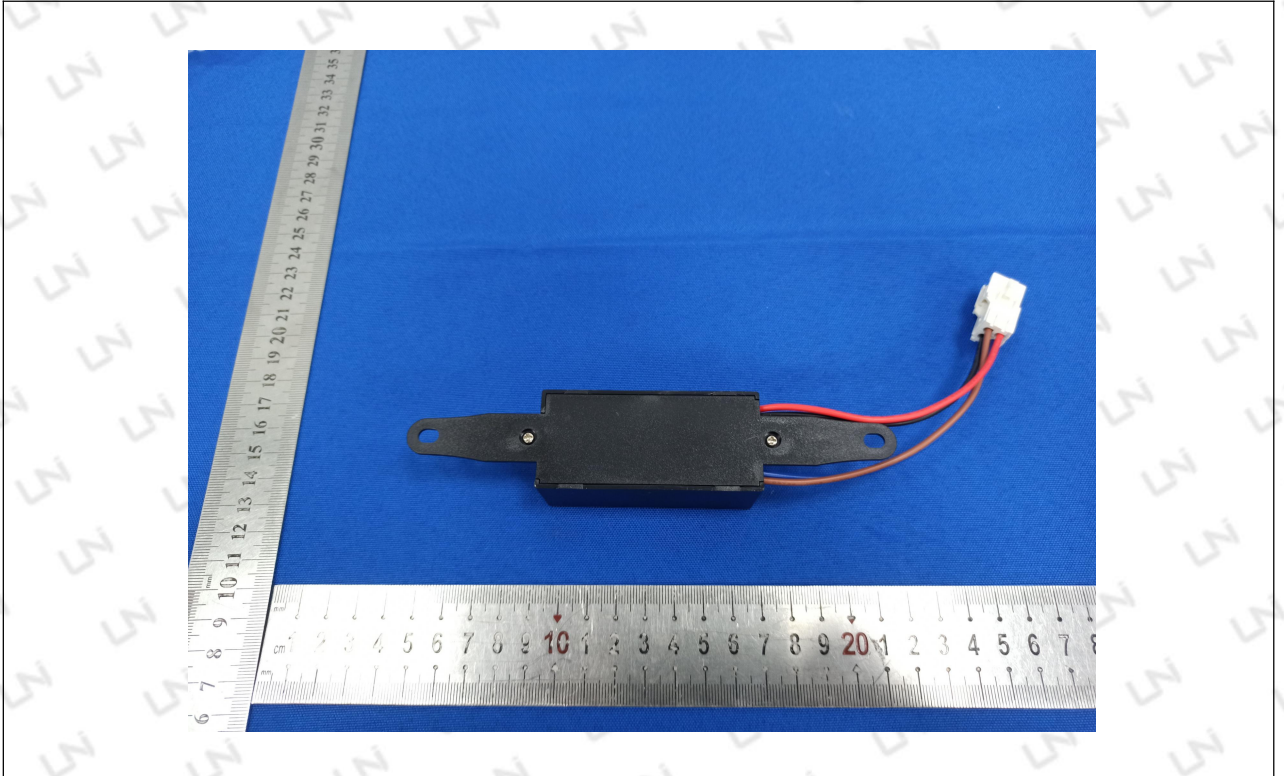
IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(15.6.2.2)	Pull test pin or tab terminals (4 samples); pull (N)		N/A
(15.6.3)	Electrical tests		N/A
	Tests according 15.6.3.1 + 15.6.3.2 in IEC 60598-1		N/A

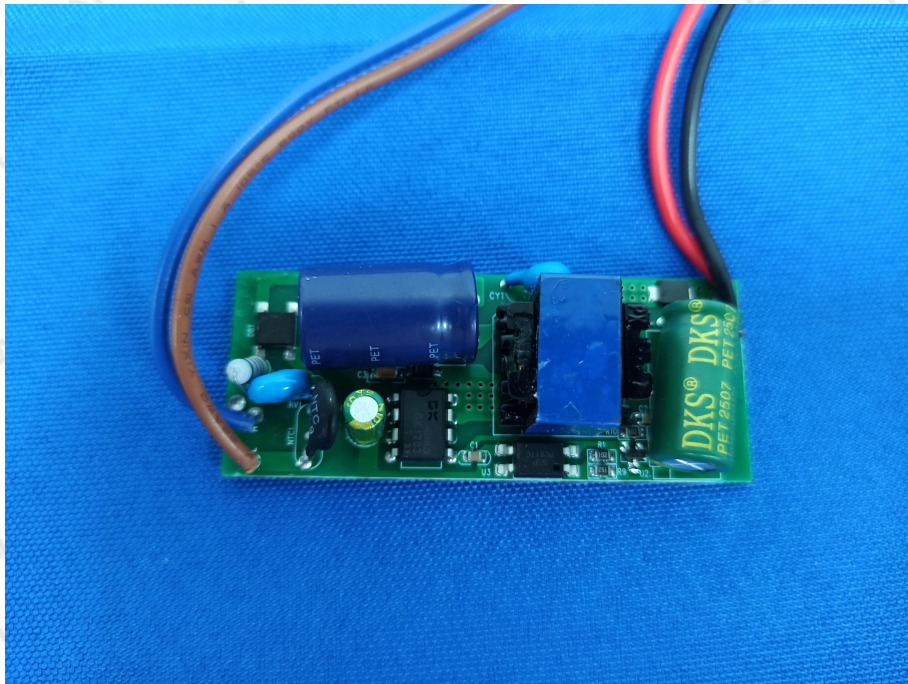
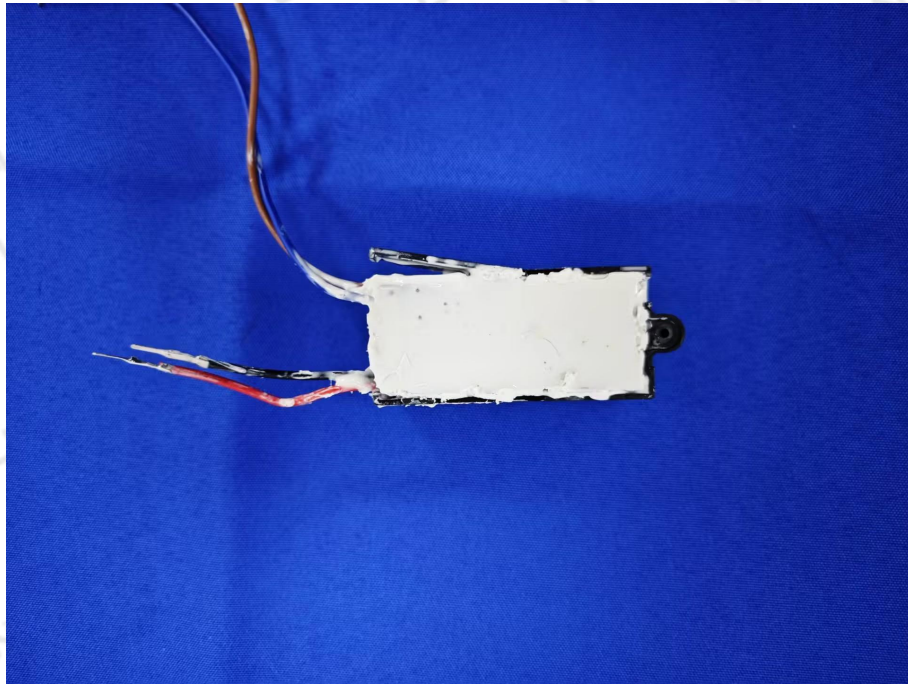
(15.6.3.1) (15.6.3.2)	TABLE: Contact resistance test / Heating tests										N/A
	Voltage drop (mV) after 1 h										—
terminal	1	2	3	4	5	6	7	8	9	10	
voltage drop (mV)											
	Voltage drop of two inseparable joints										
	Voltage drop after 10th alt. 25th cycle										
	Max. allowed voltage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

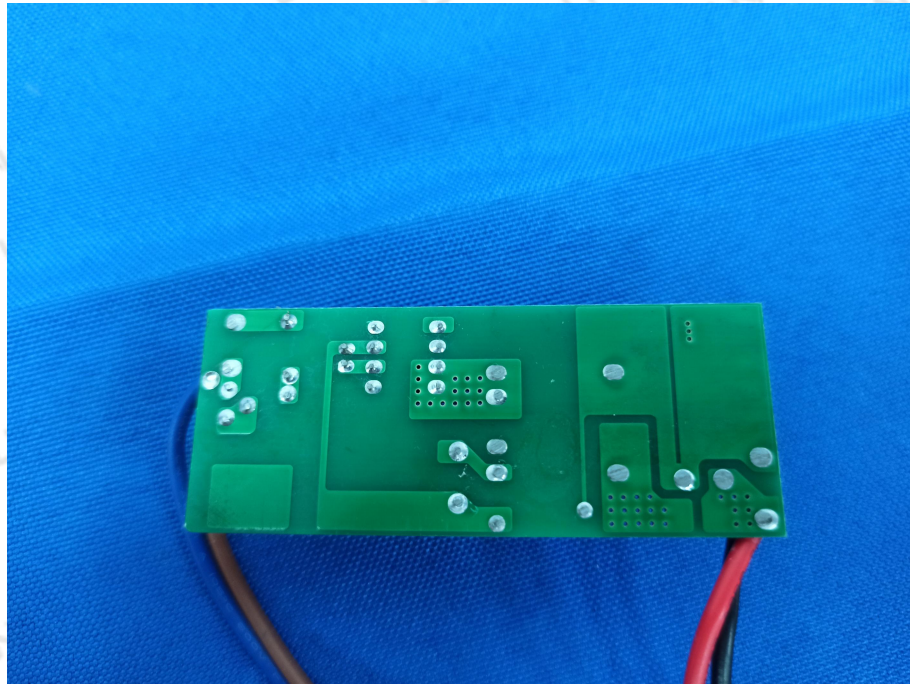
Photo documentation

Model: 020204F019

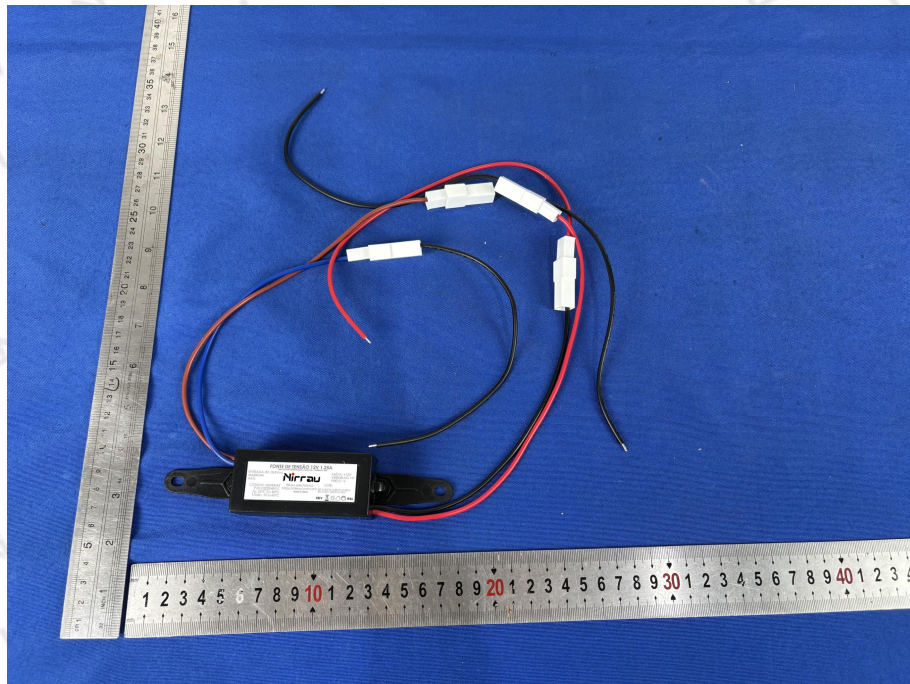


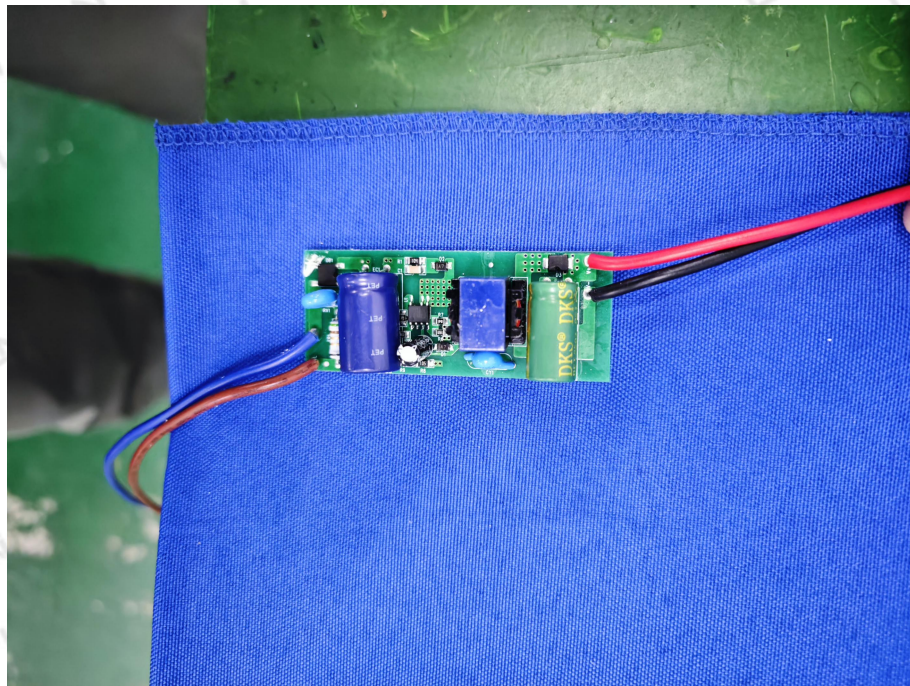


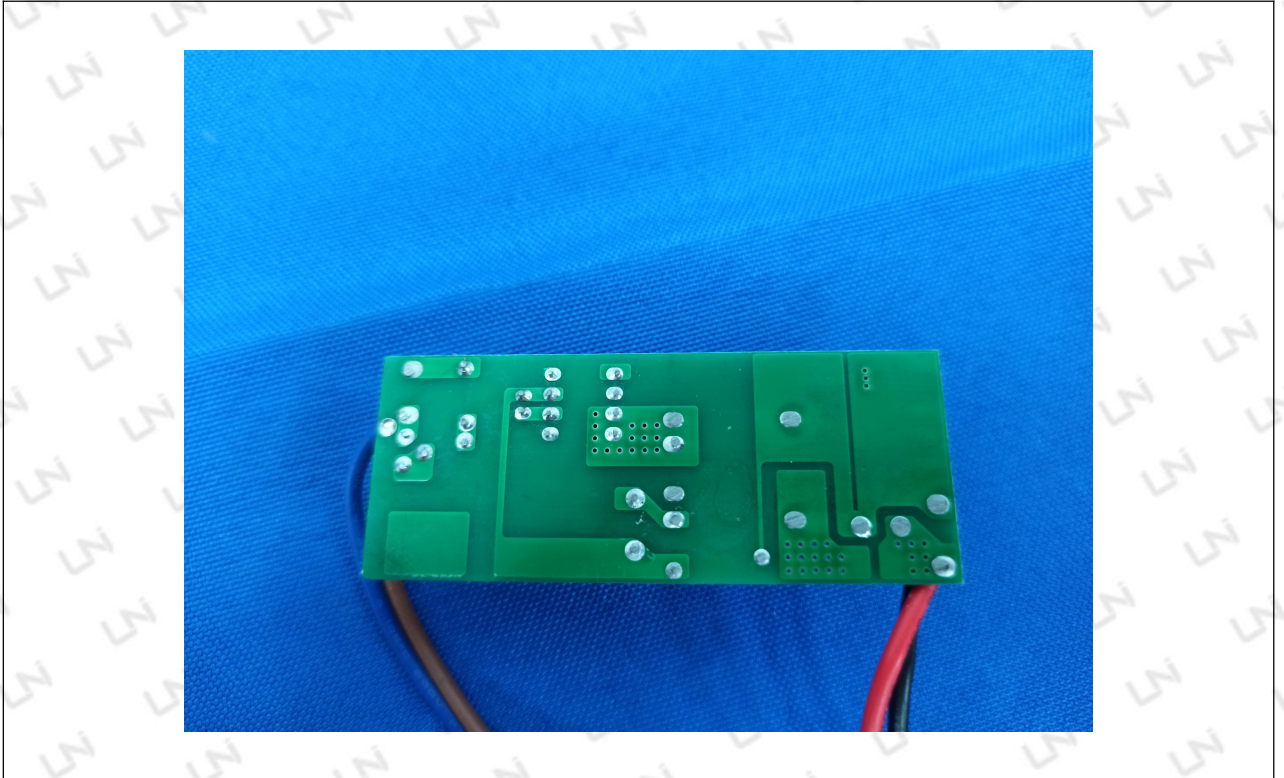




Model: 020204F011







*End of report***

Statement

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3. The results of this report are only valid for the samples provided by Applicant to our laboratory for inspection (That is, samples received by our laboratory. Without special explanation, it refers to the samples presented in the report "Sample Photo(s)").
4. If there is any objection to the test data and conclusions of this report, please submit it in writing within 10 working days after the date of issuance of the report.
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