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

**Report Number** ..... 268529  
**Date of issue** ..... 2014-10-24  
**Total number of pages** ..... 70 (including attachments)

**Applicant's name**..... Energy Recovery Products (Zhuhai) Co., Ltd.  
**Address** ..... No.8, Pingdong Road 2, Nanping Science Park, Zhuhai,  
Guangdong, China

**Test specification:**

**Standard** ..... IEC 61347-2-13:2006 (First Edition) used in conjunction with  
IEC 61347-1:2007 (Second Edition) + A1:2010 + A2:2012  
**Test procedure** ..... CB Scheme  
**Non-standard test method**..... N/A

**Test Report Form No.**..... IEC61347\_2\_13D  
**Test Report Form(s) Originator**..... Intertek Semko AB  
**Master TRF** ..... 2013-10

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**Test item description** ..... LED Driver  
**Trade Mark** .....   
**Manufacturer** ..... Same as Applicant  
**Model/Type reference** ..... **EBR0PPE-xxxx-aa-yyy-zzz series**  
(see general product information for details and code explanation)  
**Ratings** ..... Input: 230 V~, 50/60 Hz, Max. 0.27 A,  $\lambda = 0.9$   
Output: Max.700 mA, Constant current, 30-42 V, Max. 50 V d.c,  
Max. 21 W  
Built-in, SELV, IP20, tc: 90 °C

This Test Report, when bearing the Nemko name and logo is only valid when issued by a Nemko laboratory, or by a laboratory having special agreement with Nemko.

<b>Testing procedure and testing location:</b>	
<input checked="" type="checkbox"/> <b>CB Testing Laboratory:</b>	Nemko Shanghai Ltd. Shenzhen Branch
Testing location/ address .....	Unit C & D, Floor 10, Tower 2, Kefa Road #8 Hi-Technology Park, Nanshan District, 518057 Shenzhen CHINA
<input type="checkbox"/> <b>Associated CB Laboratory:</b>	
Testing location/ address .....	
Tested by (name + signature) .....	Eva Dai <span style="float: right;"><i>Eva Dai</i></span>
Approved by (+ signature) .....	Benny Lan <span style="float: right;"><i>Benny</i></span>
<input type="checkbox"/> Testing procedure: TMP	
Testing location/ address .....	
Tested by (name + signature) .....	
Approved by (+ signature) .....	
<input type="checkbox"/> Testing procedure: WMT	
Testing location/ address .....	
Tested by (name + signature) .....	
Witnessed by (+ signature) .....	
Approved by (+ signature) .....	
<input type="checkbox"/> Testing procedure: SMT	
Testing location/ address .....	
Tested by (name + signature) .....	
Approved by (+ signature) .....	
Supervised by (+ signature) .....	

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

Attachment 1: According to clause 15, clause 16 of IEC 61347-2-13:2006 and Annex L.6, L.7 of IEC 61347-1:2007+A1:2010+A2:2012) (8 pages)

Attachment 2: European Group Differences and National Differences (1 page)

Attachment 3: Transformer specification and working voltage (5 pages)

Attachment 4: National Differences for Australia for AS/NZS 61347.2.13:2013 and AS/NZS 61347.1: 2002 (2 pages)

Attachment 5: Pictures (13 pages)

**Summary of testing:**

The models EBR020E-0700-30, EBR020E-0500-42, EBR020W-0400-42, EBR010W-0250-42 are selected for full test as representative.

All models have same construction and principle of circuits, same size, and same PCB layout, only different in some components parameter for different output ratings.

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

The test samples are complying with the relevant product standard(s) and all applicable test clauses.

7 (7) – Marking

8 (10) – Protection against accidental contact with live parts

11 (11) – Moisture resistance and insulation

12 (12) – Electric strength

14 (14) – Fault conditions

16 – Abnormal conditions

17 (15) – Construction

18 (16) – Creepage distances and clearances

19 (17) – Screws, current-carrying parts and connections

20 (18) – Resistance to heat, fire and tracking

Annex A – Test to establish whether a conductive part is a live part which may cause an electric shock

Annex C – Particular requirements for electronic lamp controlgear with means of protection against overheating

Annex L – Particular additional requirements for Controlgear providing SELV

Annex N – Requirements for insulation materials used for double or reinforced insulation

**Testing location:**

Nemko Shanghai Ltd. Shenzhen Branch  
Unit C & D, Floor 10, Tower 2, Kefa Road #8 Hi-Technology Park, Nanshan District, 518057 Shenzhen CHINA

### Summary of compliance with National Differences:

List of countries addressed:

- CENELEC member countries.
- Australia / New Zealand.

- ☒ The product fulfils the requirements of EN 61347-2-13:2006 and EN 61347-1:2008+A1:2011+A2:2013.
- ☒ The product fulfils the requirements of AS/NZS 61347.2.13:2013 and AS/NZS 61347.1:2002.

### 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.



Note:

The above marking is the minimum requirement by the safety standard. For the final production, the additional markings which do not give rise to misunderstanding may be added.

The markings for other models identical to this model except for the model name and output ratings.

<b>Test item particulars</b> .....	
Classification of installation and use .....	Built-in and indoor use
Supply Connection .....	Connecting leads
.....	
.....	
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing</b> .....	
Date of receipt of test item .....	2014-07-02
Date (s) of performance of tests.....	2014-07-04 to 2014-10-10
<b>General remarks:</b>	
<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.  "(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</p>	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61347-1:</b>	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
<b>Name and address of factory (ies)</b> ..... : Same as Applicant / Manufacturer	

**General product information:**

LED Driver, built-in SELV and indoor use, constant current, connected to the supply via connecting leads, IP20, all components are encapsulated by self-hardening compound.

**Main model: EBR0PPE-xxxx-aa-yyy-zzz series**

Input: 230 V~, 50/60 Hz, Max. 0.27 A,  $\lambda = 0.9$

Output: Max.700 mA, Constant current, 30-42 V, Max.50 V d.c, Max. 21 W

Built-in, SELV, IP20, tc: 90 °C

The "PP" in the type designation can be 10, 15 or 20, indicating the maximum output wattage.

When PP=20, 16 W<Pout <=21 W;

When PP=15, 11 W<Pout<16 W;

When PP=10, Pout<11 W.

The "xxxx" can be 0100, 0105, 0110, 0115.... 0695, 0700, in the step of 5 mA, indicating the output current is 100 mA, 105 mA, 110 mA, 115 mA.... 695 mA, 700 mA. For each model series with the same output voltage range, the maximum output current not exceed the value declared in the below table.

The "aa" can be 24, 30, 32, 36, 37 or 42, indicating the maximum output voltage in Volts.

The "yyy" can be 0-9, A-Z any combination or blank, for market purpose only,

The "zzz" can be 0-9, A-Z any combination or blank, for market purpose only.

Model name	Input Voltage (Vac)	Max Output Power (W)	Max. Rated output current (mA)	Output Voltage (Vdc)	No Load Voltage (Vdc)
EBR0PPE-xxxx-30-yyy-zzz	230	21.0	700	20-30	35
EBR0PPE-xxxx-30-yyy-zzz	230	15.0	500		35
EBR0PPE-xxxx-24-yyy-zzz	230	15.0	625	16-24	31.2
EBR0PPE-xxxx-24-yyy-zzz	230	16.8	700		30
EBR0PPE-xxxx-32-yyy-zzz	230	21.0	650	20-32	41.6
EBR0PPE-xxxx-32-yyy-zzz	230	15.0	465		41.6
EBR0PPE-xxxx-36-yyy-zzz	230	21.0	580	24-36	46.8
EBR0PPE-xxxx-36-yyy-zzz	230	15.0	415		46.8
EBR0PPE-xxxx-37-yyy-zzz	230	18.5	500	26-37	48
EBR0PPE-xxxx-37-yyy-zzz	230	15.0	405		48
EBR0PPE-xxxx-42-yyy-zzz	230	21.0	500	30-42	50
EBR0PPE-xxxx-42-yyy-zzz	230	15.0	355		50

**General product information(Continued):**

LED Driver, built-in SELV and indoor use, constant current, connected to the supply via connecting leads, IP20, all components are encapsulated by self-hardening compound.

**Variant 1: EBR0PPW-xxxx-42-yyy-zzz series**

Input: 120-277 V~, 50/60 Hz, Max. 0.27 A,  $\lambda = 0.9$

Output: Max.400 mA, Constant current, 30-42 V, Max.50 V d.c, Max. 16.8 W

Built-in, SELV, IP20, tc: 90 °C

The “PP” in the type designation can be 10, 15 or 20, indicating the maximum output wattage.

When PP=20, 16 W<Pout <=21 W;

When PP=15, 11 W<Pout<16 W;

When PP=10, Pout<11 W.

“xxxx” can be 0100, 0105.... 0400, in the step of 5 mA, indicating the rated output current is 100 mA, 105 mA....400 mA, For each model series with the same output voltage range, the maximum output current not exceed the value declared in the below table.

“yyy” can be 0-9, A-Z any combination or blank, for market purpose only,

“zzz” can be 0-9, A-Z any combination or blank, for market purpose only.


Model name	Input Voltage (Vac)	Max. Output Power (W)	Max. Rated output current (mA)	Output Voltage (Vdc)	No-load Voltage (Vdc)
EBR0PPW-xxxx-42-yyy-zzz	120-277	10.5	250	30-42	50
EBR0PPW-xxxx-42-yyy-zzz	120-277	12.6	300	30-42	50
EBR0PPW-xxxx-42-yyy-zzz	120-277	14.7	350	30-42	50
EBR0PPW-xxxx-42-yyy-zzz	120-277	16.8	400	30-42	50

All models have same construction and principle of circuits, same size, and same PCB layout, only different in some components parameter for achieving the different output ratings.

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

<b>4 (4)</b>	<b>GENERAL REQUIREMENTS</b>		<b>P</b>
	<u>Insulation materials</u> according requirements in Annex N of IEC 61347-1	(see Annex N)	P
	Compliance of <u>independent controlgear enclosure</u> with IEC 60 598-1		N/A
	<u>Built-in magnetic ballast</u> with double or reinforced insulation comply with Annex I of IEC 61347-1		N/A
	<u>Built-in electronic controlgear</u> with double or reinforced insulation comply with Annex O of IEC 61347-1	(see Annex O)	N/A
	<u>SELV controlgear</u> comply with Annex L of IEC 61347-1	(see Annex L)	P
	<u>Independent SELV controlgear</u> comply with Annex I of this part 2	(see Annex I)	N/A

<b>6 (6)</b>	<b>CLASSIFICATION</b>		<b>P</b>
	Built-in controlgear .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	Independent controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Integral controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	SELV-equivalent or isolating controlgear .....	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> SELV controlgear	—
	Auto-wound controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Independent SELV controlgear .....	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

<b>7 (7)</b>	<b>MARKING</b>		<b>P</b>
7.1 (7.1)	Mandatory markings		P
	a) mark of origin		P
	b) model number or type reference	See model list for details.	P
	c) symbol for independent controlgear, if applicable		N/A
	d) correlation between interchangeable parts and controlgear marked		N/A
	e) rated supply voltage (V)	EBR0PPE-xxxx-aa-yyy-zzz series: 230 V~ EBR0PPW-xxxx-42-yyy-zzz series: 120-277 V~	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	supply frequency (Hz)	50/60 Hz	P
	supply current (A)	Max. 0.27 A, see model list for details.	P
	f) earthing symbol		N/A
	k) wiring diagram		P
	l) value of $t_c$	90 °C	P
	m) symbol for declared temperature	100 °C	P
	Constant voltage type:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- rated output voltage (V) .....		N/A
	Constant current type:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	- rated output current (A) .....	Max. 700 mA, see model list for details.	P
	- rated maximum output voltage (V) .....	Max. 50 V d.c. see model list for details.	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 on protection against accidental contact		N/A
	i) cross-section of conductors (mm <sup>2</sup> )		N/A
	j) number, type and wattage of lamp(s)		P
	- declaration of mains connected windings		N/A
	- declaration for SELV-equivalent controlgear		P

<b>8 (10)</b>	<b>PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS</b>		<b>P</b>
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 k $\Omega$	(see Annex A)	P
- (A3)	Voltage > 35 V r.m.s. 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		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 $\mu$ F: voltage after 1 min (V): < 50 V .....	Max. 4.75 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		P
- (10.4)	Accessible conductive parts in SELV circuits		N/A
	Output voltage under load $\leq 25$ V r.m.s. or $\leq 60$ V d.c.	Built-in controlgear, rely on luminaire enclosure for protection against electric shock, there is no accessible conductive parts in SELV circuits.	N/A
	If output voltage > 25 V r.m.s. or > 60 V d.c.; No load output $\leq 35$ V peak or $\leq 60$ V d.c and touch current does not exceed 0,7 mA (peak) or 2 mA d.c. ....		N/A
	One conductive part is insulated if output voltage or current exceeding the values above and withstand test voltage 500 V		N/A
	Double or reinforced insulation bridged by appropriate and at least two resistors or two Y2 capacitors or one Y1 capacitor		N/A
	Y1 or Y2 capacitors comply with IEC 60384-14		N/A
	Resistors comply with test (a) in 14.1 of IEC 60065		N/A
8.1	SELV-equivalent controlgear accessible parts are insulated from live parts by double or reinforced insulation according 8.6 and 13.1 in IEC 60065	Primary circuit to secondary circuit, live parts to enclosure meet reinforced insulation.	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
8.2	Exposed terminals of SELV or SELV-equivalent controlgear if: - the rated or maximum rated output voltages $\leq 25$ V r.m.s. - the no-load output voltage $\leq 30$ V r.m.s. or $33\sqrt{2}$ V peak	Built-in controlgear, rely on luminaire enclosure for protection against electric shock.	N/A
	Insulated terminals if convertor with rated output voltage $> 25$ V	Built-in controlgear, rely on luminaire enclosure for protection against electric shock	N/A
	One capacitor Y1 or two capacitors Y2 complying with IEC 60384-14 of the same values used in series between SELV or SELV-equivalent output and primary circuits	One capacitor Y1 complying with EN 60384-14 used	P
	Other components bridging the separating transformer complying with IEC 60065, clause 14	Opto-coupler	P

<b>9 (8)</b>	<b>TERMINALS</b>		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

<b>10 (9)</b>	<b>PROVISION FOR PROTECTIVE EARTHING</b>		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
	Earthing via means of fixing		N/A
	Earthing terminal only used for the earthing of the control gear		N/A
	All parts of material minimizing the danger of electrolytic corrosion		N/A
	Made of brass or equivalent material		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Contact surface bare metal		N/A
- (9.2)	Provision for functional earthing		N/A
	Comply with clause 8 and 9.1		N/A
- (9.3)	Earth contact via the track on the printed board		N/A
	Test with a current of 25 A between earthing terminal and each of the accessible metal parts; measured resistance ( $\Omega$ ) at $\geq 10$ 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 <sup>2</sup> and of copper or equivalent		N/A
	Protective earthing wires in line with 5.3.1.1 and clause 7		N/A
- (9.5.2)	Earthing of the lamp compartments powered via the independent lamp controlgear		N/A
	Test with a current of 25 A between input and output earth terminals; measured resistance ( $\Omega$ ) between earthing terminal and each of the accessible metal parts at $\geq 10$ 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

<b>11 (11)</b>	<b>MOISTURE RESISTANCE AND INSULATION</b>		<b>P</b>
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (M $\Omega$ ):		P
	For basic insulation $\geq 2$ M $\Omega$ .....	$> 100$ M $\Omega$ (between live parts of different polarity)	P
	For double or reinforced insulation $\geq 4$ M $\Omega$ .....	$> 100$ M $\Omega$ (between input circuit and plastic enclosure, between input and output circuit)	P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Between primary and secondary circuits in controlgear providing SELV, values in Annex L in IEC 61347-1	See Annex L.	P
11 (-)	Adequate insulation between input and output terminals not bounded together in SELV-equivalent controlgear		P

<b>12 (12)</b>	<b>ELECTRIC STRENGTH</b>		<b>P</b>
	Immediately after clause 11 electric strength test for 1 min		P
	Basic insulation for SELV, test voltage 500 V		P
	Working voltage $\leq 50$ V, test voltage 500 V		N/A
	Working voltage $> 50$ V $\leq 1000$ V, test voltage (V):		P
	Basic insulation, $2U + 1000$ V	1480 V (between live parts of different polarity)	P
	Supplementary insulation, $2U + 1000$ V		N/A
	Double or reinforced insulation, $4U + 2000$ V	2960 V (between input circuit and output circuit; between input circuit and plastic enclosure)	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	2960 V	P
12 (-)	Windings in separating transformers in SELV-equivalent convertors according to 14.3.2 of IEC 60065		P

<b>14 (14)</b>	<b>FAULT CONDITIONS</b>		<b>P</b>
- (14)	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		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Fault conditions: capacitors, resistors or inductors without proof of compliance with relevant specifications have been short-circuited or disconnected	(see appended table)	P
- (14.1)	Short-circuit of creepage distances and clearances if less than specified in clause 16 in Part 1 (except between live parts and accessible metal parts)		N/A
	Creepage distances on printed boards less than specified in clause 16 in Part 1 provided with coating according to IEC 60664-3		N/A
- (14.2)	Short-circuit or interruption of semiconductor devices	(see appended table)	P
- (14.3)	Short-circuit across insulation consisting of lacquer, enamel or textile		N/A
- (14.4)	Short-circuit across electrolytic capacitors	(see appended table)	P
- (14.5)	After the tests has been carried out on three samples:		P
	The insulation resistance $\geq 1 \text{ M}\Omega$ ..... : $> 100 \text{ M}\Omega$		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
- (14.6)	Relevant fault condition tests with high-power supply		—
14 (-)	Temperature declared thermally protected lamp controlgear fulfil requirements in Annex C		P

<b>15 (-)</b>	<b>TRANSFORMER HEATING</b>		<b>P</b>
	Windings of separating transformer in a SELV-equivalent controlgear fulfil the requirements according to 7.1 and 11.2 of IEC 60065	See attachment 1	P
15.1 (-)	Normal operation		P
	Temperatures do not exceed the changed values of the values in column 2 of Table 3 of IEC 60065, in respect to relevant ambient temperature at $t_c$ , under normal operation	See attachment 1	P
15.2 (-)	Abnormal operation		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Temperatures do not exceed the changed values of the values in column 3 of Table 3 of IEC 60065, in respect to relevant ambient temperature at $t_c$ , under abnormal conditions of Cl. 16 and fault conditions of Cl. 14	See attachment 1	P
	Ambient temperature at $t_c$ ..... :	See attachment 1	—

<b>16 (-)</b>	<b>ABNORMAL CONDITIONS</b>		<b>P</b>
16.1 (-)	Control gear which are of the constant voltage output type:		N/A
	a) No LED module inserted		N/A
	b) Double LED modules or equivalent load connected to the output terminals		N/A
	c) Output terminal short-circuited (20 cm and 200 cm or declared length)		N/A
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		N/A
16.2 (-)	Control gear which are of the constant current output type		P
	a) No LED module connected		P
	b) Double the LED modules or equivalent load connected in series to the output terminals		P
	c) Output terminal short-circuited (20 cm and 200 cm or declared length )	20 cm and 200 cm	P
	Maximum output voltage not exceeded		P
	During and at the end of the tests no defect impairing safety, nor any smoke or flammable gases produced		P

<b>17 (15)</b>	<b>CONSTRUCTION</b>		<b>P</b>
- (15.1)	Wood, cotton, silk, paper and similar fibrous material		P
	Wood, cotton, silk, paper and similar fibrous material not used as insulation	No such materials	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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 $\leq 3$ A, $\leq 25$ V r.m.s. or $\leq 60$ V d.c. and $\leq 72$ 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
17 (-)	Socket-outlet in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906		N/A
	Not possible to engage plugs accepted by socket-outlet in the output circuit with socket-outlets complying with IEC 60083 and IEC 60906		N/A

<b>18 (16)</b>	<b>CREEPAGE DISTANCES AND CLEARANCES</b>		<b>P</b>
- (16)	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	P
	Controlgears providing SELV comply with L.1 in Annex L		P
	Insulating lining of metallic enclosures		N/A
	Basic insulation on printed boards tested according to clause 14		P
	Distances subjected to both sinusoidal voltage as non-sinusoidal pulses not less than value in either Table 3 or 4		P
	Creepage distances not less than minimum clearance		P

<b>19 (17)</b>	<b>SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS</b>		<b>P</b>
	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

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
(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		P
(4.12.1)	Screws not made of soft metal		N/A
	Screws of insulating material		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

<b>20 (18)</b>	<b>RESISTANCE TO HEAT, FIRE AND TRACKING</b>		<b>P</b>
- (18.1)	Ball-pressure test:		P
	- part tested; temperature (°C)..... :	PCB; 125 °C; Ø0.72 mm	P
	- part tested; temperature (°C)..... :	Transformer bobbin; 125 °C; Ø0.67 mm	P
	- part tested; temperature (°C)..... :	Inductance bobbin; 125 °C; Ø0.63 mm	P
	- part tested; temperature (°C)..... :	Plastic enclosure; 90 °C; Ø0.65 mm	P
- (18.2)	Test of printed boards:		P
	- part tested..... :	PCB	P
	- part tested..... :		N/A
- (18.3)	Glow-wire test (650°C):		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- part tested..... :	Plastic enclosure	P
	- part tested..... :		N/A
- (18.4)	Needle flame test (10 s):		P
	- part tested..... :	PCB; Inductance bobbin	P
	- part tested..... :	Transformer bobbin	P
- (18.5)	Tracking test:		N/A
	- part tested..... :		N/A
	- part tested..... :		N/A

<b>21 (19)</b>	<b>RESISTANCE TO CORROSION</b>	<b>N/A</b>
	- test according 4.18.1 of IEC 60598-1	N/A
	- adequate varnish on the outer surface	N/A

<b>14</b>	<b>TABLE: tests of fault conditions</b>	<b>P</b>
Part	Simulated fault	Hazard
D1 <sub>AC+</sub>	SC: Fuse open immediately	No
D1 <sub>AC+</sub>	OC: Unit shut down immediately	No
D5	SC: Fuse open immediately	No
D5	OC: Unit shut down immediately	No
D8	SC: Fuse open immediately	No
D8	OC: Unit shut down immediately	No
D9	SC: Fuse open immediately	No
D9	OC: Unit shut down immediately	No
Electrolytic capacitor (1000µF35V)	OC: Unit shut down	No
Electrolytic capacitor (680µF50V)	SC: Circuit protected and unit shut down, recoverable	No
C9 capacitor	OC: Unit shut down	No
C9 capacitor	SC: Circuit protected and unit shut down, recoverable	No
C11 capacitor	OC: Unit shut down	No
C11 capacitor	SC: Circuit protected and unit shut down, recoverable	No

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
C12 capacitor	OC: Unit shut down		No
C12 capacitor	SC: Circuit protected and unit shut down, recoverable		No
C16 capacitor	OC: Unit shut down		No
C16 capacitor	SC: Circuit protected and unit shut down, recoverable		No
U1(1-2)	SC/OC: Circuit protected and unit shut down, EC3 broken		No
U1(3-4)	SC/OC: Circuit protected and unit shut down		No
Q1(e-c)	SC: Circuit protected and unit shut down		No
Q1(b-c)	SC: Circuit protected and unit shut down		No
Q1(b-e)	SC: Circuit protected and unit shut down		No
Supplementary information: SC is the abbreviation of short-circuited; OC is the abbreviation of open-circuit.. For the testing than fusing resistor opened, the test repeated for 10 times and attained the same test results.			

IEC 61347-2-13							
Clause	Requirement + Test			Result - Remark			Verdict
18 (16)	TABLES: Creepage distances and clearances						P
Table 3	Minimum distances (mm) for a.c. (50/60 Hz) sinusoidal voltages						P
RMS working voltage (V) not exceeding		50	150	250	500	750	1000
Creepage distances							
Required basic insulation, PTI ≥ 600		0,6	0,8	1,5	3	4	5,5
Measured							
Required basic insulation, PTI < 600		1,2	1,6	2,5	5	8	10
Measured				3.0			
Required supplementary insulation PTI ≥ 600		-	0,8	1,5	3	4	5,5
Measured							
Required supplementary insulation PTI < 600		-	1,6	2,5	5	8	10
Measured							
Required reinforced insulation		-	3,2	5	6	8	11
Measured				--			
Clearances							
Required basic insulation		0,2	0,8	1,5	3	4	5,5
Measured				3.0			
Required supplementary insulation		-	0,8	1,5	3	4	5,5
Measured							
Required reinforced insulation		-	1,6	3	6	8	11
Measured				--			
Table 4	Minimum distances (mm) for non-sinusoidal pulse voltages						N/A
Rated pulse voltage (peak kV)		2,0	2,5	3,0	4,0	5,0	6,0
Required clearances		1,0	1,5	2	3	4	5,5
Measured							
Rated pulse voltage (peak kV)		10	12	15	20	25	30
Required clearances		11	14	18	25	33	40
Measured							
Rated pulse voltage (peak kV)		50	60	80	100	-	-
Required clearances		75	90	130	170	-	-
Measured							

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
<b>A</b>	<b>ANNEX A - TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK</b>		<b>P</b>
A.1	Comply with A.2 or A.3		P
A.2	Voltage $\leq 35$ V peak or $\leq 60$ V d.c. .... :	Measured max. 4.7 V peak	P
A.3	If voltage $> 35$ V r.m.s. or $> 60$ V d.c. or protective impedance device; touch current does not exceed 0,7 mA (peak) or 2 mA d.c. .... :		N/A
	Comply with Annex G of IEC 60598-1		N/A
<b>C</b>	<b>ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING</b>		<b>P</b>
<b>C3</b>	<b>GENERAL REQUIREMENTS</b>		<b>P</b>
C3.1	Thermal protection means integral with the convertor, protected against mechanical damage		P
	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)		P
<b>C5</b>	<b>CLASSIFICATION</b>		<b>P</b>
	a) automatic resetting type	Yes	—
	b) manual resetting type	No	—
	c) non-renewable, non-resetting type	No	—
	d) renewable, non-resetting type	No	—
	e) other type of thermal protection; description .. :	IC with temperature detection function	P
<b>C6</b>	<b>MARKING</b>		<b>P</b>
C6.1	Symbol for temperature declared thermally protected ballasts	100 °C	P
C6.2	Declaration of the type of protection provided		P
<b>C7</b>	<b>LIMITATION OF HEATING</b>		<b>P</b>
C7.1	Pre-selection test:		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	Test sample placed for at least 12 h in an oven having temperature ( $t_c - 5$ ) K		P
	No operation of the protection device		P
C7.2	Functioning of protection means:		P
	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		P
	No operation of the protection device		P
	Introducing of the most onerous test condition determined during test of clause 14		P
	Output of windings connected to the mains supply short-circuited, and other part of the convertor operated under normal conditions		P
	Increasing of the current through the windings continuously until operation of the protection means		P
	Continuous measuring of the highest surface temperature		N/A
	Ballasts according to C5 a) or C5 e) operated until stable conditions are achieved	According to C5 e)	P
	Automatic-resetting thermal protectors working 3 times		P
	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		P
	Any overshoot of 10% over the marked value within 15 min	EBR020E-0700-30: 95 °C EBR020E-0500-42: 93 °C EBR020W-0400-42: 95 °C EBR010W-0250-42: 96 °C	P

<b>D</b>	<b>ANNEX D – REQUIREMENTS FOR CARRY OUT THE HEATING TESTS OF THERMALLY PROTECTED LAMP CONTROLGEAR</b>		<b>P</b>
	Tests in C7 performed in accordance with Annex D, if applicable		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
<b>E</b>	<b>ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN <math>t_w</math> TESTS</b>		<b>N/A</b>
	Comply with tests according Annex E		N/A
<b>F</b>	<b>ANNEX F - DRAUGHT-PROOF ENCLOSURE</b>		<b>P</b>
	Draught-proof enclosure in accordance with the description		P
	Dimensions of the enclosure		P
	Other design; description		N/A
<b>H</b>	<b>ANNEX H - TESTS</b>		<b>P</b>
	All tests performed in accordance with the advice given in Annex H, if applicable		P
<b>I</b>	<b>ANNEX I: PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES</b>		<b>N/A</b>
<b>I.3</b>	<b>Classification</b>		<b>N/A</b>
I.3.1	Class I	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	Class II	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
I.3.2	a) non-inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	b) non-inherently open circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	c) inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	d) inherently open circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	e) fail safe controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	f) non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
	g) non-open-circuit proof controlgear	Yes <input type="checkbox"/> No <input type="checkbox"/>	—
<b>I.4</b>	<b>Marking</b>		<b>N/A</b>
	Adequate symbols are used		N/A
<b>I.5</b>	<b>Protection against electric shock</b>		<b>N/A</b>
I.5.1	No connection between output winding and body		N/A
	No connection between output winding and protective earthing circuit		N/A
I.5.2	Input and output circuits electrically separated from each other		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
I.5.2.1	Insulation between input and output winding of the HF-transformer consists of double or reinforced insulation		N/A
	Class II: insulation between input/output and body consists of double or reinforced insulation		N/A
	Class I: insulation between input and body consists of basic and between output and body supplementary insulation		N/A
I.5.2.2	Insulation between input and output winding via the core consists of double or reinforced insulation		N/A
	Insulation between cord and windings of the HF-transformer consists of basic insulation		N/A
I.5.2.3	Serrated tape, additional layer		N/A
I.5.2.4	Class I controlgear for fixed connection provided with basic insulation plus protective screening comply with the following conditions:		N/A
	a) Insulation between the input winding and the protective screen complies with the requirements for basic insulation		N/A
	b) Insulation between the protective screen and the output winding complies with the requirements for basic insulation		N/A
	c) Metal screen consists of a metal foil or of a wire		N/A
	d) Metal screen so arranged that both edges cannot simultaneously touch a magnetic core		N/A
	e) Metal screen and its lead-out wire have a cross-section sufficient to ensure that an overload device will open the circuit before the screen is destroyed		N/A
	f) Lead-out wire sufficiently fixed to the metal screen		N/A
I.5.2.5	Last turn of each winding of the transformer retained by positive means		N/A
	Impregnated winding		N/A
	Winding held together by means of insulating material		N/A
I.5.3	Components bridging between input and output circuit		N/A
I.5.3.1	Used capacitors and resistors comply with 8.2		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
I.5.3.2	Used opto-couplers comply with 2.10.5.2 of IEC 60950-1 or 0,4 mm and test in I.8		N/A
<b>I.6</b>	<b>Heating</b>		N/A
I.6.1	No excessive temperatures in normal use		N/A
	Used material classified as Class .....		—
	Stated value of $t_a$ .....		—
I.6.2	Temperature rises (Upri: 1.06 time supply rated voltage)		N/A
	Determined temperature rises in windings: - Primary (K) ..... - Limit max (K) ..... - Secondary (K) ..... - Limit max (K) .....		N/A
	After the test:		N/A
	- no connections have worked loose		N/A
	- no reduction of creepage distances and clearances		N/A
	- no flow of sealing compound		N/A
	- no operation of protecting devices		N/A
	- electric strength test between input and output windings		N/A
I.6.3	Cycling test (10 cycles):		N/A
I.6.3.1	- heat run at (K) .....		N/A
I.6.3.2	- moisture treatment 48 h		N/A
I.6.3.3	- vibration test 1 h; 1,5 g		N/A
I.6.3.4	After the tests:		N/A
	- insulation resistance $\geq 2, 4$ or $5 \text{ M}\Omega$		N/A
	- dielectric strength test for 2 min. at 35 % of specified value in table I.6		N/A
	- Current or the ohmic component does not deviates by more than 30 %		N/A
<b>I.7</b>	<b>Short-circuit and overload protection</b>		N/A
I.7.1	Upri: 1.06 times rated voltage or 0.94 and 1.06 times rated supply voltage (V) .....		N/A
I.7.2 I.7.3 I.7.4	Determined temperature rise in windings and on other parts:		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- test according to Clause .....		N/A
	- Primary winding (K) .....		N/A
	- Limit max (K) .....		N/A
	- Secondary winding (K) .....		N/A
	- Limit max (K) .....		N/A
	- External enclosure $\leq 80$ (K) .....		N/A
	- Rubber insulation of wiring $\leq 60$ (K) .....		N/A
	- PVC insulation of wiring $\leq 60$ (K) .....		N/A
	- Supports $\leq 80$ (K) .....		N/A
I.7.5	Fail-safe convertors		N/A
I.7.5.1	- Upri: 1.06 times rated supply voltage ..... V:		—
	- Isec: 1.5 times rated output current ..... A:		—
	- time until steady-state conditions t1 (h) .....		—
	- time until failure t2 (h): $\leq t1$ ; $\leq 5$ h.....		N/A
I.7.5.2	During the test:		N/A
	- no flames, molten material, etc.		N/A
	- temperature rise of enclosure $\leq 150$ K		N/A
	- temperature rise of plywood support $\leq 100$ K		N/A
	After the test:		N/A
	- electric strength (test voltage; 35 % of specified value); no flashover or breakdown for primary-to-secondary and for primary-to-body		N/A
	- live parts not accessible by test finger through holes of enclosure		N/A
I.8	Insulation resistance and electric strength		N/A
I.8.1	Conditioned 48 h between 91 % and 95 %		N/A
I.8.2	Adequate insulation (500 V d.c. for 1 min) between:		N/A
	Live parts and the body -for basic insulation not less than 2 M $\Omega$ .....		N/A
	Live parts and the body -for reinforced insulation not less than 4 M $\Omega$ .....		N/A
	Input- and output circuits not less than 5 M $\Omega$ .....		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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
	Metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ .....		N/A
I.8.3	Electric strength test:		N/A
	1) Between live parts of input circuits and live parts of output circuits .....		N/A
	2) Over basic or supplementary insulation between:		N/A
	a) live parts which are or may become of different polarity .....		N/A
	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
	3) Over reinforced insulation between the body and live parts .....		N/A
	No flashover or breakdown occurred		N/A
I.9	<b>Construction</b>		N/A
I.9.1	Comply with all requirements		N/A
I.9.2	The distance between input and output terminals shall not be less than 25 mm .....		N/A
I.10	<b>Components</b>		N/A
I.10.1	Socket-outlets in the output circuit does not accept plugs complying with IEC 60083 and IEC 60906-1		N/A
I.10.2	Self-resetting protective devices shall not be used unless it is certain that there will be no hazards		N/A
	Compliance is checked by connecting the convertor for 48 h at 1.06 times the rated voltage with the output short-circuited		N/A
I.11	<b>Creepage distances and clearances</b>		N/A
	1. Insulation between input and output circuits:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	2. Insulation between adjacent <u>input</u> circuits: measured values $\geq$ specified values (mm) .....		N/A
	2. Insulation between adjacent <u>output</u> circuits: measured values $\geq$ specified values (mm) .....		N/A
	3. Insulation between terminals for external connection:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	4. Basic or supplementary insulation:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	d) measured values $\geq$ specified values (mm) .....		N/A
	e) measured values $\geq$ specified values (mm) .....		N/A
	5. Reinforced insulation: measured values $\geq$ specified values (mm) .....		N/A
	6. Distance through insulation:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	d) measured values $\geq$ specified values (mm) .....		N/A

<b>L</b>	<b>ANNEX L: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV (IEC 61347-1)</b>		<b>P</b>
<b>L.3</b>	<b>Classification</b> Note: not classified for built-in type		<b>P</b>
	Class I	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Class II	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	Class III	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	non-inherently short circuit proof controlgear	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	inherently short circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	fail safe controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	non-short-circuit proof controlgear	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
<b>L.4</b>	<b>Marking</b>		<b>P</b>
	Adequate symbols are used		P
<b>L.5</b>	<b>Protection against electric shock</b>		<b>P</b>
	Comply with 9.2 of IEC 61558-1	Max. 6.5 V	P
<b>L.6</b>	<b>Heating</b>		<b>P</b>
	No excessive temperatures in normal use	See attachment 1	P
	Value if capacitor $t_c$ marked .....	See attachment 1	—
	Winding insulation classified as Class .....	Class B	—
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
<b>L.7</b>	<b>Short-circuit and overload protection</b>		<b>P</b>
	Comply with tests of clause 15 of IEC 61558-1 with adjustments	See attachment 1	P
<b>L.8</b>	<b>Insulation resistance and electric strength</b>		<b>P</b>
L.8.1	Conditioned 48 h between 91 % and 95 %	25 °C, 93% RH	P
L.8.2	Insulation resistance		P
	Between input- and output circuits not less than 5 M $\Omega$ .....	>100 M $\Omega$	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 M $\Omega$ .....		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 M $\Omega$ .....	>100 M $\Omega$	P
L.8.3	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits .....	3000 V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity .....	1500 V	P
	b) live parts and body if intended to be connected to protective earth .....		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord .....		N/A
	d) live parts and an intermediate metal part .....		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	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 .....	3000 V	P
<b>L.9</b>	<b>Construction</b>		<b>P</b>
L.9.1	Transformer comply with 19.12 of IEC 61558-1 and 19 of IEC 61558-2-6		P
	HF transformer comply with 19 of IEC 61558-2-16		N/A
<b>L.10</b>	<b>Components</b>		<b>P</b>
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
<b>L.11</b>	<b>Creepage distances and clearances</b> Note: The components of the lamp controlgear are encapsulated in a self-hardening compound bonded to the relevant surfaces so that clearances in air do not exist, therefore clearance not measured except the clearance in the transformer itself.		<b>P</b>
	1. Insulation between input and output circuits, basic insulation:		N/A
	a) measured values $\geq$ specified values (mm) .....		N/A
	b) measured values $\geq$ specified values (mm) .....		N/A
	c) measured values $\geq$ specified values (mm) .....		N/A
	2. Insulation between input and output circuits, double or reinforced insulation:		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	a) measured values $\geq$ specified values (mm) ..... :	<b>EBR0PPE-xxxx-aa-yyy-zzz series:</b> - Between input and output circuit in PCB: cr: 5.7 mm; - Y capacitor: cl: see Note; cr: 5.8 mm; - Between Pri. and Sec. on opto-coupler: cr: 5.6 mm; - Between Pri. Winding and Sec. Winding of Transformer: cl: 6.5 mm; cr: 7.7 mm; Limit: cl: 4.7 mm; cr: 5.0 mm <b>EBR0PPW-xxxx-42-yyy-zzz series:</b> - Between input and output circuit in PCB: cr: 5.7 mm; - Y capacitor: cr: 5.8 mm; - Between Pri. and Sec. on opto-coupler: cr: 5.6 mm; - Between Pri. Winding and Sec. Winding of Transformer: cl: 6.5 mm; cr: 7.7 mm; Limit: cl: 4.7 mm; cr: 5.0 mm	P
	b) measured values $\geq$ specified values (mm) ..... :		N/A
	c) measured values $\geq$ specified values (mm) ..... :	DTI: 0.3 ( limit >0.1)	P
	3. Insulation between adjacent <u>input</u> circuits		N/A
	- measured values $\geq$ specified values (mm) ..... :		N/A
	3. Insulation between adjacent <u>output</u> circuits		N/A
	- measured values $\geq$ specified values (mm) ..... :		N/A
	4. Insulation between terminals for external connection:		N/A
	- measured values $\geq$ specified values (mm) ..... :		N/A
	5. Basic or supplementary insulation:		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	a) measured values $\geq$ specified values (mm) ..... :	<b>EBR0PPE-xxxx-aa-yyy-zzz series:</b> cl: 3.0 mm; cr: 3.0 mm Limit: cl: 2.5 mm; cr: 2.6 mm <b>EBR0PPW-xxxx-42-yyy-zzz series:</b> cl: 3.0 mm; cr: 3.0 mm Limit: cl: 2.8 mm; cr: 2.8 mm	P
	b) measured values $\geq$ specified values (mm) ..... :		N/A
	c) measured values $\geq$ specified values (mm) ..... :		N/A
	d) measured values $\geq$ specified values (mm) ..... :		N/A
	e) measured values $\geq$ specified values (mm) ..... :		N/A
	6. Reinforced insulation or insulation:		N/A
	Between body and output circuit: measured values $\geq$ specified values (mm) ..... :		N/A
	Between body and output circuit if provision against transient voltages: measured values $\geq$ specified values (mm) ..... :		N/A
	7. Distance through insulation:		P
	a) measured values $\geq$ specified values (mm) ..... :		N/A
	b) measured values $\geq$ specified values (mm) ..... :		N/A
	c) measured values $\geq$ specified values (mm) ..... :	The thickness of plastic enclosure is 2.1 mm(>0.9 mm)	P

<b>N</b>	<b>ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION (IEC 61347-1)</b>		<b>P</b>
<b>N.4</b>	<b>General requirements</b>		<b>P</b>
N.4.1	Material comply with IEC 60085 and IEC 60216 series		N/A
N.4.2	Solid insulation		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
N.4.3	Thin sheet insulation		P
N.4.3.1	Thickness and composition of thin sheet insulation		P

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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)		P
	Electric strength test after mandrel test:		P
	- Non-separated layers: min. 5 kV or 1,35 x test voltage in Table N.1		P
	- 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		P
<b>O</b>	<b>ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION (IEC 61347-1)</b>		<b>N/A</b>
<b>O.6</b>	<b>Marking</b>		<b>N/A</b>
	Marking according clause 7 (7)	See clause 7	N/A
	Special symbol		N/A
	Meaning of the special symbol explained in catalogue		N/A
<b>O.7</b>	<b>Protection against accidental contact with live parts</b>		<b>N/A</b>
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
<b>O.8</b>	<b>Terminals</b>		<b>N/A</b>
	Clause 9 (8)	See clause 9	N/A
<b>O.9</b>	<b>Provision for earthing</b>		<b>N/A</b>
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
<b>O.10</b>	<b>Moisture resistance and insulation</b>		N/A
	Clause 11 (11)	See clause 11	N/A
<b>O.11</b>	<b>Electric strength</b>		N/A
	Clause 12 (12)	See clause 12	N/A
<b>O.13</b>	<b>Fault conditions</b>		N/A
	Clause 14 (14)	See clause 14	N/A
	End of test, between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface comply with dielectric strength test reduced to 35 % of values according Table 1 in part 1		N/A
	Insulation resistance according to O.10 between live part and accessible metal parts or external parts of insulating material in contact with the supporting surface not less than 4 MΩ	>100 MΩ	N/A
<b>O.14</b>	<b>Construction</b>		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
<b>O.15</b>	<b>Creepage distances and clearances</b>		N/A
	Clause 18 (16)	See clause 18	N/A
	Comply with corresponding values for luminaries in IEC 60598-1		N/A
<b>O.16</b>	<b>Screws, current-carrying parts and connections</b>		N/A
	Clause 19 (17)	See clause 19	N/A
<b>O.17</b>	<b>Resistance to heat and fire</b>		N/A
	Clause 20 (18)	See clause 20	N/A
<b>O.18</b>	<b>Resistance to corrosion</b>		N/A
	Clause 21 (19)	See clause 21	N/A

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

	<b>ANNEX 1: components</b>	P
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object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Enclosure	C	Sabic Innovative Plastics B V	945(GG)	PC. 2.1 mm, rated V-0, 120 °C	IEC 61347-1 IEC 61347-2- 13	Tested in the EUT *UL E45329
Input and output wire	C	Foshan Zhuo Sheng Green Wire Co., Ltd.	1430	Min. 18 AWG, rated VW-1, min. 300 V, minimum 105 °C.	IEC 61347-1 IEC 61347-2- 13	Tested in the EUT *UL E251755
Potting Compound	C	Tempo Chemical Co., Ltd.	TS-6001	Potting Silicone Material, V-0, min. 130 °C	IEC 61347-1 IEC 61347-2- 13	Tested in the EUT *UL E231717
	D	Dow Corning (Shanghai) Co. Ltd.	CN-8760	Potting Silicone Material, min. V-0, min. 150 °C	IEC 61347-1 IEC 61347-2- 13	Tested in the EUT *UL E251343
	D	Shenzhen Gelle Industry Co., Ltd.	GA-0230-2	Potting Silicone Material, min. V-0, min. 105 °C	IEC 61347-1 IEC 61347-2- 13	Tested in the EUT *UL E241402
PCB	C	Jia He Electronic Ltd.	B1	V-0, 130 °C, 1.6 mm	IEC 61347-1 IEC 61347-2- 13	Tested in the EUT *UL E187621
Fusing resistor	A	Shi Meng Electronic (Shenzhen) Co., Ltd.	FKN	0.1-0.22 Ω	IEC/EN 61347-2-13 IEC/EN 61347-1	Tested in EUT *UL E339430
Fuse-link (Alt.)	D	Cooper Bussmann LLC	SS-5H	300 V, 1 A	IEC 61347-1 IEC 61347-2- 13	VDE 40031800
	D	Conquer Electronics Co., Ltd.	MST	T1A300V a.c.	EN 60127-1 EN 60127-3 K60127-1 K60127-3	TÜV TA 50196759 KTL SU05006- 7012
Varistor (MV1)	A	Thinking Electronic Industrial Co., Ltd.	TVR07511	320 Vac, 125 °C	IEC 61051-1 IEC 61051-2 IEC 61051-2- 2	VDE approval Tested in EUT *UL E314979

IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
X Capacitor (C2)	A	Xiamen Faratronic Co., Ltd.	MKP62	Max. 0.1 $\mu$ F, Min. 305 V, 100 °C	EN 60384-14	VDE 40000358
Y Capacitor (C22)	A	JEC Company	JD	Min. 400 V, Max. 3300 pF, 125 °C	EN 60384-14	ENEC 16 2013033
Opto-Coupler (IC2) (PRI – SEC)	A	LITE-ON Technology Corp	LTV-357T	cr. and cl. between input and output: >= 5.0 dti . >= 0.4 mm 55/110/21	EN 60065 EN 60950-1 EN 60747-5-2	VDE 138213
Alternative	D	Avago Technologies Manufacturing (Singapore) Pte. Ltd.	HCPL-817	cr. and cl. between input and output: >= 5.0 dti . >= 0.4 mm 55/110/21	EN 60065 EN 60950-1 EN 60747-5-2	VDE 40016429
Transformer	C	Mao Hsin Electronic Co., Ltd.	6900-01087 or 6900-01087-x, where (x=1,2,3,4,5f or market purpose only)	Rated 130 °C, (Class B)	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E182305
	D	Shenzhen Shixindahui Electronics Co., Ltd.	6900-01087 or 6900-01087-x, where (x=1,2,3,4,5 for market purpose only)	Rated 130 °C, (Class B)	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E348674
	D	Dongguan Zhongkai Electronic Co., Ltd.	6900-01087 or 6900-01087-x, where (x=1,2,3,4,5 for market purpose only)	Rated 130 °C, (Class B)	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E349803

IEC 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
Bobbin	C	Sumitomo Bakelite Co., Ltd.	PM-9820	V-0, 150 °C	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E41429
	D	Chang Chun Plastics Co., Ltd.	T200NA	V-0, 150 °C	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E59481
Primary Windings	C	Ta Ya Electric Wire & Cable Co., Ltd.	TYA1-U155(UEW/QA-F)	155 °C, Class F	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E84201
	D	Pacific Electric Wire & Cable (Shenzhen) Co., Ltd.	UEWN/U	155 °C, Class F	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E201757
Triple wire (Secondary Winding)	C	Great Leoflon Industrial Co., Ltd.	TRW (F)	155 °C, Class F	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E211989
	D	Furukawa Electric Co., Ltd.	TEX-FR	155 °C, Class F	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E206440
	D	Cosmolink Co., Ltd.	TIW-M(F)	155 °C, Class F	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E213764
Tape	C	3M Company Electrical Markets Div (EMD)	1350T-1	PET, 130 °C	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E17385
Varnish	C	John Dolph Co	BC-359	Min. rated 155 °C.	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E317427
	C	Suzhou Taihu Electric Advanced Material Co., Ltd.	T-4260(A)	Min. rated 155 °C.	IEC 61347-1 IEC 61347-2-13	Tested in the EUT *UL E228349

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

\* Component has been certified by UL according to UL standards. Compliance with the requirements of the product standard(s) (see page one of this test report) has been checked.

IEC 61347-2-13			
Clause	Requirement + Test	Result - Remark	Verdict
	<b>ANNEX 2: screw terminals (part of the luminaire)</b>		<b>N/A</b>
(14)	<b>SCREW TERMINALS</b>		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 <sup>2</sup> ) .....		N/A
(14.3.3)	Conductor space (mm) .....		N/A
(14.4)	Mechanical tests		N/A
(14.4.1)	Minimum distance		N/A
(14.4.2)	Cannot slip out		N/A
(14.4.3)	Special preparation		N/A
(14.4.4)	Nominal diameter of thread (metric ISO thread) .		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

	<b>ANNEX 3: screwless terminals (part of the luminaire)</b>		<b>N/A</b>
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<b>(15)</b>	<b>SCREWLESS TERMINALS</b>		<b>N/A</b>
(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
(15.5.1)	Terminals internal wiring		N/A
(15.5.1.1)	Pull test spring-type terminals (4 N, 4 samples).....:		N/A
(15.5.1.2)	Pull test pin or tab terminals (4 N, 4 samples).....:		N/A
	Insertion force not exceeding 50 N		N/A
(15.5.2)	Permanent connections: pull-off test (20 N)		N/A
(15.6)	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.....:		N/A
	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

IEC 61347-2-13										
Clause	Requirement + Test					Result - Remark				Verdict
	After ageing, voltage drop (mV) after 50th alt. 100th cycle (4 samples) .....									N/A
(15.7)	Terminals external wiring									N/A
	Terminal size and rating									N/A
(15.8.1)	Pull test spring-type terminals or welded connections (4 samples); pull (N) .....									N/A
	Pull test pin or tab terminals (4 samples); pull (N) .....									N/A
(15.9)	Contact resistance test									N/A
	Voltage drop (mV) after 1 h									N/A
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop of two inseparable joints									N/A
	Voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 10th alt. 25th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										
	Continued ageing: voltage drop after 50th alt. 100th cycle									N/A
	Max. allowed voltage drop (mV) .....									—
terminal	1	2	3	4	5	6	7	8	9	10
voltage drop (mV)										

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<b>Attachment 1: Heating test</b> <b>(According to clause 15, clause 16 of IEC 61347-2-13:2006 and Annex L.6, L.7 of IEC 61347-1: 2007+A1:2010+A2:2012)</b>		<b>P</b>

	Type reference..... :	EBR020E-0700-30	—
	Load used .....	Equivalent resistance load	—
	Mounting position..... :	On black plywood (according to H.12.1 in Annex H)	—
	- rated voltage..... :	230 V~	—
	- test voltage (normal operation)..... :	<b>A: 1.1x 230 V = 253 V</b> <b>P=26.2 W, I=0.11 A</b> <b>B: 0.9 x 230 V = 207V</b> <b>P = 23.6 W, I = 0.116 A</b>	—
	- test voltage (abnormal operation)..... :	<b>1. No lamp is inserted</b> 1.1UR = 253 V; I = 10 mA; P = 0.4 W; <b>2. Double the LED modules or equivalent load</b> 1.1UR = 253 V; I = 85 mA; P = 16.0 W; <b>3. The output shall be short-circuited.</b> 1.1UR = 253 V; I = 10 mA; P = 0.8 W. <b>4. Overload</b> 1.1UR = 253 V; I = 0.114 A; P = 26.8 W	—
temperature (°C) of part		Normal operation (according to clause 15 and clause L.6 of Annex L of IEC 61347-1: 2007+A1:2010+A2:2012)	
—	<b>A</b>	<b>B</b>	Limit (°C)
Input wire	78.0	80.1	105
Capacitor Y (C22)	93.7	94.6	125
Capacitor X2 (C2)	83.5	85.7	100
Varistor (MV1)	94.1	94.9	125
L1 coil	89.6	90.9	120*
T1 primary winding	99.6	99.5	130*

IEC 61347-2-13_ATTACHMENT					
Clause	Requirement + Test			Result - Remark	Verdict
T1 secondary winding	101.7	102.5	130*		
T1 Bobbin	89.8	90.4	130*		
PCB under T1	88.9	89.7	130		
Opto-coupler	88.8	88.8	110		
E-cap (35V/1000uF)	89.3	91.0	105		
E-cap (50V/47uF)	92.6	93.4	105		
Output wire	77.3	80.3	105		
Plastic enclosure near T1	98.0	97.9	For ball pressure test reference		
Plastic enclosure tc point	89.9	90.7	90		
Ambient temp	59.2	63.4	—		
temperature (°C) of part	Abnormal operation (according to Clause 16 of IEC 61347-2-13:2006 & Annex L.7 of IEC 61347-1:2007+A1:2010+A2:2012)				
	1 - No load	2-Double load	3 - Short circuit	4 - Overload	Limit (°C)
Ambient temp	—	61.0	68.2	65.7	—
Input wire	—	86.1	78.2	76.3	105
Capacitor Y (C22)	—	93.3	93.3	95.8	125+10
Capacitor X (C2)	—	84.2	84.2	96.4	100+10
L1 coil	—	90.0	90.0	94.6	165*
T1 primary winding	—	97.0	97.0	99.5	190*
T1 secondary winding	—	99.5	101.3	104.6	190*
E-cap (35 V/1000 µF)	—	88.5	88.5	91.3	105+10
E-cap (50 V/47 µF)	—	91.6	91.6	94.7	105+10
Output wire	—	85.5	76.1	78,6	105
Support	—	68.3	75.4	73.8	125
Plastic enclosure tc point	—	90.1	90.1	93.6	105
Note: The no-load conditions not tested since the EUT is shut down and no further heating caused. *the limit is deducted by 10 °C since it is measured by thermal coupler. During the fault conditions, the unit either shut down or fusing resistor / fuse-link operated, no higher heating occurred therefore no further heating test considered.					

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Type reference.....:	EBR020E-0500-42	—
	Load used.....:	Equivalent resistance load	—
	Mounting position.....:	On black plywood (according to H.12.1 in Annex H)	—
	- rated voltage.....:	230 V~	—
	- test voltage (normal operation).....:	<b>A:</b> 1.1 x 230 V = 253 V <b>P=25.3 W, I=0.106 A</b> <b>B:</b> 0.9 x 230 V = 207 V <b>P = 23.0 W, I = 0.112 A</b>	—
	- test voltage (abnormal operation).....:	<b>1. No lamp is inserted</b> 1.1UR = 253V; I = 10 mA; P = 0.2 W; <b>2. Double the LED modules or equivalent load</b> 1.1UR = 253V; I = 88 mA; P = 16.0 W; <b>3. The output shall be short-circuited.</b> 1.1UR = 253 V; I = 8 mA; P = 0.6 W. <b>4. Overload</b> 1.1UR = 253 V; I = 110 mA; P = 25.8 W	—
temperature (°C) of part		Normal operation (according to clause 15 and clause L.6 of Annex L of IEC 61347-1: 2007+A1:2010+A2:2012)	
—	<b>A</b>	<b>B</b>	Limit (°C)
Input wire	87.0	86.8	105
Capacitor Y (C22)	98.8	96.9	125
Capacitor X (C2)	90.0	89.4	100
Varistor (MV1)	101.7	99.5	125
L1 coil	93.8	92.7	120
T1 primary winding	107.4	104.1	130*
T1 secondary winding	110.5	110.5	130*
T1 Bobbin	106.7	106.1	130*
PCB under T1	106.4	103.4	130

IEC 61347-2-13_ATTACHMENT					
Clause	Requirement + Test			Result - Remark	Verdict
Opto-coupler	85.9	85.9		110	
E-cap (50 V/680 $\mu$ F)	81.0	81.5		105	
E-cap (50 V/47 $\mu$ F)	101.9	99.7		105	
Output wire	94.6	93.7		105	
Plastic enclosure near T1	104.9	99.7		For ball pressure test reference	
Plastic enclosure tc point	90.6	89.9		90	
Ambient temp	69.1	71.4		—	
temperature ( $^{\circ}$ C) of part	Abnormal operation (according to Clause 16 of IEC 61347-2-13:2006 & Annex L.7 of IEC 61347-1:2007+A1:2010+A2:2012)				
	1-No load	2-Double load	3-Short circuit	4-Overload	Limit ( $^{\circ}$ C)
Ambient temp	—	71.5	68.4	72.7	—
Input wire	—	84.4	86.5	85.3	105
Capacitor Y (C22)	—	93.0	98.3	99.7	125+10
Capacitor X (C2)	—	86.5	89.6	96.4	100+10
Varistor (MV1)	—	94.8	101.1	95.3	125+10
L1 coil	—	89.0	93.3	93.6	165*
T1 primary winding	—	99.4	106.3	107.5	190*
T1 secondary winding	—	102.3	108.4	109.6	190*
E-cap (50 V/680 $\mu$ F)	—	77.8	80.5	83.4	105+10
E-cap (50 V/47 $\mu$ F)	—	95.6	101.3	102.7	105+10
Output wire	—	89.6	93.9	92.4	105
Support	—	76.6	74.5	78.8	125
Plastic enclosure tc point	—	90.0	90.1	91.5	105
<p>Note: The no-load conditions not tested since the EUT is shut down and no further heating caused.  *the limit is deducted by 10 <math>^{\circ}</math>C since it is measured by thermal coupler.  During the fault conditions, the unit either shut down or fusing resistor / fuse-link operated, no higher heating occurred therefore no further heating test considered.</p>					

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Type reference.....:	EBR020W-0400-42	—
	Load used.....:	Equivalent resistance load	—
	Mounting position.....:	On black plywood (according to H.12.1 in Annex H)	—
	- rated voltage.....:	120-277 V~	—
	- test voltage (normal operation).....:	<b>A:</b> 1.1 x 277 V = 304.7 V <b>P=20.9 W, I=0.123 A</b> <b>B:</b> 1.06 x 120 V = 127 V <b>P=14.2 W, I = 0.136 A</b>	—
	- test voltage (abnormal operation).....:	<b>1. No lamp is inserted</b> 1.1UR = 304.7 V; I = 12 mA; P = 0.5 W; <b>2. Double the LED modules or equivalent load</b> 1.1UR = 304.7 V; I = 52 mA; P = 11.3 W; <b>3. The output shall be short-circuited.</b> 1.1UR = 304.7 V; I = 10 mA; P = 0.6 W. <b>4. Overload</b> 1.1UR = 304.7 V; I = 78 mA; P = 21.5 W	—
temperature (°C) of part		Normal operation (according to clause 15 and clause L.6 of Annex L of IEC 61347-1: 2007+A1:2010+A2:2012)	
—	<b>A</b>	<b>B</b>	Limit (°C)
Input wire	90.1	92.2	105
Capacitor Y (C22)	95.5	96.8	125
Capacitor X (C2)	85.7	88.1	100
Varistor (MV1)	94.6	96.9	125
L1 coil	87.5	89.8	120*
T1 primary winding	108.5	111.5	130*
T1 secondary winding	111.4	114.2	130*
T1 Bobbin	103.5	104.6	130*

IEC 61347-2-13_ATTACHMENT					
Clause	Requirement + Test			Result - Remark	Verdict
PCB under T1	100.8	100.8		130	
Opto-coupler	91.0	94.0		110	
E-cap (35 V / 1000 $\mu$ F)	89.7	91.0		105	
E-cap (50 V / 47 $\mu$ F)	95.7	96.6		105	
Output wire	88.0	89.4		105	
Plastic enclosure near T1	98.0	96.9		For ball pressure test only	
Plastic enclosure tc point	90.5	90.2		90	
Ambient temp	69.0	72.4		—	
temperature ( $^{\circ}$ C) of part	Abnormal operation (according to Clause 16 of IEC 61347-2-13:2006 & Annex L.7 of IEC 61347-1:2007+A1:2010+A2:2012)				
	1 - No load	2 - Double load	3 - Short circuit	4 - Overload	Limit ( $^{\circ}$ C)
Ambient temp	—	73.9	69.0	68.4	—
Input wire	—	86.3	75.5	78.4	105
Capacitor Y (C22)	—	93.2	95.0	96.3	125+10
Capacitor X (C2)	—	85.1	84.8	87.4	100+10
Varistor (MV1)	—	90.8	92.8	92.3	125+10
L1 coil	—	85.9	86.1	87.2	165*
T1 primary winding	—	96.2	100.2	101.4	190*
T1 secondary winding	—	100.9	103.8	104.3	190*
E-cap (35 V/1000 $\mu$ F)	—	88.7	89.2	90.4	105+10
E-cap (50 V/47 $\mu$ F)	—	93.9	95.3	96.4	105+10
Output wire	—	75.5	74.8	79.8	105
Support	—	77.8	75.3	78.4	125
Plastic enclosure tc point	—	90.0	90.2	94.6	105
<p>Note: The no-load conditions not tested since the EUT is shut down and no further heating caused.</p> <p>*the limit is deducted by 10 <math>^{\circ}</math>C since it is measured by thermal coupler.</p> <p>During the fault conditions, the unit either shut down or fusing resistor / fuse-link operated, no higher heating occurred therefore no further heating test considered.</p>					

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Type reference..... :	EBR010W-0250-42	—
	Load used..... :	Equivalent resistance load	—
	Mounting position..... :	On black plywood (according to H.12.1 in Annex H)	—
	- rated voltage..... :	120-277 V~	—
	- test voltage (normal operation)..... :	<b>A:</b> 1.1 x 277 V = 304.7 V <b>P=13.5 W, I=0.055 A</b> <b>B:</b> 1.06 x 120 V = 127 V <b>P =10.6 W, I = 0.101 A</b>	—
	- test voltage (abnormal operation)..... :	<b>1. No lamp is inserted</b> 1.1UR = 304.7 V; I = 12 mA; P = 0.7 W; <b>2. Double the LED modules or equivalent load</b> 1.1UR = 304.7 V; I = 32 mA; P = 7.4 W; <b>3. The output shall be short-circuited.</b> 1.1UR = 304.7 V; I = 14 mA; P = 1.6 W <b>4. Overload</b> 1.1UR = 304.7 V; I = 110 mA; P = 14.9 W	—
temperature (°C) of part		Normal operation (according to clause 15 and clause L.6 of Annex L of IEC 61347-1: 2007+A1:2010+A2:2012)	
—	<b>A</b>	<b>B</b>	Limit (°C)
Input wire	97.5	96.3	90
Capacitor Y (C22)	104.0	101.1	125
Capacitor X (C2)	96.5	95.5	100
Varistor (MV1)	103.8	102.8	125
L1 coil	95.4	95.4	120*
T1 primary winding	113.6	113.8	130*
T1 secondary winding	116.8	116.4	130*
T1 Bobbin	107.5	103.4	130*
PCB under T1	101.1	98.6	130

IEC 61347-2-13_ATTACHMENT					
Clause	Requirement + Test			Result - Remark	Verdict
Opto-coupler	104.4	101.2	110		
E-cap (35 V/1000 μF)	98.0	96.3	105		
E-cap (50V/47 μF)	103.7	100.7	105		
Output wire	84.0	84.6	90		
Plastic enclosure near T1	103.9	100.3	For ball pressure test reference		
Plastic enclosure tc point	90.6	90.3	90		
Ambient temp	82.0	83.0	—		
temperature (°C) of part	Abnormal operation (according to Clause 16 of IEC 61347-2-13:2006 & Annex L.7 of IEC 61347-1:2007+A1:2010+A2:2012)				
	1 - No load	2 -Double load	3 - Short circuit	4 - Overload	Limit (°C)
Ambient temp	—	83.3	81.7	84.2	—
Input wire	—	95.7	92.9	96.3	105
Capacitor Y (C22)	—	100.4	103.3	102.6	125+10
Capacitor X (C2)	—	94.6	95.7	96.4	100+10
Varistor (MV1)	—	100.4	103.1	104.3	125+10
L1 coil	—	93.7	94.7	95.2	165*
T1 primary winding	—	103.0	106.9	107.4	190*
T1 secondary winding	—	106.9	109.8	110.3	190*
E-cap (35 V/1000 μF)	—	95.3	97.3	98.4	105+10
E-cap (50 V/47 μF)	—	100.1	103.0	104.2	105+10
Output wire	—	84.4	82.9	86.4	105
Support	—	87.5	83.7	88.5	125
Plastic enclosure tc point	—	90.0	90.0	95.8	105
Note: The no-load conditions not tested since the EUT is shut down and no further heating caused. *the limit is deducted by 10 °C since it is measured by thermal coupler. During the fault conditions, the unit either shut down or fusing resistor / fuse-link operated, no higher heating occurred therefore no further heating test considered.					

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<b>Attachment 2: European Group Differences and National Differences</b>		<b>P</b>

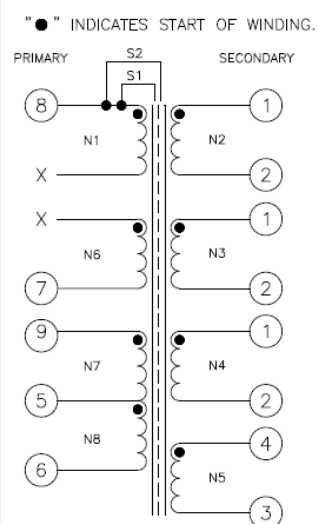
<b>ATTACHMENT TO TEST REPORT IEC 61347-2-13</b> <b>EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES</b> Part 2: Particular requirements Section Thirteen – d.c. or a.c. supplied electronic controlgear for LED modules	
<b>Differences according to</b> .....	EN 61347-2-13:2006 used in conjunction with EN 61347-1:2008 + A1:2011 + A2:2013
<b>Attachment Form No.</b> .....	EU_GD_IEC61347_2_13D
<b>Attachment Originator</b> .....	Intertek Semko AB
<b>Master Attachment</b> .....	Date 2013-10
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	<b>CENELEC COMMON MODIFICATIONS (EN)</b>	--
	No Common modifications	--

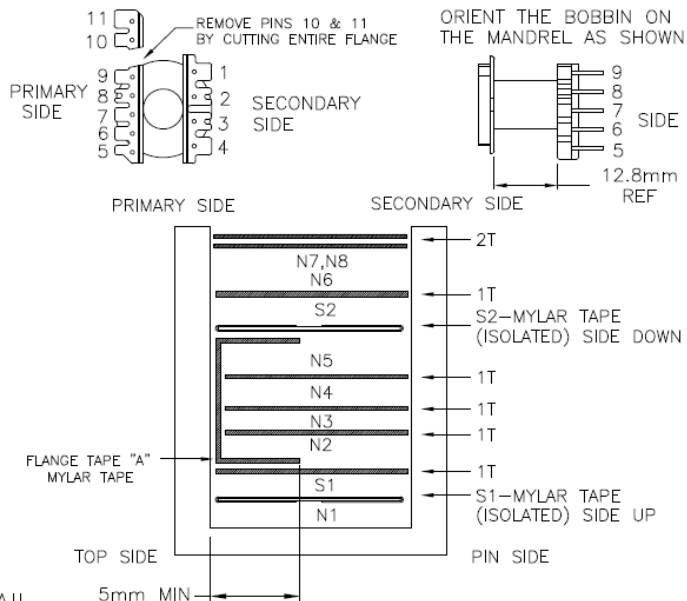
# IEC 61347-2-13\_ATTACHMENT

Clause	Requirement + Test	Result - Remark	Verdict
	<b>Attachment 3: Transformer specification and working voltage</b>		<b>P</b>

## SCHEMATIC DIAGRAM AND BUILD SEQUENCE

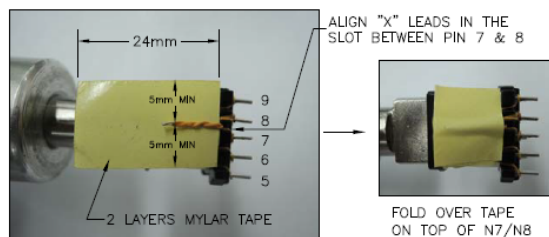


## BOTTOM VIEW



## CONFIGURATION DETAIL

TURNS, WIRE AND CODE INSULATION				
NO	TERMINAL START/END	WIRE SIZE	TURNS	INSULATION
N1	8-X	Ø0.3 TIW	25T	0
S1	8	T=0.025mm	11mm WIDE X 32mm LONG	1
A. FLANGE PRIMARY PIN SIDE			1 LAYER ITEM 6 (13mm WIDE X 24mm LONG)	0
N2	1-2	Ø0.1mm X 10	25T	1
N3	1-2	Ø0.1mm X 10	25T	1
N4	1-2	Ø0.1mm X 10	25T	1
N5	4-3	Ø0.20mm	8T (WIND EVENLY ACROSS BOBBIN WIDTH)	0
FOLD BACK FLANGE TAPE A				0
S2	8	T=0.025mm	11mm WIDE X 42mm LONG	1
N6	X-7	Ø0.3mm TIW	25T	0
N7	9-5	Ø0.20mm TIW	6T (WIND ACROSS RIGHT HALF OF BOBBIN WIDTH)	0
N8	5-6	Ø0.20mm TIW	13T (WIND ACROSS LEFT HALF OF BOBBIN WIDTH)	0
SOLDER "X" LEADS TOGETHER, FOLD OVER ON TOP OF N7/N8 AND HOLD DOWN WITH A PIECE OF MYLAR TAPE (2 LAYERS)				2



SIZE	DWG. NO.	REV
B	6900-01087-X (X = BLANK, 1, 2, 3, ...)	B

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

	<p>COPPER SHIELD (S1)</p> <p>ISOLATE ALL 4 EDGES OF COPPER WITH ITEM 5 (1356T-1 MYLAR TAPE). FOLD OVER TAPE, 5.0mm MIN ALL AROUND</p> <p>COPPER 11.0mm WIDE</p> <p>START</p> <p>END</p> <p>0.24mm DIA. TTW SOLDER TO COPPER WHERE SHOWN</p>	
STEP 1		
	<p>COPPER SHIELD (S2)</p> <p>START</p> <p>0.24mm DIA. TTW SOLDER TO COPPER WHERE SHOWN</p> <p>COPPER 11.0mm WIDE</p> <p>END</p> <p>ISOLATE ALL 4 EDGES OF COPPER WITH ITEM 5 (1356T-1 MYLAR TAPE). FOLD OVER TAPE, 5.0mm MIN ALL AROUND</p>	STEP 1
STEP 2	<p>INSTALL S1 WITH ISOLATED SIDE UP</p> <p>START OF S1</p> <p>PINS "X" 5-9</p> <p>MYLAR HOLD DOWN TAPE</p>	
	<p>INSTALL S1 WITH ISOLATED SIDE DOWN</p> <p>START OF S2</p> <p>MYLAR HOLD DOWN TAPE</p> <p>PINS 1-4</p>	STEP 2
STEP 3	<p>MYLAR HOLD DOWN TAPE</p> <p>END OF S1</p> <p>PINS 5-9</p> <p>"X"</p>	
	<p>SOLDER WIRE TO PIN 8</p> <p>9</p> <p>8</p> <p>7</p> <p>6</p> <p>5</p>	STEP 3
STEP 4	<p>END OF S1</p> <p>SOLDER WIRE TO PINS</p> <p>9</p> <p>8</p> <p>7</p> <p>6</p> <p>5</p> <p>START OF S1</p> <p>"X"</p>	
	<p>MYLAR HOLD DOWN TAPE</p>	STEP 4
STEP 5	<p>END OF S2</p> <p>START OF S2</p> <p>4</p> <p>3</p> <p>2</p> <p>1</p>	STEP 5

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

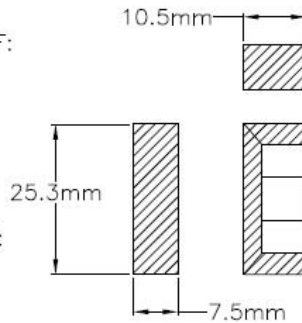
## CONFIGURATION AND DIMENSIONS

### STEP 1

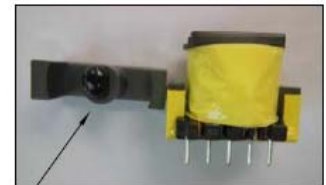
PREP BOTTOM CORE HALF:

4

WRAP 2 LAYERS  
OF MYLAR TAPE  
AROUND TOP, SIDE &  
ENDS OF CORE AS  
SHOWN



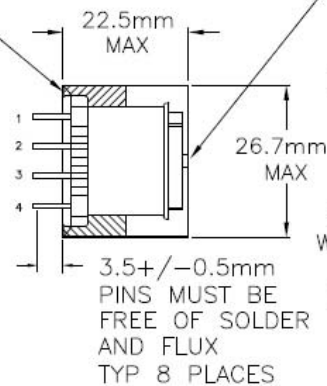
### STEP 2



ADD GLUE TO CORE

5

PLACE TAPED CORE  
HALF ON BOTTOM  
SIDE OF BOBBIN  
AS SHOWN.



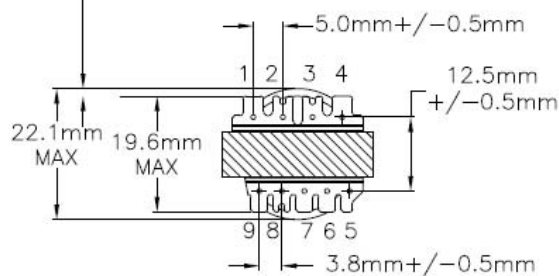
### STEP 3

INSTALL CORES

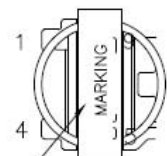
### STEP 4

SECURE CORE  
WITH 2 LAYERS  
MYLAR TAPE  
(7.5mm WIDE)

BUILD UP NOT TO EXCEED  
1.3mm FROM EDGE OF  
BOBBIN, TYPICAL BOTH SIDES



### TOP VIEW



### STEP 5

7

APPLY GLUE IN 4 PLACES



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

Point:	8-1	8-2	8-3	8-4	7-1	7-2	7-3	7-4
Voltage:	160 V 226 Vpk	162 V 229 Vpk	160 V 226 V pk	160 V 226 Vpk	175 V 248 Vpk	183 V 259 Vpk	158 V 223 Vpk	159 V 225 Vpk

Point:	9-1	9-2	9-3	9-4	5-1	5-2	5-3	5-4
Voltage:	209 V 296 Vpk	184 V 260 Vpk	209 V 295 V pk	200 V 282 Vpk	182 V 257 Vpk	176 V 249 Vpk	182 V 257 Vpk	178 V 251 Vpk

Point:	6-1	6-2	6-3	6-4	Capacitor C22	U1 (1-3)	U1 (1-4)	U1 (2-3)
Voltage:	176 V 251 Vpk	181 V 256 Vpk	176 V 249 V pk	176 V 249 Vpk	161 V 228 Vpk	164 V 232 Vpk	165 V 233 Vpk	163 V 230 Vpk

Point:	U1 (2-4)	
Voltage:	163 V 230 Vpk	

**EBR020E-0700-30**

Point:	8-1	8-2	8-3	8-4	7-1	7-2	7-3	7-4
Voltage:	158 V 223 Vpk	174 V 246 Vpk	160 V 226 V pk	159 V 225 Vpk	160 V 226 Vpk	176 V 249 Vpk	161 V 228 Vpk	160 V 226 Vpk

Point:	9-1	9-2	9-3	9-4	5-1	5-2	5-3	5-4
Voltage:	167 V 236 Vpk	163 V 230 Vpk	163 V 230 V pk	168 V 238 Vpk	160 V 230 Vpk	168 V 238 Vpk	160 V 230 Vpk	161 V 228 Vpk

Point:	6-1	6-2	6-3	6-4	Capacitor C22	U1 (1-3)	U1 (1-4)	U1 (2-3)
Voltage:	203 V 287 Vpk	171 V 242 Vpk	191 V 270 V pk	203 V 287 Vpk	159 V 225 Vpk	161 V 228 Vpk	191 V 270 Vpk	162 V 229 Vpk


Point:	U1 (2-4)	
Voltage:	170 V 240 Vpk	

**EBR020E-0500-42**

IEC 61347-2-13_ATTACHMENT								
Clause	Requirement + Test				Result - Remark			Verdict
Point:	8-1	8-2	8-3	8-4	7-1	7-2	7-3	7-4
Voltage:	192 V 416 Vpk	202 V 600 Vpk	194 V 472Vpk	192 V 416Vpk	186 V 440Vpk	203V 464 Vpk	194 V 432Vpk	195 V 416Vpk
Point:	9-1	9-2	9-3	9-4	5-1	5-2	5-3	5-4
Voltage:	200 V 560 Vpk	193 V 440 Vpk	194 V 504V pk	199 V 560 Vpk	196 V 464 Vpk	200 V 448 Vpk	192 V 424 Vpk	193 V 464 Vpk
Point:	6-1	6-2	6-3	6-4	Capacitor C22	U1 (1-3)	U1 (1-4)	U1 (2-3)
Voltage:	235 V 584 Vpk	233 V 472 Vpk	225 V 576 Vpk	233 V 592 Vpk	192 V 416 Vpk	199 V 424 Vpk	240 V 414 Vpk	203 V 432 Vpk
Point:	U1 (2-4)							
Voltage:	215 V 392 Vpk							
EBR020W-0400-42								

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	<b>Attachment 4: National Differences for Australia for AS/NZS 61347.2.13: 2013 and AS/NZS 61347.1: 2002</b>		<b>P</b>

5	General notes on tests		P
	For Australia, the rated supply voltage is 230V/400V +10%, -6% and for testing according to this standard, the rated test voltage shall be 240V/415V.	240 V covered	P
5.5	For independent lamp control gear, thermal test used in IEC 60598-1 (Annex D)		N/A
7	Marking		P
7.1	-The marking of the rated voltage, or rated voltage range. If shall cover 240V for Australia and 230V for New Zealand.		P
8	Terminals, cables and cords		N/A
	Screw terminals shall comply with Section 14 of AS/NZS 60598.1		N/A
	Screwless terminals shall comply with Section 15 of AS/NZS 60598.1		N/A
	Cables and cords shall comply with the relevant requirements of Section 5 of AS/NZS 60598.1		N/A
9.1	Protective earth(ground), symbol 		N/A
18.2	Resistance to flame and ignition		P
18.2.1	Part retaining current-carrying parts in position shall withstand 750 °C glow-wire test:		P
	- Part tested.....:	PCB, Transformer bobbin, Inductance bobbin	P
18.2.2	Part which provide protection against electric shock, or retaining SELV parts in position shall withstand 650 °C glow-wire test:		P
	- Part tested.....:	Enclosure	P
	- Part tested.....:		N/A
18.2.3	Needle flame test:		N/A
	- Part tested.....:	No flames produced during the glow-wire testing	N/A
18.3	Tracking test		N/A

#### National Differences for Australia for AS/NZS 61347.2.13: 2013

4	GENERAL REQUIREMENTS	P
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IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Where the controlgear has accessible outputs, the controlgear shall be SELV output and comply with Annex I.		N/A
	SELV equivalent is not permitted where controlgear has accessible outputs or is classified as independent SELV.	It is built in not independent SELV, the outputs not accessible when built-in the luminaire	N/A
8	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		P
8.2	Output circuits of SELV controlgear with accessible outputs shall not exceed 25 V r.m.s. or 60 V d.c. ripple-free d.c. under load except as indicated below.	Built-in type, no accessible outputs in the output circuit	N/A
	If the voltage exceeds 25 V r.m.s. or 60 V ripple-free d.c., the output shall comply with the following:		N/A
	a) the touch current shall not exceed:		N/A
	-- for a.c.: 0,7 mA (peak);		N/A
	-- for d.c.: 2,0 mA;		N/A
	b) the no-load output shall not exceed 33.2 V peak or 60 V ripple free d.c.		N/A
	Controlgear with an output greater than the limits above shall have insulated terminals.		N/A
	Accessible conductive parts separated by double or reinforced insulation		N/A
	Y1 or Y2 capacitors shall comply with relevant requirements of IEC 60384-14		N/A
	if resistors are used they shall comply with the requirements of test in 14.1 of IEC 60065:2001.		N/A
9	TERMINALS		N/A
9.1	Direct plug-in control gear		N/A
	Plug-in controlgear with pins for direct insertion into a socket-outlet shall comply with Appendix J of AS/NZS 3112:2011.		N/A
16	ABNORMAL CONDITIONS		P

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
16.2	d) For controlgear with SELV output, the LED modules, or equivalent load for which the controlgear is designed, shall continue to be connected in series incrementally to the output terminals until the controlgear ceases to operate or the output voltage is stabilized.	See attachment 1	P

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	Attachment 5: Pictures		P



Fig. 1 – Overall view for all models



Fig. 2 – bottom view of all models

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

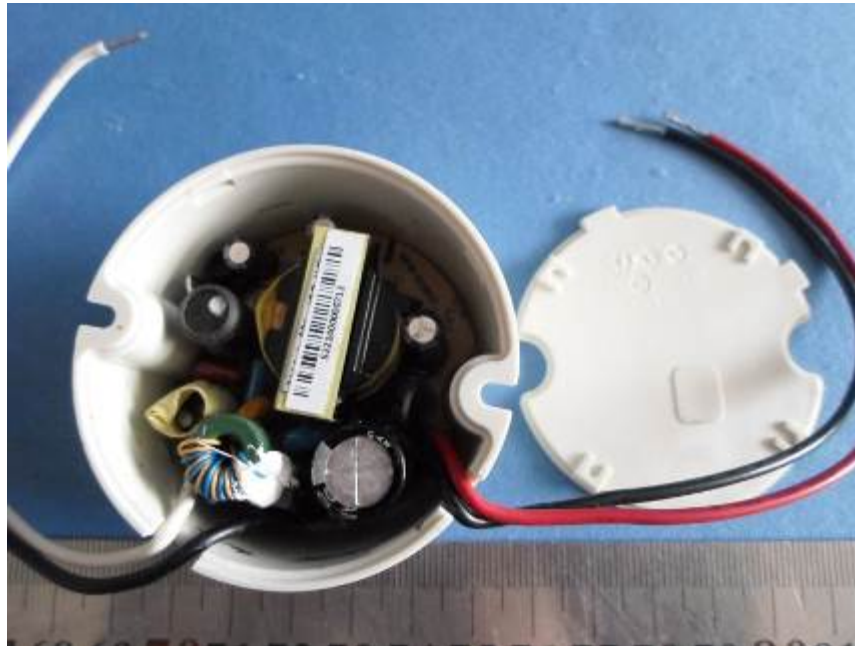


Fig. 3 – internal of EBR020E-0700-30

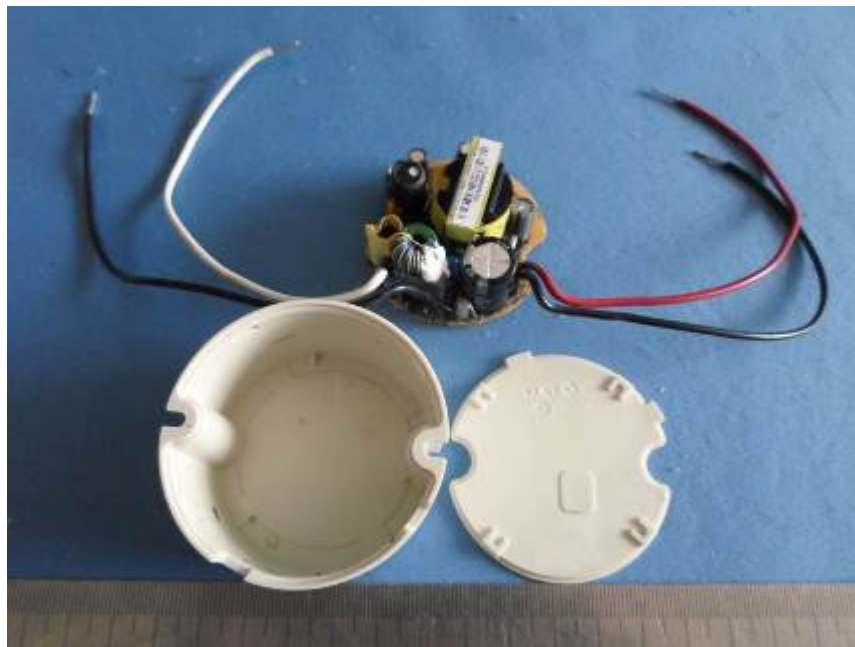


Fig. 4 – internal of EBR020E-0700-30

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



Fig. 5 – internal of EBR020E-0700-30



Fig. 6 – internal of EBR020E-0700-30

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



Fig. 7 –general view for EBR020E-0500-42



Fig. 8 –general view for EBR020E-0500-42

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

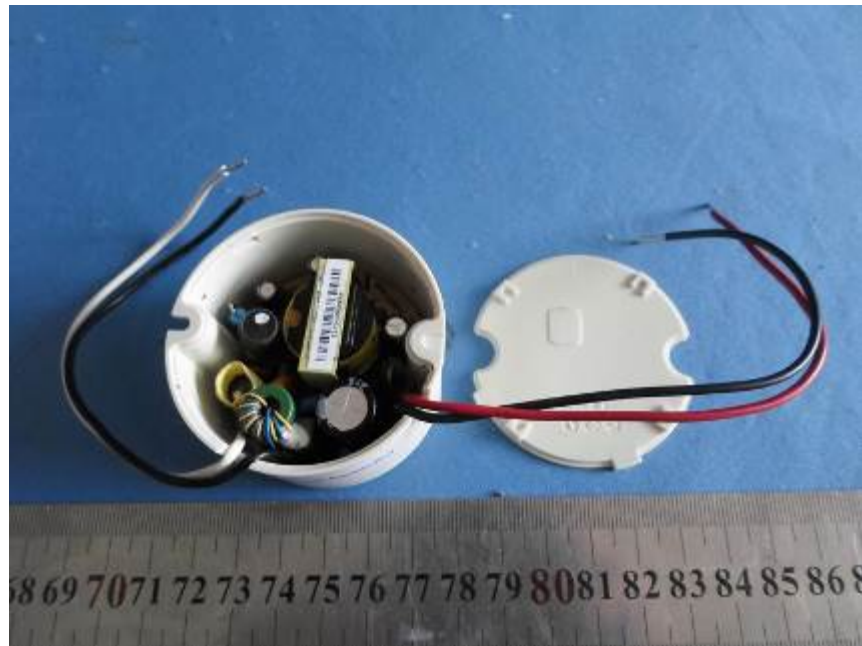


Fig. 9 – general view for EBR020E-0500-42



Fig. 10 – general view for EBR020E-0500-42

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



Fig. 11 – internal of EBR020E-0500-42



Fig. 12 – internal of EBR020E-0500-42

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



Fig. 13 – general view for EBR020W-0400-42

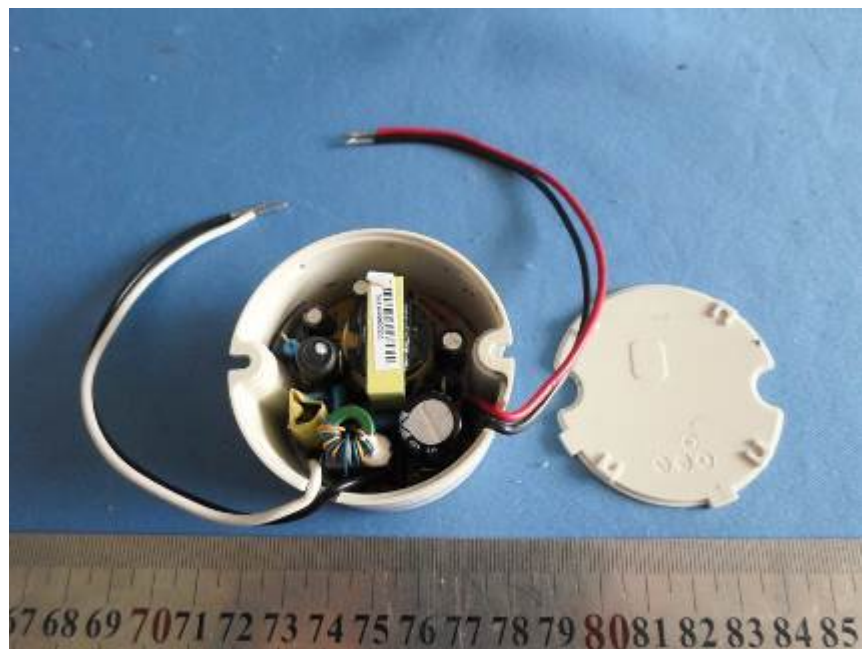


Fig. 14 – general view for EBR020W-0400-42

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



Fig. 15 – internal of EBR020W-0400-42

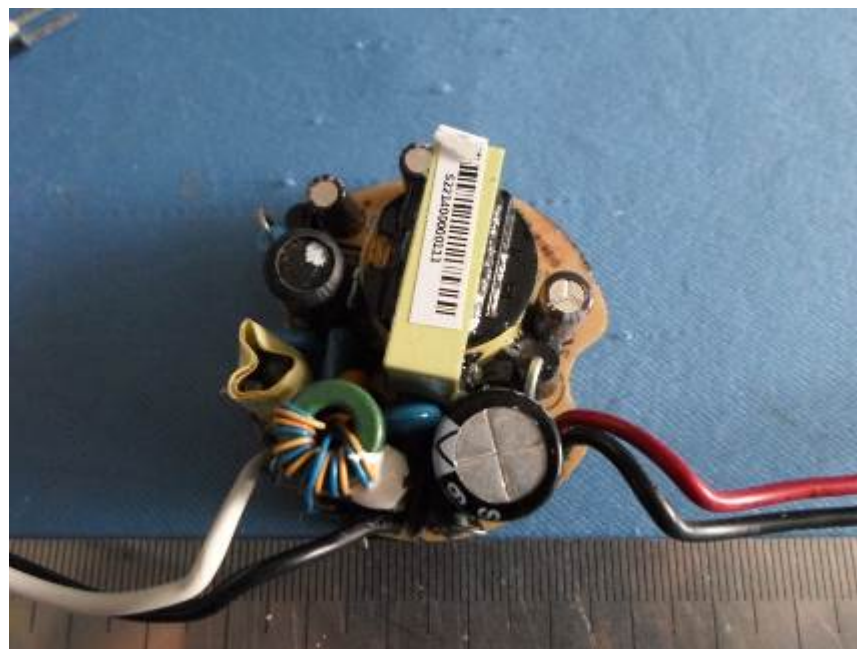


Fig. 16 – PCB of EBR020W-0400-42

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

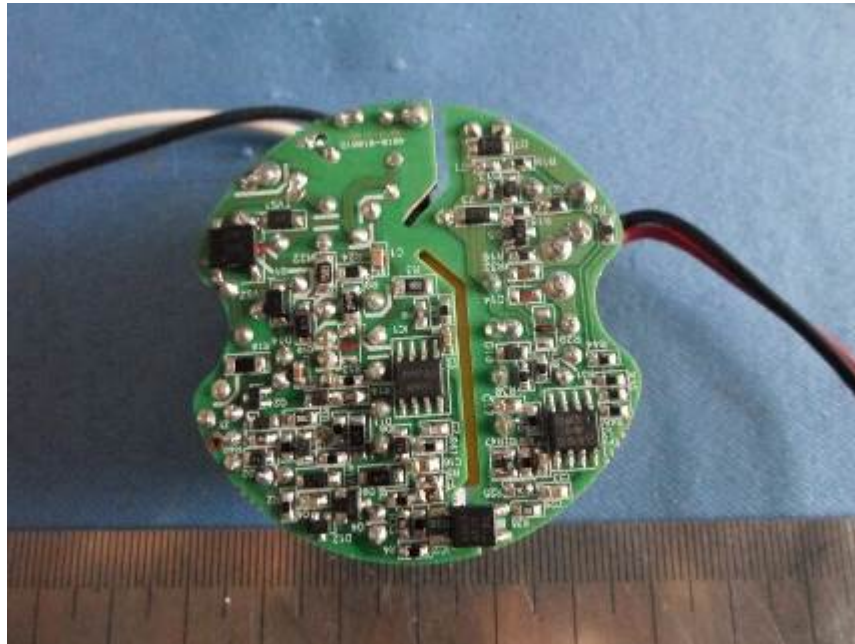


Fig. 17 – PCB of EBR020W-0400-42

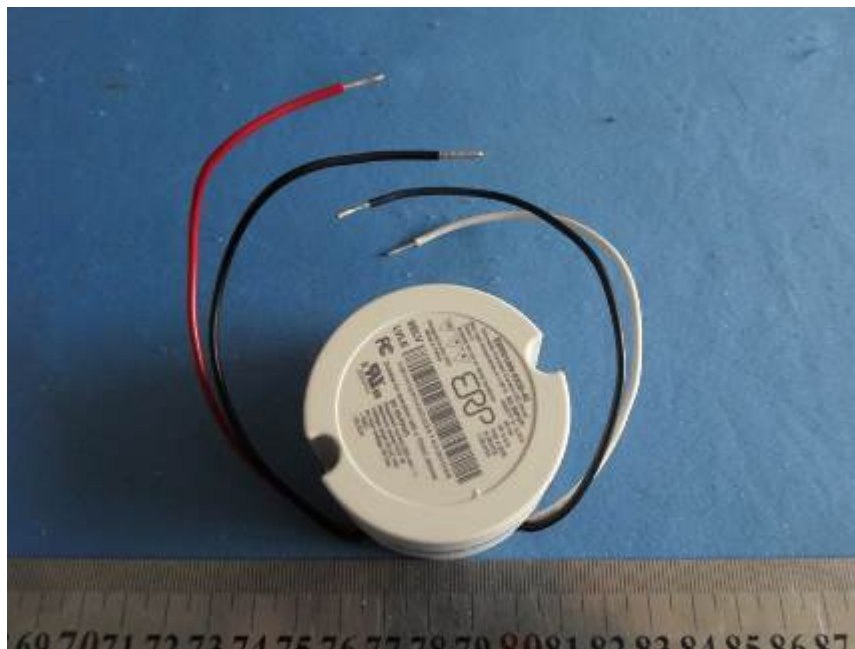


Fig. 18 – general view for EBR010W-0250-42

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



Fig. 19 – PCB of EBR010W-0250-42

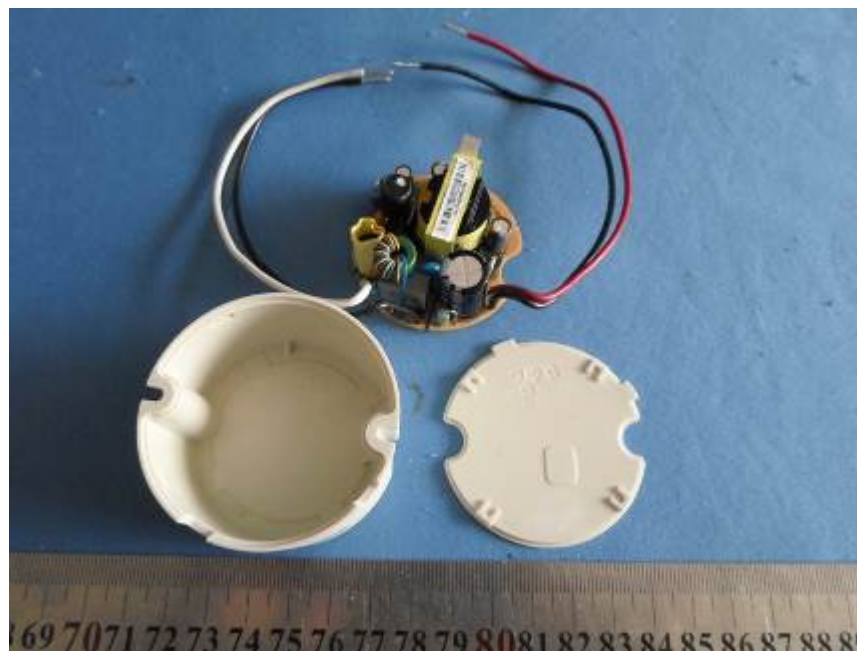


Fig. 20 – PCB of EBR010W-0250-42

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



Fig. 21 – PCB of EBR010W-0250-42

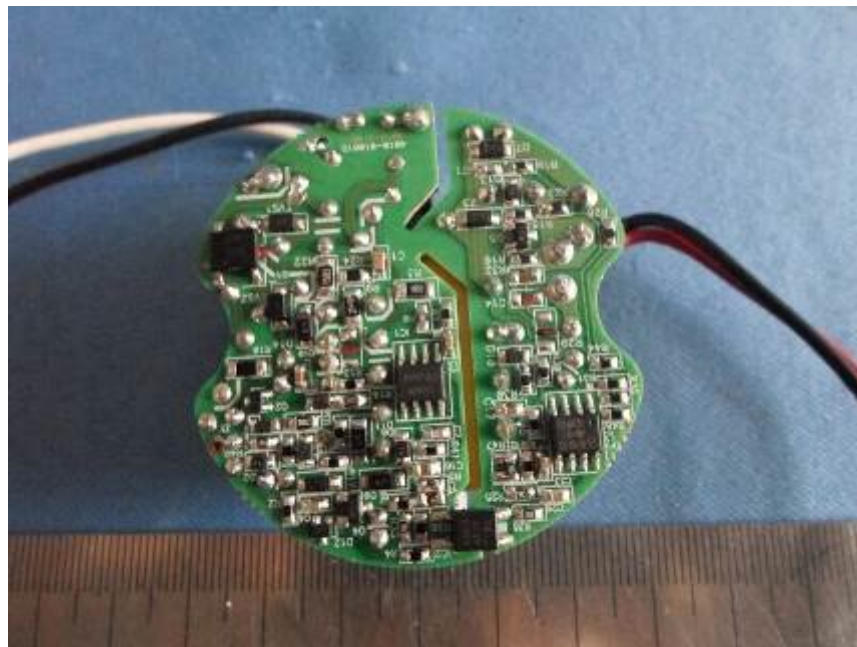
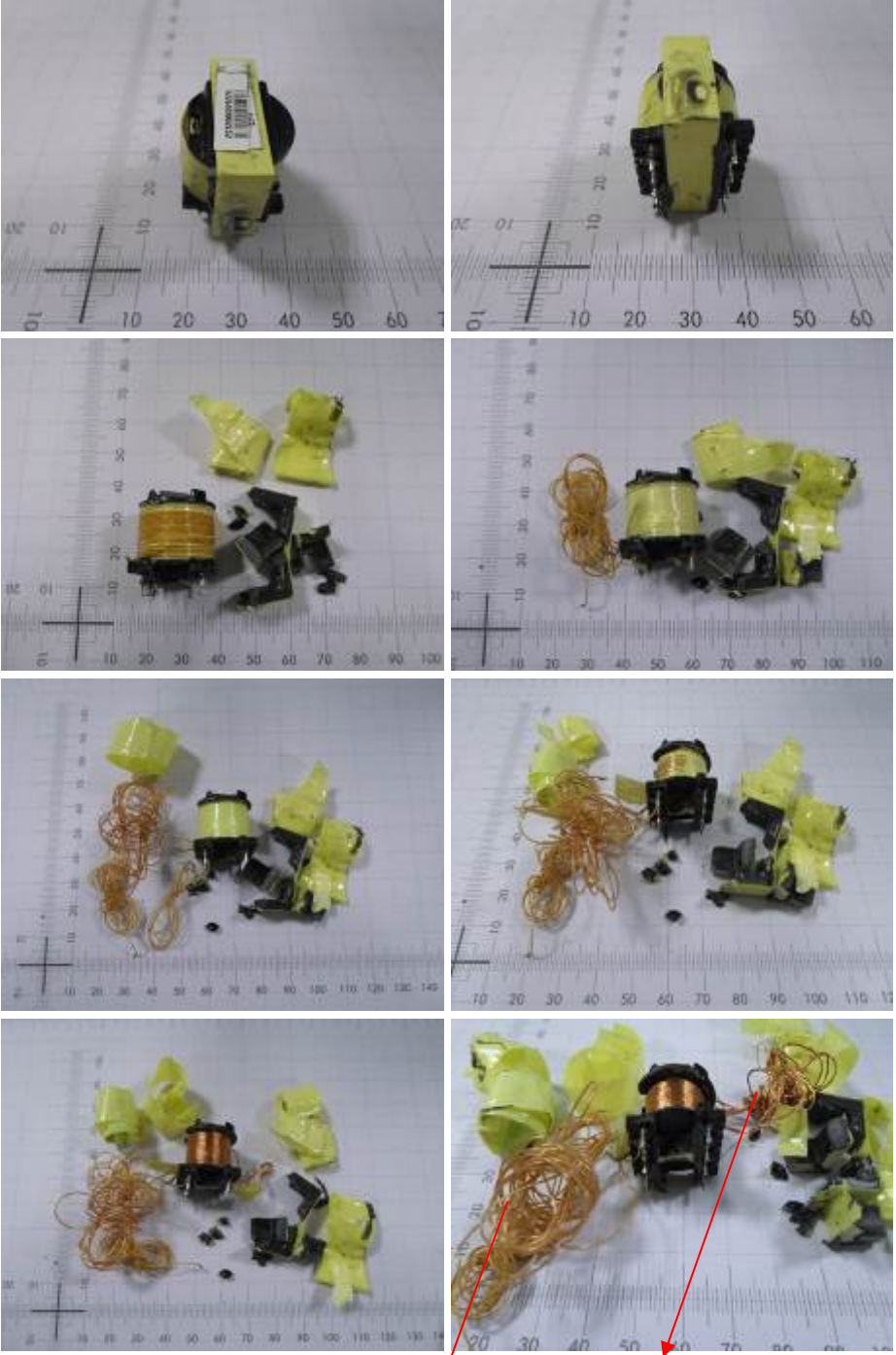


Fig. 22 – PCB of EBR010W-0250-42

IEC 61347-2-13_ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
<div data-bbox="411 488 1337 1877">  </div> <p>Primary winding, double insulation    Secondary winding</p> <p>Fig. 23-30 - Transformer construction (Representative: all transformers have identical construction)</p>			

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

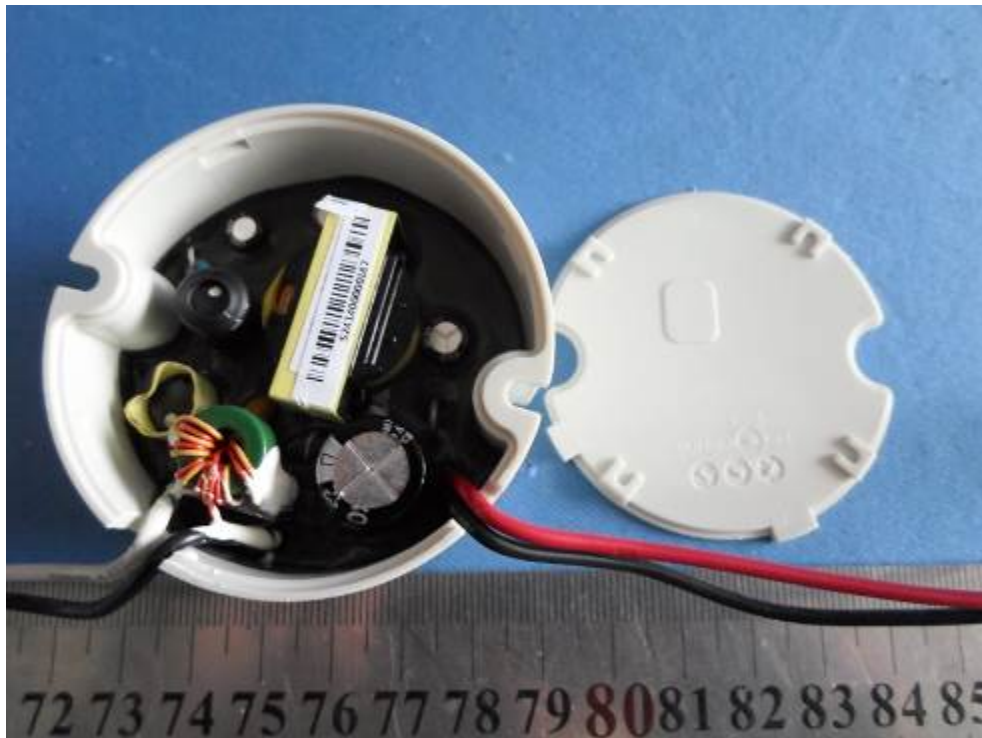


Fig. 31 – The components are totally encapsulated by self-hardening compound

— End of test report —