

Report Number:	LCZS14090055
Applicant Name:	Energy Recovery Products (Zhuhai) Co., Ltd
Applicant Address:	F building No.8, Pingdong Road 2, Nanping Science Park, Zhuhai, Guangdong China 519060
Test item:	LED Driver
Model / Type Reference:	See the model list on page 2 to 3
Date of Issue:	2014-10-30
Testing Laboratory:	LCTECH (Zhongshan) Testing Service Co., Ltd. 2/F., Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
Test Specification:	EN 61347-2-13:2006 EN 61347-1:2008+A2:2013
Test Result:	Passed.
Compiled by:	Reviewed by:
2014-10-28 Harlan Wu <i>Harlan Wu</i>	2014-10-29 Tension Li <i>Tension Li</i>
_____ Date Name Signature	_____ Date Name Signature
Remark: N/A	
<p>The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of the examination of the product sample submitted by the applicant. A general statement concerning the quality of the products from the series manufacture cannot be derived therefore.</p>	



Test item description	LED Driver								
Trade Mark	ERP								
Manufacturer	Energy Recovery Products (Zhuhai) Co., Ltd								
Model/Type reference	See the model list on page 2 to 3								
Ratings	See the model list on page 2 to 3								
Test item particulars									
Protection against electric shock	SELV controlgear								
Classification of installation and use	Built-in controlgear								
Supply connection	Connecting leads								
Output type	Constant current controlgear								
Possible test case verdicts:									
- test case does not apply to the test object	N/A (not applicable)								
- test object does meet the requirement	P (Pass)								
- test object does not meet the requirement	F (Fail)								
Testing									
Date of receipt of test item	2014-09-27								
Date (s) of performance of tests	2014-09-29 to 2014-10-27								
General remarks:									
<p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma (point) is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in EN 61347-1</p>									
General product information:									
LED drivers are suitable for operation with LED modules only.									
All models have same construction and principle of circuits, same size, same appearance and same PCB layout, only different in some components parameter for different output ratings.									
Model list									
Model	Input Voltage (V ac)	Frequency (Hz)	Ta (°C)	Tc (°C)	Input Current (A)	Max Output Power (W)	Max output current (mA)	Output Voltage (V dc)	Max. Output Voltage (V dc)
EBR0PPA-xxxx-30-yyy-zzz	A	50/60	50	90	0,27	21,0	700	20-30	35
EBR0PPA-xxxx-30-yyy-zzz	A	50/60	50	90	0,27	15,0	500		35
EBR0PPA-xxxx-24-yyy-zzz	A	50/60	50	90	0,27	16,8	700	16-24	31,2
EBR0PPA-xxxx-24-yyy-zzz	A	50/60	50	90	0,27	15,0	625		30



EBR0PPA- xxxx-32-yyy-zzz	A	50/60	50	90	0,27	21,0	650	20-32	41,6
EBR0PPA- xxxx-32-yyy-zzz	A	50/60	50	90	0,27	15,0	465		
EBR0PPA- xxxx-36-yyy-zzz	A	50/60	50	90	0,27	21,0	580	24-36	46,8
EBR0PPA- xxxx-36-yyy-zzz	A	50/60	50	90	0,27	15,0	415		
EBR0PPA- xxxx-37-yyy-zzz	A	50/60	50	90	0,27	18,5	500	26-37	48,0
EBR0PPA- xxxx-37-yyy-zzz	A	50/60	50	90	0,27	15,0	405		
EBR0PPA- xxxx-42-yyy-zzz	A	50/60	50	90	0,27	21,0	500	30-42	50,0
EBR0PPA- xxxx-42-yyy-zzz	A	50/60	50	90	0,27	15,0	355		
EBR010U- XXXX-28-YYY- ZZZ	120	50/60	50	90	0,27	7,6	300	22-28	35
EBR0YYU- XXXX-21-YYY- ZZZ	120	50/60	50	90	0,27	11,1	530	14-21	30

Notes:

1. "PP" designate: If $16W < P_{out} < 21W$, $PP=20$, If $11W < P_{out} < 16W$, $PP=15$, If $P_{out} < 11W$, $PP=10$.
2. If AC input is 120VAC, $A=U$; If AC input is 120-277VAC, $A=W$; if AC input is 230VAC, $A=E$; If AC input is 277VAC, $A=V$
3. "xxxx" means regulated output current, which is not greater than max output regulated current within the output voltage range.
4. For last two model, if $10W < P_{out} < 15W$, $YY=15$, If $P_{out} < 10W$, $YY=10$
5. "yyy" ($y=0\sim9$, $A\sim Z$ or blank, for marketing purpose only).
6. "zzz" ($z=0\sim9$, $A\sim Z$ or blank, for marketing purpose only).

General remark for test:

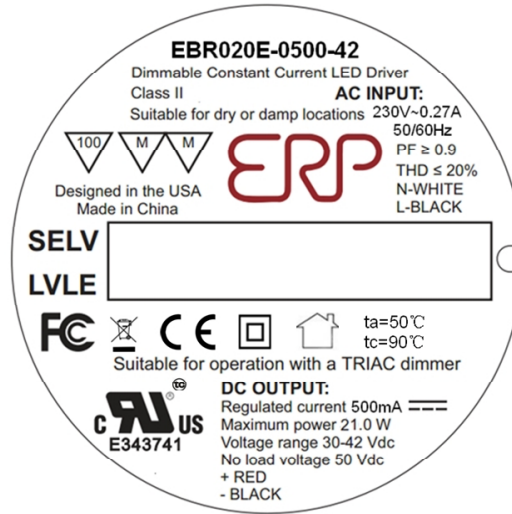
Models EBR020E-0700-30, EBR020W-0700-30, EBR020E-0500-42, EBR020W-0500-42 were selected as representative models for the full test, other models were conducted for the construction checking.

The submitted samples were tested and found to comply with the requirements as below.

- EN 61347-2-13:2006
- EN 61347-1:2008+A2:2013

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.



Rating label is attached on the top enclosure.

Remark:

1. 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.
2. The markings for other models identical to this model except for the model name and output ratings.
3. The height of graphical symbols shall be not less than 5mm.
4. The height of letters and numerals shall be not less than 2mm.



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

4 (4)	GENERAL REQUIREMENTS		P
	Compliance of independent controlgear enclosure with EN 60 598-1		N/A
	Independent SELV controlgear comply with Annex I		N/A

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

7	MARKING		P
7.1 (7.1)	Mandatory markings:		P
	- mark of origin		P
	- model number, type reference		P
	- symbol for independent controlgear, if applicable		P
	- correlation between interchangeable parts and controlgear marked	No such parts	N/A
	- rated supply voltage (V)	See the model list	P
	- earthing symbol		N/A
	- wiring diagram		P
	- value of tc	See the model list	P
	- symbol for declared temperature		N/A
	Constant voltage type:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	—
	- rated supply voltage (V)		N/A
	Constant current type:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	—
	- rated output current (A)	See the model list	P
	- rated maximum output voltage (V)	See the model list	P
	- indication if for LED modules only		P
7.2 (7.1)	- information to be provided, if applicable		P



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Clause	Requirement + Test	Result - Remark	Verdict
	- declaration on protection against accidental contact		N/A
	- cross-section of conductors (mm ²)	0,75mm ² to 1,5mm ²	P
	- number, type and wattage of lamp(s)	for LED modules only	P
	- directly mains-connected windings		N/A
	SELV-equivalent controlgear		N/A
- (7.2)	Marking durable and legible		P
	Rubbing 15 s water, 15 s petroleum; marking legible		P

8 (10)	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		P
- (10.1)	Controlgear protected against accidental contact with live parts		P
- (A2)	Voltage measured with 50 K Ω	(see Annex A)	P
- (A3)	Voltage > 35 V r.m.s. or > 60 V d.c. or protective impedance device.....	(see Annex A)	P
- (10.1)	Lacquer or enamel not used for protection or insulation		N/A
	Adequate mechanical strength on parts providing protection		N/A
- (10.2)	Capacitors > 0,5 μ F: voltage after 1 min (V): < 50 V:	Voltage after 1 min: Max 4,75V	P
- (10.3)	Controlgear providing SELV		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		P
	Accessible conductive parts are insulated from live parts by double or reinforced insulation in SELV controlgear		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.		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	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		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		P
8.2 (-)	Exposed terminals of SELV or SELV-equivalent controlgear are allowed if: - the rated or maximum output voltage does not exceeding 25 V r.m.s. - the no-load output voltage does not exceed 30 V r.m.s. or $33\sqrt{2}$ V peak		N/A
	Insulated terminals if rated output voltage >25 V		N/A
	One capacitor Y1 or two capacitors Y2 of the same values used in series between SELV or SELV-equivalent output and primary circuits - Capacitor complying with IEC 60384-14 - Other components bridging the separating transformer complying with IEC 60065, clause 14	One approved Y1 capacitor	P
	Other components bridging the separating transformer complying with IEC 60065, clause 14	Opto-coupler	P

9 (8)	TERMINALS		N/A
	Screw terminals: compliance with Section 14 of IEC 60598-1		N/A
	Screwless terminals: compliance with Section 15 of IEC 60598-1		N/A

10 (9)	PROVISION FOR EARTHING		N/A
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Clause	Requirement + Test	Result - Remark	Verdict
	External metal parts connected to the earth-terminal:	No earthing part	N/A
	- compliance with 7.2.1 in IEC 60598-1		N/A
	Test with a current of 10 A between earthing terminal and each of the accessible metal parts; measured resistance (Ω): $< 0,5 \Omega$		N/A
	Protective earth, symbol		N/A
	Terminal complying with clause 8 in Part 1		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
	Contact surface bare metal		N/A
	Conductors by tracks on printed circuit boards:		N/A
	- a.c. current of 25 A for 1 min between earthing terminal and accessible metal parts		N/A
	- compliance with clause 7.2.1 in IEC 60598-1		N/A

11 (11)	MOISTURE RESISTANCE AND INSULATION	P
	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (M Ω):	P
	$\geq 2 \text{ M}\Omega$ for basic insulation: $>10 \text{ M}\Omega$	P
	$\geq 4 \text{ M}\Omega$ for double or reinforced insulation: $>10 \text{ M}\Omega$	P
	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

12 (12)	ELECTRIC STRENGTH	P
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Clause	Requirement + Test	Result - Remark	Verdict
	Immediately after clause 11 electric strength test for 1 min		P
	Working voltage ≤ 50 V, test voltage 500 V		N/A
	Working voltage > 50 V ≤ 1000 V, test voltage (V):		P
	Basic insulation, $2U + 1000$ V	1460V	P
	Supplementary insulation, $2U + 1000$ V		N/A
	Double or reinforced insulation, $4U + 2000$ V	2960V	P
	No flashover or breakdown		P
	Windings in separating transformers in SELV-equivalent control gear according to 14.3.2 of EN 60065		N/A

13 (13)	THERMAL ENDURANCE FOR WINDINGS (Not applicable)	—
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14 (14)	FAULT CONDITIONS	P
	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
- (14.1)	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)	(see appended table) P
	Distances on printed boards 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 the insulation resistance with d.c. 500 V ($M\Omega$) are $\geq 1 M\Omega$:	$> 10 M\Omega$ P



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Clause	Requirement + Test	Result - Remark	Verdict
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	After the tests the accessible parts has not become live		P
	During the tests, a five-layer tissue paper, where the test specimen is wrapped, does not ignite		P
	Temperature declared thermally protected controlgear fulfil the requirements in Annex C		P

15	TRANSFORMER HEATING		P
	Windings of separating transformer in a SELV-equivalent controlgear fulfil the requirements according to 7.1 and 11.2 of IEC 60065		N/A
15.1	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		P
15.2	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		P
	Ambient temperature at t_c	See the model list	P

16	ABNORMAL CONDITIONS		P
	Safety not impaired when the controlgear is operated at any voltage between 90% and 110% of rated voltage		P
16.1	Control gear which are of the constant voltage output type:		—
	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:		—
	a) No LED module connected		P
	b) Double the LED modules or equivalent load connected in series to the output terminals		P



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Clause	Requirement + Test	Result - Remark	Verdict
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	c) Output terminal short-circuited (20 cm and 200 cm or declared length)		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

17 (15)	CONSTRUCTION		P
- (15.1)	Wood, cotton, silk, paper and similar fibrous material not used as insulation		P
- (15.2)	Printed boards used as internal connections complies with clause 14 of IEC 61347-1		P
	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

18 (16)	CREEPAGE DISTANCES AND CLEARANCES		P
	Creepage distances and clearances according to Table 3 and 4, as appropriate	(see appended table)	P
	Printed boards see clause 14 of IEC 61347-1		N/A
	Insulating lining of metallic enclosures		N/A

19 (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	All electrical connection made by soldering	P
(4.11.2)	Screws:		N/A
	- self-tapping screws		N/A
	- thread-cutting screws		N/A
	- at least two self-tapping screws		N/A
(4.11.3)	Screw locking:		N/A
	- spring washer		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	- rivets		N/A
(4.11.4)	Material of current-carrying parts		N/A
(4.11.5)	No contact to wood		N/A
(4.11.6)	Electro-mechanical contact systems	No this parts used	N/A
(4.12)	Mechanical connections and glands		N/A
(4.12.1)	Mechanical stress		N/A
	Screws not made of soft metal		N/A
	Screws of insulating material		N/A
	Torque test: part; torque (Nm)		N/A
	Torque test: part; torque (Nm)		N/A
	Torque test: part; torque (Nm)		N/A
(4.12.2)	Screw diameter < 3 mm screwed into metal		N/A
(4.12.3)	Void		—
(4.12.4)	Locked connections		N/A
(4.12.5)	Screwed glands: force (N)		N/A

20 (18)	RESISTANCE TO HEAT, FIRE AND TRACKING		P
20 (18.1)	Parts of insulating material retaining live parts in position, ball-pressure test:		P
	- part; test temperature (°C)	PCB: 125 °C, 0,72mm	P
	- part; test temperature (°C)	Bobbin: 125 °C, 0,67mm	P
	- part; test temperature (°C)	Plastic enclosure: 90 °C; 0,65mm	P
20 (18.2)	Printed boards in accordance with IEC 60249-1, 4.3	UL Approved component	P
20 (18.3)	External parts of insulating material preventing electric shock glow-wire test 650 °C	Plastic enclosure	P
20 (18.4)	Parts of insulating material retaining live parts in position, needle-flame test 10 s:		P
	- flame extinguished within 30 s	PCB, Bobbin	P
	- no flaming drops igniting tissue paper		P
20 (18.5)	Tracking test	UL Approved component	P

21 (19)	RESISTANCE TO CORROSION		N/A
	Rust protection:		N/A
	- test according 4.18.1 of IEC 60598-1	No ferrous parts used	N/A



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Clause	Requirement + Test	Result - Remark	Verdict

	- adequate varnish on the outer surface		N/A
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- (20)	NO-LOAD OUTPUT VOLTAGE	N/A
	No load output voltage not differ more than 10 % from rated voltage	N/A

14	TABLE: tests of fault conditions			P
Part	Rated voltage	Short-circuited	Observation	Hazard
D1 (+ to -)	230V~	X	Fuse open immediately	No
MV1	230V~	X	Fuse open immediately	No
D8	230V~	X	Fuse open immediately	No
D9	230V~	X	Fuse open immediately	No
C9	230V~	X	Circuit protected and unit shut down, recoverable	No
C11	230V~	X	Circuit protected and unit shut down, recoverable	No
C12	230V~	X	Circuit protected and unit shut down, recoverable	No
C16	230V~	X	Circuit protected and unit shut down, recoverable	No
Q1 (G-S)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
Q1 (G-D)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
Q1 (S-D)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
T1 (7-8)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
T1 (6-9)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
T1 (1-2)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
T1 (3-4)	230V~	X	Circuit protected and unit shut down, unrecoverable	No
C6	230V~	X	Circuit protected and unit shut down, recoverable	No
D5	230V~	X	Fuse open immediately	No
Remark: SC – Short circuit; OC – Open circuit				

15.1	TABLE 1: Normal operation (Model EBR020E-0700-30)						P
	Supply voltage (V)	243,8V	—	—	—	—	—
	Input current(A)	0,11A	—	—	—	—	—



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Clause	Requirement + Test	Result - Remark	Verdict
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	Ambient Tmin (°C)	50,3	—	—	—	—	—
	Ambient Tmax (°C)	63,4	—	—	—	—	—
Maximum measured temperature T of part/at::		T (°C)					Allowed Tmax (°C)
Input wire		80,1	—	—	—	—	105
Capacitor Y (C22)		94,6	—	—	—	—	125
Capacitor X2 (C2)		85,7	—	—	—	—	100
Varistor (MV1)		94,9	—	—	—	—	125
L1 coil		90,9	—	—	—	—	110
Winding of transformer (T1)		99,5	—	—	—	—	110
T1 Bobbin		90,4	—	—	—	—	150
PCB under T1		89,7	—	—	—	—	130
Opto-coupler		88,8	—	—	—	—	110
Capacitor (C6)		91,0	—	—	—	—	105
Capacitor (C11)		93,4	—	—	—	—	105
Output wire		80,3	—	—	—	—	105
Plastic enclosure near T1		97,9	—	—	—	—	Ref.
Plastic enclosure tc point		90,7	—	—	—	—	90
Supplementary information:							
The insulation system of isolating transformer is class B							

15.1	TABLE 1: Normal operation (Model EBR020W-0700-30)						P
	Supply voltage (V)	127,2V	293,6V	—	—	—	—
	Input current(A)	0,107	0,12A	—	—	—	—
	Ambient Tmin (°C)	50,3	50,1	—	—	—	—
	Ambient Tmax (°C)	62,4	63,0	—	—	—	—
Maximum measured temperature T of part/at::		T (°C)					Allowed Tmax (°C)
Input wire		80,3	82,5	—	—	—	105
Capacitor Y (C22)		91,1	94,0	—	—	—	125
Capacitor X2 (C2)		85,5	86,5	—	—	—	100
Varistor (MV1)		92,8	93,8	—	—	—	125



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Clause	Requirement + Test		Result - Remark			Verdict
L1 coil	92,4	93,4	—	—	—	110
Winding of transformer (T1)	103,8	103,6	—	—	—	110
T1 Bobbin	93,4	97,5	—	—	—	150
PCB under T1	88,6	91,1	—	—	—	130
Opto-coupler	81,2	84,4	—	—	—	110
Capacitor (C6)	86,3	88,0	—	—	—	105
Capacitor (C11)	90,7	93,7	—	—	—	105
Output wire	81,6	84,6	—	—	—	105
Plastic enclosure near T1	90,3	93,9	—	—	—	Ref.
Plastic enclosure tc point	90,3	90,6	—	—	—	90
Supplementary information: The insulation system of isolating transformer is class B						

15.1	TABLE 1: Normal operation (Model EBR020E-0500-42)						P
	Supply voltage (V)	243,8V	—	—	—	—	—
	Input current(A)	0,106A	—	—	—	—	—
	Ambient Tmin (°C)	50,2	—	—	—	—	—
	Ambient Tmax (°C)	69,1	—	—	—	—	—
Maximum measured temperature T of part/at::		T (°C)				Allowed Tmax (°C)	
Input wire	87,0	—	—	—	—	105	
Capacitor Y (C22)	98,8	—	—	—	—	125	
Capacitor X2 (C2)	90,0	—	—	—	—	100	
Varistor (MV1)	101,7	—	—	—	—	125	
L1 coil	93,8	—	—	—	—	110	
Winding of transformer (T1)	107,4	—	—	—	—	110	
T1 Bobbin	106,7	—	—	—	—	150	
PCB under T1	106,4	—	—	—	—	130	
Opto-coupler	85,9	—	—	—	—	110	
Capacitor (C6)	81,0	—	—	—	—	105	
Capacitor (C11)	101,9	—	—	—	—	105	



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Clause	Requirement + Test	Result - Remark				Verdict
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Output wire	94,6	—	—	—	—	105
Plastic enclosure near T1	104,9	—	—	—	—	Ref.
Plastic enclosure tc point	90,6	—	—	—	—	90
Supplementary information: The insulation system of isolating transformer is class B						

15.1	TABLE 1: Normal operation (Model EBR020W-0500-42)						P
	Supply voltage (V)	127,2V	293,6V	—	—	—	—
	Input current(A)	0,104A	0,11	—	—	—	—
	Ambient Tmin (°C)	50,3	50,4	—	—	—	—
	Ambient Tmax (°C)	72,4	69,0	—	—	—	—
Maximum measured temperature T of part/at::		T (°C)				Allowed Tmax (°C)	
Input wire		92,2	90,1	—	—	—	105
Capacitor Y (C22)		96,8	95,5	—	—	—	125
Capacitor X2 (C2)		88,1	85,7	—	—	—	100
Varistor (MV1)		96,9	94,6	—	—	—	125
L1 coil		89,8	87,5	—	—	—	110
Winding of transformer (T1)		107,5	108,5	—	—	—	110
T1 Bobbin		104,6	103,5	—	—	—	150
PCB under T1		100,8	100,8	—	—	—	130
Opto-coupler		94,0	91,0	—	—	—	110
Capacitor (C6)		91,0	89,7	—	—	—	105
Capacitor (C11)		96,6	95,7	—	—	—	105
Output wire		89,4	88,0	—	—	—	105
Plastic enclosure near T1		96,9	98,0	—	—	—	Ref.
Plastic enclosure tc point		90,2	90,5	—	—	—	90
Supplementary information: The insulation system of isolating transformer is class B							

18 (16)	TABLE: creepage distances and clearances	P
	Minimum distances for a.c. (50/60 Hz) sinusoidal voltages	



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Clause	Requirement + Test	Result - Remark					Verdict	
RMS working voltage (V) not exceeding		50	150	250	500	750	1000	
1	minimum distances between live parts of different polarity. Specify the value measured.	-	-	-	-	-	-	
-	Live parts before fuse	-	-	Cl:3,0 Cr:3,0	-	-	-	
2	minimum distances between live parts and accessible parts which are permanently fixed to the ballast, including screws or devices for fixing covers or fixing the ballast to its support. Specify the value measured.	-	-	-	-	-	-	
-	required creepage distances (mm), insulation PTI ≥ 600 (Basic Insulation)	0,6	0,8	1,5	3	4	5,5	
-	required creepage distances (mm), insulation PTI < 600 (Basic Insulation)	1,2	1,6	2,5	5	8	10	
-	required creepage distances (mm), insulation PTI ≥ 600 (Supplementary Insulation)	-	0,8	1,5	3	4	5,5	
-	required creepage distances (mm), insulation PTI < 600 (Supplementary Insulation)	-	1,6	2,5	5	8	10	
-	reinforce insulation	-	3.2	6	6	8	11	
-	required clearances (mm) (Basic Insulation)	0,2	0,8	1,5	3	4	5,5	
-	required clearances (mm) (Supplementary Insulation)	-	0,8	1,5	3	4	5,5	
-	required clearances (mm) (Reinforced Insulation)	-	1,6	6	6	8	11	
3	minimum distances between live parts and a flat supporting surface or a loose metal cover, if any, if the construction does not ensure that the values under 2 above are maintained under the most unfavourable circumstances	-	-	-	-	-	-	
-	required clearances (mm)	2	3,2	3,6	4,8	6	8	
		Minimum distances for non-sinusoidal pulse voltages						
rated pulse voltage (peak kV)		2,0	2,5	3,0	4,0	5,0	6,0	8,0
required minimum distances, clearances (mm)		1,0	1,5	2	3	4	5,5	8
Specify the value measured		-	-	-	-	-	-	-
rated pulse voltage (peak kV)		10	12	15	20	25	30	40



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Clause	Requirement + Test	Result - Remark	Verdict
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required minimum distances, clearances (mm)	11	14	18	25	33	40	60
Specify the value measured	-	-	-	-	-	-	-
rated pulse voltage (peak kV)	50	60	80	100	-	-	-
required minimum distances, clearances (mm)	75	90	130	170	-	-	-
Specify the value measured	-	-	-	-	-	-	-
Supplementary information:							

A	ANNEX A (NORMATIVE), TEST TO ESTABLISH WHETHER A CONDUCTIVE PART IS A LIVE PART WHICH MAY CAUSE AN ELECTRIC SHOCK		—
A.1	Comply with A.2 or A.3		P
A.2	Voltage ≤ 35 V peak or ≤ 60 V d.c..... :	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

C	ANNEX C – PARTICULAR REQUIREMENTS FOR ELECTRONIC LAMP CONTROLGEAR WITH MEANS OF PROTECTION AGAINST OVERHEATING			—
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C3	GENERAL REQUIREMENTS			—
C3.1	Thermal protection means integral with the controlgear, 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			—
	a) automatic resetting type			—
	b) manual resetting type			—



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Clause	Requirement + Test	Result - Remark	Verdict
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	c) non-renewable, non-resetting type		—
	d) renewable, non-resetting type		—
	e) other type of thermal protection; description		N/A

C6	MARKING		—
C6.1	Symbol for temperature declared thermally protected ballasts		N/A
C6.2	Declaration of the type of protection provided		N/A
C7	LIMITATION OF HEATING		N/A
C7.1	Preselection test		N/A
	Test sample placed for at least 12 h in an oven having temperature ($t_c - 5$) K		N/A
	No operation of the protection device		N/A
C7.2	Functioning of protection means		N/A
	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		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
	Controlgear according to C5 a) or C5 e) operated until stable conditions are achieved		N/A
	Automatic-resetting thermal protectors working 3 times		N/A
	Controlgear according to C5 b) working 6 times		N/A
	Controlgear according to C5 c) and C5 d) working once		N/A
	Highest temperature does not exceed the marked value		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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	Any overshoot of 10% over the marked value within 15 min		N/A
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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

E	ANNEX E – USE OF CONSTANT S OTHER THAN 4500 IN t_w TESTS	N/A
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E1	Constant S claimed	N/A
	Claimed test method	N/A
E2	Procedure A	N/A
	Adequate data provided by the manufacturer	N/A
	The inverse of the slope is greater than or equal to the claimed value of S	N/A
	Compliance with the failure criteria for procedure B	N/A
E3	Procedure B	N/A
	Claimed value of T_1	N/A
	Claimed value of T_2	N/A
	Endurance test carried out at:	N/A
	T_1 (7 samples)	N/A
	T_2 (7 samples)	N/A
	Duration of test calculated from equation (2)	N/A
	T_1	N/A
	T_2	N/A
	During the test: - No open circuit - No breakdown insulation	N/A
	The claimed constant S is deemed to be verified	N/A

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



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Clause	Requirement + Test	Result - Remark	Verdict

	Other design; description		N/A
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H	ANNEX H - TESTS		P
	All tests performed in accordance with the advise given in Annex H, if applicable		P

I	ANNEX I - PARTICULAR ADDITIONAL REQUIREMENTS FOR INDEPENDENT SELV D.C. OR A.C. SUPPLIED ELECTRONIC CONTROLGEAR FOR LED MODULES		N/A
I.3	Classification		—
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"/>	—
I.4	Marking		—
	Adequate symbols are used		N/A
I.5	Protection against electric shock		—
I.5.1	No connection between output winding and body		N/A
	No connection between output winding and protective earthing circuit	No protective earthing circuit provided	N/A
I.5.2	Input and output circuits electrically separated from each other		N/A
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



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Clause	Requirement + Test	Result - Remark	Verdict
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 wound screen		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
I.5.3.2	Used opto-couplers		N/A
I.6	Heating		—
I.6.1	No excessive temperatures in normal use		N/A
	Used material classified as Class _____		—
	Stated value of t_a _____		—
I.6.2	Upri: 1.06 time supply rated voltage		—



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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	- dielectric strength test at 35 % of specified value; test voltage _____ V		N/A
	- Current or the ohmic component does not deviates by more than 30 %		N/A
I.7	Short-circuit and overload protection		N/A
I.7.1	Upri: 1.06 times rated voltage or 0.94 and 1.06 times rated supply voltage - used voltage _____ V		N/A
I.7.2 I.7.3 I.7.4	Determined temperature rise in windings and on other parts:		N/A
	- 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



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Clause	Requirement + Test	Result - Remark	Verdict
	- External enclosure _____ K		N/A
	- Limit max 80 K		N/A
	- Rubber insulation of wiring _____ K		N/A
	- Limit max 60 K		N/A
	- PVC insulation of wiring _____ K		N/A
	- Limit max 60 K		N/A
	- Supports _____ K		N/A
	- Limit max 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): $\leq t1$; ≤ 5 h.....:		N/A
I.7.5.2	During the test:		N/A
	- no flames, molten material, etc.		N/A
	- temperature rise of enclosure ≤ 150 K		N/A
	- temperature rise of plywood support ≤ 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 Ω:		N/A
	Live parts and the body -for reinforced insulation not less than 4 M Ω:		N/A
	Input- and output circuits not less than 5 M Ω:		N/A
	Metal parts of class II controlgear which are separated from live parts by basic insulation only and the body not less than 5 M Ω:		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	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	Construction		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	Components		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 controlgear for 48 h at 1.06 times the rated voltage with the output short-circuited		N/A
I.11	Creepage distances and clearances		N/A
	1. Insulation between input and output circuits:		N/A
	a) measured values > specified values (mm)		N/A
	b) measured values ≥ specified values (mm)		N/A
	c) measured values ≥ specified values (mm)		N/A
	2. Insulation between adjacent input circuits: measured values ≥ specified values (mm)		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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	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
	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

L	ANNEX L: PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROLGEARS PROVIDING SELV (IEC 61347-1)		P
L.3	Classification Note: not classified for built-in type		P
	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"/>	—
	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 9.2 of IEC 61558-1	Max. 6.5 V	P
L.6	Heating		P



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Clause	Requirement + Test	Result - Remark	Verdict
	No excessive temperatures in normal use	See the table 1	P
	Value if capacitor tc marked	See the table 1	P
	Winding insulation classified as Class	Class B	P
	Comply with tests of clause 14 of IEC 61558-1 with adjustments		P
L.7	Short-circuit and overload protection		P
	Comply with tests of clause 15 of IEC 61558-1 with adjustments		P
L.8	Insulation resistance and electric strength		P
L.8.1	Conditioned 48 h between 91 % and 95 %	25 °C, 93% RH	P
L.8.2	Insulation resistance		P
	Between input- and output circuits not less than 5 MΩ	>100 MΩ	P
	Between metal parts of class II convertors which are separated from live parts by basic insulation only and the body not less than 5 MΩ		N/A
	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material not less than 2 MΩ.....	>100 MΩ	P
L.8.3	Electric strength		P
	1) Between live parts of input circuits and live parts of output circuits	3000V	P
	2) Over basic or supplementary insulation between:		P
	a) live parts having different polarity	1500V	P
	b) live parts and body if intended to be connected to protective earth		N/A
	c) accessible metal parts and a metal rod of the same diameter as the flexible cable or cord		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



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Clause	Requirement + Test	Result - Remark	Verdict
	HF transformer comply with 19 of IEC 61558-2-16		N/A
L.10	Components		P
	Protective devices comply with 20.6 – 20.11 of IEC 61558-1		N/A
L.11	Creepage distances and clearances 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.		P
	1. Insulation between input and output circuits, basic insulation:		
	a) measured values > specified values (mm)		N/A
	b) measured values > specified values (mm)		N/A
	c) measured values > specified values (mm)		N/A
	2. Insulation between input and output circuits, double or reinforced insulation:		P
	a) measured values > specified values (mm): - Between input and output circuit in PCB: cl >4,7mm, cr>5,7 mm; - Y capacitor: cl >4,7mm, cr>5,7 mm - Between Pri. and Sec. on opto-coupler: cl >4,7mm, cr>5,7 mm - Between Pri. Winding and Sec. Winding of Transformer: cl >4,7mm, cr>5,7 mm Limit: cl: 4,7 mm; cr: 5,0 mm		P
	b) measured values > specified values (mm)		N/A
	c) measured values > specified values (mm)		N/A
	3. Insulation between adjacent input circuits		N/A
	- measured values > specified values (mm)		N/A
	3. Insulation between adjacent output circuits		N/A
	- measured values > specified values (mm)		N/A
	4. Insulation between terminals for external connection:		N/A
	- measured values > specified values (mm)		N/A
	5. Basic or supplementary insulation:		P
	a) measured values > specified values (mm): cl:3,0 mm; cr: 3,0 mm Limit: cl: 2,5 mm; cr: 2,6 mm		P



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Clause	Requirement + Test	Result - Remark	Verdict
	b) measured values > specified values (mm)		N/A
	c) measured values > specified values (mm)		N/A
	d) measured values > specified values (mm)		N/A
	e) measured values > specified values (mm)		N/A
	6. Reinforced insulation or insulation:		N/A
	Between body and output circuit: measured values > specified values (mm)		N/A
	Between body and output circuit if provision against transient voltages: measured values > specified values (mm)		N/A
	7. Distance through insulation:		P
	a) measured values > specified values (mm)		N/A
	b) measured values > specified values (mm)		N/A
	c) measured values > specified values (mm)	The thickness of plastic enclosure is 2,1 mm(>0,9 mm)	P

N	ANNEX N: REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR REINFORCED INSULATION (IEC 61347-1)		P
N.4	General requirements		P
N.4.1	Material comply with IEC 60085 and IEC 60216 series		N/A
N.4.2	Solid insulation		N/A
	Electric strength test at least 5 kV or 1,35 x test voltage in Table N.1		N/A
	If not classified according IEC 60085 and IEC 60216 series: Electric strength test increased 10 % of 5,5 kV or 1,5 x test voltage in Table N.1		N/A
N.4.3	Thin sheet insulation		P
N.4.3.1	Thickness and composition of thin sheet insulation		P
	- Inside the ballast and not subjected to handling or abrasion during the production and during maintenance		P
	- Non-separated layers: Min. 3 layers and fulfil mandrel test of 150N		P
	- Separated layers: Min. 2 layers and each layer fulfil mandrel test of 50N		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
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	- 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

O	ANNEX O: ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROLGEAR WITH DOUBLE OR REINFORCED INSULATION (IEC 61347-1)		N/A
0.6	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
0.7	Protection against accidental contact with live parts		N/A
	Requirements of clause 8 (10)	See clause 8	N/A
	Test finger not possible to make contact with basic insulated metal parts		N/A
0.8	Terminals		N/A
	Clause 9 (8)	See clause 9	N/A
0.9	Provision for earthing		N/A
	Functional earthing terminals comply with clause 9 of part 1		N/A
	No protective earthing terminal		N/A
0.10	Moisture resistance and insulation		N/A
	Clause 11 (11)	See clause 11	N/A
0.11	Electric strength		N/A
	Clause 12 (12)	See clause 12	N/A
0.13	Fault conditions		N/A
	Clause 14 (14)	See clause 14	N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	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
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

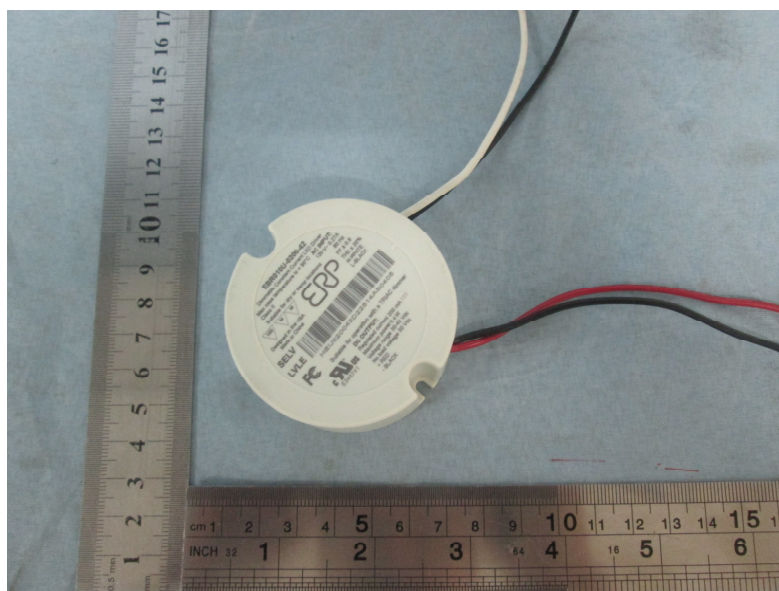
Appendix: Components:

object/part No.	code	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
Plastic enclosure	B	SABIC INNOVATIVE PLASTICS B V	945(GG)	V-0, 120°C	--	UL E45329
Input wire And Output wire	B	FOSHAN ZHUO SHENG GREEN WIRE CO LTD	1430	18AWG, 300V, 105°C	--	UL E251755
PCB	B	Jia He Electronic Ltd	B1	V-0, 130°C	--	UL E187621

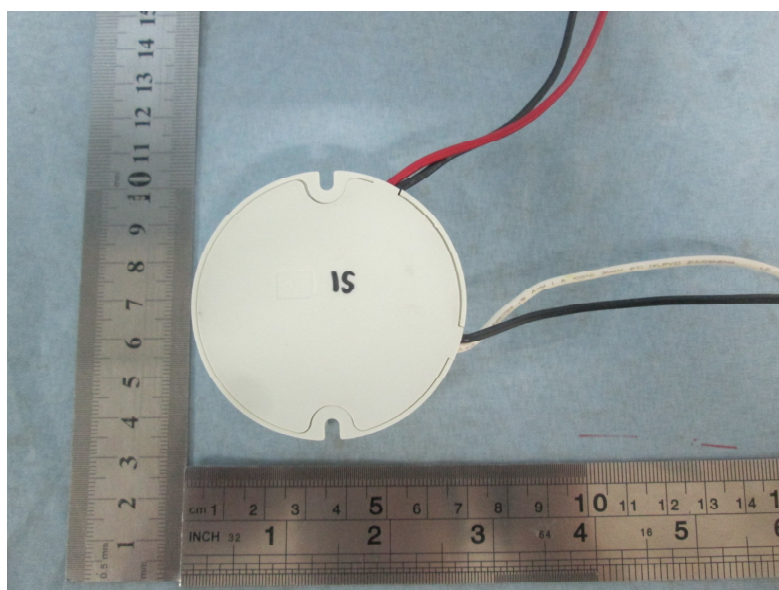


EN 61347-2-13						
Clause	Requirement + Test			Result - Remark		Verdict
Fuse	B	Cooper Bussmann LLC	SS-5H	300V, 1A		VDE 40031800
Varistor (MV1)	B	Thinking Electronic Industrial Co., Ltd	TVR07511	320Vac, 125°C	--	UL E314979
X capacitor (C2)	B	Xiamen Faratronic Co., Ltd	MKP62	Max. 0.1uF, Min. 305 V, 100°C	EN 60384-14	VDE 40000358
Y capacitor (C22)	B	JEC Company	JD	400V, 3300 pF, 125°C	EN 60384-14	ENEC 2013033
Opto-Coupler	B	LITE-ON Technology Corp	LTV-357T	cr. and cl. between input and output: >= 5.0mm dti . >= 0.4 mm	--	VDE 138213
Transformer	B	Mao Hsin Electronic Co., Ltd	6900-01087 or 6900-01087-x, where (x=1,2,3,4,5 for market purpose only)	Class B	--	UL E182305
- Bobbin	B	SUMITOMO BAKELITE CO LTD	PM-9820	V-0, 150°C	--	UL E41429
- Magnet wire for primary winding	B	Ta Ya Electric Wire & Cable Co., Ltd	UEW/QA-B	130°C	--	UL E84201
- Triple wires for secondary winding	B	GREAT LEOFLON INDUSTRIAL CO LTD	TRW (B)	130°C	--	UL E211989
- Insulating tape	B	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350T-1	130°C	--	UL E17385

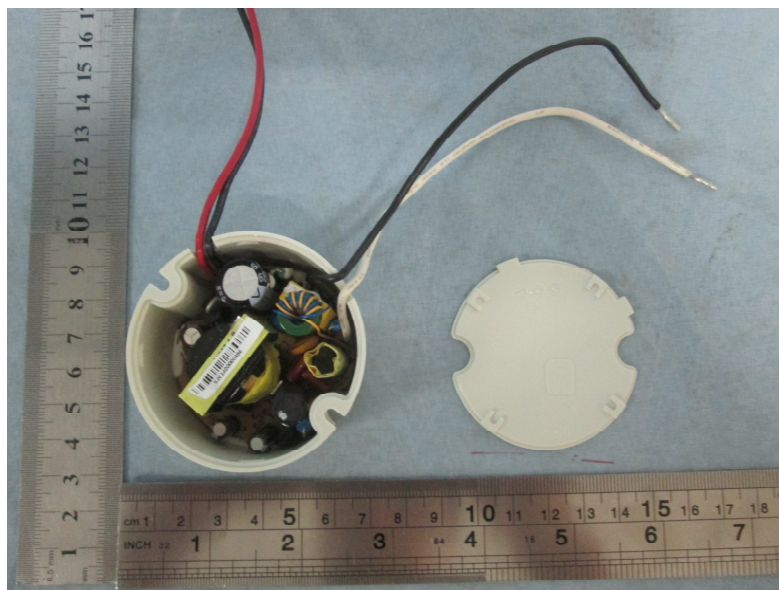
Appendix: Photo



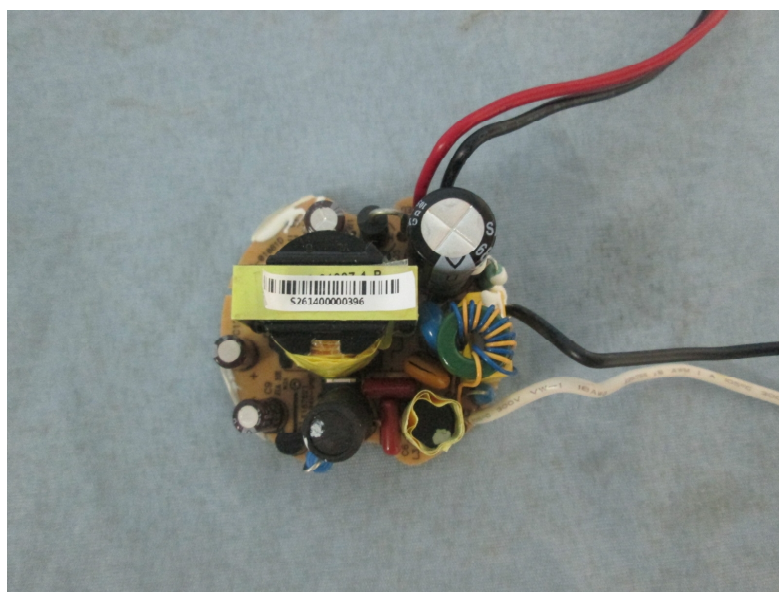
Picture 1: Overview of all models



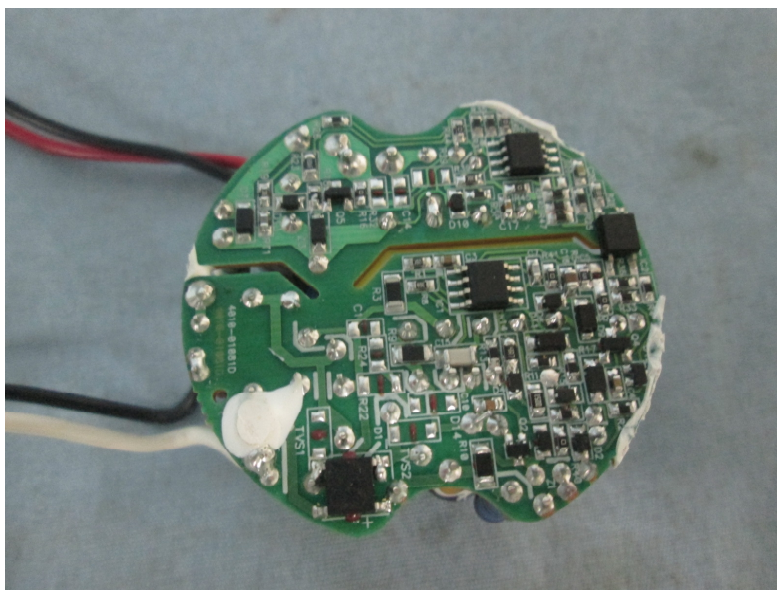
Picture 2: bottom view of all models



Picture 3: Internal view of all models



Picture 4: Internal view of EBR020E-0700-30



Picture 6: PCB Layout of model EBR020E-0700-30

-- End of Test Report --