


Test Report issued under the responsibility of:



TEST REPORT IEC 62560 Self-Ballasted LED-Lamp for general lighting services by voltage > 50V Safety specifications	
Report Number	220100632HZH-001
Date of issue	March 28, 2022
Total number of pages	21 pages
Name of Testing Laboratory preparing the Report	Intertek Testing Services Zhejiang Ltd., Hangzhou Branch
Applicant's name	Shenzhen Sonoff Technologies Co., Ltd.
Address	1001, BLDG8, Lianhua Industrial Park, Shenzhen, GD, China
Test specification:	
Standard	IEC 62560:2011, AMD1:2015 EN 62560:2012 + A1:2015 + A11:2019
Test procedure	Testing
Non-standard test method	N/A
Test Report Form No.	IEC62560C
Test Report Form(s) Originator	DEKRA Certification B.V.
Master TRF	Dated 2018-12-21
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General disclaimer:	
The test results presented in this report relate only to the object tested.	

Test item description :	Self-Ballasted LED-Lamp
Trade Mark :	SONOFF
Manufacturer	Same as applicant above
Model/Type reference	B02-BL-A60/B02-B-A60/B02-A60, L02-BL-A60/L02-B-A60/L02-A60
Ratings	220-240V~, 50/60Hz, Use in Dry Locations only, E27 lamp cap (More details refer to model list on page 6)

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	Intertek Testing Services Zhejiang Ltd., Hangzhou Branch
	Testing location/ address.....:	4/F., Building 4, No. 22, 22nd Street, Qiantang District, Hangzhou, Zhejiang, China
	Tested by (name, function, signature).....:	Jason Qian, Engineer <i>Jason Qian</i>
	Approved by (name, function, signature)....:	Jerry Chen, Reviewer <i>Jerry Chen</i>
<hr/>		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
	Testing location/ address.....:	N/A
	Tested by (name, function, signature).....:	N/A
	Approved by (name, function, signature)....:	N/A
<hr/>		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
	Testing location/ address.....:	N/A
	Tested by (name + signature).....:	N/A
	Witnessed by (name, function, signature) .:	N/A
	Approved by (name, function, signature)....:	N/A
<hr/>		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
	Testing location/ address.....:	N/A
	Tested by (name, function, signature).....:	N/A
	Witnessed by (name, function, signature) .:	N/A
	Approved by (name, function, signature)....:	N/A
	Supervised by (name, function, signature) :	N/A
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<p>List of Attachments (including a total number of pages in each attachment): Attachment 1: EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES (Page 15) Attachment 2: IEC/TR 62778:2014: The assessment of blue light hazard to light sources and luminaires (Pages 16 - 17) Attachment 3: Photos (Pages 18 - 19) Attachment 4: Schematic circuit diagram and PCB layout (Pages 20 - 21)</p>	
<p>Summary of testing: 1, Some representative samples of the products covered by this report have been tested and compiled with the applicable requirements of this standard. 2, All respective tests were applied to B02-BL-A60/B02-B-A60/B02-A60. 3, The product was evaluated to meet the requirements of RG0 of LED product according to EN 62471:2008 and IEC/TR 62778. 4, Lamp caps are in compliance with the requirements of IEC 60061. 5, According to clause 4.2.2 of EN 62493:2015, all these LED products are deemed to comply with the requirements of EN 62493:2015 without testing.</p>	
<p>Tests performed (name of test and test clause): Full.</p>	<p>Testing location: Same as previous page.</p>
<p>Summary of compliance with National Differences (List of countries addressed): CENELEC Common Modifications (EN) and Special National Conditions (EN) are verified.</p>	
<p>Copy of marking plate: Label (sample): Wi-Fi Smart LED Bulb B02-BL-A60/B02-B-A60/B02-A60 220-240V~, 50/60Hz, 0,055A, 9W SONOFF</p>  <p>Note: Both of models have the same label only except model name. When the equipment is vended to EU, then name and address of the importer or authorized representative within the EEA shall be added on the equipment.</p>	

Test item particulars: Self-Ballasted LED-Lamp	
Classification of installation and use: Use in Dry Locations only	
Supply Connection: E27 cap:	
Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement.....: F (Fail)	
Testing:	
Date of receipt of test item: September 18, 2021	
Date (s) of performance of tests: September 18, 2021 – October 26, 2021	
General remarks:	
<p>“(See Enclosure #)” refers to additional information appended to the report. “(See appended table)” refers to a table appended to the report. Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods. Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty. Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator. This report is for the exclusive use of Intertek’s Client and is provided pursuant to the agreement between Intertek and its Client. Intertek’s responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.</p>	
Manufacturer’s Declaration per sub-clause 4.2.5 of IEC 60529:	
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.	
Name and address of factory (ies) : Hengdian Group Tospo Lighting Co., Ltd. Hengdian Industrial Zone, Dongyang City, Zhejiang Province, P. R. China	

General product information and other remarks:

These products covered by the report are self-ballasted LED lamps with E27 caps used in dry locations only.

These products can be dimmable by a Wi-Fi app, not suitable for standard dimmer.


These products are no-repairable factory-sealed unit which can't be opened without breaking.

Basic model and alternative model are the same only except model name.

This report is based on the report Ref. No. 210900517HZH-001 (dated on October 29, 2021) issued by Intertek Testing Services Zhejiang Ltd., Hangzhou Branch include the following changes and/or additions: Divide B02-BL-A60/B02-B-A60/B02-A60 and B05-BL-A60/B05-B-A60/B05-A60 in the report into two reports.

Model list:

Basic model no.	Alternative model no.	Rated current (mA)	Rated wattage (W)	Color Temperature (K)
B02-BL-A60/B02-B-A60/B02-A60	L02-BL-A60/L02-B-A60/L02-A60	55	9	2700-6500K

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL REQUIREMENTS		
4.1	The lamp shall be so designed and constructed that in normal use cause no danger to the user.		P
4.2	Self-ballasted LED-Lamp are non-repairable.		P
5	MARKING		
5.1	Mandatory marking		P
	- mark of origin		P
	- rated supply voltage (V)	220-240	P
	- rated wattage (W)	9	P
	- rated frequency (Hz).....	50/60	P
5.2	Addition marking		P
	- rated current (A)	0,055	P
	- weight significantly higher		P
	- special conditions or restrictions		N/A
	Not suitable for dimming; symbol  used	Dimming via a Wi-Fi app	N/A
	- not suitable for water contact		P
5.3	Marking durable and legible		P
	rubbing 15 s water, 15 s petroleum; marking legible		P
6	INTERCHANGEABILITY		
6.1	Cap interchangeability in accordance with IEC 60061-1		
	Gauge in accordance with IEC 60061-3		P
6.2	Bending moment and mass imparted by the lamp at the lampholder		
	Bending moment imparted by the lamp at the lampholder (Nm).....	0,04Nm	P
	Mass not exceeding value table 2 or as specified in IEC 60061-1 (kg)	0,036kg	P
7	PROTECTION AGAINST ACCIDENTAL CONTACT WITH LIVE PARTS		
	Internal, basic insulated or live metal parts not accessible		P
	Tested with a test finger with a force of 10 N		P

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
	Compliance checked with appropriate gauges		P
8	INSULATION RESISTANCE AND ELECTRIC STRENGTH		
8.2	After storage 48 h at 91-95% relative humidity and 20-30 °C measuring of insulation resistance with d.c. 500 V (MΩ):		
	≥ 4 MΩ for double or reinforced insulation: 1999MΩ		P
8.3	Immediately after clause 8.2 electric strength test for 1 min		
	Double or reinforced insulation, 4U + 2000 V	2960V	P
	No flashover or breakdown		P
9	MECHANICAL STRENGTH		
9.2.1	Torsion resistance of unused lamps		
	B15d or E14 Cap..... 1,15 Nm		N/A
	B22d, E26, E26d or E27 Cap..... 3,0 Nm	E27	P
	E11 or E12 Cap..... 0,8 Nm		N/A
	E17 Cap 1,5 Nm		N/A
	E39 or E40 Cap..... 5,0 Nm		N/A
	GX53 Cap 3,0 Nm		N/A
9.3	Compliance criteria		
	Clause 8 shall comply after the mechanical strength test.		P
9.4	Axial strength of Edison caps		
	After full insertion into the gauge an axial force of Table 4 is applied to the central contact (N):	E27: 120N	P
	The insulation around the central contact shall remain intact		P
10	CAP TEMPERATURE RISE		
	The cap temperature rise Δt _s of the lamp shall not exceed 120 K.	41,0K	P
11	RESISTANCE TO HEAT		
	Parts of insulating material providing protection against electric shock, retaining live parts in position, ball-pressure test:	(see appended table)	P

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
12	RESISTANCE TO FLAME AND IGNITION		
	External parts of insulating material preventing electric shock glow-wire test 650 °C	(see appended table)	P
13	FAULT CONDITIONS		
13.2	Fault conditions: where diagram indicates fault condition impairs safety, electronic components have been short-circuited or disconnected	(see appended table)	P
13.3	When operated under fault conditions the lamp		
	- does not emit flames or molten material		P
	- does not produce flammable gases or smoke		P
	- live parts not accessible		P
	After the tests the insulation resistance with d.c. 1000 V complies with requirements of Cl. 8.1 :	1999MΩ	P
14 (16)	CREEPAGE DISTANCES AND CLEARANCES		
	Creepage distances and clearances according to IEC 61347-1	(see appended table)	P
	Conductive accessible parts according to IEC 60598-1	(see appended table)	P
15	ABNORMAL OPERATION		
	Non-dimmable self-ballasted lamps are tested on a dimmer or an electronic switch according to the test circuit shown in Figure 8		P
	Operate the lamp for 8 h at most onerous dimming level		P
	When operated under abnormal operation the lamp		
	- does not catch fire		P
	- does not produce flammable gases		P
	- live parts not accessible		P
16	TEST CONDITIONS FOR DIMMABLE LAMPS		
	Test are carried out at maximum power setting for Clause 10 and Clause 17		P
17	PHOTOBIOLOGICAL SAFETY		
17.1	UV radiation		

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
	The LED lamp doesn't exceed 2mW/klm		P
17.2	Blue light hazard		
	Assessed according to IEC TR 62778		P
	LED lamps shall be RG0 or RG1	RG0	P
18	INGRESS PROTECTION		
18.1	Lamps shall be suitable for water contact unless marked with Figure 6	Use in Dry Locations only	N/A
18.2	The lamp is subjected to an IPX4 test according to IEC 60598-1		N/A
	The lamp complies with the compliance provisions of 9.2 of IEC 60598-1		N/A
	Lamps constructed so that it is sealed to exclude water need not to be tested		N/A

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict

11	TABLE: Ball Pressure Test of Thermoplastics			P
Allowed impression diameter (mm)		2,0mm		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	Refer to annex 1	125	1,0	
Driver PCB	Refer to annex 1	125	1,1	
Insulating material in cap	Refer to annex 1	125	1,3	
Lampshade	Refer to annex 1	80	0,8	
Connector on PCB	Refer to annex 1	125	1,2	
Supplementary information: N/A				

12	TABLE: Resistance to heat and fire - Glow wire tests			P
Object/ Part No./ Material	Manufacturer/ trademark	Glow wire test (GWT); (°C)		Verdict
		650		
		te	ti	
Enclosure	Refer to annex 1	No	0	P
Driver PCB	Refer to annex 1	No	0	P
Insulating material in cap	Refer to annex 1	No	0	P
Heat-shrinkable tube	Refer to annex 1	No	0	P
Lampshade	Refer to annex 1	No	0	P
Connector on PCB	Refer to annex 1	No	0	P
Supplementary information:				
Ti: The duration from the beginning of tip application up to the time at which the specimen or the layer placed below it ignites.				
Te: The duration from the beginning of tip application up to the time when the flames are extinguished, during or after the period of application.				

13	TABLE: tests of fault conditions		P
Part	Simulated fault	Result	Hazard

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
LED	Short-circuited	Not work, recoverable	NO
LED	Open-circuited	Not work, recoverable	NO
U3	Short-circuited	Not work, recoverable	NO
U4	Short-circuited	Not work, LED broken	NO
CE3	Short-circuited	Work normally	NO
CS1	Short-circuited	Not work, recoverable	NO
U1	Short-circuited	Fusing resistor broken	NO
DS3	Short-circuited	Not work, recoverable	NO
CE4	Short-circuited	Not work, recoverable	NO
CE5	Short-circuited	Fusing resistor broken	NO

14	TABLE: Clearance And Creepage Distance Measurements					P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
between live parts of different polarity	N/A	220-240V~	>1,5	3,0	>2,5	3,0
Live parts and the outer accessible surface of insulating parts	N/A	220-240V~	>3	6,5	>5	6,5
Supplementary information: N/A						

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX 1 TABLE: Critical components information							P
Object / part No.	Code	Manufacturer/ trademark ²⁾	Type / model ²⁾	Technical data	Standard	Mark(s) of conformity ¹⁾	
Lampshade	C	HENGDIAN GROUP TOSPO ENGINEERING PLASTICS CO LTD	C301-XX	PC, min. thickness: 0,8mm (UL/E187910)	EN 62560	Test with appliance	
Enclosure	C	ZHEJIANG CHENFENG SCIENCE AND TECHNOLOGIES CORP., LTD.	PA-AF0915	PA, min. thickness: 1,2mm	EN 62560	Test with appliance	
Insulating material in cap	C	KINGFA SCI & TECH CO LTD	PBT- RG301(r1)	V-0, 130°C	EN 62560	Test with appliance	
Driver PCB	C	QUANZHOU JINTIAN ELECTRON CIRCUIT BOARD CO LTD	JFR-1	V-0, 130°C, min. thickness: 1,2mm (UL/E239807)	EN 62560	Test with appliance	
			JCEM-1				
	C	ZHEJIANG LEUCHTEK TECHNOLOGY CO LTD	PFR-1	V-0, 130°C min. thickness: 1,2mm (UL/E199273)	EN 62560	Test with appliance	
			PCEM-1				
Fusing resistor	C	SHENZHEN GREAT ELECTRONICS CO LT	RXF	47Ω/1W (UL/E301541)	EN 62560	Test with appliance	
	C	NANJING SHAGON ELECTRONICS CO LTD	RXF	47Ω, 1W (UL/E304814)	EN 62560	Test with appliance	
LED chips	C	MLS	2835	9-36V, 30- 100mA, 2700- 6500K, Blue light hazard: RG0	EN 62560 EN 62471 IEC/TR 62778	Test with appliance	
Heat shrinkable tube	C	CHANGYUAN ELECTRONICS GROUP CO LTD	-	600V, 125°C	EN 62560	Test with appliance	
Internal wire connected to base	C	TONGXIANG TENGFEI ELECTRON & WIRING CO LTD	3266	24AWG, 300V, 125°C (UL/E238015)	EN 62560	Test with appliance	
	C	GAOYOUSHI DINGTIAN GAOFENZI CAILIAO CO LTD	3266	24AWG, 300V, 125°C (UL/E344671)	EN 62560	Test with appliance	

IEC 62560						
Clause	Requirement + Test			Result - Remark		Verdict
Connector on PCB	C	Jiangsu Wote High Performance Materials Co Ltd	KC184(@)	LCP, min. thickness: 0,3mm (UL/E478701)	EN 62560	Test with appliance
	C	CELANESE INTERNATIONAL CORP	E130i(+1)	LCP, min. thickness: 0,43mm (UL/E83005)	EN 62560	Test with appliance
	C	KINGFA SCI & TECH CO LTD	Vicryst R8(gg)(ccc)(r5)	LCP, min. thickness: 0,35mm (UL/E171666)	EN 62560	Test with appliance

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

ATTACHMENT – IEC/EN 62560			
Clause	Requirement + Test	Result - Remark	Verdict

Attachment 1:

<p>ATTACHMENT TO TEST REPORT IEC 62560 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Self-Ballasted LED-Lamp for general lighting services by voltage > 50V Safety specifications</p>
<p>Differences according to : EN 62560:2012+A1:2015+A11:2019</p>

CENELEC COMMON MODIFICATIONS (EN)			
	Caps E11, E12, E17, E26, E26d and E39 excluded in Europe		P
	Item a) deleted from clause 5.2		P
	Corrigendum January 2012 included in Clause 14		P
	Annex B deleted		P

7	Protection against accidental contact with live parts		
7.Z1	General		P
7.Z2	Fixing of conductors		
7.Z2.1	Requirements		P
7.Z2.2	Compliance criterial		P

ATTACHMENT - IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

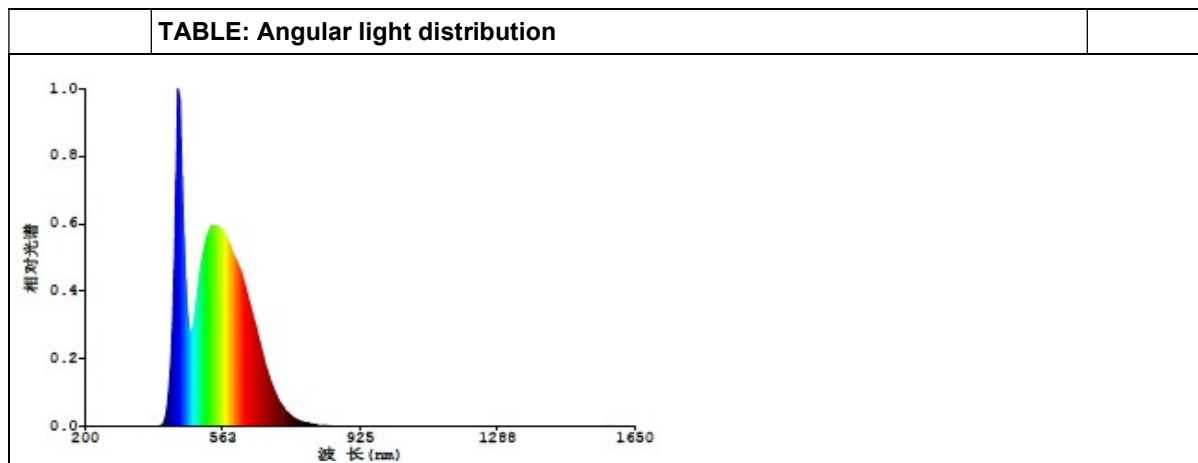
Attachment 2:

IEC/TR 62778:2014: The assessment of blue light hazard to light sources and luminaires

7	MEASUREMENT INFORMATION FLOW		
7.1	Basic flow		
	'Law of conservation of luminance' applied		P
	Use of only true luminance/radiance values		P
	In case of luminaire: The light source is operated in the luminaire under similar conditions as when tested as a component		P
	In case E_{thr} value for RG2 was established the peak value was derived from angular light distribution		N/A
7.2	Conditions for the radiance measurement		
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N/A
7.3	Special cases (I): Replacement by a lamp or LED module of another type		
	Light source is a white light source		N/A
	Evaluation done based on highest luminance		N/A
	Evaluation done based on CCT value		N/A
7.4	Special cases (II): Arrays and clusters of primary light sources		
	LED package is evaluated as	<input checked="" type="checkbox"/> RG0 unlimited <input type="checkbox"/> RG1 unlimited	N/A
	E_{thr} of LED package applies to array		N/A
8	RISK GROUP CLASSIFICATION		
	Risk group achieved:		P
	-.. Risk Group 0 unlimited		P
	-.. Risk Group 1 unlimited		N/A
	- E_{thr} (lx) : Distance to reach RG1..... (m) :		N/A

	TABLE: Spectroradiometric measurement		
	Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input checked="" type="checkbox"/> Lamp <input type="checkbox"/> Luminaire	

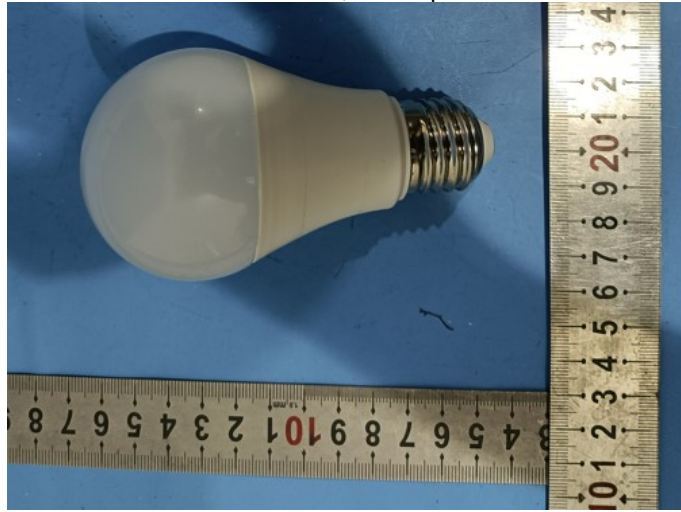
ATTACHMENT - IEC TR 62778				
Clause	Requirement + Test	Result - Remark		Verdict
	Model number:	B02-BL-A60/B02-B-A60/B02-A60		
	Test voltage (V)	240		—
	Test current (mA)	N/A		—
	Test frequency (Hz):	50		—
	Ambient, t (°C)	25		—
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—
	Source size	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small: mm		—
	Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—
Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	/	/
x/y colour coordinates	/	/	/	/
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	5,2e+01	/
Blue light hazard irradiance	E _B	W/m ²	4,0e-01	
Luminance	L	cd/m ²	/	/
Illuminance	E	lx	500,0	/
Supplementary information: N/A				



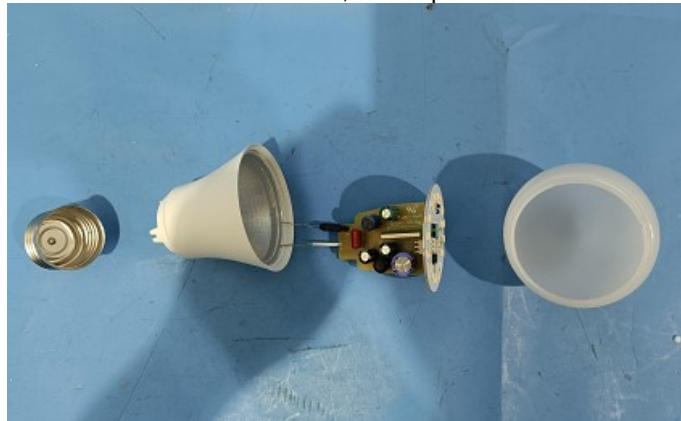
Attachment 3:

Photos:

Overall view of B02-BL-A60/B02-B-A60/B02-A60, also represents L02-BL-A60/L02-B-A60/L02-A60



Construction of B02-BL-A60/B02-B-A60/B02-A60, also represents L02-BL-A60/L02-B-A60/L02-A60



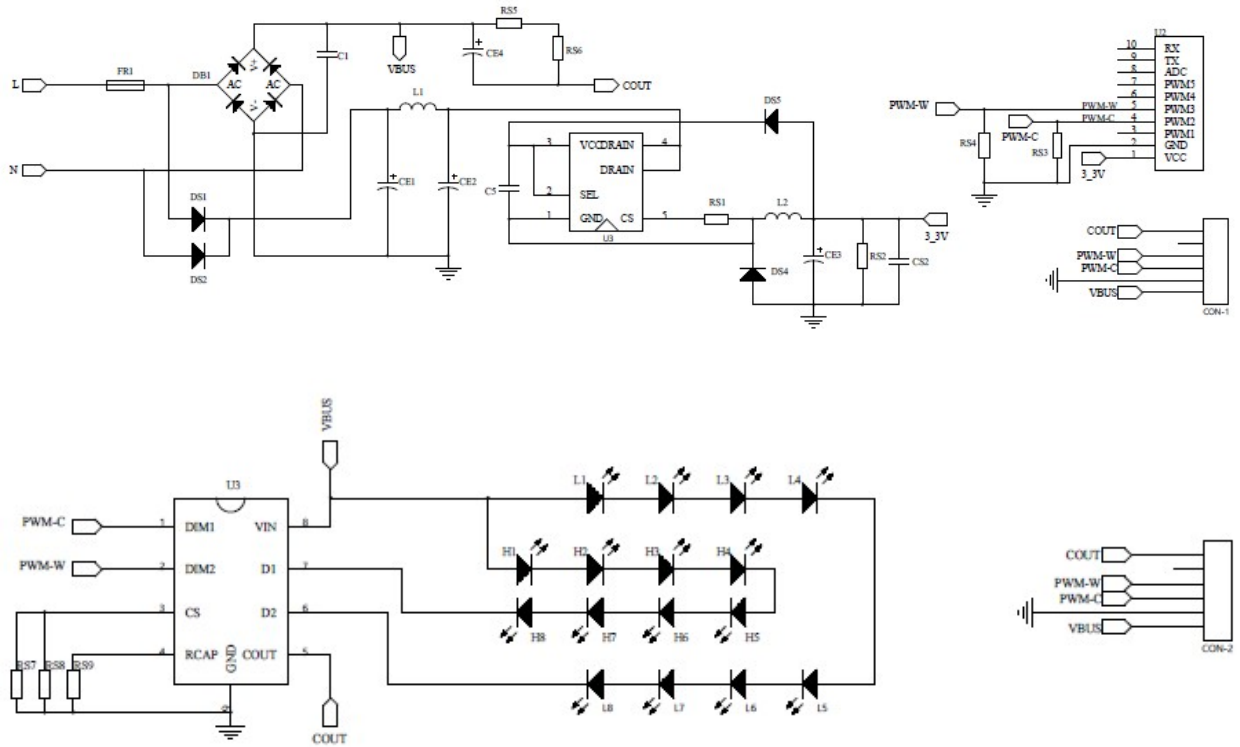
Attachment 3:

PCB of B02-BL-A60/B02-B-A60/B02-A60, also represents L02-BL-A60/L02-B-A60/L02-A60



Attachment 4:

Schematic circuit diagram of B02-BL-A60/B02-B-A60/B02-A60, also represents L02-BL-A60/L02-B-A60/L02-A60



Attachment 4:

PCB layout of B02-BL-A60/B02-B-A60/B02-A60, also represents L02-BL-A60/L02-B-A60/L02-A60

