



TEST REPORT IEC 62560

Self-Ballasted LED-Lamp
for general lighting services by voltage > 50V Safety specifications

Report Number: 68.140.12.318.02
Date of issue.....: 2013-05-06
Total number of pages: 17 (not including attachments)

Applicant's name.....: Shenzhen GuanKe Technologies Co., Ltd.
Address: Heshuikou Second Industrial Zone, Gongming Town, Baoan District,
 518000 Shenzhen City, PEOPLE'S REPLUBLIC OF CHINA


Test specification:

Standard: IEC 62560:2011 (First Edition)
Test procedure: CE-LVD
Non-standard test method.....: N/A

Test Report Form No......: IEC62560A
Test Report Form(s) Originator: DEKRA Certification B.V.
Master TRF.....: Dated 2011-10

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Test item description: LED Lamp
Trade Mark: 
Manufacturer: Same as applicant
Model/Type reference.....: GKS09-27W E27, GKS09-36W E27,
 GKS09-45W E27, GKS09-54W E27,
 GKS09-27W E40, GKS09-36W E40,
 GKS09-45W E40, GKS09-54W E40
Ratings: 100-250V~; 50/60Hz;
 27W [GKS09-27W E27 and GKS09-27W E40];
 36W [GKS09-36W E27 and GKS09-36W E40];
 45W [GKS09-45W E27 and GKS09-45W E40];
 54W [GKS09-54W E27 and GKS09-54W E40]



Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory:	Jiangsu TÜV Product Service Ltd. - Shenzhen Branch
Testing location/ address	6/F, H Hall, Culture Creative Park, No. 4001, Fuqiang Road, Futian District, Shenzhen Guangdong, P.R. China
<input type="checkbox"/> Associated CB Laboratory:	
Testing location/ address	
Tested by (name + signature).....:	Sadie Jiang 
Approved by (name + signature).....:	David Zhao 
<input type="checkbox"/> Testing procedure: TMP	
Testing location/ address	
Tested by (name + signature)	
Approved by (name + signature)	
<input type="checkbox"/> Testing procedure: WMT	
Testing location/ address	
Tested by (name + signature)	
Witnessed by (name + signature)	
Approved by (name + signature)	
<input type="checkbox"/> Testing procedure: SMT	
Testing location/ address	
Tested by (name + signature)	
Approved by (name + signature)	
Supervised by (name + signature).....:	
<input type="checkbox"/> Testing procedure: RMT	
Testing location/ address	
Tested by (name + signature)	
Approved by (name + signature)	
Supervised by (name + signature).....:	



List of Attachments (including a total number of pages in each attachment):	
Attachment No. 1: 1 page of test report for European group differences and national differences for EN 62560:2012;	
Attachment No. 2: 13 pages of test report for EN 62471:2008 (for photobiological safety);	
Attachment No. 3: 2 pages of test report for EN 62493:2010 (EMF);	
Attachment No. 4: 10 pages of photo documentation.	
Summary of testing:	
Tests performed (name of test and test clause): <ul style="list-style-type: none">- EN 62560:2012;- EN 62471:2008;- EN 62493:2010. <p>The submitted samples were classified as exempt group according to EN 62471:2008. The submitted samples were found to comply with the requirements of above specification.</p>	Testing location: 6/F, H Hall, Culture Creative Park, No. 4001, Fuqiang Road, Futian District, Shenzhen Guangdong, P.R. China
Summary of compliance with National Differences	
List of countries addressed:	
Nil.	
<input checked="" type="checkbox"/> The product fulfils the requirements of IEC 62560	

Copy of marking plate

<p>GKS09-54W E27 </p> <p>100-250V~50/60Hz 54W</p> <p>  </p>	<p>GKS09-54W E40 </p> <p>100-250V~50/60Hz 54W</p> <p>  </p>
<p>GKS09-45W E27 </p> <p>100-250V~50/60Hz 45W</p> <p>  </p>	<p>GKS09-45W E40 </p> <p>100-250V~50/60Hz 45W</p> <p>  </p>
<p>GKS09-36W E27 </p> <p>100-250V~50/60Hz 36W</p> <p>  </p>	<p>GKS09-36W E40 </p> <p>100-250V~50/60Hz 36W</p> <p>  </p>
<p>GKS09-27W E27 </p> <p>100-250V~50/60Hz 27W</p> <p>  </p>	<p>GKS09-27W E40 </p> <p>100-250V~50/60Hz 27W</p> <p>  </p>

Location: sticking on the external enclosure of lamp. (Height of letters and numerals at least 2mm, Height of WEEE mark at least 7mm, height of CE mark at least 5mm.)

Test item particulars:	
- Lamp cap.....	: E27 [GKS09-27W E27; GKS09-36W E27; GKS09-45W E27; GKS09-54W E27] E40 [GKS09-27W E40; GKS09-36W E40; GKS09-45W E40; GKS09-54W E40]
- Lamp identification	: Self-ballasted LED lamps
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	: 2012-11-01; 213-04-01; 2013-04-22
Date (s) of performance of tests	: 2012-11-01 to 2013-05-06
General remarks:	
<p>The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Clause numbers between brackets refer to clauses in IEC 61347-1</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>According to the EU decision 768/2008/EC and German product safety law (ProdSG), the name and address of manufacturer (an EU-based importer or authorized representative if the manufacturer is not based in EU) shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on EU market.</p> <p>The manufacturer/Importer has to ensure the appliance conforms to EMC Directive 2004/108/EC and its amendments.</p> <p>Appendix I: Table for temperature measurement of clause 10.</p>	
Manufacturer's Declaration per sub-clause 6.2.5 of IEC60060-2:	
<p>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</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable</p>	
<p>When differences exist; they shall be identified in the General product information section.</p> <p>Name and address of factory (ies)..... : Same as applicant</p>	

General product information:



Self-ballasted LED lamps.
Product information are listed as follows:

Model No.	Rated power (W)	Rated current (A)	Lamp cap	LED number (pcs)	Circuit of LED driver	Lamp weight (g)
GKS09-54W E27	54	0,235-0,551	E27	9x18	Similar circuit, only parameters of some components are different; same PCB layout; SELV-equivalent	882,9
GKS09-45W E27	45	0,196-0,459		9x16		826,5
GKS09-36W E27	36	0,156-0,367		9x13		721,9
GKS09-27W E27	27	0,117-0,275		9x10		623,8
GKS09-54W E40	54	0,235-0,551	E40	9x18		898,9
GKS09-45W E40	45	0,196-0,459		9x16		851,4
GKS09-36W E40	36	0,156-0,367		9x13		768,4
GKS09-27W E40	27	0,117-0,275		9x10		648,0

Specification of LED:

Manufacture	LED Model	V _F	I _F	CCT	View angle	CRI
SAMSUNG LED CO., LTD.	SPMWHT5225D5WAW0S0	2,8-3,3	150mA	6000-6500K	120°	80
	SPMWHT5225D5WAP0S0			2700-3000K		
	SPMWHT5225D5WAQ0S0			3000-3500K		
	SPMWHT5225D5WAR0S0			3500-4000K		
	SPMWHT5225D5WAS0S0			4000-4500K		
	SPMWHT5225D5WAT0S0			4500-5000K		
	SPMWHT5225D5WAU0S0			5000-5500K		
	SPMWHT5225D5WAV0S0			5500-6000K		

Unless otherwise specified, the model GKS09-54W E27 was chosen as representative model to perform all the tests, other models were chosen to perform different tests.

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).....:	100-250V~	P
	- rated wattage (W).....:	54W [GKS09-54W E27 and GKS09-54W E40]; 45W [GKS09-45W E27 and GKS09-45W E40]; 36W [GKS09-36W E27 and GKS09-36W E40]; 27W [GKS09-27W E27 and GKS09-27W E40]	P
	- rated frequency (Hz).....:	50/60Hz	P
5.2	Addition marking		P
	- burning position		N/A
	- rated current (A).....:	Stated in the instruction manual	P
	- weight significantly higher	Warning: Increased weight of lamp may reduce the mechanical stability of certain luminaires and lampholders and may impair contact making and lamp retention (in the instruction manual)	P
	- special conditions or restrictions		N/A
	Not suitable for dimming; symbol used		P
	- eye protection	The products are classified as exempt group according to EN 62471:2008.	N/A
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		P
	Gauge in accordance with IEC 60061-3		P

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
6.2	Bending moment, axial pull and mass		P
	Bending moment imparted by the lamp at the lampholder		P
	Lamp construction withstands axial pull (N)..... :	40N	P
	Mass not exceeding value tabel 2 (kg) :	0,899kg (maximum value is recorded)	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
	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):		P
	≥ 4 MΩ for double or reinforced insulation..... :	100MΩ	P
8.3	Immediately after clause 8.2 electric strength test for 1 min		P
	Double or reinforced insulation, 4U + 2000 V	3000V	P
	No flashover or breakdown		P
9	MECHANICAL STRENGTH		—
	Torsion resistance of unused lamps		P
9.1	Torque test		P
	B 15 d Cap 1,15 Nm		N/A
	B 22 d Cap 3,0 Nm		N/A
	E 11 Cap 0,8 Nm		N/A
	E 12 Cap 0,8 Nm		N/A
	E 14 Cap 1,15 Nm		N/A
	E 17 Cap 1,5 Nm		N/A
	E 26 or E27 Cap..... 3,0 Nm		P
	GX 53 Cap 3,0 Nm	under consideration	N/A
9.2	Torsion resistance of lamps after a defined time of usage		N/A
	Torsion resistance of used lamp	under consideration.	N/A
9.3	Repetition of clause 8		P
	Clause 8 shall comply after the mechanical strength test.		P

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
10	CAP TEMPERATURE RISE		—
	The cap temperature rise Δt_s of the lamp shall not exceed 120 K.	20,4K for GKS09-54W E27; 20,2K for GKS09-54W E40	P
11	RESISTANCE TO HEAT		—
	Parts of insulating material retaining live parts in position, ball-pressure test:		P
	- part; test temperature (°C)	(see appended table)	P
12	RESISTANCE TO FLAME AND IGNITION		—
	External parts of insulating material preventing electric shock glow-wire test 650 °C	PCB of LED module; transformer bobbin; PCB of LED driver; connector; white plastic enclosure; gray plastic enclosure	P
	- flame extinguished within 30 s	No flame	N/A
	- no flaming drops igniting tissue paper	No drop	N/A
13	FAULT CONDITIONS		—
13.2	Extreme electrical conditions (dimmable lamps)		N/A
	Lamp withstands overpower condition >15 min.		N/A
	Lamp fails safe after 15 min overpower condition		N/A
	Lamp with automatic protective device or power limiter, test performed 15 min. at limit.		N/A
13.3	Extreme electrical conditions (non-dimmable lamps)		P
	Tested according 13.2 (as far as possible)		P
13.4	Short-circuit across capacitors	(see appended table)	P
13.5	Fault conditions: where diagram indicates fault condition impairs safety, electronic components have been short-circuited or disconnected	(see appended table)	P
13.6	When operated under fault conditions the lamp		P
	- 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	100M Ω	P
14 (16)	CREEPAGE DISTANCES AND CLEARANCES		—
	Creep age distances and clearances according to Table 3 and 4 of IEC 61347-1, as appropriate	(see appended table)	P
	Printed boards see clause 14 of IEC 61347-1		P

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict

	Insulating lining of metallic enclosures		N/A
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13	TABLE: tests of fault conditions		P
Part	Simulated fault	Result	Hazard
ZV1	100V/250V; short circuit	F1 broken	NO
C2	100V/250V; short circuit	F1 broken	NO
R1	100V/250V; short circuit	LED lighted, can be recoverable	NO
Q2 (b-e)	100V/250V; short circuit	LED lighted, can be recoverable	NO
Q2 (b-c)	100V/250V; short circuit	LED lighted, can be recoverable	NO
Q2 (c-e)	100V/250V; short circuit	LED lighted, can be recoverable	NO
D1	100V/250V; short circuit	F1 broken	NO
C9	100V/250V; short circuit	LED lighted, can be recoverable	NO
D8	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
D9	100V/250V; short circuit	LED lighted, can be recoverable	NO
Q1 (G-D)	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
Q1 (G-S)	100V/250V; short circuit	R27, R28, R29 damaged, F1 broken.	NO
Q1 (D-S)	100V/250V; short circuit	R27, R28, R29 damaged, F1 broken.	NO
D5	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
R16	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
U1 (5-8)	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
T1A	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
T1B	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
T1E	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
D11	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
C13	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO
LED + and LED-	100V/250V; short circuit	Unit shut down, LED turn off, can be recoverable	NO

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict

11	TABLE: Ball Pressure Test of Thermoplastics		P
Allowed impression diameter (mm)		≤ 2,0mm	—
Part	Test temperature (°C)	Impression diameter (mm)	
PCB of LED driver	125	1,0	
Transformer bobbin	125	0,8	
White plastic enclosure	125	1,0	
Gray plastic enclosure	125	1,0	
PCB of LED module	125	0,7	
Connector	125	1,2	
Supplementary information:--			

14(16)	TABLE: Clearance And Creep age Distance Measurements					P
clearance cl and creepage distance cr at/of:	Up (V)	U rms. (V)	Required cl (mm)	cl (mm)	required cr (mm)	cr (mm)
L and N on PCB	--	250	1,5	4,3	2,5	4,3
Different polarity of fuse on PCB	--	250	1,5	3,2	2,5	3,2
Live parts and accessible parts	--	250	3,0	10,0	5,0	10,0
Primary track and secondary track on PCB	--	250	3,0	6,5	5,0	6,5
Core of transformer and secondary circuit on PCB	--	250	3,0	5,9	5,0	5,9
Primary winding and secondary circuit on PCB	--	250	3,0	5,9	5,0	5,9
“+” of LED module and accessible metal part (CTI>600)	--	57 (SELV)	0,3	0,8	0,7	0,8
Supplementary information: --						

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Critical components information	P
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Object/Part No.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
1. E40 lamp cap	Shenzhen Guanke	E40	Copper >60%	EN 62560	Tested with appliance
2. E27 lamp cap	Shenzhen Guanke	E40	Copper >60%	EN 62560	Tested with appliance
3. Input wiring of LED driver	Dong Guan Sheng Pai Electric Wire & Cable Co., Ltd.	3239	18AWG; 200°C	--	UL E347603
Alt.	Various	3239	18AWG; 200°C	--	UL approved
4. Output wiring of LED driver and input wiring of LED module	Dong Guan Sheng Pai Electric Wire & Cable Co., Ltd.	3239	22AWG; 200°C	--	UL E347603
Alt.	Various	3239	22AWG; 200°C	--	UL approved
5. LED driver for 54W LED lamps	Shenzhen Guanke	S09-P54W-V1	Input: AC100 -250 Output: 5-32V; 1,8A	--	Tested with appliance
LED driver for 45W LED lamps	Shenzhen Guanke	S09-P45W-V1	Input: AC100 -250 Output: 44-57V; 0,82A	--	Tested with appliance
LED driver for 36W LED lamps	Shenzhen Guanke	S09-P36W-V1	Input: AC100 -250 Output: 36-47V; 0,82A	--	Tested with appliance
LED driver for 27W LED lamps	Shenzhen Guanke	S09-P27W-V1	Input: AC100 -250 Output: 28-36V; 0,82 ^a	--	Tested with appliance
- Fuse (F1)	Littelfuse, Inc.	392	AC 250V; T2A	EN 60127-1; EN 60127-3	VDE 126983
Alt.	XC	5TE	AC 250V; T2A	EN 60127-1; EN 60127-3	VDE 40029550
Alt.	Conquer	MST Series	AC 250V; T2A	EN 60127-1; EN 60127-3	VDE 40017118
- X2 capacitor (CX1 for 45W, 36W and 27W models)	Dongguan Easy-gather	MKP-X2	AC 300V; 0,1uF; 40/105/21	EN 60384-14	VDE 40022258

IEC 62560					
Clause	Requirement + Test		Result - Remark	Verdict	
Object/Part No.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
Alt.	Shenzhen Chuangshuoda Electronics Co., Ltd.	MPX	AC 300V; 0,1uF; 40/110/56	EN 60384-14	VDE 40028274
Alt.	Tenta Electric Industrial Co., Ltd.	MEX	AC 275V; 0,1uF; 40/100/21	EN 60384-14	VDE 119119
- X2 capacitor (CX1 for 54W models and CX2 for all models)	Dongguan Easy-gather	MKP-X2	AC 300V; 0,22uF; 40/105/21	EN 60384-14	VDE 40022258
Alt.	Shenzhen Chuangshuoda Electronics Co., Ltd.	MPX	AC 300V; 0,22uF; 40/110/56	EN 60384-14	VDE 40028274
Alt.	Tenta Electric Industrial Co., Ltd.	MEX	AC 275V; 0,22uF; 40/100/21	EN 60384-14	VDE 119119
- Varistor (ZV1)	Songtian Enterprise Co., Ltd	STE-10D471K	Class current: 25A; max. peak current: 2500A; max. continuous voltage: AC50-625V; DC65-825V; 40/85/21	IEC 61051-1; IEC 61051-2; IEC 61051-2-2	VDE 40023049
- Y1 capacitor (CY1)	Songtian Enterprise Co., Ltd	CD-Series	AC 400V; 2200pF; 25/125/21	EN 60384-14	VDE 40025754
- LED driver PCB	Goldenmax International Technology (Zhuhai) Ltd.	GF432	V-0; 130°C	--	UL E330731
- Transformer (for 54W models)	Shenzhen Jianengie Electronics Co., Ltd.	PQ2625-008	130°C	--	Tested with appliance
Transformer (for 45W and 36W models)	Shenzhen Jianengie Electronics Co., Ltd.	PQ2620-006	130°C	--	Tested with appliance
Transformer (for 27W models)	Shenzhen Jianengie Electronics Co., Ltd.	PQ2620-007	130°C	--	Tested with appliance

IEC 62560					
Clause	Requirement + Test			Result - Remark	Verdict
Object/Part No.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
Primary winding	Xingning Jinyan Electrical Co., Ltd.	QA-1/130	130°C	--	UL E238500
Secondary winding (TIW)	Furukawa Electric Co., Ltd.	TEX-E	130°C	EN 60950-1	VDE 006735
Bobbin	Chang Chun Plastics Co., Ltd.	T375J	V-0; 150°C; PMC	--	UL E59481
Insulated tape	Jingjiang Yahua	CT-280	130°C	--	UL E165111
6. Connector	Zhejiang Jinda Electronics Co., Ltd.	0.5-A-4P thru 0.5-A-23P	--	--	UL E237523
7. Heat-shrinkable tube	Dongguan Salipt Co., Ltd.	SALIPT S-901-600	600V; 125°C	--	UL E209436
Alt.	Shenzhen Wolida Trading Co., Ltd.	RSFR-H	600V; 125°C	--	UL E329530
Alt.	Various	Various	600V; 125°C	--	UL Approved
8. White plastic enclosure and gray plastic enclosure of LED lamps	Chi Mei Corporation	PC-110	V-2; 125°C	--	UL E56070
9. Insulated sheet for LED driver	Teijin Polycarbonate Singapore Pte Ltd.	L-1225ZL	V-2; 125°C	--	UL E195100
10. LED PCB for LED module	Goldenmax International Technology (Zhuhai) Ltd.	GF432	V-0; 130°C	--	UL E330731
11. Metal base PCB for LED	Xianyang Yuke Electronics Co., Ltd.	YK-AL	V-0; 90°C	--	UL E351469
12. Transparent cover	Chi Mei Corporation	PC-110	V-2; 125°C	--	UL E56070

IEC 62560					
Clause	Requirement + Test		Result - Remark	Verdict	
Object/Part No.	Manufacturer/ Trademark	Type/Model	Technical Data	Standard	Mark(s) of Conformity
13. LED	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WA W0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 6000-6500K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAP 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 2700-3000K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAQ 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 3000-3500K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAR 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 3500-4000K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAS 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 4000-4500K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAT 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 4500-5000K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAU 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 5000-5500K	EN 62471	Tested with appliance
Alt.	SAMSUNG LED CO., LTD.	SPMWHT5 225D5WAV 0S0	I _F : 150mA; V _F : 2,8-3,3V; Viewing angle: 120°; color Rendering: 80; CCT: 5500-6000K	EN 62471	Tested with appliance
Supplementary information: --					

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict

	Appendix I: table for temperature measurement of clause 10		P
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	Type reference.....:	GKS09-54W E27	—
	Mounting position.....:	Cap-up and cap-down	—
	Test voltage.....:	100V; 250V	—
	Supply wattage (W).....:	--	—
	Supply current (A).....:	--	—
	Calculated power factor.....:	--	—
	Table: measured temperatures corrected for ta = 25 °C:		P

temperature (°C) of part	Temperature measurement	
	Measured max. temperature (°C)	Limit (°C)
Lamp cap (E27)	(20,4K) 45,4	(120K) 145
Input wiring of LED driver	78,4	200
Output wiring of LED driver	73,2	200
Enclosure of lamp (outside)	52,1	Ref.
Enclosure of lamp (inside)	56,8	Ref.
Varistor (ZV1)	74,4	85
X2 capacitor (CX2)	82,9	100
X2 capacitor (CX1)	79,3	100
Fuse (F1)	76,4	Ref.
Winding of transformer	98,4	110
CY1 capacitor	94,8	125
PCB of LED driver near transformer	98,6	130
Enclosure under LED driver	97,4	Ref.
Connector	81,2	Ref.
LED module PCB	68,0	130
Metal base PCB for LED	68,3	90
Input wiring for LED module PCB	71,3	200
Input wiring for metal base PCB	87,1	200
Transparent cover	26,8	Ref.

IEC 62560			
Clause	Requirement + Test	Result - Remark	Verdict
	Type reference.....:	GKS09-54W E40	—
	Mounting position.....:	Cap-up and cap-down	—
	Test voltage.....:	100V; 250V	—
	Supply wattage (W).....:	--	—
	Supply current (A).....:	--	—
	Calculated power factor.....:	--	—
	Table: measured temperatures corrected for ta = 25 °C:		P
temperature (°C) of part	Temperature measurement		
	Measured max. temperature (°C)		Limit (°C)
Lamp cap (E40)	(20,2K) 45,2		(120K) 145

**Attachment No. 1**

IEC62560A - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

**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

Differences according to.....: EN 62560:2012

Attachment Form No.....: EU_GD_IEC62560A

Attachment Originator TÜV SÜD

Master Attachment Date (2012-12)

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	CENELEC COMMON MODIFICATIONS (EN)	—
	Lamps with E11, E12, E17, E26 are excluded from this standard	N/A
	Delete from the contents page the line on Annex B.	N/A
	Delete from Clause 5.2 the item a).	N/A
	Include in Clause 14 the Corrigendum January 2012.	P
	Delete Annex B.	N/A

ZB	ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)	—
	No special National conditions	N/A

ZC	ANNEX ZC, NATIONAL DEVIATIONS (EN)	—
	No National deviations	N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
4	EXPOSURE LIMITS		—
4.1	General		N/A
	The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and should be used as guides in the control of exposure		N/A
	Detailed spectral data of a light source are generally required only if the luminance of the source exceeds $10^4 \text{ cd}\cdot\text{m}^{-2}$	see clause 4.3	N/A
4.3	Hazard exposure limits		N/A
4.3.1	Actinic UV hazard exposure limit for the skin and eye		N/A
	The exposure limit for effective radiant exposure is $30 \text{ J}\cdot\text{m}^{-2}$ within any 8-hour period		N/A
	To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broadband source, the effective integrated spectral irradiance, E_s , of the light source shall not exceed the levels defined by:		N/A
	$E_s \cdot t = \sum_{200}^{400} \sum_t E_\lambda(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 30 \quad \text{J}\cdot\text{m}^{-2}$		N/A
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by:		N/A
	$t_{\max} = \frac{30}{E_s} \quad \text{s}$		N/A
4.3.2	Near-UV hazard exposure limit for eye		N/A
	For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed $10000 \text{ J}\cdot\text{m}^{-2}$ for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, E_{UVA} , shall not exceed $10 \text{ W}\cdot\text{m}^{-2}$.		N/A
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:		N/A
	$t_{\max} \leq \frac{10\,000}{E_{UVA}} \quad \text{s}$		N/A
4.3.3	Retinal blue light hazard exposure limit		N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, $B(\lambda)$, i.e., the blue-light weighted radiance, L_B , shall not exceed the levels defined by:		N/A
	$L_B \cdot t = \sum_{300}^{700} \sum_t L_\lambda(\lambda, t) \cdot B(\lambda) \cdot \Delta\lambda \leq 10^6 \quad \text{J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	for $t \leq 10^4$ s $t_{\max} = \frac{10^6}{L_B}$	N/A
	$L_B = \sum_{300}^{700} L_\lambda \cdot B(\lambda) \cdot \Delta\lambda \leq 100 \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	for $t > 10^4$ s	N/A
4.3.4	Retinal blue light hazard exposure limit - small source		N/A
	Thus the spectral irradiance at the eye E_λ , weighted against the blue-light hazard function $B(\lambda)$ shall not exceed the levels defined by:	see table 4.2	N/A
	$E_B \cdot t = \sum_{300}^{700} \sum_t E_\lambda(\lambda, t) \cdot B(\lambda) \cdot \Delta\lambda \leq 100 \quad \text{J} \cdot \text{m}^{-2}$	for $t \leq 100$ s	N/A
	$E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta\lambda \leq 1 \quad \text{W} \cdot \text{m}^{-2}$	for $t > 100$ s	N/A
4.3.5	Retinal thermal hazard exposure limit		N/A
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_λ , weighted by the burn hazard weighting function $R(\lambda)$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:		N/A
	$L_R = \sum_{380}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{50\,000}{\alpha \cdot t^{0,25}} \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	(10 $\mu\text{s} \leq t \leq 10$ s)	N/A
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		N/A
	For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, L_{IR} , as viewed by the eye for exposure times greater than 10 s shall be limited to:		N/A
	$L_{IR} = \sum_{780}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{6\,000}{\alpha} \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	$t > 10$ s	N/A
4.3.7	Infrared radiation hazard exposure limits for the eye		N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, E_{IR} , over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:		N/A
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 18\,000 \cdot t^{-0,75} \quad W \cdot m^{-2}$	$t \leq 1000 \text{ s}$	N/A
	For times greater than 1000 s the limit becomes:		N/A
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 100 \quad W \cdot m^{-2}$	$t > 1000 \text{ s}$	N/A
4.3.8	Thermal hazard exposure limit for the skin		N/A
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:		N/A
	$E_H \cdot t = \sum_{380}^{3000} \sum_{\tau} E_{\lambda}(\lambda, \tau) \cdot \Delta\tau \cdot \Delta\lambda \leq 20\,000 \cdot t^{0,25} \quad J \cdot m^{-2}$		N/A

5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		—
5.1	Measurement conditions		P
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.		P
5.1.1	Lamp ageing (seasoning)		P
	Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.		P
5.1.2	Test environment		P
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations.		P
5.1.3	Extraneous radiation		P
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.		P
5.1.4	Lamp operation		P
	Operation of the test lamp shall be provided in accordance with:		P
	– the appropriate IEC lamp standard, or		P
	– the manufacturer' s recommendation		N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.5	Lamp system operation		N/A
	The power source for operation of the test lamp shall be provided in accordance with:		N/A
	– the appropriate IEC standard, or		N/A
	– the manufacturer' s recommendation		N/A
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
	Minimum aperture diameter 7mm.		P
	Maximum aperture diameter 50 mm.		P
	The measurement shall be made in that position of the beam giving the maximum reading.		P
	The measurement instrument is adequate calibrated.		P
5.2.2	Radiance measurements		P
5.2.2.1	Standard method		P
	The measurements made with an optical system.		P
	The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument.		P
5.2.2.2	Alternative method		P
	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements.		P
5.2.3	Measurement of source size		P
	The determination of α , the angle subtended by a source, requires the determination of the 50% emission points of the source.		P
5.2.4	Pulse width measurement for pulsed sources		N/A
	The determination of Δt , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.	see table 4.1	P
5.3.2	Calculations		P

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.		P
5.3.3	Measurement uncertainty		P
	The quality of all measurement results must be quantified by an analysis of the uncertainty.	see Annex C in the norm	P
6	LAMP CLASSIFICATION		—
	For the purposes of this standard it was decided that the values shall be reported as follows:	see table 6.1	P
	– for lamps intended for general lighting service, the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm		P
	– for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm		N/A
6.1	Continuous wave lamps		P
6.1.1	Exempt Group		P
	In the exempt group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:		P
	– an actinic ultraviolet hazard (E_S) within 8-hours exposure (30000 s), nor		P
	– a near-UV hazard (E_{UVA}) within 1000 s, (about 16 min), nor		P
	– a retinal blue-light hazard (L_B) within 10000 s (about 2,8 h), nor		P
	– a retinal thermal hazard (L_R) within 10 s, nor		P
	– an infrared radiation hazard for the eye (E_{IR}) within 1000 s		P
6.1.2	Risk Group 1 (Low-Risk)		N/A
	In this group are lamps, which exceeds the limits for the exempt group but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_S) within 10000 s, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 300 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 100 s, nor		N/A
	– a retinal thermal hazard (L_R) within 10 s, nor		N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	– an infrared radiation hazard for the eye (E_{IR}) within 100 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 100 s are in Risk Group 1.		N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_S) within 1000 s exposure, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 100 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 0,25 s (aversion response), nor		N/A
	– a retinal thermal hazard (L_R) within 0,25 s (aversion response), nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 10 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 10 s are in Risk Group 2.		N/A
6.1.4	Risk Group 3 (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		N/A
6.2	Pulsed lamps		N/A
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.		N/A
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.		N/A
	The risk group determination of the lamp being tested shall be made as follows:		N/A
	– a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)		N/A
	– for single pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance does is below the EL shall be classified as belonging to the Exempt Group		N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	<ul style="list-style-type: none">– for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission		N/A

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Table 4.1	Spectral weighting function for assessing ultraviolet hazards for skin and eye			P
Wavelength ¹ λ , nm	UV hazard function $S_{uv}(\lambda)$	Wavelength λ , nm	UV hazard function $S_{uv}(\lambda)$	
200	0,030	313*	0,006	
205	0,051	315	0,003	
210	0,075	316	0,0024	
215	0,095	317	0,0020	
220	0,120	318	0,0016	
225	0,150	319	0,0012	
230	0,190	320	0,0010	
235	0,240	322	0,00067	
240	0,300	323	0,00054	
245	0,360	325	0,00050	
250	0,430	328	0,00044	
254*	0,500	330	0,00041	
255	0,520	333*	0,00037	
260	0,650	335	0,00034	
265	0,810	340	0,00028	
270	1,000	345	0,00024	
275	0,960	350	0,00020	
280*	0,880	355	0,00016	
285	0,770	360	0,00013	
290	0,640	365*	0,00011	
295	0,540	370	0,000093	
297*	0,460	375	0,000077	
300	0,300	380	0,000064	
303*	0,120	385	0,000053	
305	0,060	390	0,000044	
308	0,026	395	0,000036	
310	0,015	400	0,000030	

¹ Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.
* Emission lines of a mercury discharge spectrum.

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Table 4.2	Spectral weighting functions for assessing retinal hazards from broadband optical sources		P
Wavelength nm	Blue-light hazard function B (λ)	Burn hazard function R (λ)	
300	0,01	—	
305	0,01	—	
310	0,01	—	
315	0,01	—	
320	0,01	—	
325	0,01	—	
330	0,01	—	
335	0,01	—	
340	0,01	—	
345	0,01	—	
350	0,01	—	
355	0,01	—	
360	0,01	—	
365	0,01	—	
370	0,01	—	
375	0,01	—	
380	0,01	0,1	
385	0,013	0,13	
390	0,025	0,25	
395	0,05	0,5	
400	0,10	1,0	
405	0,20	2,0	
410	0,40	4,0	
415	0,80	8,0	
420	0,90	9,0	
425	0,95	9,5	
430	0,98	9,8	
435	1,00	10,0	

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Table 4.2	Spectral weighting functions for assessing retinal hazards from broadband optical sources		P
	440	1,00	10,0
	445	0,97	9,7
	450	0,94	9,4
	455	0,90	9,0
	460	0,80	8,0
	465	0,70	7,0
	470	0,62	6,2
	475	0,55	5,5
	480	0,45	4,5
	485	0,40	4,0
	490	0,22	2,2
	495	0,16	1,6
	500-600	$10^{[(450-\lambda)/50]}$	1,0
	600-700	0,001	1,0
	700-1050	—	$10^{[(700-\lambda)/500]}$
	1050-1150	—	0,2
	1150-1200	—	$0,2 \cdot 10^{0,02(1150-\lambda)}$
	1200-1400	—	0,02

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Table 5.4 Summary of the ELs for the surface of the skin or cornea (irradiance based values)					N/A
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Limiting aperture rad (deg)	EL in terms of constant irradiance $W \cdot m^{-2}$
Actinic UV skin & eye	$E_S = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	200 – 400	< 30000	1,4 (80)	30/t
Eye UV-A	$E_{UVA} = \sum E_\lambda \cdot \Delta\lambda$	315 – 400	≤ 1000 > 1000	1,4 (80)	10000/t 10
Blue-light small source	$E_B = \sum E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	≤ 100 > 100	< 0,011	100/t 1,0
Eye IR	$E_{IR} = \sum E_\lambda \cdot \Delta\lambda$	780 – 3000	≤ 1000 > 1000	1,4 (80)	18000/t ^{0,75} 100
Skin thermal	$E_H = \sum E_\lambda \cdot \Delta\lambda$	380 – 3000	< 10	2π sr	20000/t ^{0,75}

Table 5.5 Summary of the ELs for the retina (radiance based values)					N/A
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Field of view radians	EL in terms of constant radiance $W \cdot m^{-2} \cdot sr^{-1}$
Blue light	$L_B = \sum L_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	0,25 – 10	$0,011 \cdot \sqrt{(t/10)}$	$10^6/t$
			10-100	0,011	$10^6/t$
			100-10000	$0,0011 \cdot \sqrt{t}$	$10^6/t$
			≥ 10000	0,1	100
Retinal thermal	$L_R = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	380 – 1400	< 0,25	0,0017	$50000/(\alpha \cdot t^{0,25})$
			0,25 – 10	$0,011 \cdot \sqrt{(t/10)}$	$50000/(\alpha \cdot t^{0,25})$
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	780 – 1400	> 10	0,011	6000/α

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict
	CENELEC COMMON MODIFICATIONS (EN)		—
4	EXPOSURE LIMITS		—
	Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB		—
	Clause 4 replaced by the following:		P
	Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in IEC 62471:2006	See appended Table 6.1	P
4.1	General		P
	First paragraph deleted		—

Attachment No. 2

EN 62471			
Clause	Requirement + Test	Result - Remark	Verdict

Table 6.1	Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)	P
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MODEL: GKS09-54W E40 (with LED: SPMWHT5225D5WAW0S0)

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{UV}(\lambda)$	E_s	$W \cdot m^{-2}$	0,001	0,0000894	-	-	-	-
Near UV		E_{UVA}	$W \cdot m^{-2}$	10	0,000202	-	-	-	-
Blue light	$B(\lambda)$	L_B	$W \cdot m^{-2} \cdot sr^{-1}$	100	52,7181	10000	-	4000000	-
Blue light, small source	$B(\lambda)$	E_B	$W \cdot m^{-2}$	0,01	-	1,0	-	400	-
Retinal thermal	$R(\lambda)$	L_R	$W \cdot m^{-2} \cdot sr^{-1}$	327868	1930	$28000/\alpha$	-	$71000/\alpha$	-
Retinal thermal, weak visual stimulus**	$R(\lambda)$	L_{IR}	$W \cdot m^{-2} \cdot sr^{-1}$	545000	-				
				$0,0017 \leq \alpha \leq 0,011$					
				$6000/\alpha$	-				
				$0,011 \leq \alpha \leq 0,1$					
IR radiation, eye		E_{IR}	$W \cdot m^{-2}$	100	0,0118	570	-	3200	-

* Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian.

** Involves evaluation of non-GLS source

NOTE The action functions: see Table 4.1 and Table 4.2

The applicable aperture diameters: see 4.2.1

The limitations for the angular subtenses: see 4.2.2

The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

Attachment No. 3

EN 62493			
Clause	Requirement + Test	Result - Remark	Verdict
4.2	APPLICATION OF LIMITS (Test summary)		—
	Specific absorption rate (SAR)		P
a)	CISPR 15 clause 4.3.1 Disturbance voltage mains terminals 20 kHz – 30 MHz	*)	P
b)	CISPR 15 clause 4.4 Radiated electromagnetic disturbances 100 kHz – 30 MHz	*)	P
c)	CISPR 15 clause 4.4.2 Radiated electromagnetic disturbances 30 MHz – 300 MHz	*)	P
*)	<input checked="" type="checkbox"/> See separate Test Report for measurements of a), b) and c) above Test Report with Ref. No.: 68.740.12.263.01. <input type="checkbox"/> Only measurement of d) below. See measurement results below. In this case this test report does not show compliance with IEC 62493.		—
	Induced current density		P
d)	Induced current density 20 kHz – 10 MHz	See measurement results below	P
4.2.d	INDUCED CURRENT DENSITY		—
	Power supply system utilised:		—
	Voltage.....	: 100-250VAC	—
	Frequency.....	: 50/60Hz	—
	Environmental conditions:		—
	Temperature	: 25°C	—
	Humidity.....	: 60%	—
	EuT operation mode:		—
	<input checked="" type="checkbox"/> Normal operation		—
	<input type="checkbox"/> Other operation:		—
			—

Attachment No. 3

EN 62493			
Clause	Requirement + Test	Result - Remark	Verdict

4.2.d	MEASUREMENT RESULTS			P
	Measuring with "Van der Hoofden" test head			P
Location of EuT	Measuring distance	Result (F)	Limit (F)	Verdict
GKS09-54W E27	30cm	0,132	0,85	P

4.2.d	EQUIPMENT USED DURING TEST		
Equipment	Manufacturer	Type	Id. No.
EMC analyzer	Agilent	E7405A	68-1-26-11-001
Coaxial cable	DRAKA COMTEQ	M17/75-RG214	68-1-26-11-002
Test head & protection network	AFJ	VDH30	68-1-26-11-003

Test set-up, photos (model GKS09-54W E27 is chosen as representative.)



Attachment No. 4

Photo documentation

Page 1 of 10

Report No.: 68.140.12.318.02

Details of: Outlook
(from left to right: GKS09-54W E40, GKS09-45W E40, GKS09-36W E40 and GKS09-27W E40)



Details of: Outlook
(from left to right: GKS09-54W E27, GKS09-45W E27, GKS09-36W E27 and GKS09-27W E27)



Attachment No. 4

Photo documentation

Page 2 of 10

Report No.: 68.140.12.318.02

Details of: Internal view for GKS09-36W E40
(other models internal view are same as model GKS09-36W E40)



Details of: Internal view for GKS09-36W E40
(other models internal view are same as model GKS09-36W E40)



Attachment No. 4

Photo documentation

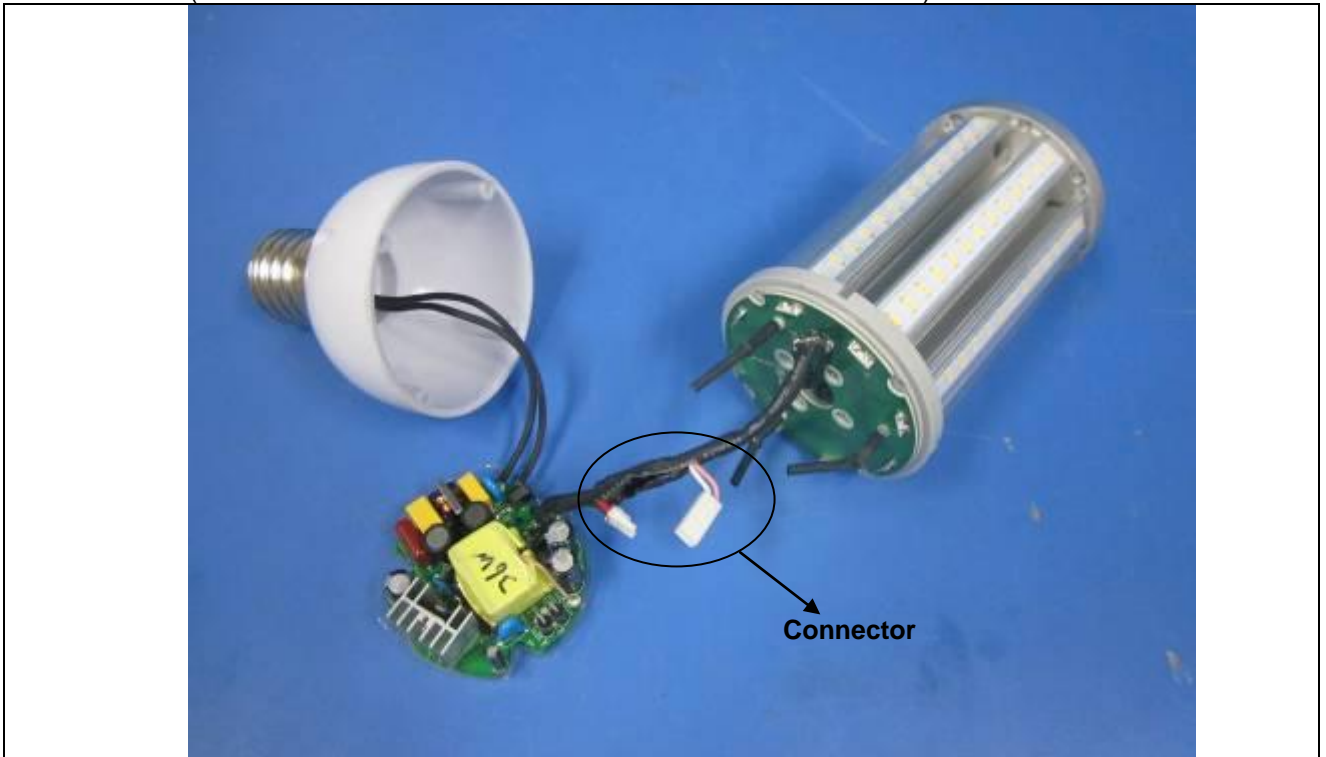
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Report No.: 68.140.12.318.02

Details of: Connection PCB for GKS09-36W E40
(other models connection PCB are same as model GKS09-36W E40)



Details of: Connector for GKS09-36W E40
(other models connector are same as model GKS09-36W E40)



Attachment No. 4

Photo documentation

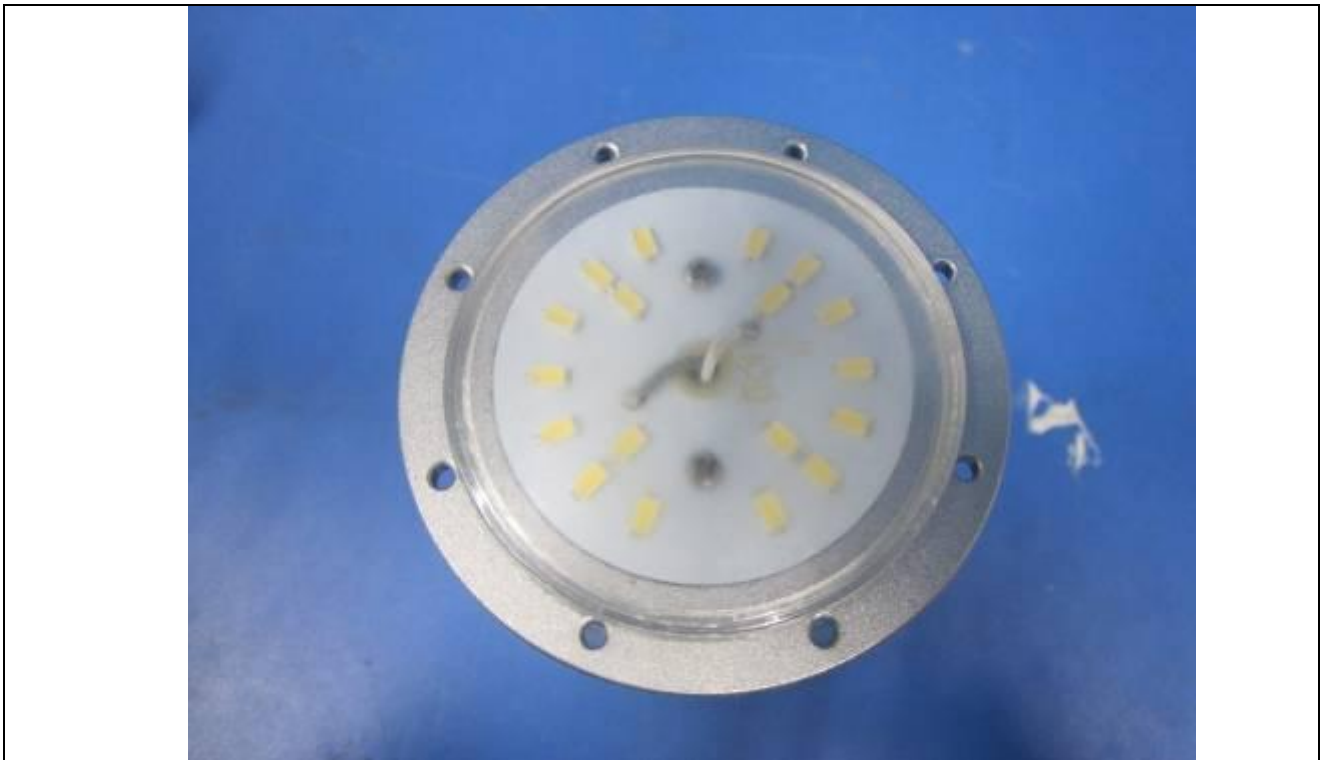
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Details of: LED module for GKS09-54W E40 and GKS09-54W E27 (side)



Details of: LED module for GKS09-54W E40 and GKS09-54W E27 (top)



Attachment No. 4

Photo documentation

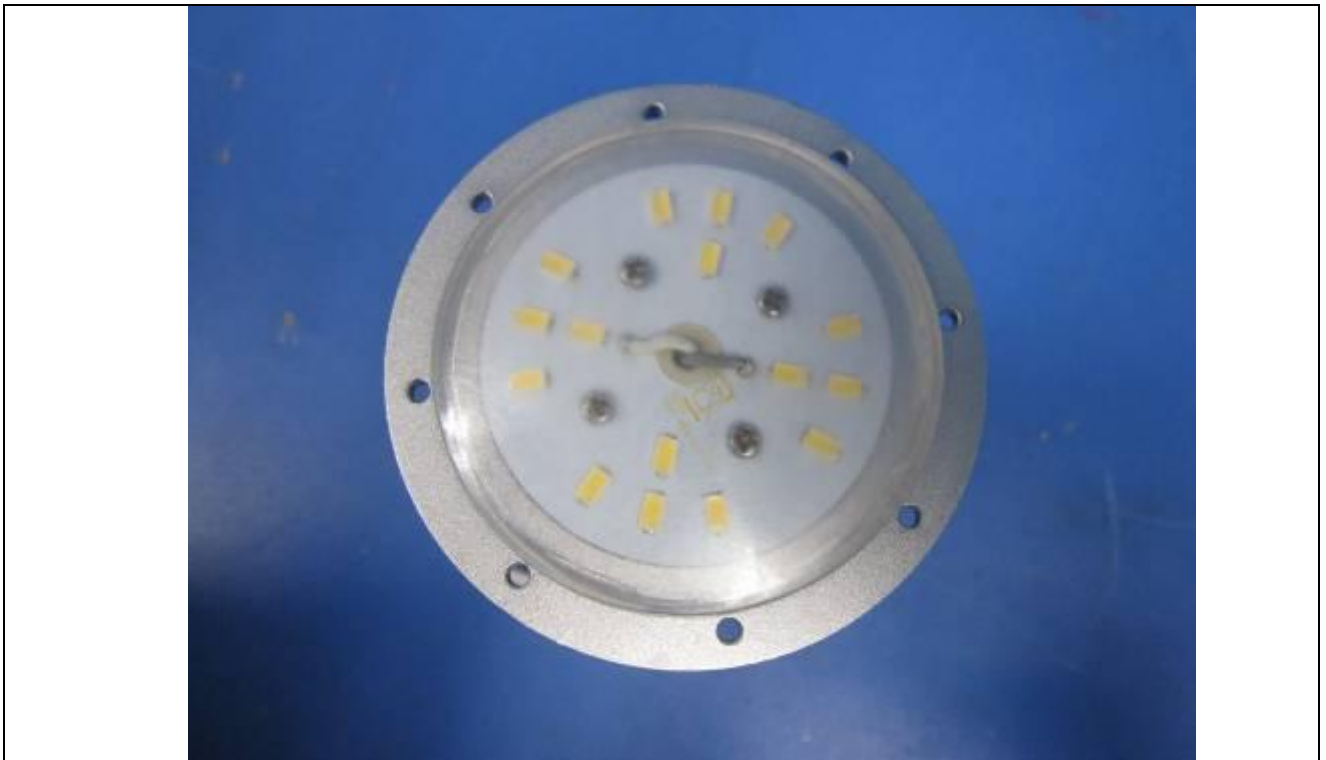
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Details of: LED module for GKS09-45W E40 and GKS09-45W E27 (side)



Details of: LED module for GKS09-45W E40 and GKS09-45W E27 (top)



Attachment No. 4

Photo documentation

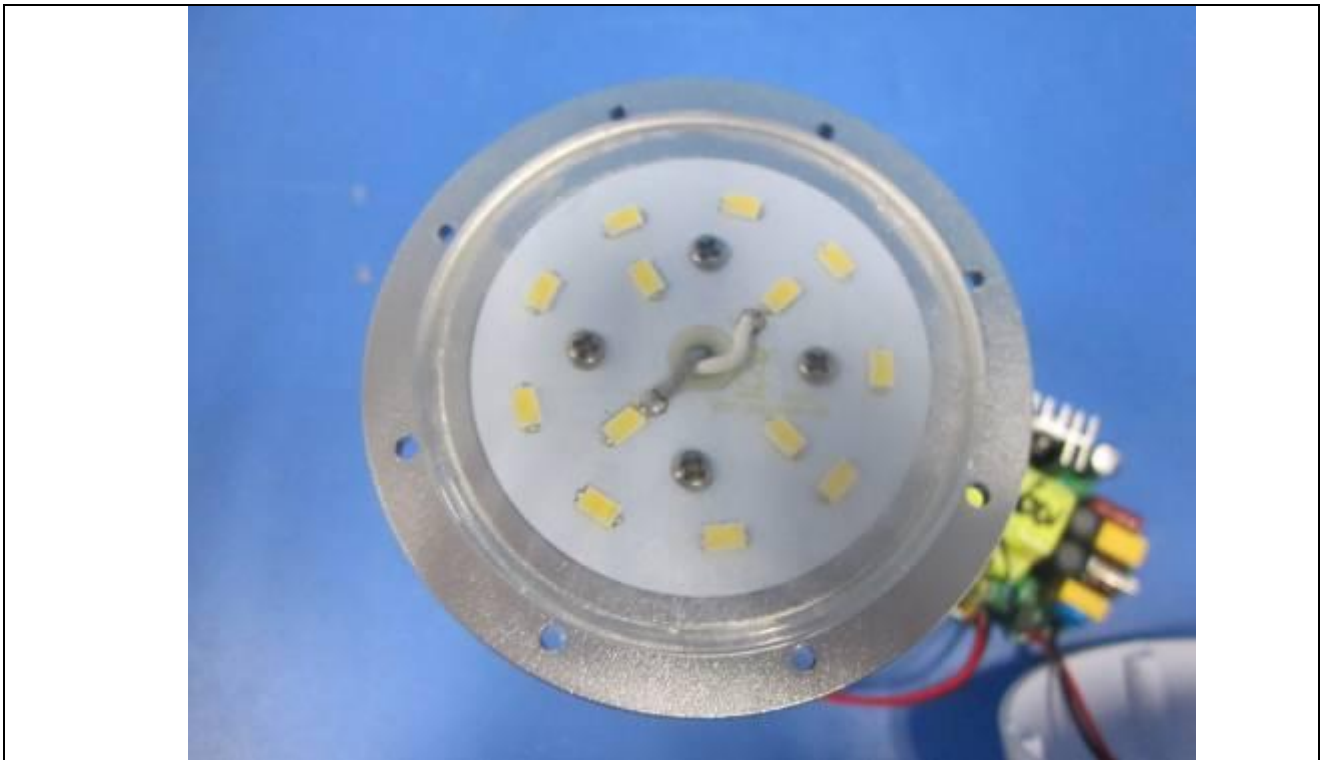
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Details of: LED module for GKS09-36W E40 and GKS09-36W E27 (side)



Details of: LED module for GKS09-36W E40 and GKS09-36W E27 (top)



Attachment No. 4

Photo documentation

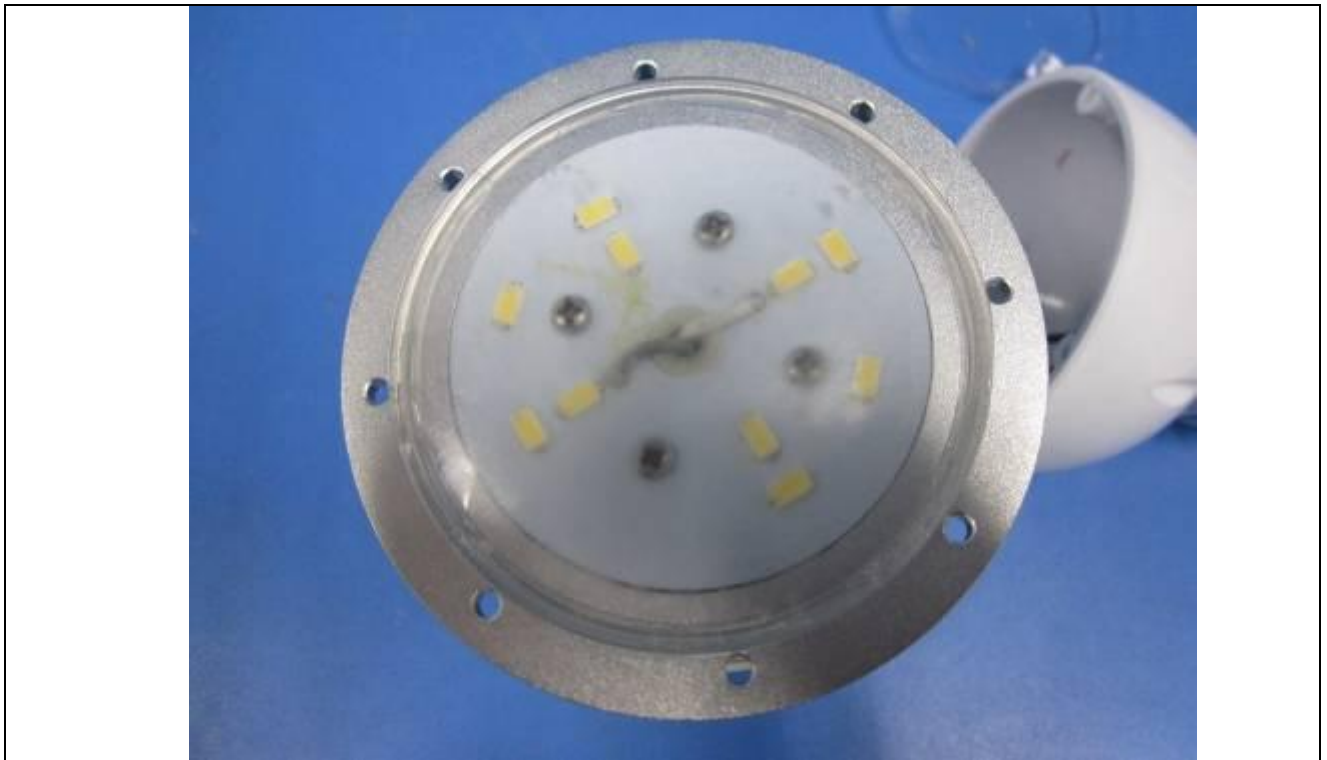
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Details of: LED module for GKS09-27W E40 and GKS09-27W E27 (side)



Details of: LED module for GKS09-27W E40 and GKS09-27W E27 (top)



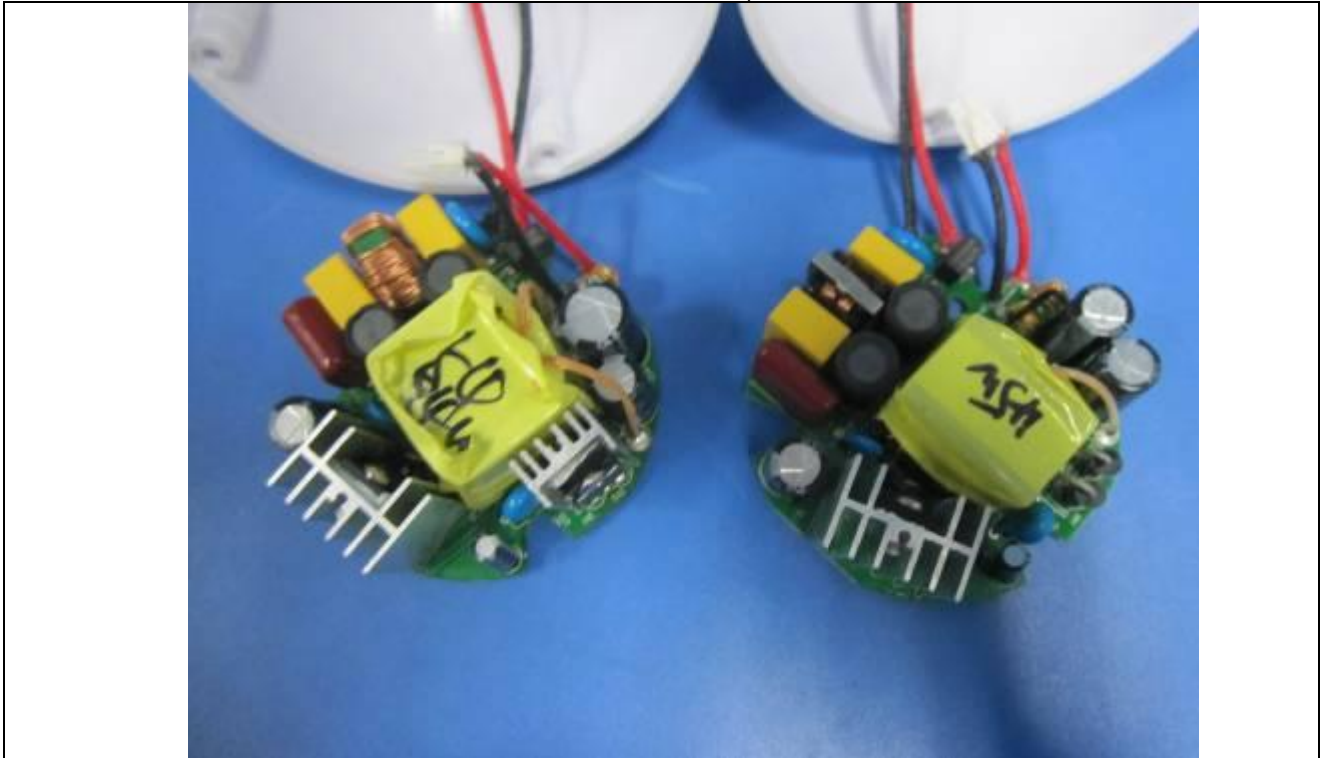
Attachment No. 4

Photo documentation

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Details of: PCB (right for GKS09-54W E40 and GKS09-54W E27;
left for GKS09-45W E40 and GKS09-45W E27)



Details of: PCB layout (right for GKS09-54W E40 and GKS09-54W E27;
left for GKS09-45W E40 and GKS09-45W E27)



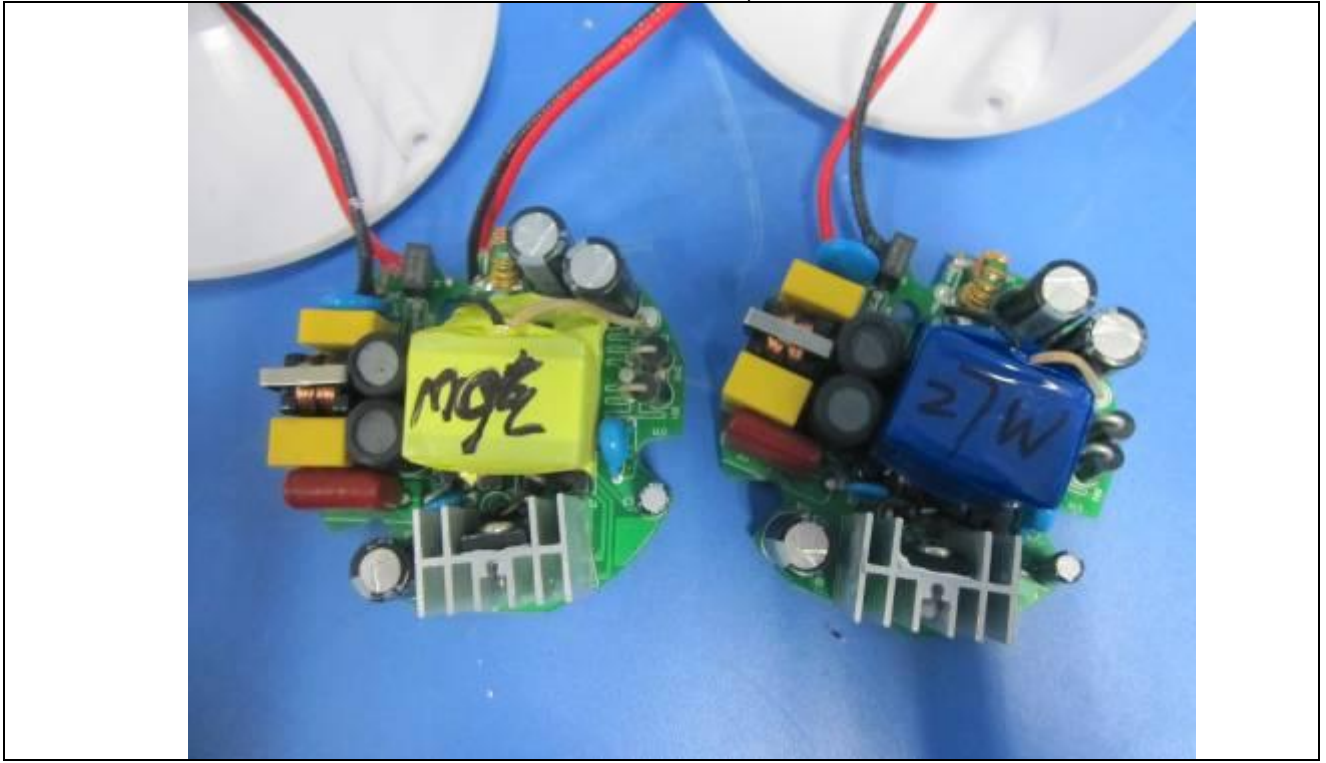
Attachment No. 4

Photo documentation

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Details of: PCB (right for GKS09-36W E40 and GKS09-36W E27;
left for GKS09-27W E40 and GKS09-27W E27)



Details of: PCB layout (right for GKS09-36W E40 and GKS09-36W E27;
left for GKS09-27W E40 and GKS09-27W E27)



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Details of: Transformer



Details of: Transformer

