

Issue No. 2	الشركة السعودية للفحص والاختبار	
Issue Date : 01/10/2020	SAUDI INSPECTION & TESTING CO. (SAITCO)	
Revision No. 3	ملحق 7 - أ: ملاحق متطلبات العملية - نتائج الاختبارات مختبر الكهرباء	
Issue Date : 05/08/2023	Appendix 7-A: LAB process REQ. TEST RESULTS -ELECTRICAL LAB	

Code of product in Lab :	C-032	   
LAB DATA		بيانات المختبر
Laboratory name	اسم المختبر	Saudi Inspection & Testing Co.(SAITCO)
Address	العنوان	1st Industrial Area, St. No.4,5,6,7-Riyadh
Country	الدولة	Saudi Arabia
Client Data		بيانات العميل
Sample Date in	تاريخ استلام العينة	04/03/2024
Date or period of tests	تاريخ / فترة الاختبار	04/03/2024 06/03/2024
Date of report issue	تاريخ اصدار التقرير	07/03/2024
Laboratory test report number	رقم التقرير بالمختبر	E-P-240048
Client Name	اسم العميل	Suzhou Opplé Lighting Co., Ltd
Client Address	عنوان العميل	China
Client Reference No. / Date	مرجع العميل	--
No of received Samples	عدد العينات المستلمة	4pcs
Sample Data		بيانات العينة
Product description	وصف المنتج	LED BULB
Brand name or trademark	العلامة التجارية	OPPLE
Type or reference	النوع / المرجع	LED ES1 HPB E27 20W 6500K
Country of Origin	بلد الصنع	China
Manufacture Name	اسم الصانع	OPPLE Lighting Co., Ltd.
Manufacture Address	عنوان الصانع	Room 411, Building 1 No. 6111,Longdong Avenue, Pudong New District, Shanghai City 201201,P. R. China
Factory Name	اسم المصنع	Suzhou Opplé Lighting Co.,Ltd
Factory Address	عنوان المصنع	China
Products Category	تصنيف المنتج	Self-ballasted LED-lamps for general lighting services
Standard / TR No.	رقم المواصفة / اللانحة	IEC 62612:2013/AMD2:2018, IEC 62560:2011+A1:2015, SASO 2870:2017/AMD1:2021
Test case verdicts		حالات الحكم على نتيجة الاختبار
Conformity to articles tested		☒ Yes ☐ No
Test case does not apply to the test object		Not Applicable N/A
Test item does meet the requirement		Pass P
Test item does not meet the requirement		Fail F

Technical Lab supervisor / Manager



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Clause	Requirement -Test	Result - Remark	Verdict

SASO IEC 62560			
Clause	Requirement-Test	Result-Remarks	Verdict

5	Marking		
5.1	Lamps shall be clearly and durably marked with the following mandatory markings:	-	-
	The manufacturer's name or trade mark	OPPLE	P
	Rated Voltage	220V-240V	P
	Rated wattage	20W	P
	Nature of supply	~	P
	Rated Frequency	50/60Hz	P
5.2	In addition, the following information shall be given by the lamp manufacturer on the lamp or immediate lamp wrapping or container or in installation instruction.	-	-
	a. Rated current	140mA	P
	b. Restriction according the lamp weight, if applicable	-	N/A
	c. Special conditions and restriction for lamp operation (example: in dimming circuits) 	-	P
	e. Lamps with bulbs not suitable for water contact shall be marked with the symbol according to Figure 6. The marking shall be provided on the packaging or accompanying information. The height of the graphical symbol shall be at least 5mm. The symbol is not needed if a written cautionary notice is provided such as "Use in Dry Locations only".  Figure 6 – Lamp not suitable for use under dust and moisture	-	P
According to MOCI no need to verdict any size of the symbol			
5.3	Compliance is checked by the following:	-	-
	Presence and legibility of the marking required in 5.1- by visual inspection	-	P
	The durability of the marking is checked by trying to remove it by rubbing lightly for 15 s with a piece of cloth soaked with water and, after drying, for a further 15 s with a piece of cloth soaked with hexane	-	P
	The marking shall be legible after the test	-	P
5.2 IEC 62612	Places of Marking	1. Product 2. Packaging 3. Datasheets, websites	-
	a- Rated luminous flux / rated color / beam angle (directional lamp)	1,2	P
	b- Lamp photometric code	-	N/A
	c- Rated life (h) and the rated lumen maintenance (x)	2	P
	d- Failure fraction (F _v) corresponding to the rated life	-	N/A
	f- directional lamp only, peak intensity (cd)	-	N/A
	g- Rated colour rendering index	1,2	P
	h- Aging time (h) if different to 0 h	2	P
	I- Rated efficacy	2	P
	j- dimension, including dimensional tolerances	2	P

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	k- displacement factor	-	N/A
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8.2	Humidity test			
	The lamp shall be conditioned for 48hours in a cabinet containing air with a relative humidity between 91% and 95%.	-		P
	The temperature is maintained within 1°C of any convenient value between 20°C and 30°C.	-		P
8.2	Insulation resistance and electric strength			
	Insulation resistance R between:	Required R (MΩ)	R (MΩ)	-
	- between live parts of the cap and accessible parts of the lamp	4	>99.99	P
	- SELV	1	-	N/A

8.3	Electric Strength			
	Voltage applied between :	Test Voltage (V)	Breakdown (Yes/No)	-
	Supply contacts and accessible parts of insulating material of the cap (4U +2000)	2960	No	P
	SELV	-		

SASO IEC 62612				
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8.1	Lamp wattage			
	The initial power consumed by each individual Led lamp in the measured sample shall not exceed more than 10% Average= more than 7.5% Rated: 20W Ave (Limit): 21.5W Max(Limit):22W	Average Power (W)	Measured Power(W)	-
	Sample no.1	18.876W	18.80W	P
	Sample no.2		19.28W	P
	Sample no.3		19.03W	P
	Sample no.4	Rel. diff. between maximum and minimum: (≤0.50%) Sample 1: 0.1% Sample 2: 0.1% Sample 3: 0.2% Sample 4: 0.1%	18.53W	P
9.1	Luminous flux			
	The initial luminous flux each individual Led lamp in the measured sample shall not be less than the rated luminous flux less than 10% Average= less than 7.5% Rated: 2000lm Ave (Limit): 1850lm Min (Limit): 1800lm	Average (Φ) lm	Measured (Φ) lm	-
	Sample no.1	1944.76lm	1950.60lm	P
	Sample no.2		1958.37lm	P
	Sample no.3		1931.80lm	P
	Sample no.4		1938.27lm	P

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SASO 2870

4.0	Requirements for indirect and direct lamps		
4.1	Energy efficiency requirements	-	-
	Lamps listed in Annex A of this Standard shall comply with the energy efficiency requirements specified in Annex C (indirect lamps) according to Table 2, and Annex F (direct lamps) according to Table 8.	Annex C	P
	Energy efficiency classes and the methods of calculating the EEI for lamps are detailed in Annex C (indirect lamps) and Annex F (direct lamps).	Annex C	P
Addition(2870 2021)	It is allowable to use same test report for models in SLS system that are different in color temperature only and have same technical specifications of the product.		P
4.2	Functionality requirements	-	-
	Lamps listed in Annex A of this Standard shall comply with the functionality requirements specified in Annex D (indirect lamps) and Annex G (direct lamps).	Annex D	P
4.3	Marking requirements	-	-
	Instruction manuals supplied with products shall be in the Arabic and English language.	English/Arabic	P
	Cautionary and/or any safety warnings for the direct user or consumer shall be in the Arabic and English language.	-	P
	Internationally accepted pictograms is permitted instead of verbally expressed language.	-	P
	Lamps listed in Annex A of this Standard shall comply with the marking requirements specified in Annex E (indirect lamps) and Annex H (direct lamps).	Annex E	P
Replace(2870 2021)	"Special purpose" lamps (Annex B-3) do not need to comply with the marking requirements specified in Annex E and Annex H. Instead, the following information shall be clearly and prominently indicated on their packaging and in all forms of product information accompanying the lamp when it is placed on the market:	-	N/A
	☐ Brand Name	-	N/A
	☐ Model number	-	N/A
	☐ Rated power(Watt)	-	N/A
	☐ Rated Voltage (Voltage)	-	N/A
	☐ Rated Lumen(lumen)	-	N/A
	☐ Rated color temperature (Kelvin)	-	N/A
	☐ Country of origin	-	N/A
	☐ Their intended purpose	-	N/A
4.4	Hazardous chemicals: Substance restrictions for lamps		-
	Products specified in Annex A and Annex B shall comply with the maximum hazardous substance limits according to Annex I, Tables 16, 17 and 18.	-	N/A
4.5	Energy efficiency label	-	-
	Products requiring compliance to energy efficiency requirements shall bear the energy efficiency label as per Annex J.	-	N/A
5.0	Testing requirements	-	-

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	Lamps listed in this Standard shall be tested under the requirements mentioned in Annex K.	-	P
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ANNEX C	Energy efficiency requirements for indirect lamps	-
C1	Calculation of energy efficiency index	-
	For the calculation of the energy efficiency index (EEI) of a model, its corrected rated power for any control gear losses is compared with its reference power	P
	The EEI is calculated as follows and rounded to two decimal places: EEI = Pcor / Pref	0.14(0.136)
Pcor	For models without external control gear: Pcor = Prated	20
-	For models with external control gear, Pcor is the rated power (Prated) corrected in accordance with the corrections factors listed below:	-
	Lamps operating on external halogen lamp control gear: (Pcor) = Prated × 1.06	N/A
	Lamps operating on external LED lamp control gear: (Pcor) = Prated × 1.10	N/A
	The rated power (Prated) of the lamps is measured at their nominal input voltage.	230V~ 60Hz
Pref	Pref is the reference power obtained from the useful luminous flux of the model (Φ_{use}) by the following formula:	-
-	For models with $\Phi_{use} < 1\,300$ lumen: Pref = 0.88√Φ_{use} + 0.049Φ_{use}	N/A
	For models with $\Phi_{use} \geq 1\,300$ lumen: Pref = 0.07341Φ_{use}	146.82
	luminous flux (Φ_{use}) = Total rated luminous flux (Φ)	2000

C2	Maximum allowable EEI for indirect lamps	P																																																												
	Table 2: Maximum energy efficiency index (EEI) <table><tr><th rowspan="2">Range</th><th colspan="4">Stage 1 (1 May 2016)</th><th colspan="4">Stage 2 (1 May 2017)</th><th colspan="4">Stage 3 (1 Jan 2019)</th></tr><tr><th>Incandescent</th><th>High voltage halogen</th><th>Low voltage halogen</th><th>CFLI & LED</th><th>Incandescent</th><th>High voltage halogen</th><th>Low voltage halogen</th><th>CFLI & LED</th><th>Incandescent</th><th>High voltage halogen¹</th><th>Low voltage halogen</th><th>CFLI & LED</th></tr><tr><td>All lamps with power < 60W</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>0.95</td><td>0.95</td><td>0.5</td><td>0.24</td><td>0.95</td><td>0.5</td><td>0.5</td><td>0.24</td></tr><tr><td>All lamps with power ≥ 60W</td><td>0.95</td><td>0.95</td><td>0.5</td><td>0.24</td><td>0.95</td><td>0.95</td><td>0.5</td><td>0.24</td><td>0.95</td><td>0.5</td><td>0.5</td><td>0.24</td></tr></table>											Range	Stage 1 (1 May 2016)				Stage 2 (1 May 2017)				Stage 3 (1 Jan 2019)				Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED	Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED	Incandescent	High voltage halogen ¹	Low voltage halogen	CFLI & LED	All lamps with power < 60W	n/a	n/a	n/a	n/a	0.95	0.95	0.5	0.24	0.95	0.5	0.5	0.24	All lamps with power ≥ 60W	0.95	0.95	0.5	0.24	0.95	0.95	0.5	0.24	0.95	0.5	0.5	0.24
Range	Stage 1 (1 May 2016)				Stage 2 (1 May 2017)				Stage 3 (1 Jan 2019)																																																					
	Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED	Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED	Incandescent	High voltage halogen ¹	Low voltage halogen	CFLI & LED																																																		
All lamps with power < 60W	n/a	n/a	n/a	n/a	0.95	0.95	0.5	0.24	0.95	0.5	0.5	0.24																																																		
All lamps with power ≥ 60W	0.95	0.95	0.5	0.24	0.95	0.95	0.5	0.24	0.95	0.5	0.5	0.24																																																		

C3	Energy efficiency classes	-
	The energy efficiency rating of lamps shall be determined on the basis of their energy efficiency index (EEI) as outlined in Table 3.	-
	EEI = Pcor / Pref	-
	Table 3: Energy efficiency classes for indirect lamps	
	EEI ≤ 0.11	A
	0.11 < EEI ≤ 0.13	B
	0.13 < EEI ≤ 0.18	C

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	0.18< EEI ≤ 0.24	د	D
	0.24 < EEI ≤0.50	هـ	E
	0.50 <EEI ≤0.95	و	F
	0.95 <EEI ≤1.75	ز	G
	Note: For labelling purposes, the Arabic letters should be used. The equivalent English version is only provided for informational purposes		
Sample no.1 @ 230V	EEI = 0.13	EEI Class = B	
Sample no.2 @ 230V	EEI = 0.13	EEI Class = B	
Sample no.3 @ 230V	EEI = 0.13	EEI Class = B	
Sample no.4 @ 230V	EEI = 0.13	EEI Class = B	

Annex D	Functionality requirements for indirect lamps		P
	The lamp functionality requirements are outlined in Table 4 for indirect compact fluorescent lamps with integrated ballast (CFLi) lamps, Table 5 for indirect LED lamps, and Table 6 for all other indirect lamp types. For the purposes of testing the number of times the lamp can be switched on and off before failure, the switching cycle shall consist of periods comprising 1 minute on and 3 minutes off.	LED	P
	For the purposes of testing lamp lifetime, lamp survival factor, lumen maintenance and premature failure, the standard switching cycle shall be used.	-	P

Table 4: Functionality requirements for indirect compact fluorescent lamps with integrated ballast

Functionality parameter	Requirements	Result(s)	N/A
Lamp survival factor at 6 000h	≥0.70	-	N/A
Lumen maintenance	At 2 000 h: ≥88 %	-	N/A
	second lamp envelope: ≥ 83%	-	N/A
	At 6 000 h: ≥70%	-	N/A
Number of switching cycles before failure	≥half the lamp lifetime expressed in hours	-	N/A
	≥30 000 if lamp starting time > 0.3 s	-	N/A
Starting time	< 1.5s if P < 10W	-	N/A
	< 1.0s if P = 10W	-	N/A
Lamp warm-up time to 60% total rated luminous flux (Φ)	< 40 s or < 100 s for lamps containing mercury in amalgam form	-	N/A
Premature failure rate	≤2.0 % at 400 h	-	N/A
UVA + UVB radiation	≤2.0 mW/klm	-	N/A
UVC radiation	≤0.01 mW/klm	-	N/A
Lamp power factor	≥0.55 if P < 25 W	-	N/A
	≥0.90 if P = 25 W	-	N/A
Color Rendering (Ra)	≥80	-	N/A

Table 5: Functionality requirements for indirect LED lamps

Functionality parameter	Requirement	Result(s)	P
Lamp survival factor at 6 000h	≥0.90	≥0.90	P
Lumen Maintenance at 6 000h	≥0.80	≥0.80	P

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Number of switching cycles before failure	≥15 000 if rated lamp life ≥30000h otherwise:	20000hr	P
	≥half the rated lamp life expressed in hours	-	N/A
Starting time	< 0.5s	0.289	P
Premature failure rate	≤5.0% at 1 000h	0%	P
Color rendering (Ra)	≥80	81.3	P
Color consistency	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less..	-	-
Lamp power factor (PF) for lamps with integrated control gear	P = 2W : no requirement	-	-
	2W < P ≤5W : PF > 0.4	-	-
	W < P ≤ 25W : PF > 0.5	0.58	P
	P > 25W : PF > 0.9	-	-

Table 6: Functionality requirements for all other indirect lamps

Functionality parameter	Requirement	Result(s)	N/A
Rated lamp lifetime	≥ 2 000h	-	N/A
Lumen maintenance	≥ 85% at 75% of rated average lifetime	-	N/A
Number of switching cycles	≥ four times the rated lamp life expressed in hours	-	N/A
Starting time	< 0.2s	-	N/A
Lamp warm-up time to 60% total rated luminous flux (Φ)	≤1.0s	-	N/A
Premature failure rate	≤ 5.0% at 200h	-	N/A
Lamp power factor	≥0.95	-	N/A

ANNEX E Marking requirements for Indirect lamps			
-	The following should be printed on the bulb with non-removable ink:		-
	Brand Name	OPPLE	P
	Input Voltage	220V-240V	P
2870(2021) replace	Rated power (Watt)	20W	P
	Country of Origin	China	P
	Information shall be visibly displayed prior to purchase to end-users on the packaging and/or on an accompanying catalogue, in addition the information should be displayed on free access websites (English and/or Arabic).	-	P
2870(2021) replace	The information does not need to be specified using the exact wording of the list below. It may be displayed using graphs, figures or symbols rather than text:	-	-
	a. Brand name	OPPLE	P
	b. Model number	LED ES1 HPB E27 20W 6500K	P
	c. Rated Input voltage(Volt)	220V-240V	P
	d. Lamp type (Indirect)	Indirect	P
	e. Country of origin	China	P
	f. Lamp technology (Incandescent/Halogen/CFLi/LED)	LED	P
	g. Cap type	E27	P
	h. Rated lamp power (Watt)	20W	P
	i. Rated luminous flux (Lumens)	2000lm	P

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j. Rated efficacy (Lumens/Watt)	100lm/W	P
k. Rated life time (hours)	20000hrs	P
l. Rated Number of switching cycles before up to B50 lifetime	20000 times	P
m. Rated Color temperature (Kelvin)	6500K	P
n. Rated power factor	0.58	P
o. Rated color rendering (percentage)	>80	P
p. Lamp mercury content as X.X mg (applicable only to lamps that contains mercury) (milligrams).	No Hg	N/A
q. Following information shall be displayed on free-access websites or in any other form the manufacturer deems appropriate: - how to clean lamp debris in case of accidental lamp breakage and disposal of lamp at the end of life, when relevant; - About actual values of the hazardous content, when relevant	-	N/A

ANNEX F	Energy efficiency requirements for direct lamps		-
F1	Calculation of energy efficiency index	-	N/A
	The energy efficiency index (EEI) of the lamp is calculated as follows and rounded to two decimal places: EEI= Pcor / Pref	-	N/A
Pcor	Pcor is the rated power (Prated) measured at nominal input voltage and corrected where appropriate in accordance with Table 7. The correction factors are cumulative where appropriate.	-	N/A
-	Lamps operating on external halogen lamp control gear: Prated × 1.06	-	N/A
	Lamps operating on external LED lamp control gear: Prated × 1.10	-	N/A
	Compact fluorescent lamps with color rendering index ≥ 90: Prated × 0.85	-	N/A
	Lamps with anti-glare shield: Prated × 0.80	-	N/A
Pref	Pref is the reference power obtained from the useful luminous flux of the lamp (Φuse) by using the following formula:	-	N/A
-	For models with $\Phi_{use} < 1300$ lumen: Pref = 0.88√Φuse + 0.049Φuse	-	N/A
	For models with $\Phi_{use} \geq 1300$ lumen: Pref = 0.07341Φuse	-	N/A
	Φuse is defined as:	-	N/A
	Rated luminous flux present in a 120° cone (Φ_{120°) for direct lamps meeting all the following conditions: - Having a beam angle ≥ 90° - Being of type different than a filament lamp - Carrying a warning on their packaging in accordance with point (j) of Annex H (Information requirements on packaging and free access websites)	-	N/A

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	Rated luminous flux present in a 90° cone (Φ90°) for all other direct lamps	-	N/A
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F2	Maximum allowable EEI for direct lamps	-	N/A
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Table 8: Maximum energy efficiency index (EEI)

Range	Stage 1 (1 May 2016)				Stage 2 (1 May 2017)				Stage 3 (1 Jan 2019)			
	Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED	Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED	Incandescent	High voltage halogen	Low voltage halogen	CFLI & LED
All lamps with power < 60W	n/a	n/a	n/a	n/a	0.95	1.75	0.95	0.24	0.95	0.95	0.95	0.24
All lamps with power ≥ 60W	0.95	1.75	0.95	0.24	0.95	1.75	0.95	0.24	0.95	0.95	0.95	0.24

F3	Energy efficiency classes	N/A
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The energy efficiency rating of lamps shall be determined on the basis of their energy efficiency index (EEI) as outlined in Table 9.

$$EEI = P_{cor} / P_{ref}$$

Table 9: Energy efficiency classes for direct lamps

EEI ≤ 0.11	أ	A
0.11 < EEI ≤ 0.13	ب	B
0.13 < EEI ≤ 0.18	ج	C
0.18 < EEI ≤ 0.24	د	D
0.24 < EEI ≤ 0.50	هـ	E
0.50 < EEI ≤ 0.95	و	F
0.95 < EEI ≤ 1.75	ز	G

Note: For labelling purposes, the Arabic letters should be used. The equivalent English version is only provided for informational purposes

ANNEX H Marking requirements for Direct lamps

-	The following should be printed on the bulb with non-removable ink:	-
	Brand Name	N/A
	Input Voltage	N/A
2870(2021) replace	Rated power	N/A
	Country of Origin	N/A
	Information shall be visibly displayed prior to purchase to end-users on the packaging and/or on an accompanying catalogue, in addition the information should be displayed on free access websites (English and/or Arabic).	N/A
2870(2021) replace	The information does not need to be specified using the exact wording of the list below. It may be displayed using graphs, figures or symbols rather than text:	N/A
	a. Brand name	N/A
	b. Model number	N/A
	c. Rated Input voltage (Volt)	N/A
	d. Rated lamp power (Watt)	N/A
	e. Lamp type (Direct)	N/A
	f. Country of origin	N/A
	g. Lamp technology (Incandescent/Halogen/CFLi/LED)	N/A
	h. Cap type	N/A

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i. Rated luminous flux (Lumens)	-	N/A
j. Rated efficacy (lumens/watt)	-	N/A
k. Rated life time (hours)	-	N/A
l. Rated Color temperature(Kelvins)	-	N/A
m. Rated Number of switching cycles before premature failure.	-	N/A
n. Warm-up time up to 60 % of the full light output	-	N/A
o. Rated color rendering (percentage)	-	N/A
p. Lamp mercury content as X.X mg (applicable only to lamps that contains mercury) (milligrams)	-	N/A
q. Place the information to refer to in the event of an accidental breakage of the lamp to find instructions on how to clean lamp debris provided on the manufacturer's website or any other form the manufacturer deems appropriate.	-	N/A
r. A warning if the lamp cannot be dimmed or can be dimmed only on specific dimmers; in the latter case, a list of compatible dimmers shall be also provided on the manufacturer's website or any other form the manufacturer deems appropriate.	-	N/A
s. Following information are optional:	-	N/A
- If designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25^\circ\text{C}$ or specific thermal management is necessary), provide information on those conditions.	-	N/A
If the lamp's beam angle is $\geq 90^\circ$ and its useful luminous flux as defined in Annex F is to be measured in a 120° cone, a warning that the lamp is not suitable for accent lighting.	-	N/A
If the lamp cap is a standardized type also used with filament lamps, but the lamp's dimensions are different from the dimensions of the filament lamp(s) that the lamp is meant to replace, provide a drawing comparing the lamp's dimensions to the dimensions of the filament lamp(s) it replaces.	-	N/A
- An indication that the lamp is of a type listed in the first column of Table 13 may be displayed only if the luminous flux of the lamp in a 90° cone ($\phi 90^\circ$) is not lower than the reference luminous flux indicated in Table 13 for the smallest wattage among the lamps of the type concerned. The reference luminous flux shall be multiplied by the correction factor in Table 14. For LED lamps, it shall be in addition multiplied by the correction factor in Table 15.	-	N/A
- An equivalence claim involving the power of a replaced lamp type may be displayed if the lamp type is listed in Table 13 and if the luminous flux of the lamp in a 90° cone ($\phi 90^\circ$) is not lower than the corresponding reference luminous flux in Table 13. The reference luminous flux shall be multiplied by the correction factor in Table 14. For LED lamps, it shall be in addition multiplied by the correction factor in Table 15. The intermediate values of both the luminous flux and the claimed equivalent lamp power (rounded to the nearest 1 W) shall be calculated by linear interpolation between the two adjacent values.	-	N/A
t. Following information shall be displayed on free-access websites or in any other form the manufacturer deems appropriate: - how to clean lamp debris in case of accidental lamp breakage and disposal of lamp at the end of life, when relevant;	-	N/A

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	- About actual values of the hazardous content, when relevant		
--	---	--	--

2870(2021) after table 15 Delete	If the lamp contains mercury:	-
	(a) Lamp mercury content as X.X mg.	-
	(o) Indication of which website to consult in case of accidental lamp breakage to find instructions on how to clean up the lamp debris.	-

Table 5: Functionality requirements for indirect LED lamps

No. of sample	Test Voltage (V)	Luminous Flux (lm)		Lumen Maintenance (%)	Premature failure rate	Lamp survival Factor	Ra	Power factor	CCT (K)
		Initial	@6000H	6000H	At 1000H	At 6000H	At 6000H	At 6000H	At 6000H
1	220	1950.60	1869.0	95.8	0%	100%	-	-	-
2	220	1958.37	1731.1	88.3	0%	100%	-	-	-
3	220	1931.80	1740.9	90.1	0%	100%	-	-	-
4	220	1938.27	1761.3	90.8	0%	100%	-	-	-
Average	220	1944.76	1775.575	91.25	0%	100%	81.3	0.58	-
Requirement	-	-	-	≥80%	≤5%	≥90%	≥80	2W < P ≤ 5W : PF > 0.4	-

Parameter	Rated	Measured (average) @230V	Limit	Verdict
Rated Power	20W	17.96W	Power (Max. 1.1x Rated Power) (22W)	P
Luminous Flux	2000lm	1944.76lm	Luminous Flux (Min. 0.90 x Rated Lumen) (1800lm)	P
Color temperature	6500K	6688.5K	Color temperature (Min x 0.9, Max x 1.1) (5850K – 7150K)	P
Calculated Rated EEI	0.14	0.13	Tolerance (within 10% of the rated EEI) 0.15	P

Remarks:

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Clause	Requirement -Test		Result - Remark	Verdict

Photo no.1 (Marking)



Photo no.2 (General view / External packaging)

Features
High lumen output, Low power consumption, Long life span, High Color Rendering Index, Eco friendly. Contains no mercury, lead or cadmium.

Specification
 * Model: LED ES1 HPB E27 20W 6500K
 * Rated Voltage: 220V-240V~ 50/60Hz
 * Operation Voltage: 176V-264V~ 50/60Hz
 * Rated Power: 20W PF:0.58
 * Rated Current: 140mA
 * Color Temperature: 6500K Daylight
 * Color : White Weight: 0.00kg
 * Base: E27
 * CRI: >80
 * Beam Angle: 200°
 * Lamp Type: Indirect
 * Efficacy: 100lm/W
 * Switching Cycles: 20,000 times

Cautions
 1. Switch power off before installation.
 2. Operation temperature is -30°C-40°C.
 3. Do not use in closed luminaires.
 4. Contact your supplier for any queries.
 Pictures for your reference only.
 Please check the actual product.

الخطرات:
 1. قبل تركيب المصباح، يرجى إيقاف التيار الكهربائي.
 2. درجة حرارة التشغيل: -30°C-40°C.
 3. لا تستخدم في مصابيح الإضاءة المغلقة.
 4. للتأكد من المصباح، بعد وقوع التسليم، يرجى التحقق من المنتج الفعلي.
 الصور للمرجع فقط.

85% energy saving compared with incandescent
 Ahorra 85% de energía en comparación con lámpara incandescente
 Economiza 85% de energía comparado con lámpara incandescente
 85% экономии энергии по сравнению с лампами накаливания

حفظ طاقة بنسبة 85% مقارنة بالمصابيح المتوهجة العادية

A BRIGHTER WAY TO MORE SAVINGS

ENERGY LABEL: A+
 20KWh/1000h

Opplle Lighting Co.,Ltd.
 www.opplle.com Made in China

Model Number	LED ES1 HPB E27 20W 6500K
Luminous Flux (lm)	2000
Rated Power (W)	20
Efficacy (lm/W)	100
Df	0.9
Life Time (H)	20000
Color Temperature (K)	6500
Switching Cycle (X)	20000
Color Rendering (Ra)	80
Beam Angle (°)	120
Type	Non-direct

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Photo no.3 (Energy efficiency label / QR code)



Test Report No :	E-P-240048	Standard No:	IEC 62560, IEC 62612 SASO 2870
Clause	Requirement -Test		Result - Remark Verdict

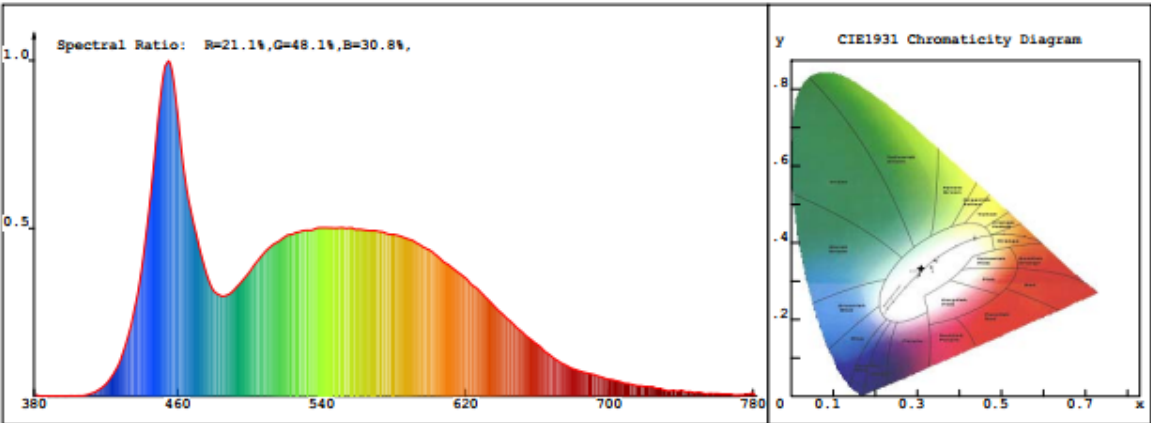
Photo no.4 (Photometric result no.1)

SAITCO GUANGZHOU CO. LTD.

LED Test Report

Product Mark
Product Type : LED INCANDESCENT
Temperature : 23°C
Operator : SAITCO CHINA
Remark: LED ES1 HPB E27 20W 6500K

Manufacturer : OPPL
Humidity : 65%
Test Date : 2024-03-05 14:56:53



Chroma Parameters
Chro.Coor.:x=0.3091 y=0.3332 u=0.1938 v=0.3134 duv=0.0071
CCT: 6664K Dominant Wave.:491.7nm Purity:8.2% Centre Wave:455.2nm
Flux RGB Ratio:R=12.5%,G=83.1%,B=4.4% Peak Wave:453.6nm Half Width:26.7nm

Rendering Index:Ra= 83.8 CRI= 79.3
R1 =81 R2 =89 R3 =94 R4 =82 R5 =82 R6 =85 R7 =89 R8 =70
R9 =7 R10=74 R11=81 R12=59 R13=84 R14=97 R15=76
Fidelity Index(Rf)=82.0 Gamut Index(Rg)=93.3

Photo Parameters
Flux:1950.60lm Effi.:110.4lm/W Radiant:6433.9mW Ri:0.0mW/sr
Efficiency:0.12 Effi Level:B (SASO2870)

Ele. Parameters
Voltage:U=230.10V Current:I=0.1340A
Power:P=17.750W Power Factor:PF=0.573

Instrument state
Instrument:Hopoo HP8000
VDark: 1272

Integral Time: 42.031ms
Scan Range: 380-780nm

VPeak: 13717
Product ID: 201806529

Test Report No :	E-P-240048	Standard No:	IEC 62560, IEC 62612 SASO 2870
Clause	Requirement -Test		Result - Remark Verdict

Photo no.5 (Photometric result no.2)

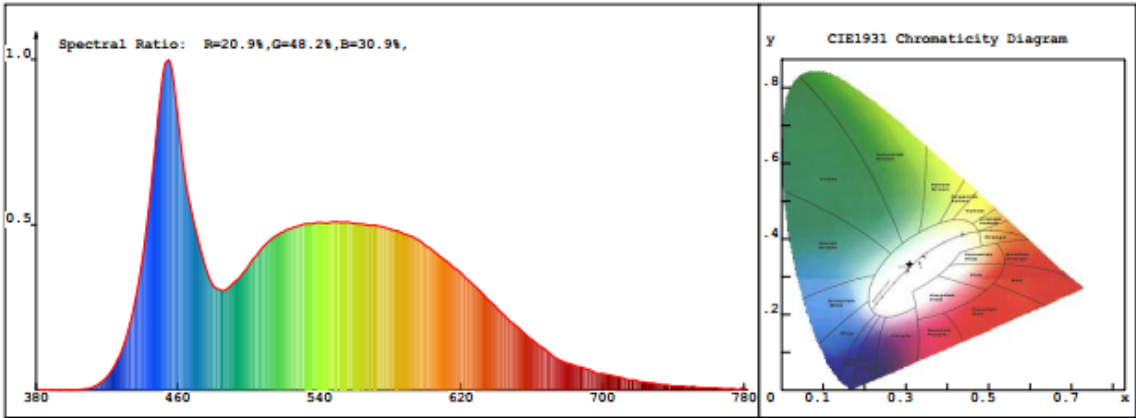
SAITCO GUANGZHOU CO. LTD.

LED Test Report

Product Mark

Product Type : LED INCANDESCENT
Temperature : 23'C
Operator : SAITCO CHINA
Remark: LED ES1 HPB E27 20W 6500K

Manufacturer : OPPL
Humidity : 65%
Test Date : 2024-03-05 15:17:25



Chroma Parameters

Chro.Coar.:x=0.3091 y=0.3336 u=0.1937 v=0.3135 duv=0.0073
CCT: 6661K Dominant Wave.:491.9nm Purity:8.2% Centre Wave:455.1nm
Flux RGB Ratio:R=12.4%,G=83.2%,B=4.4% Peak Wave:453.6nm Half Width:26.9nm

Rendering Index:Ra= 83.6 CRI= 79.0

R1 =81 R2 =89 R3 =93 R4 =81 R5 =82 R6 =85 R7 =89 R8 =69
R9 =6 R10=74 R11=80 R12=60 R13=83 R14=97 R15=76
Fidelity Index(Rf)=82.0 Gamut Index(Rg)=93.2

Photo Parameters

Flux:1958.37lm Effi.:109.2lm/W Radiant:6429.0mW Ri:0.0mW/sr
Efficiency:0.13 Effi Level:B (SASO2870)

Ele. Parameters

Voltage:U=230.10V Current:I=0.1360A
Power:P=18.020W Power Factor:PF=0.573

Instrument state

Instrument:Hopoo HP8000 Integral Time: 42.031ms VPeak: 13557
VDark: 1272 Scan Range: 380-780nm Product ID: 201806529

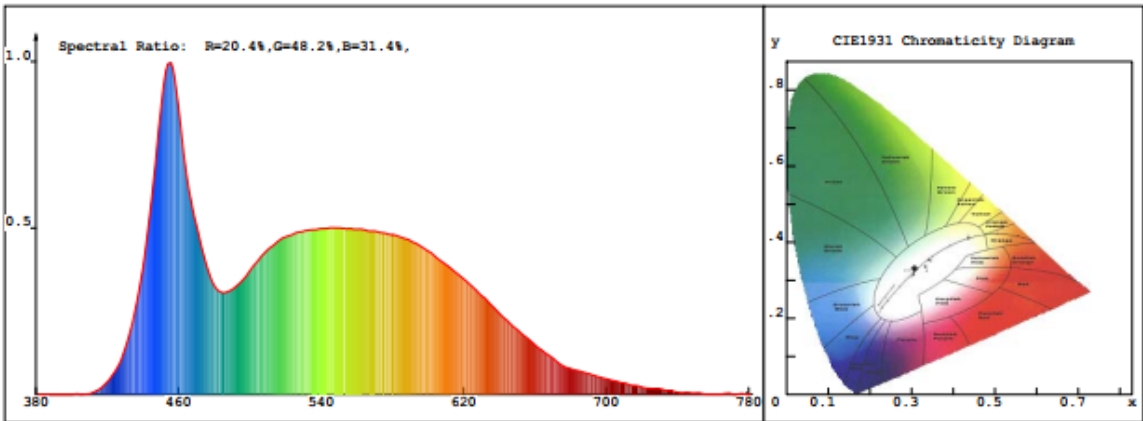
Test Report No :	E-P-240048	Standard No:	IEC 62560, IEC 62612 SASO 2870
Clause	Requirement -Test	Result - Remark	Verdict

Photo no.6 (Photometric result no.3)

SAITCO GUANGZHOU CO. LTD.

LED Test Report

Product Mark
Product Type : LED INCANDESCENT
Temperature : 23'C
Operator : SAITCO CHINA
Remark: LED ES1 HPB E27 20W 6500K
Manufacturer : OPPL
Humidity : 65%
Test Date : 2024-03-05 15:44:08



Chroma Parameters
Chro.Coor.:x=0.3076 y=0.3316 u=0.1934 v=0.3127 duv=0.0071
CCT: 6758K Dominant Wave.:490.9nm Purity:8.8% Centre Wave:455.8nm
Flux RGB Ratio:R=12.4%,G=83.1%,B=4.5% Peak Wave:453.6nm Half Width:27.5nm
Rendering Index:Ra= 83.8 CRI= 79.3
R1 =81 R2 =90 R3 =94 R4 =81 R5 =82 R6 =85 R7 =89 R8 =69
R9 =7 R10=75 R11=80 R12=59 R13=84 R14=97 R15=76
Fidelity Index(Rf)=81.8 Gamut Index(Rg)=92.9

Photo Parameters
Flux:1931.80lm Effi.:106.5lm/W Radiant:6320.2mW Ri:0.0mW/sr
Efficiency:0.13 Effi Level:B (SASO2870)

Ele. Parameters
Voltage:U=230.20V Current:I=0.1370A
Power:P=18.230W Power Factor:PF=0.575

Instrument state
Instrument:Hopoo HP8000 Integral Time: 42.031ms VPeak: 13558
VDark: 1300 Scan Range: 380-780nm Product ID: 201806529

Test Report No :	E-P-240048	Standard No:	IEC 62560, IEC 62612 SASO 2870
Clause	Requirement -Test	Result - Remark	Verdict

Photo no.7 (Photometric result no.4)

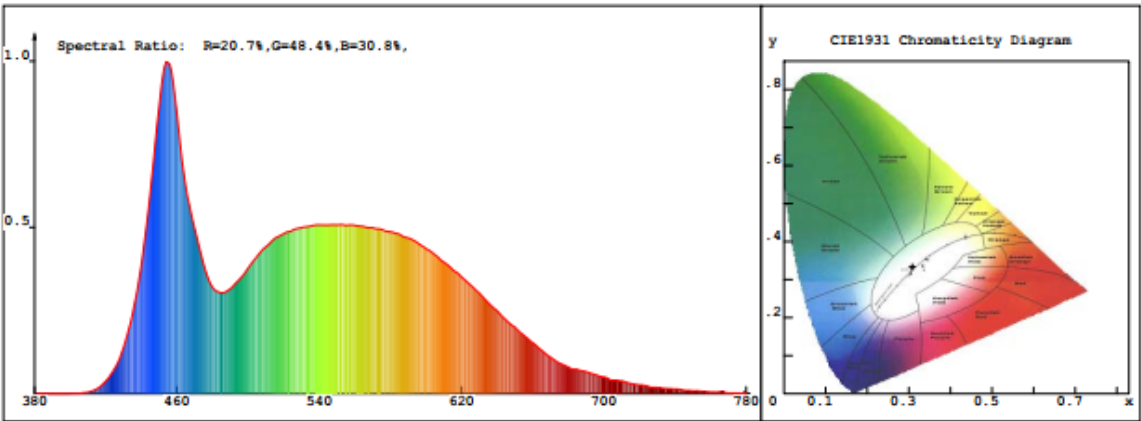
SAITCO GUANGZHOU CO. LTD.

LED Test Report

Product Mark

Product Type : LED INCANDESCENT
Temperature : 23°C
Operator : SAITCO CHINA
Remark: LED ES1 HPB E27 20W 6500K

Manufacturer : OPPL
Humidity : 65%
Test Date : 2024-03-05 16:04:35



Chroma Parameters

Chro.Coar.:x=0.3089 y=0.3341 u=0.1933 v=0.3137 duv=0.0077
CCT: 6671K Dominant Wave.:492.2nm Purity:8.2% Centre Wave:455.3nm
Flux RGB Ratio:R=12.4%,G=83.2%,B=4.4% Peak Wave:453.6nm Half Width:26.9nm

Rendering Index:Ra= 83.4 CRI= 78.9

R1 =81 R2 =89 R3 =94 R4 =81 R5 =81 R6 =85 R7 =89 R8 =69
R9 =5 R10=73 R11=80 R12=59 R13=83 R14=97 R15=75
Fidelity Index(Rf)=81.8 Gamut Index(Rg)=92.9

Photo Parameters

Flux:1938.27lm Effi.:108.8lm/W Radiant:6339.7mW Ri:0.0mW/sr
Efficiency:0.13 Effi Level:B (SASO2870)

Ele. Parameters

Voltage:U=230.30V Current:I=0.1350A
Power:P=17.820W Power Factor:PF=0.573

Instrument state

Instrument:Hopoo HP8000 Integral Time: 42.031ms VPeak: 13461
VDark: 1280 Scan Range: 380-780nm Product ID: 201806529

F07-08-02 A	Page 17 of 18	Issued By: QGM	Approved By: GM
Issue No: 2	Issue Date : 01/10/2020	Revision No: 3	Revision Date : 05/08/2023
SAITCO First Industrial City area, Riyadh Station area beside dry customs St.4,5,6,7 Building No.2433, Riyadh 11427, PO 27711, Tel : +966 11 2043000,Fax +966 1 2042888, www.saitco.com.sa			

Test Report No :	E-P-240048	Standard No:	IEC 62560, IEC 62612 SASO 2870
Clause	Requirement - Test	Result - Remark	Verdict

Conformity Decision is usually included in the report, unless the agreement states otherwise by the client.				
Results Notes: The acceptance criterion is based on :		A-The relevant TR Requirements ☐		B-The relevant standard specifications ☐
		C- Manufacturer's manual (product technical data sheet) ☐		D- Customer requirements ☐
Acceptance Rule is based on:		Special Case	Rejection Rule (Failing) is based on:	
A- The measured value (+) measurement uncertainty value is less than the maximum required to criteria of acceptance. B- The measured value (-) measurement uncertainty value is greater than the minimum required to criteria of acceptance.	Accept when a confidence level of less than 95% is acceptable	May be accept if: Measured result $\leq$ the upper limit Measured result $\geq$ lower limit May be rejected if: measured value $<$ the upper limit measured result $>$ lower limit	Reject when a confidence level of less than 95% is acceptable	A- The measured value (+) measurement uncertainty value is greater than the maximum required to criteria of acceptance. B- The measured value (-) measurement uncertainty value is less than the minimum required to criteria of acceptance.
◆ = measurement result with agreed method			I = uncertainty interval of agreed method	

☒ The sample passed all the above-mentioned tests in accordance with the requirements of the product			
☐ The sample passed all the tests mentioned above in accordance with the requirements for the product, except for the test where the measured value does not meet the requirements of the product mentioned in the attached standard specifications.			
The result is for the sample referred to in the report, which has been tested only and is only representative of itself.			
Accreditation statues :	All tests are accredit : ☐	All tests are accredit except:	
REMARK :			
SOFT COPY OF THE CONTROL TEST RESULT SHEET IS AUDITED BY THE LAB SUPERVISOR			
Name	Inspected by Patrick pereira	Lab supervisor/ Reviewer Mark benson	Technical Manager Ahmed awad
Sign			
Date	08/03/2024	08/03/2024	08/03/2024
“End of Report”			