



中国认可  
国际互认  
检测  
TESTING  
CNAS L6478



# TEST REPORT

**Reference No.**..... : WTF21F01000599N  
**Applicant**..... : Shada BV  
**Address**..... : Molenmakershoek 28 NL-7328 JK Apeldoorn  
**Manufacturer**..... : Shada BV  
**Address**..... : Molenmakershoek 28 NL-7328 JK Apeldoorn  
**Product Name**..... : LED LUMINAIRE  
**Model No.**..... : 2400325  
**Ratings**..... : 220-240VAC, 50/60Hz, 40W  
**Standards**..... : In situ temperature measurement test (ISTMT) and TM-21-11  
**Date of Receipt sample**..... : 2021-01-05  
**Date of Test**..... : 2021-01-05 to 2021-01-18  
**Date of Issue**..... : 2021-01-18  
**Test Report Form No.**..... : WPL-ISTMT-02A  
**Test Result**..... : See the attached sheets

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

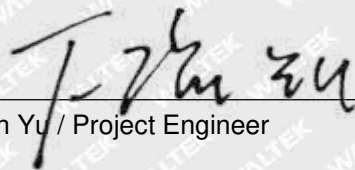
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Compiled by:

  
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Approved by:



  
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**Trade Mark:**

**General remarks:**

"(See Attachment #)" refers to additional information appended to the report.

"(See remark #)" refers to a remark appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

**Remark:**

1. Measurement was conducted at voltage 230VAC 50Hz and at a stable ambient temperature  $25^{\circ}\text{C}\pm 1^{\circ}\text{C}$ .
2. Detail information for models covered in this report as below:

Item	Model	Ratings	CCT	LED Type	Driver
1	2400325	220-240VAC, 50/60Hz, 40W	4000K	SMD 2835	---

**LED specification:**

Model / Series	Manufacturer	$V_F$ (V)	$I_F$ (mA)	CCT (K)	Viewing angle (Deg)
2835 White SMD LED	ShenZhen JuFei Optoelectronics Co., Ltd.	3	60	4000K	---

**Possible test case verdicts:**

- test case does not apply to the test object ..... : N (Not applicable)
- test object does meet the requirement ..... : P (Pass)
- test object does not meet the requirement ..... : F (Fail)



## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

#### General Description:

Product Type .....	LED LUMINAIRE
Manufacturer .....	Shada BV
Product Model No. ....	2400325
Product Brand Name .....	N/A
Rated Voltage/Frequency .....	220-240VAC, 50/60 Hz
Rated Power .....	40W
Nominal CCT.....	4000K

### 1.2 Information of LED Light Source(tested in IES LM-80 Test Report)

Model No. ....	2835 White SMD LED
LED Type .....	SMD 2835
Manufacturer .....	ShenZhen JuFei Optoelectronics Co., Ltd.
Nominal CCT.....	3000K
Total Number of Test Units .....	75 pcs (25 pcs for each temperature)
Total Test Duration .....	10000 hours
Tested Driver Current .....	60mA
First Case Temperature .....	55 °C
Second Case Temperature .....	85 °C
Third Case Temperature .....	105 °C

### 1.3 Reference Standard

IEC 60598-1:2020 Luminaires - Part 1: General requirements and tests

IES LM-84-14 Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminaires---Annex A: measurement of in-situ conditions LED case temperature

IES TM-21-11 Projecting Long Term Lumen Maintenance of LED Light Sources

IES LM-80-08 Approved Method: Measuring Lumen Maintenance of LED Light Source

IES LM-80-15 Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

### 1.4 Test Facility

The test facility used by Waltek Testing Group (Foshan) Co., Ltd. is located at No. 13-19, 2/F, 2nd Building, Sunlink International Machinery City, Chencun Town, Shunde District, Foshan, Guangdong, China.

### 1.5 Test Summary

In-situ temperature measurement test (ISTMT) for one sample using IEC 60598-1, including sections 12.4.1.

Statement confirming the measurement method follows IES LM-84-14 Annex A.



### 1.6 Test Equipment

Equipment	Model/Type	Cal. Due. Date
AC Power Source	ALL POWER APW-150	--
Power meter	YOKOGAWA WT310E	2021-02-24
Multimeter	FLUKE 15B	2021-02-24
Temperature Recorder	Agilent 34970A	2021-02-24

### 2 - Temperature Measurement Data

The samples were operated until constant temperatures were obtained. A temperature was considered constant if the sample was operating for at least three hours and upon three successive readings - taken at 15 minute intervals - were within one degree and were not rising.

Thermocouples were attached at locations described in the results by means of a cement made of water glass and Fuller's earth, solder, or epoxy.

### 3 - Life Measurement Data

Test Method:

Lumen maintenance life of LED light source and LED lamp or luminaire (if any) is the elapsed operating time over which an LED light source maintains a given percentage of its initial light output. L70 in this report is the time (in hours) when the light output from the LED has dropped to 70% of its initial output. A lumen maintenance test report of LED light sources was provided by client to calculate the lumen maintenance life according to IES TM-21-11.

The LED light source is LED package, array, or module which is tested in IES LM-80 test report. Final product means LED lamp or luminaire which the LED light source will be included. Ts is the temperature of the thermocouple attachment point on the LED light source package as defined by the manufacturer of the LED light source. The in situ temperature of LED light source used in final product was used to calculate the lumen maintenance life of final product, if any.

Reported L70: For a sample size of 20 units or more, luminous flux values must not be projected beyond 6 times the total test duration (in hours) of measured data. For a sample size of 10 units to 19 units, luminous flux values must not be projected beyond 5.5 times the total test duration of measured data.

All test data used in this report is from report No.: R2DG160507060-10-10000 which is issued by Bay Area Compliance Laboratories Corp. (Dongguan). (Laboratory), issue date: 2017-07-11.



#### 4 - Appended-Test Data Sheet

##### 4.1 ISTMT Test Result of Product

Ambient Temperature, °C :	25±1°C	Relative Humidity, % :	65%
Supply voltage:	230 V / 50 Hz	Type of thermocouples:	J
Test Product Model.	2400325		
Test LED Model.	2835 White SMD LED		
Test LED Driver Model.	---		
Number of Driver / Product	One Lamp with a power supply		
Test Duration	≥3.5Hours		
Sample number	Test Location	Location Description	Test Result at 25°C (°C)
#1	101	Temperature for LED #1	43.0
	102	Temperature for LED #2	<b>45.8</b>
	103	Temperature for LED #3	44.7
	104 (Tc)	Temperature for LED Driver	52.2
<b>LED drive current (Forward current of LEDs)*</b>		<b>59mA</b>	
<p><b>*Note:</b>  <b>Test instructions for Forward current of LEDs as below:</b>  <b>There is one LED array connected in parallel within the product. Within each LED array, there are 6 strings connected in parallel. Within each strings, there are 38 LED chips connected in series. In total there are 228 LED chips used in the product.</b>  <b>The average output current of driver measured by a multimeter is 354mA. There is one LED array in parallel, and each LED array has 6 strings connected in parallel. Therefore, the current of each string is calculated to be 59mA (354/6), which is the average forward current of LEDs. The current is the result of indirect test and calculation.</b></p>			



#### 4.2 Test Data of LED Light Source

Test Data for 55°C Case Temperature		Test Data for 85°C Case Temperature		Test Data for 105°C Case Temperature	
Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
0	100.00%	0	100.00%	0	100.00%
1000	100.30%	1000	100.19%	1000	100.10%
2000	100.10%	2000	99.91%	2000	99.70%
3000	99.94%	3000	99.64%	3000	99.32%
4000	99.77%	4000	99.37%	4000	98.96%
5000	99.61%	5000	99.16%	5000	98.83%
6000	99.40%	6000	98.88%	6000	98.59%
7000	99.25%	7000	98.63%	7000	98.32%
8000	99.07%	8000	98.38%	8000	98.02%
9000	98.87%	9000	98.15%	9000	97.69%
10000	98.64%	10000	97.88%	10000	97.39%

#### 4.3 Calculate Result of LED Light Source

Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		Manufacturer: ShenZhen JuFei Optoelectronics Co., Ltd. Model: 2835 White SMD LED LM-80 report number: R2DG160507060-10-10000			
Test Condition 1 - 55 C Case Temp		Test Condition 2 - 85 C Case Temp		Test Condition 3 - 105 C Case Temp	
Sample size	25	Sample size	25	Sample size	25
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	60	DUT drive current used in the test (mA)	60	DUT drive current used in the test (mA)	60
Test duration (hours)	10,000	Test duration (hours)	10,000	Test duration (hours)	10,000
Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000	Test duration used for projection (hour to hour)	5,000 - 10,000
Tested case temperature ( C)	55	Tested case temperature ( C)	85	Tested case temperature ( C)	105
$\alpha$	1.908E-06	$\alpha$	2.564E-06	$\alpha$	2.970E-06
B	1.006	B	1.004	B	1.003
Calculated L70(10k) (hours)	190,000	Calculated L70(10k) (hours)	141,000	Calculated L70(10k) (hours)	121,000
Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	>60000	Reported L70(10k) (hours)	>60000



#### 4.4 Calculate Result of Product

<b>Model:</b> 2400325	
<b>In-Situ Inputs</b>	
Drive current for each LED package/array/module (mA):	59
In-situ case temperature (T <sub>c</sub> , °C):	45.8
Percentage of initial lumens to project to (L <sub>70</sub> ):	70
<b>Results</b>	
Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	91.42%
Calculated L70 (hours):	190,000
Reported L70 (hours):	>60000
<b>Interpolation Report</b> (projection based on <i>in-situ</i> temperature entered)	
T <sub>s,1</sub> ( C)	55.00
T <sub>s,1</sub> (K)	328.15
α <sub>1</sub>	1.908E-06
B <sub>1</sub>	1.006
T <sub>s,2</sub> ( C)	-
T <sub>s,2</sub> (K)	-
α <sub>2</sub>	-
B <sub>2</sub>	-
E <sub>a</sub> /k <sub>b</sub>	-
A	-
B <sub>0</sub>	1.006
T <sub>s,i</sub> ( C)	45.80
T <sub>s,i</sub> (K)	318.95
α <sub>i</sub>	1.908E-06
Projected L70(10k) at 45.8 C (hours)	190,000
Reported L70(10k) at 45.8 C (hours)	>60000
<b>Additional Results</b>	
Projected L80 (hours):	120,000
Reported L80 (hours):	>60000
Projected L90 (hours):	58,000
Reported L90 (hours):	58,000



**Attachment 1: Photo document**

**Model: 2400325**



Photo 1

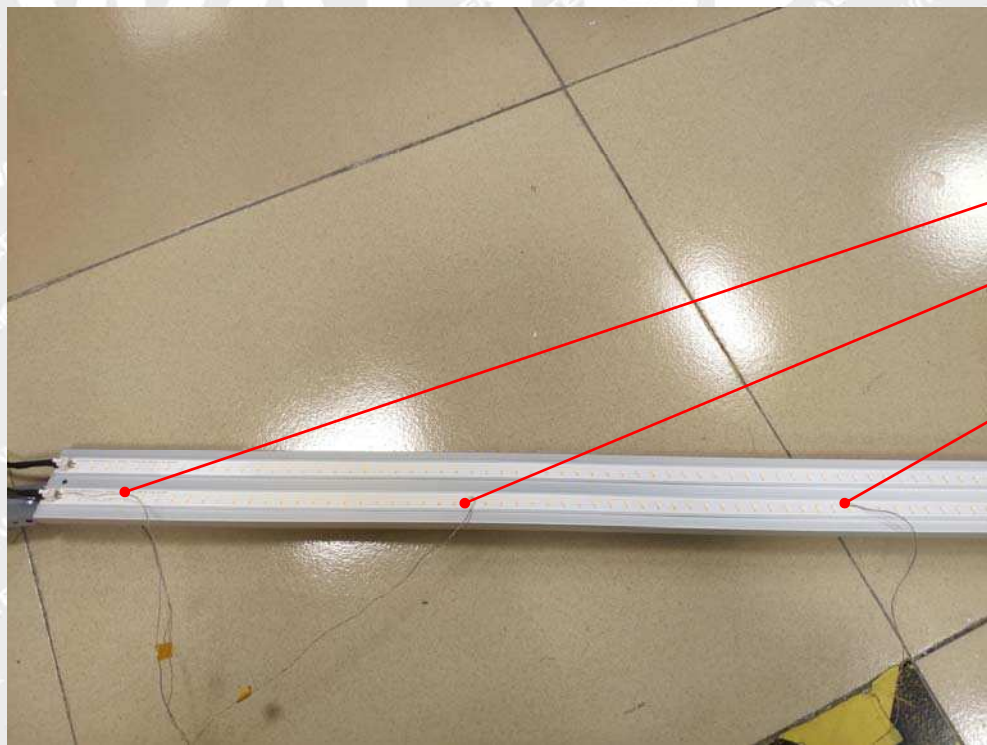


Photo 2



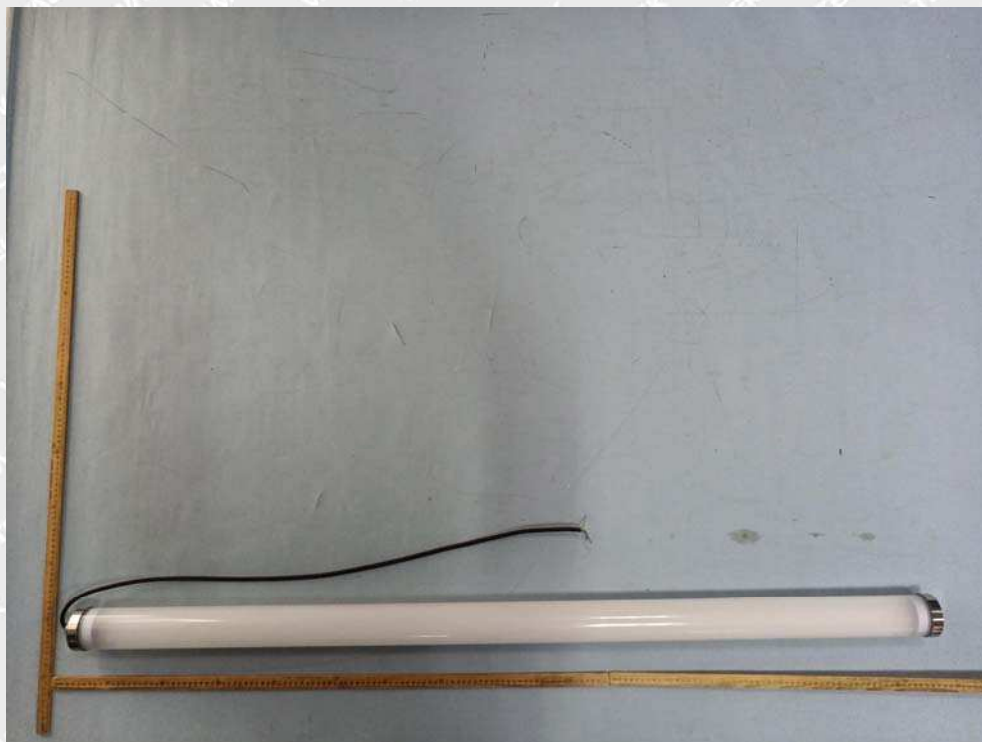


Photo 3



Photo 4



Photo 5

===== End of Report =====

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