



## TEST REPORT

Applicant: P.Q.L., Inc.  
2285 Ward Avenue  
Simi Valley, CA 93065

Number: 130600616SHA-102

Date: July 14, 2014

### Sample Description

Product : Fixed Luminaire

Brand Name : SUPERIOR LIFE®

Manufacturer : Same as applicant

Model No : 90801 DIM(4000K)

Electrical Rating : 120V, 60HZ, 45W, 3850Lm

No. of Submitted Samples : 1 piece

Date Received : July 09, 2014

Date Test Conducted : July 09, 2014 ~July 14, 2014

Test Requested : IN SITU TEMPERATURE MEASUREMENT TEST

Test Method : See the attached sheets.

Test Result : See the attached sheets. Measurement uncertainty for applicable tests has been established.

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# TEST REPORT

Test Result:

Number: 130600616SHA-102

Description : Fixed Luminaire

Design : Indoor Applications-New,Fully Integrated Luminaires

Test Sample Size : 1 piece

## 1. Measuring Method

### 1.1 Temperature Measurement Test

The sampel was operated at 25°C until constant temperatures were obtained. A temperature was considered constant if 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.

### 1.2 Driver current Measurement Test

During the temperature measurement test, measure the forward current for each LED package/array/module.

### 1.3 Equipment List

Equipment Used	Model Number	Control Number
Draught-proof enclosure	N/A	EC2201
Agilent - Data Acquisition Unit	34970A	EC2043
QINGZHI - Power Meter	8770A	EC2652
YOKOGAWA - Digital Power Meter	WT-210	EC4553

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Test Result:

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### 2. Test Result

Input Voltage - 120Vac 60Hz

Ambient temperature: 25±5°C, Relative Humidity: 35%

Test Model: 90801 DIM(4000K)

Test LED model: LM561B

Test Location:

TMP



#### In-Situ Maximum Measured LED Source Point Temperature

Maximum Junction Temperature from LED specification ( $T_j$ ) = 110°C

Thermal Resistance Formula from LED specification = 16°C/W

Maximum Forward Voltage ( $V_f$ ) from LED specification = 3.2V

Measured LED Current = 89.8mA

Calculated LED Wattage =  $V_f \times$  Measured LED Current = 0.29W

Maximum Source Temperature ( $T_s$ ) =  $T_j - (LED \text{ Wattage} \times \text{Thermal Resistance}) = 105.4^\circ$

Item	Symbol	Rating	Condition
LED junction temperature	$T_j$	110°C	-
Forward Current	$I_f$	150 mA	-
Peak Pulsed Forward Current	$I_{FP}$	300 mA	Duty 1/10 pulse width 10ms
Thermal resistance	$R_{th, j-s}$	16°C/W	Junction to solder point

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	$V_f$	$I_f = 65 \text{ mA}$	Init. Value*0.9	Init. Value*1.1

Intertek Sample No.	Model no.	Maximum Measured Source Temperature (°C)	Maximum Rated Source Temperature (°C)
0140704-07-002	90801 DIM(4000K)	45.3	105.4

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### 3. Lumen Maintenance Life Projection

The Calculation is based on the Illumination Engineering Society's TM-21-11: Projecting Long Term Lumen Maintenance of LED Light Sources.

LM-80 Testing Details	
Total number of units tested per case temperature:	25
Number of failures:	0
Number of units measured:	25
Test duration (hours):	6000
Tested drive current (mA):	150
Tested case temperature 1 (T <sub>c</sub> , °C):	55
Tested case temperature 2 (T <sub>c</sub> , °C):	85
Tested case temperature 3 (T <sub>c</sub> , °C):	105

In-Situ Inputs	
Drive current for each LED package/array/module (mA):	89.8
In-situ case temperature (T <sub>c</sub> , °C):	45.3
Percentage of initial lumens to project to (e.g. for L70, enter 70):	70

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>	2.658E-06
B <sub>1</sub>	0.999
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>	0.999
T <sub>s,i</sub> (°C)	45.30
T <sub>s,i</sub> (K)	318.45
α <sub>i</sub>	2.658E-06
Projected L70(6k) at 80°C (hours)	134,000
Reported L70(6k) at 80°C (hours)	>36000

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# TEST REPORT

Appendix A:

Number: 130600616SHA-102

Product Photo:



Model No.: 90801 DIM(4000K)

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