In Situ Temperature Measurement Test Report

For

PROFOLUX B.V.

(Brand Name: PROFOLUX)

Ekkersrijt 1005, 5692 AB Son, The Netherlands

High Bay Luminaires (Commercial and Industrial)

Model name(s):
100W Series, 150W Series
200W Series, 240W Series

Representative (Tested) Model: 150W 4000K

The tested lamps' color temperature include 3000K,4000K, 5000K and 6000K

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Mar.08,2022

Review By:

Johnson Sun

Manager: Johnson Sun

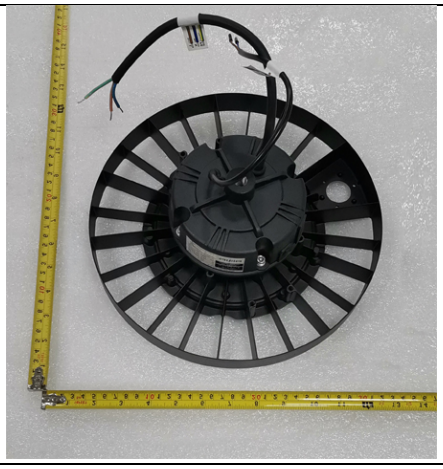
Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.

Table of Contents

1 General

1.1 Product Information

Brand Name	PROFOLUX
Model Number	150W 4000K
Luminaire Type	High Bay Luminaires (Commercial and Industrial)
Nominal Power	150W
Rated Initial Lamp Lumen	--
Declared CCT	4000K
LED Manufacturer	Samsung Electronics Co., LTD
LED Model	SPMWHx229xxxxxxxxx
Sample Receipt Date	Dec.01,2020
Sample Number	JBE220216-B1
Photo	
	

1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/UL 1598:2008	**Luminaires**

1.3 Equipment list

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-411	Power Meter	2021-06-26	2022-06-25
ST-R-401	Temperature Tester	2022-01-23	2023-01-22

2 Test conducted and method

2.1 Ambient Condition

Test was conducted in an ambient temperature of 25±5℃. Ambient temperature variations above or below 25℃ was subtracted from or added to temperatures recorded at points on the luminaire.
The ambient temperature was measured by a thermocouple which was immersed in 15ml of mineral oil in a glass container.

2.2 Temperature Stabilization

Temperatures were measured after they have stabilized when the test has been running for a minimum of 7.5 hours, or the test has been running for a minimum of 3 hours and three successive reading taken at 15 minutes intervals are with 1℃ of another and are not rising.

2.3 Thermocouples

Type J thermocouple was used for temperature measurement. The thermocouple was 0.05mm2(30AWG), and complied with the requirements specified in ASTM MNL 12 and limits of error specified in NIST ITS 90 and ISA MC96.1.

2.4 Thermocouples contact

Thermocouples were in contact with the TMP LED location described in LM-80 test report. In order to gain the maximum temperature, if appropriate, more than one thermocouple were contact in these locations. For details information, please refer to clause 3.3 for the photo of thermocouple contact.

3 Test Results

Test date	2022-02-16	Test Ambient	25.1 °C
Sample No.		LED Package Model	
JBE220216-B1		SPMWHx229xxxxxxxxx	
LED driver of Each Lamp	Output voltage V	Measured LED working current (Max.) mA	
1	243.3	38.1	

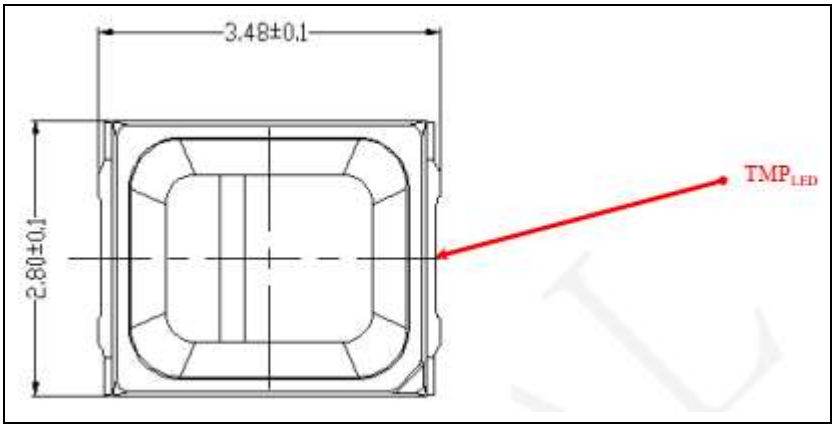
3.1 Test Data:

Input Vol.	230.0V	Input Current	0.6272A	Input Wattage	142.4W	Temperature stabilization time:	500 min

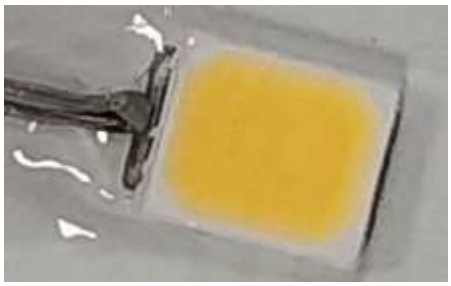
No.	Temperature (°C)		No.	Temperature (°C)		No.	Temperature (°C)	
	Measured	Corrected at 25°C		Measured	Corrected at 25°C		Measured	Corrected at 25°C
1	80.6	80.5	3	80.9	80.8	5	79.5	79.4
2	79.8	79.7	4	81.5	81.4	6	81.2	81.1
The highest in-situ measured temperature LED is 81.4°C								

3.2 Test Photo:

Ts Position:



Thermocouple Location on Temperature Measurement Point (TMP):



LM-80 report summary for LED chip(s)

Manufactured by	Samsung Electronics Co., LTD		
LED Model	SPMWHx229xxxxxxxxx		
Number of LED light source tested	25 units		
Drive Current	100mA		
Case temperature	55	85	105
9000 hours lumen maintenance	97.61%	96.71%	95.75%
9000 hours lumen maintenance(△u'v')	0.0020	0.0022	0.0025

Lumen Maintenance Projection luminaires

Criteria Item	Result
50000h at which estimate luman maintenance	81.63%
Drive current on each LED light source	38.1mA
Reported LM70 lumen maintenance life	>54000

LM-80 Test Inputs

Description of LED Light Source Tested (manufacturer, model, catalog number)
Samsung Electronics Co., LTD SPMWHx229xxxxxxxxx

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):	9000
Tested drive current (mA):	100
Tested case temperature 1 (T_c, ^{0}C):	55
Tested case temperature 2 (T_c, ^{0}C):	85
Tested case temperature 3 (T_c, ^{0}C):	105

Test Data for 55^{0}C Case Temperature		Test Data for 85^{0}C Case Temperature		Test Data for 105^{0}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	100.31%	1000	100.22%	1000	100.09%
2000	100.00%	2000	99.81%	2000	99.59%
3000	99.61%	3000	99.33%	3000	99.01%
4000	99.20%	4000	98.82%	4000	98.41%
5000	98.82%	5000	98.34%	5000	97.82%
6000	98.50%	6000	97.92%	6000	97.30%
7000	98.18%	7000	97.52%	7000	96.78%
8000	97.88%	8000	97.10%	8000	96.26%
9000	97.61%	9000	96.71%	9000	95.75%

In-Situ Inputs

Drive current for each LED package/array/module (mA):	38.1
In-situ case temperature (T_c, ^{0}C):	81.4
Percentage of initial lumens to project to (e.g. for L_{70}, enter 70):	70

Results

Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	81.63%
Reported L70 (hours):	>54000

Table 1: Report at each LM-80 Test Condition

Description of LED Light Source Tested (manufacturer, model, catalog number)	Samsung Electronics Co., LTD SPMWHx229xxxxxxxxx				
Test Condition 1 - 55^{0}C Case Temp		**Test Condition 2 - 85^{0}C Case Temp**		**Test Condition 3 - 105^{0}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)	100	DUT drive current used in the test (mA)	100	DUT drive current used in the test (mA)	100
Test duration (hours)	9,000	Test duration (hours)	9,000	Test duration (hours)	9,000
Test duration used for projection (hour to hour)	4,000 - 9,000	Test duration used for projection (hour to hour)	4,000 - 9,000	Test duration used for projection (hour to hour)	4,000 - 9,000
Tested case temperature (^{0}C)	55	Tested case temperature (^{0}C)	85	Tested case temperature (^{0}C)	105
α	3.221E-06	α	4.288E-06	α	5.446E-06
B	1.004	B	1.005	B	1.005
Reported L70(9k) (hours)	>54000	Reported L70(9k) (hours)	>54000	Reported L70(9k) (hours)	>54000

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)

$T_{s,1}$ (^{0}C)	55.00
$T_{s,1}$ (K)	328.15
α_1	3.221E-06
B_1	1.004
$T_{s,2}$ (^{0}C)	85.00
$T_{s,2}$ (K)	358.15
α_2	4.288E-06
B_2	1.005
E_a/k_b	1.12E+03
A	9.821E-05
B_0	1.005
$T_{s,i}$ (^{0}C)	81.40
$T_{s,i}$ (K)	354.55
α_i	4.154E-06
Reported L70(9k) at 81.4^{0}C (hours)	>54000

****** END OF THE TEST REPORT******