In Situ Temperature Measurement Test Report

For

SHENZHEN SUNPER OPTO CO.,LTD

(Brand Name: SUNPER)

5/F,BLOK C,SANMIN INDUSTRIAL PARK,SHIYAN STREET,
BAO'AN DISTRICT,SHENZHEN 518108,GUANGDONG,CHINA

Low-Bay Luminaires for Commercial and Industrial buildings

Model name(s): SP-HB-100WA

Representative (Tested) Model: SP-HB-100WA(4000K)

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Sean Zhuo

Engineer: Sean Zhuo

Date: Dec.10,2014

Review By:

Tommy Liang

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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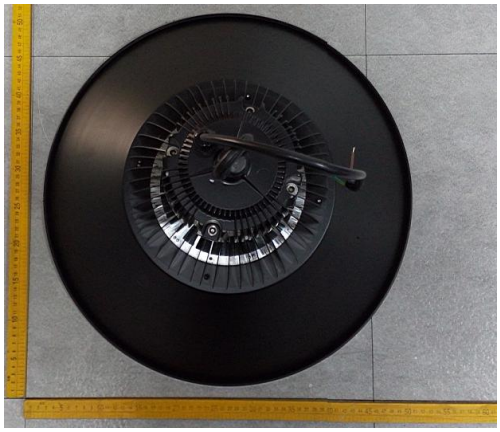
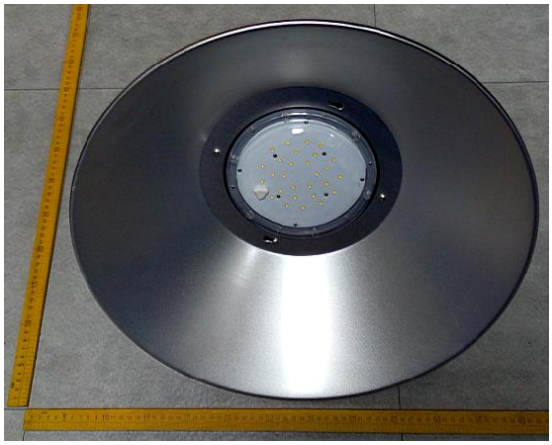
1 General

1.1 Product Information

Brand Name	SUNPER
Model Number	SP-HB-100WA
Luminaire Type	Low-Bay Luminaires for Commercial and Industrial buildings
Nominal Power	100 W
Rated Initial Lamp Lumen	--
Declared CCT	4000K,4500K,5000K,5700K
[Luminaire Aperture] [Size]	--
LED Manufacturer	CREE
LED Model	Xlamp XT-E
Sample Receipt Date	Dec.08,2014
Sample Number	141129-1
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
PF210	Power Meter	2014-07-01	2015-06-30
ST-R-181A	Temperature Tester	2014-07-01	2015-06-30

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	2014-12-09	Test Ambient	25.1 ℃
Sample No.		LED Package Model	
141129-1		Xlamp XT-E	
LED driver of Each Lamp	Output voltage V	Measured LED working current (Max.) mA	
1	44.9	1007	

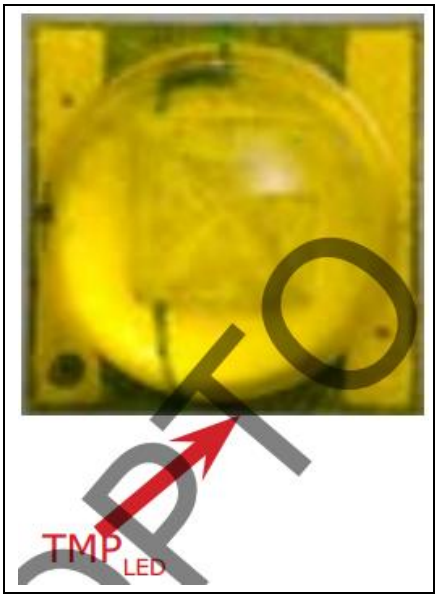
3.1 Data:

Input Vol.	120.0 V	Input Current	0.8196A	Input Wattage	96.88W	Temperature stabilization time:	500 min

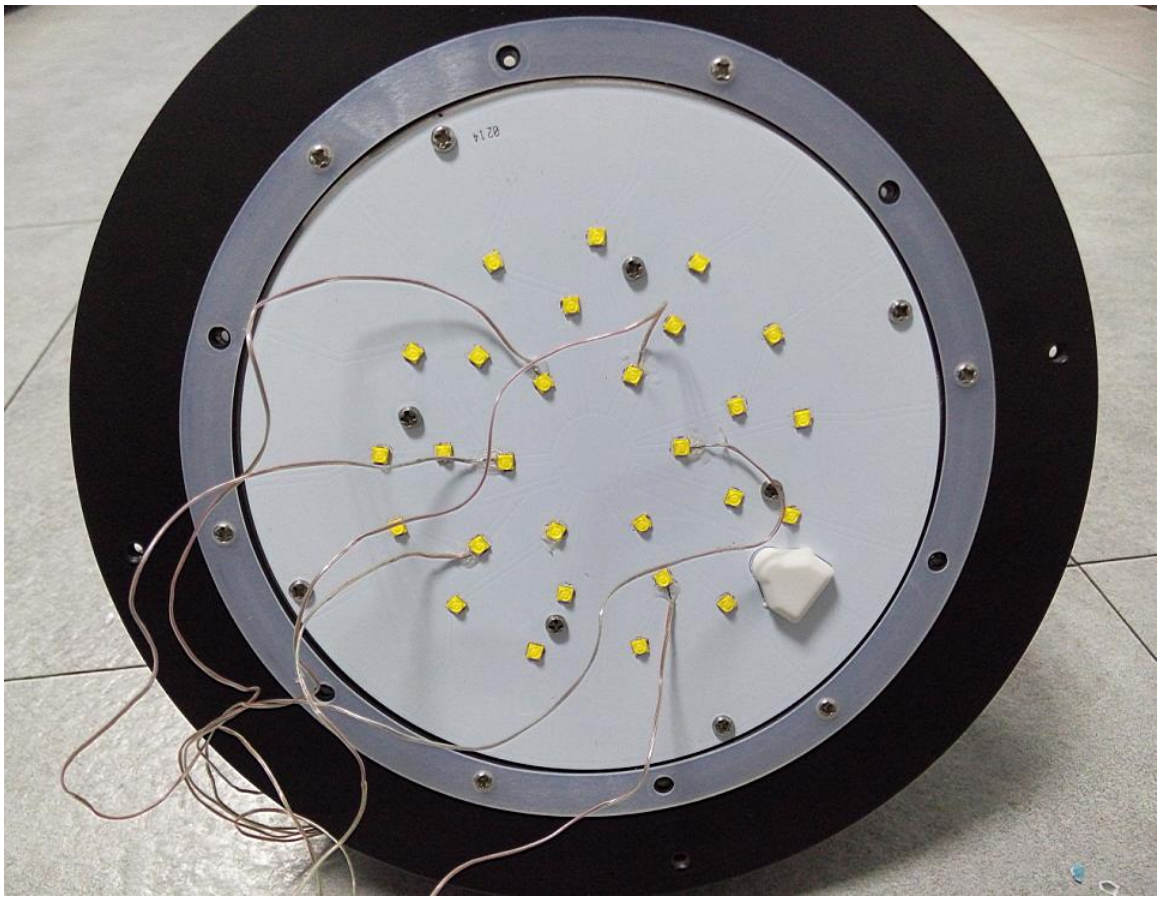
No.	Temperature (°C)		No.	Temperature (°C)		No.	Temperature (°C)	
	Measured	Corrected at 25°C		Measured	Corrected at 25°C		Measured	Corrected at 25°C
1	75.2	75.1	3	75.4	75.3	5	75.9	75.8
2	74.6	74.5	4	74.2	74.1	6	74.8	74.7
The highest in-situ measured temperature LED is 75.8°C								

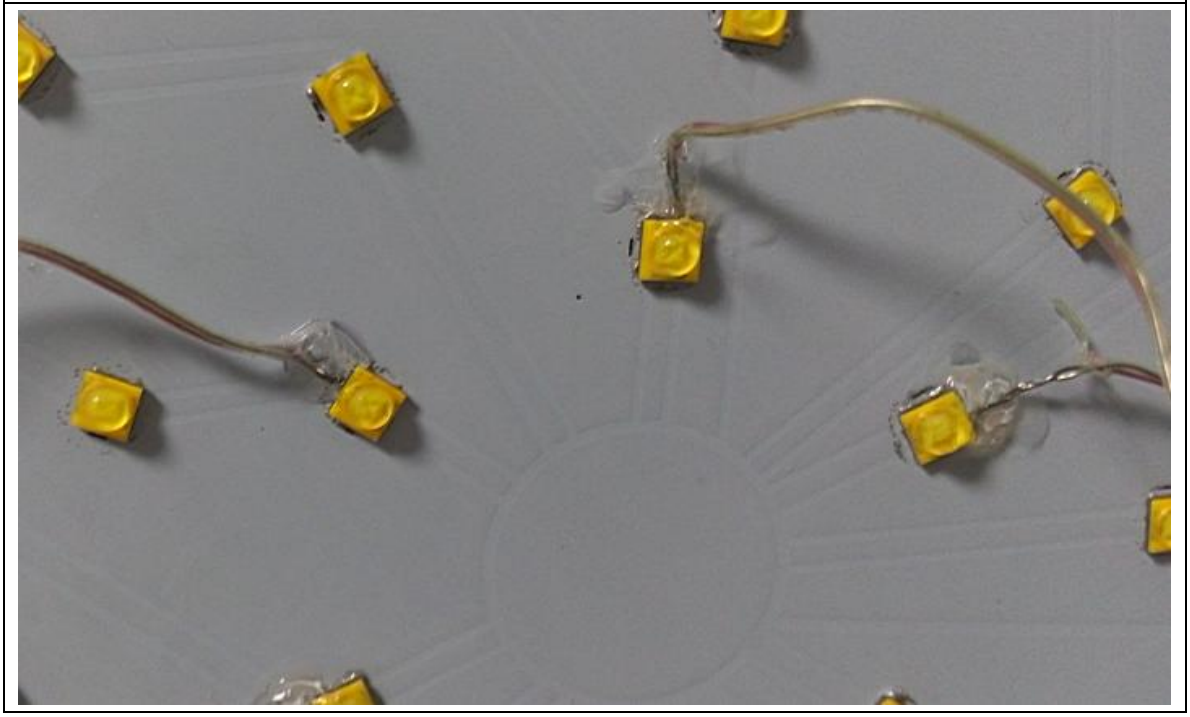
3.2 Test Photo:

Ts Position:



Thermocouple Location on Temperature Measurement Point (TMP):





NVLAP LAB CODE 201011-0

Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)	CREE,Xlamp XT-E				
Test Condition 1 - 55°C Case Temp		Test Condition 2 - 85°C Case Temp			
Sample size	25	Sample size	25	Sample size	-
Number of failures	0	Number of failures	0	Number of failures	-
DUT drive current used in the test (mA)	1250	DUT drive current used in the test (mA)	1250	DUT drive current used in the test (mA)	-
Test duration (hours)	9,000	Test duration (hours)	9,000	Test duration (hours)	-
Test duration used for projection (hour to hour)	4,032 - 9,072	Test duration used for projection (hour to hour)	4,032 - 9,072	Test duration used for projection (hour to hour)	-
Tested case temperature (°C)	55	Tested case temperature (°C)	85	Tested case temperature (°C)	-
α	7.907E-07	α	5.334E-06	α	-
B	0.976	B	0.998	B	-
Calculated L70(9k) (hours)	420,000	Calculated L70(9k) (hours)	66,000	Calculated L70(9k) (hours)	-
Reported L70(9k) (hours)	>54000	Reported L70(9k) (hours)	>54000	Reported L70(9k) (hours)	-

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)	
$T_{s,1}$ (°C)	55.00
$T_{s,1}$ (K)	328.15
α_1	7.907E-07
B_1	0.976
$T_{s,2}$ (°C)	85.00
$T_{s,2}$ (K)	358.15
α_2	5.334E-06
B_2	0.998
E_a/k_b	7.48E+03
A	6.242E+03
B_0	0.987
$T_{s,i}$ (°C)	75.80
$T_{s,i}$ (K)	348.95
α_i	3.076E-06
Projected L70(9k) at 75.8°C (hours)	112,000
Reported L70(9k) at 75.8°C (hours)	>54000

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