



Photometric Test Report

Relevant Standards

- IES LM-79-2008
- ANSI C82.77-2002
- UL1598-2008/ UL1993-2012

Prepared For

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Catalog Number

HL-LI4880H

Project Number

4788153300

Report Number

4788153300-4a

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6/21/2017

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1.0 Test Summary

DLC Technical Requirements v4.2

Requirement Category	Test Method	Requirements	Test value	Results (Fail/Pass)
Minimum Light Output (lm)	IES LM-79-2008	10000	11094.1	Pass
Minimum Lamp Output (lm)	IES LM-79-2008	N/A	N/A	N/A
Spacing Criteria (0-180°)	IES LM-79-2008	N/A	N/A	N/A
Spacing Criteria (90-270°)	IES LM-79-2008	N/A	N/A	N/A
Zonal Lumen Requirement (0°-90°)	IES LM-79-2008	N/A	N/A	Pass
Zonal Lumen Requirement (80°-90°)	IES LM-79-2008	N/A	N/A	Pass
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	100	139.85	Pass
Minimum Lamp Efficacy (lm/ft)	IES LM-79-2008	N/A	N/A	N/A
Allowable CCTs* (K)	IES LM-79-2008	≤5700	5118	Pass
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	≥65	71.79	Pass
L70 Lumen maintenance (hours)	IES LM-80-2015 IES TM-21-2011	≥50000	≥50000	Pass
L90 Lumen maintenance (hours)	IES LM-80-2015 IES TM-21-2011	N/A	N/A	N/A
Power Factor	ANSI C82.77-2002	≥0.87	0.8899	Pass
Total Harmonic Distortion (A%)	ANSI C82.77-2002	≤20%	9.30%	Pass
In-Situ Temperature Measurement Test for LED (°C)	UL1598-2008/ UL1993-2012	≤105	42.9	Pass
In-Situ Temperature Measurement Test for Driver (°C)	UL1598-2008/ UL1993-2012	N/A	N/A	N/A
Minimum Luminaire Warranty (years)	N/A	5	5	Pass

*Defined by ANSI C78.377-2011‡

‡ANSI C78.377-2015 also referred to for Duv and (x,y) chromaticity coordinates tolerances for indoor categories.



2.0 Test List

Test Item	Test	Test Date	Model Number	Tests Conducted By
1	Integrating Sphere Test for the Higher Voltage	6/21/2017	HL-LI4880H	Yakima Yuan
2	THD and PF Test	6/21/2017	HL-LI4880H	Yakima Yuan
3	In-Situ Temperature Measurement Test	6/21/2017	HL-LI4880H	Yakima Yuan

Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL's Aurora database.



3.0 Production Description

Luminaire Description: Specialty: Hazardous Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model Number: HL-LI4880H

Rated Voltage: AC200-480V

LED Package: LUXEON 5050

Photos of Luminaire Characteristics





4.0 LM-79 Measurement and Test Results

Model No.	HL-LI4880H	Sample ID.	1002579
Opreate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The sample was tested according to the IES LM-79-2008.

2. Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The reference standard lamp is rated current 2.6A omni-directional Incandescent lamp and was calibrated by china seprei laboratory.

3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

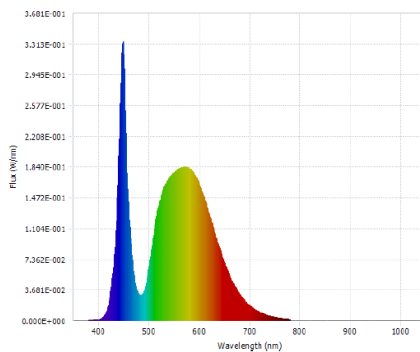
Integrating Sphere Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
25	480.08	60	0.1857	79.33	0.8899

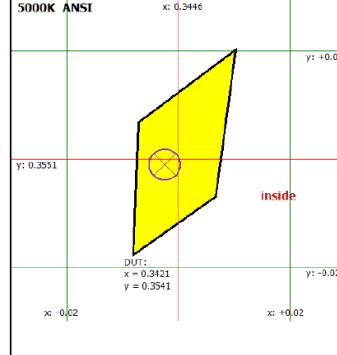
Test Results

CCT (K)	CRI (Ra)	Duv	Luminous Flux (lm)	Luminous Efficacy (lm/W)
5118	71.79	0.0024	11094.1	139.85

Spectral Flux Graph



Chromaticity Diagram 5000K ANSI



Spectral Result

Luminous Flux Φ(v)	11094.1 (lm)	Chrom x	0.3421
Chrom y	0.3541	Chrom u	0.2085
Chrom v	0.3236	Duv	0.0024
Chrom u'	0.2085	Chrom v'	0.4854
CCT	5118.0 (K)	Luminous Efficacy η	139.85 (lm/W)
Ra	71.79	R1	69.9
R2	75.8	R3	80.0
R4	73.3	R5	70.9
R6	67.2	R7	79.6
R8	57.6	R9	-28.3
R10	42.6	R11	71.4
R12	43.7	R13	70.2
R14	88.7	R15	64.3
Rf	70	Rg	95



5.0 THD and PF Test

Test Method

1. The samples were tested according to the ANSI C82.77-2002.
2. The ambient temperature condition was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD
25	480.08	60	0.8899	79.33	0.8899	9.30%



6.0 In-Situ Temperature Measurement Test

Test Method

1. In-Situ Temperature Measurement Test is conducted according to the UL1598-2008, Section 14 or UL1993-2012, Section 8.5.
2. The testing was conducted in a room with ambient temperature of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The apparatus construction followed those described in UL1598-2008 for normal temperature testing. Thermocouples were placed on the LED package in the locations indicated by LM-80 report. The temperature was recorded after the lamp was operated by 3.5 hours in stability or by 7.5 hours.

In-Situ Temperature Measurement Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
24.7	480.08	60.00	0.1857	79.33	0.8899

Test Results(LED)

Thermocouple Location	Manufacturer Declared Current (mA)	Temperature for Lighting source (°C)		LED Model Number	LM-80 Limit Current (mA)	LM-80 Limit Temp. (°C)
		Test result column 1	Test result (Correct to 25 °C)			
TMP of LEDs	84	42.6	42.9	LUXEON 5050	200	55
Ambient temperature	N/A	24.7	25.0			



6.0 In-Situ Temperature Measurement Test (Cont'd)

Test Photos for T_c Point of LED Packages

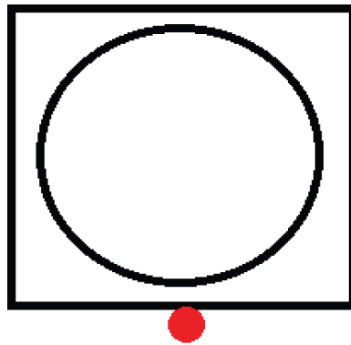
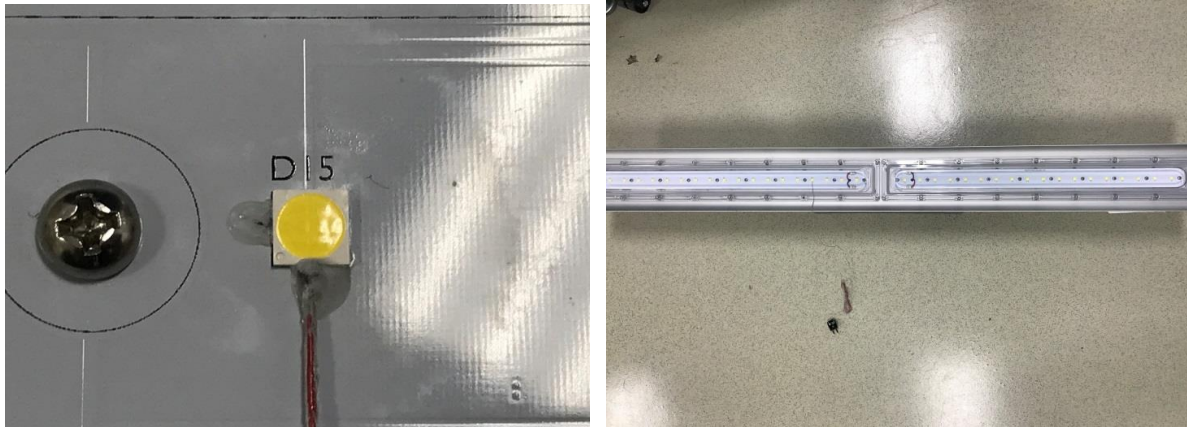


Figure 3. The recommended T_s point is located in the bottom of LUXEON 5050.



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