



Photometric Test Report

Relevant Standards

UL1598-2008

ANSI C82.77-10-2014

IES LM-79-2008

Prepared For

P.Q.L., Inc.

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Catalog Number

55612

Project Number

4789044943

Report Number

4789044943_15R01

Test Date

2019-06-20~2019-06-27

Issue Date

2019-07-31

Revision Date

2019-07-31

Prepared By

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Xu, Jonathan

Approved By

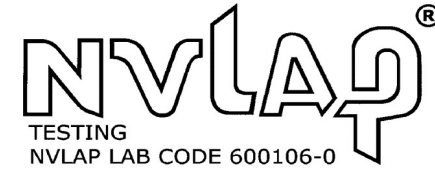
Duff Yang

Yang, Duff

The results contained in this report pertain only to the tested sample.

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Test Summary

DLC Technical Requirements v4.4- issued 2018-10-18

Requirement Category	Test Method	Requirements	Tolerance	Test Result
Minimum Light Output (lm/ft)-Luminaires	IES LM-79-2008	≥375	-10%	669.56
Minimum Luminaire Efficacy (lm/W)-Luminaires	IES LM-79-2008	≥130	-3%	132.60
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3462.0
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3463.0
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3467.0
Minimum CRI	IES LM-79-2008/CIE 13.3-1995	≥80	-2	82.22
L70 Lumen maintenance (Hours)	N/A	≥50000	N/A	≥50000
L90 Lumen maintenance (Hours)	N/A	≥36000	N/A	≥36000
Power Factor	ANSI C82.77-10-2014	≥0.9	-0.03	0.9523
Total Harmonic Distortion (A%)	ANSI C82.77-10-2014	≤20%	5%	7.16%
In-Situ Temperature Measurement Test for LED 1 (°C)	UL1598-2008	≤105	N/A	47.7
In-Situ Temperature Measurement Test for Driver 1 (°C)	UL1598-2008	≤90	N/A	48.4
Minimum Luminaire Warranty (Years)	N/A	≥5	N/A	≥5



Test List

Sample Received Date: 2019-06-06

Test Item	Test Date	Model Number	Tests Conducted By
Integrating Sphere Test	2019-06-20	55612	Xiong, Blaire
Integrating Sphere Test	2019-06-20	55612	Xiong, Blaire
THD and PF Test	2019-06-26	55612	Xiong, Blaire
In-Situ Temperature Measurement Test	2019-06-27	55612	Xiong, Blaire

Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL 's Aurora database.
2. This report replace 4789044943_15, the report 4789044943_15 is terminated.



Product Description

Lamp/Luminaire Description: Direct Linear Ambient Luminaires

Model Number: 55612

Electrical Parameter: 120-277V, 50/60Hz, 38W/46W/54W

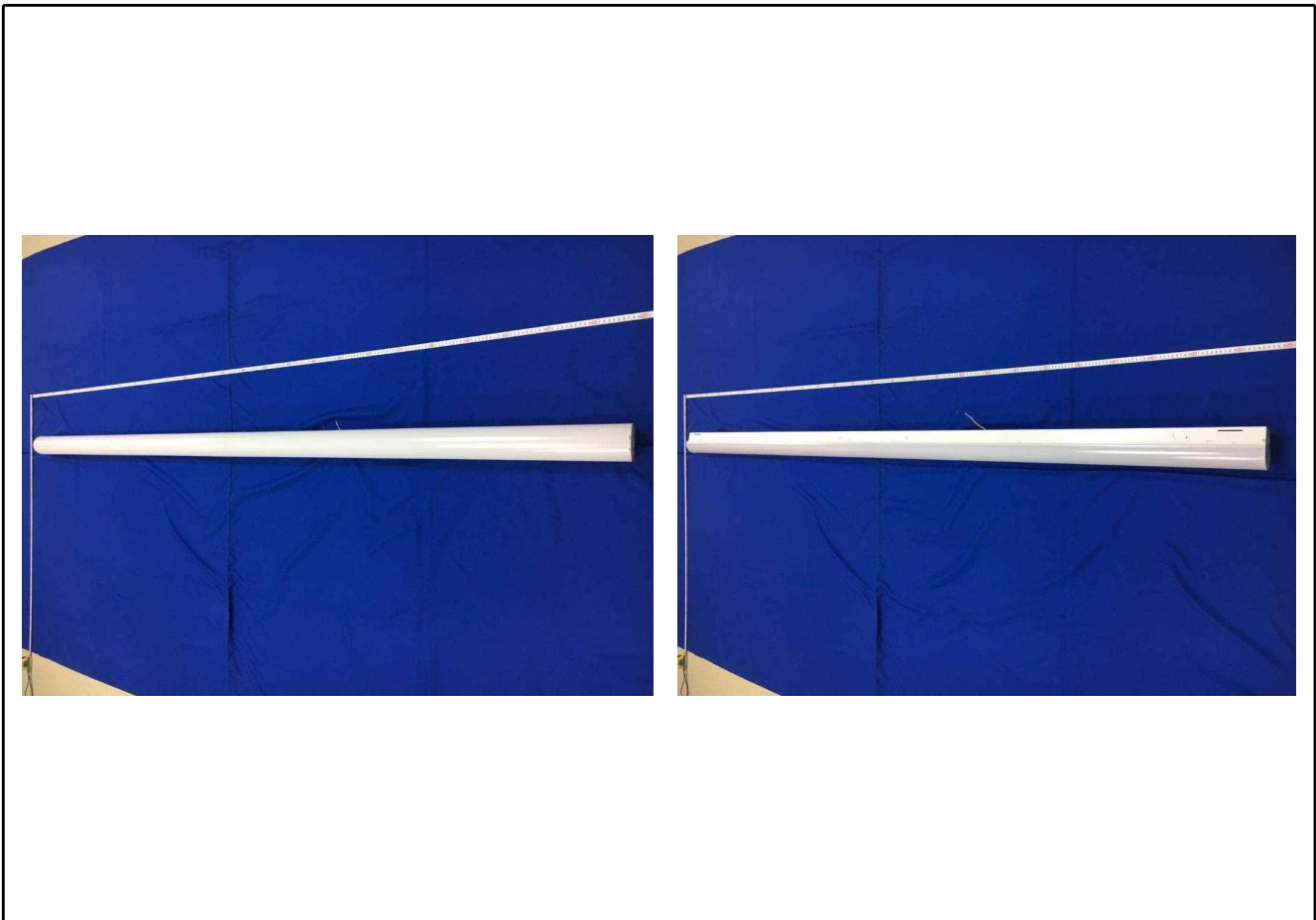
LED Package: STW8A2PD-XX

Family Model and Variation: 55612

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
55612	3500	7020	54	130
55612	4000	7074	54	131
55612	5000	7128	54	132

Photos of Products Characteristics





Integrating Sphere Test

Model No.	55612	Sample ID.	2339757
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

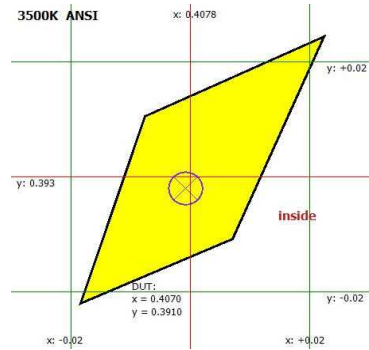
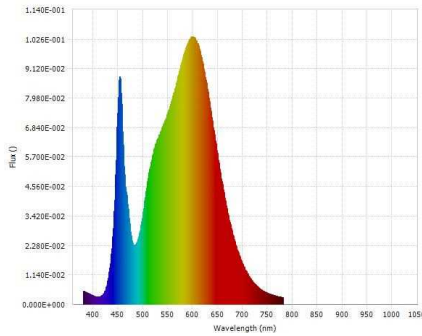
1. The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
 2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by Labsphere, Inc., Optical Calibration 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 ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
25.5	120.11	60	0.3184	37.974	0.9931	N/A	Horizontal

Test Results

CCT (K)	CRI (Ra)	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Luminous Efficacy (lm/ft)
3462.0	82.45	0.0003	5356.5	141.06	669.56



Luminous Flux (lm)	5356.5	Chrom x	0.4070
Chrom y	0.3910	Chrom u	0.2367
Chrom v	0.3411	Duv	0.0003
Chrom u'	0.2367	Chrom v'	0.5116
CCT (K)	3462.0	Luminous Efficacy (lm/W)	141.06
Ra	82.45	R1	81.0
R2	89.6	R3	95.5
R4	80.5	R5	80.5
R6	85.7	R7	84.7
R8	62.1	R9	8.2
R10	74.9	R11	78.9
R12	62.2	R13	83.1
R14	97.6	R15	74.7
Rf	81.7	Rg	95.4



Integrating Sphere Test

Model No.	55612	Sample ID.	2339757
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

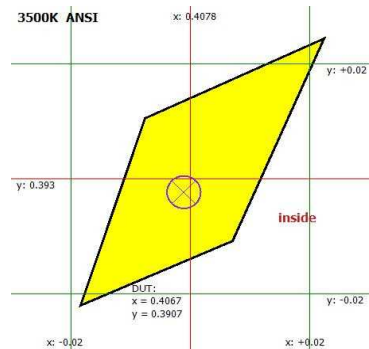
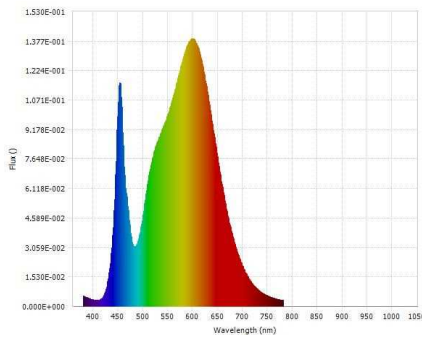
1. The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
 2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by Labsphere, Inc., Optical Calibration 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 ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
25.5	120.03	60	0.4538	54.189	0.9949	N/A	Horizontal

Test Results

CCT (K)	CRI (Ra)	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Luminous Efficacy (lm/ft)
3467.0	82.22	-0.0004	7185.67	132.60	898.21



Luminous Flux (lm)	7185.67	Chrom x	0.4067
Chrom y	0.3907	Chrom u	0.2366
Chrom v	0.3410	Duv	-0.0004
Chrom u'	0.2366	Chrom v'	0.5114
CCT (K)	3467.0	Luminous Efficacy (lm/W)	132.60
Ra	82.22	R1	80.7
R2	89.5	R3	95.5
R4	80.2	R5	80.2
R6	85.5	R7	84.5
R8	61.7	R9	7.3
R10	74.6	R11	78.5
R12	62.1	R13	82.8
R14	97.6	R15	74.4
Rf	81.5	Rg	95.3



THD and PF Test

Model No.	55612	Sample ID.	2339757
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
 2. The ambient temperature condition was maintained at 25° C ± 1° 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	Orientation
25.5	120.08	60	0.4544	54.38	0.9964	7.16%	Horizontal
25.5	276.96	60	0.1977	53.28	0.9732	5.08%	Horizontal



In-Situ Temperature Measurement Test

Model No.	55612	Sample ID.	2339757
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Test Method

1. In-Situ Temperature Measurement Test is conducted according to the UL 1598-2008, Section 14.
 2. The testing was conducted in a room with ambient temperature of 25°C ± 5°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. Thermocouples were placed on the LED driver case in the locations specified by the manufacture if necessary. The temperature was recorded after the lamp was operated by 7.5 hours.

In-Situ Temperature Measurement Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
25.5	120.08	60	0.4544	54.38	0.9964	7.16%	Horizontal

Test Results (LEDs)

Thermocouple Location	Declared Light Source Current (mA)	Temperature for Light Source (°C)		LED Model Number	LM-80 Limit Current (mA)	LM-80 Limit Temp (°C)
		Test Result	Test Result (Correct to 25 °C)			
Ambient TEMP	N/A	25.5	25.0			
TMP of Location 1	100	48.2	47.7	STW8A2PD-XX	200	105

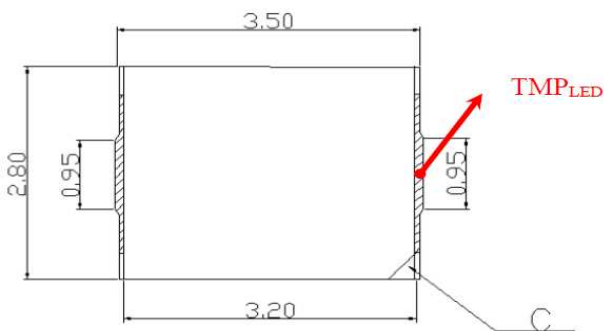
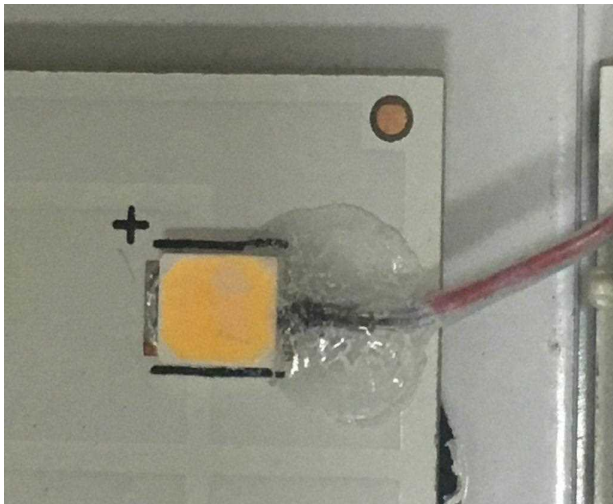
Test Results (Drivers)

Thermocouple Location	Temperature for Driver (°C)		Driver Model Number	Driver Limit Temp (°C)
	Test Result	Test Result (Correct to 25 °C)		
Ambient TEMP	25.5	25.0		
TMP of Location 1	48.9	48.4	SIP50-I1200 120-277 W D1+D3 P3	90



In-Situ Temperature Measurement Test (Cont'd)

Test Photos for Ts Point of Light Sources & Tc Point of Drivers





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