



## DesignLights Consortium Test Report

### Reference Standards

UL1598-2008

ANSI C82.77-10-2014

IES LM-79-2008

### Prepared For

**P.Q.L., Inc.**

2285 Ward Avenue / Simi Valley, CA 93065

Test Laboratory:

UL-CCIC Company Limited

Test Laboratory Address:

No.2, Chengwan Road, Suzhou Industrial Park, Suzhou 21522, China

### Catalog Number

55762

### Project Number

4790562779

### Report Number

4790562779\_5

### Test Date

2022-09-26~2022-09-28

### Issue Date

2022-10-09

### Revision Date

N/A

### Prepared By

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Zhao, Elaine

### Approved By

*Elvis Wu*

Wu, Elvis

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

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## Test Summary

### DLC Technical Requirements V5.1- issued 2020-02-14

Requirement Category	Test Method	Requirements	Tolerance	Test Result
Minimum Light Output (lm/ft)-Luminaires	IES LM-79-2008	≥375	-10%	664.74
Zonal Lumen Requirement 1(0°-60°)	IES LM-79-2008	≥40%	-3%	59.70%
Minimum Luminaire Efficacy (lm/W)-Luminaires	IES LM-79-2008	≥115	-3%	130.47
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3403
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	4081
Allowable CCT (5000K)	IES LM-79-2008/ANSI C78.377-2015	5029±283	N/A	4962
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3399
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3392
Minimum CRI	IES LM-79-2008/CIE 13.3-1995	≥80	-1	81
Minimum R9	IES LM-79-2008	≥0	-1	2.0
Minimum Rf	IES LM-79-2008	≥70	-1	82
Minimum Rg	IES LM-79-2008	≥89	-1	97
Rcs,h1	IES LM-79-2008	-12%-23%	-1%	-12%
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	0.9291
Total Harmonic Distortion (A%)	ANSI C82.77-10-2014	≤20%	5%	17.67%
In-Situ Temperature Measurement Test for LED 1 (°C)	UL1598-2008	≤105	N/A	46.6
In-Situ Temperature Measurement Test for Driver 1 (°C)	UL1598-2008	≤90	N/A	59.8
Max Chromaticity Shift (1000-6000h)	N/A	≤0.004	0.0004	0.0022
Minimum Luminaire Warranty (Years)	N/A	≥5	N/A	≥5



## Test List

Sample Received Date: 2022-09-19

Test Item	Test Date	Model Number	Tests Conducted By
Integrating Sphere Test	2022-09-27	55762-30W-35K	Yang, Gavin X
Integrating Sphere Test	2022-09-27	55762-30W-40K	Yang, Gavin X
Integrating Sphere Test	2022-09-27	55762-30W-50K	Yang, Gavin X
Integrating Sphere Test	2022-09-27	55762-25W-35K	Yang, Gavin X
Integrating Sphere Test	2022-09-27	55762-18W-35K	Yang, Gavin X
Goniophotometer Test	2022-09-26	55762-30W-35K	Yang, Gavin X
Goniophotometer Test	2022-09-26	55762-30W-50K	Yang, Gavin X
THD and PF Test	2022-09-26	55762-30W-35K	Yang, Gavin X
THD and PF Test	2022-09-26	55762-30W-40K	Yang, Gavin X
THD and PF Test	2022-09-26	55762-30W-50K	Yang, Gavin X
THD and PF Test	2022-09-26	55762-25W-35K	Yang, Gavin X
THD and PF Test	2022-09-26	55762-18W-35K	Yang, Gavin X
In-Situ Temperature Measurement Test	2022-09-28	55762-30W-35K	Yang, Gavin X

### Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL's Aurora database.
2. The accuracy method decision rule is applied when the compliance or verdict is made to the results of this report.



### Product Description

**Lamp/Luminaire Description:** Direct Linear Ambient Luminaires

**Model Number:** 55762

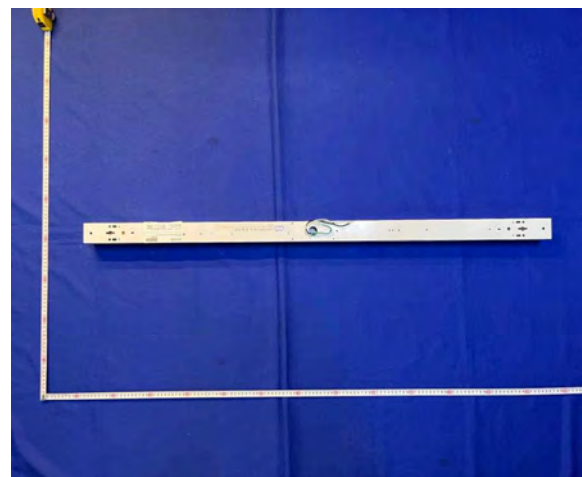
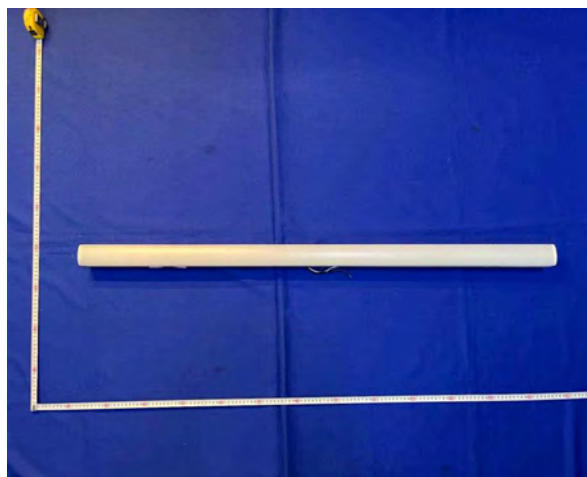
**Electrical Parameter:** 120-277V, 50/60Hz

**LED Package:** BXEN-(A)E-11M-3AA

**Dimming Information:** Continuous dimming capability

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
55762-30W-35K	3500K	3960	30	132
55762-30W-40K	4000K	4260	30	142
55762-30W-50K	5000K	4020	30	134
55762-25W-35K	3500K	3450	25	138
55762-25W-40K	4000K	3700	25	148
55762-25W-50K	5000K	3500	25	140
55762-18W-35K	3500K	2592	18	144
55762-18W-40K	4000K	2772	18	154
55762-18W-50K	5000K	2628	18	146





## Integrating Sphere Test

<b>Model No.</b>	55762-30W-35K		<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	45	

### Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assumed 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The reference standard lamp is rated current 2.679A omnidirectional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

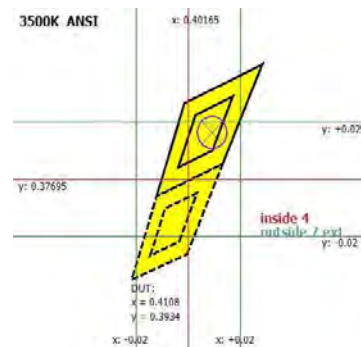
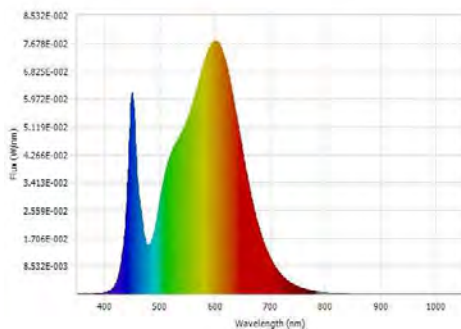
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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	Orientation
25.1	119.94	60	0.2625	31.243	0.9924	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3403	82	5.0	0.0000	4148.41	132.78	1037.10



Luminous Flux (lm)	4148.41	Chrom x	0.4108
Chrom y	0.3934	Chrom u	0.2382
Chrom v	0.3421	Duv	0.0000
Chrom u'	0.2382	Chrom v'	0.5132
CCT (K)	3403	Luminous Efficacy (lm/W)	132.78
Ra	82	R1	80.0
R2	89.0	R3	96.0
R4	81.0	R5	81.0
R6	85.0	R7	84.0
R8	61.0	R9	5.0
R10	74.0	R11	81.0
R12	66.0	R13	82.0
R14	98.0	R15	73.0
Rf	84	Rg	97
Rcs,h1	-12%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

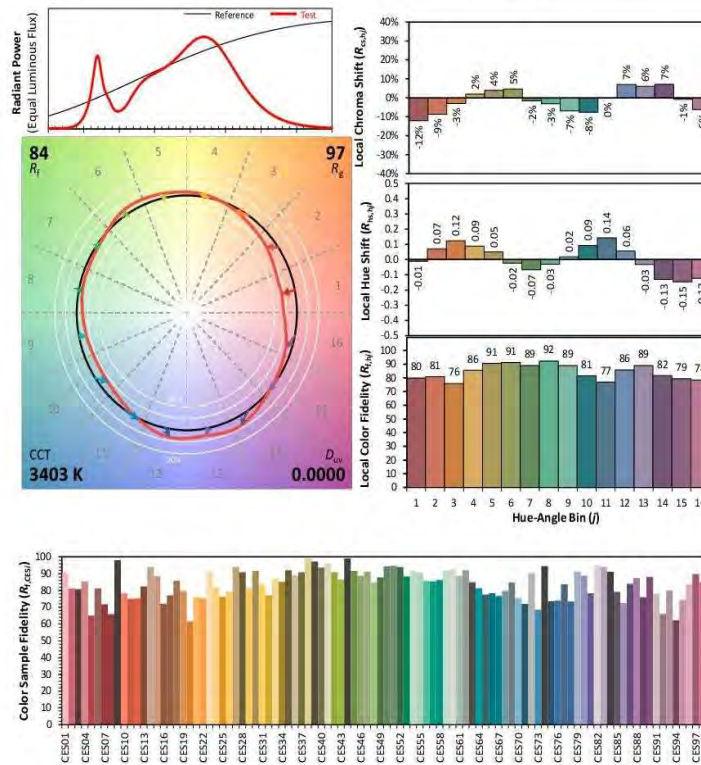
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-11M-3AA

Manufacturer: P.Q.L., Inc.

Date: 9/27/2022

Model: 55762-30W-35K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4108  
y 0.3934  
u' 0.2382  
v' 0.5132

CIE 13.3-1995  
(CRI)  
 $R_a$  82  
 $R_9$  5

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



## Integrating Sphere Test

<b>Model No.</b>	55762-30W-40K		<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	45	

### Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assumed 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The reference standard lamp is rated current 2.679A omnidirectional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

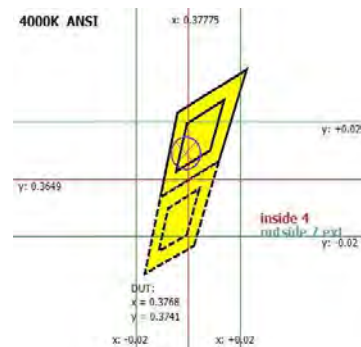
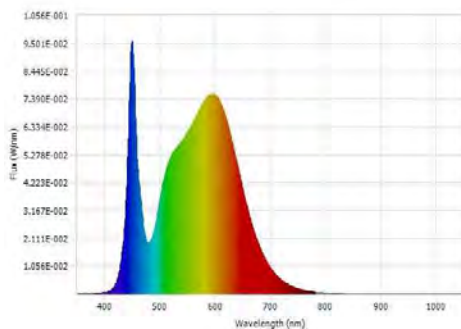
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions using  $4\pi$  geometry. The self-absorption 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	Orientation
25.1	119.92	60	0.2504	29.813	0.9929	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4081	83	9.0	-0.0002	4462.87	149.70	1115.72



Luminous Flux (lm)	4462.87	Chrom x	0.3768
Chrom y	0.3741	Chrom u	0.2238
Chrom v	0.3333	Duv	-0.0002
Chrom u'	0.2238	Chrom v'	0.4999
CCT (K)	4081	Luminous Efficacy (lm/W)	149.70
Ra	83	R1	81.0
R2	88.0	R3	93.0
R4	83.0	R5	82.0
R6	83.0	R7	86.0
R8	66.0	R9	9.0
R10	72.0	R11	82.0
R12	62.0	R13	83.0
R14	96.0	R15	75.0
Rf	84	Rg	97
Rcs,h1	-12%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

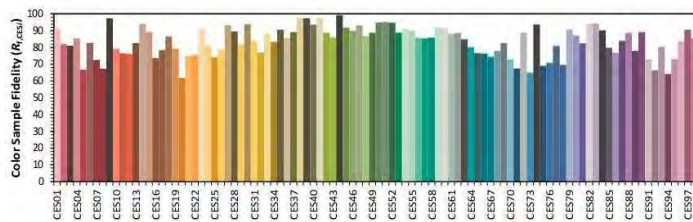
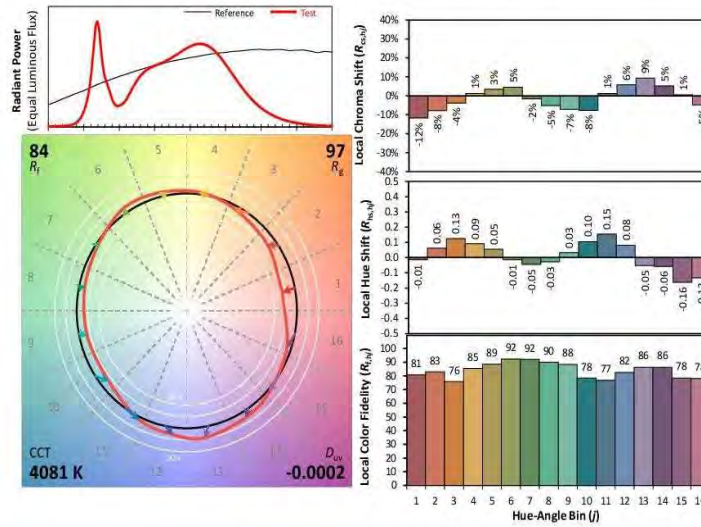
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-11M-3AA

Manufacturer: P.Q.L., Inc.

Date: 9/27/2022

Model: 55762-30W-40K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.3768  
 y 0.3741  
 u' 0.2238  
 v' 0.4999

CIE 13.3-1995  
 (CRI)  
 $R_a$  83  
 $R_9$  9

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.





## Integrating Sphere Test

<b>Model No.</b>	55762-30W-50K		<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	45	

### Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assumed 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

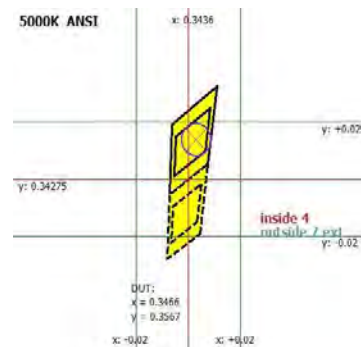
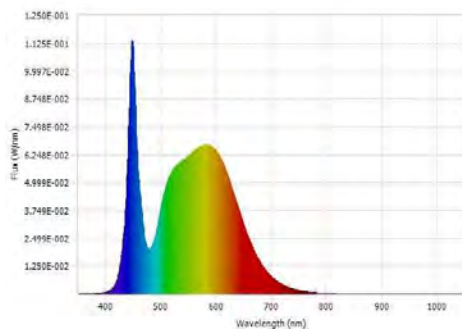
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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	Orientation
25.1	119.93	60	0.2616	31.141	0.9925	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4962	81	2.0	0.0020	4250.69	136.50	1062.67



Luminous Flux (lm)	4250.69	Chrom x	0.3466
Chrom y	0.3567	Chrom u	0.2105
Chrom v	0.3249	Duv	0.0020
Chrom u'	0.2105	Chrom v'	0.4874
CCT (K)	4962	Luminous Efficacy (lm/W)	136.50
Ra	81	R1	79.0
R2	85.0	R3	90.0
R4	82.0	R5	80.0
R6	79.0	R7	87.0
R8	67.0	R9	2.0
R10	64.0	R11	81.0
R12	57.0	R13	80.0
R14	94.0	R15	73.0
Rf	82	Rg	98
Rcs,h1	-13%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

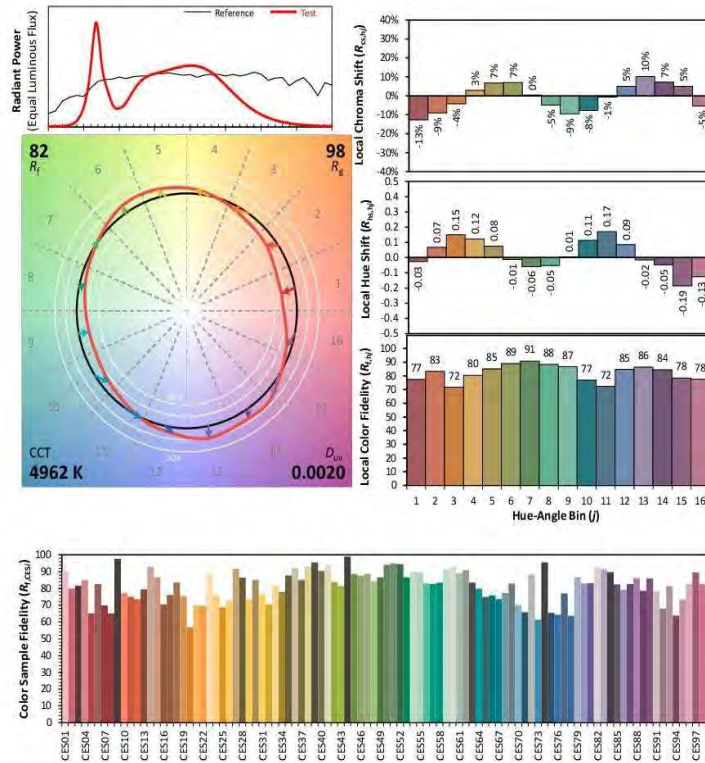
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-11M-3AA

Manufacturer: P.Q.L., Inc.

Date: 9/27/2022

Model: 55762-30W-50K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.3466  
 y 0.3567  
 u' 0.2105  
 v' 0.4874

CIE 13.3-1995  
 (CRI)  
 R<sub>a</sub> 81  
 R<sub>g</sub> 2

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



## Integrating Sphere Test

<b>Model No.</b>	55762-25W-35K		<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	45	

### Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assumed 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The reference standard lamp is rated current 2.679A omnidirectional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

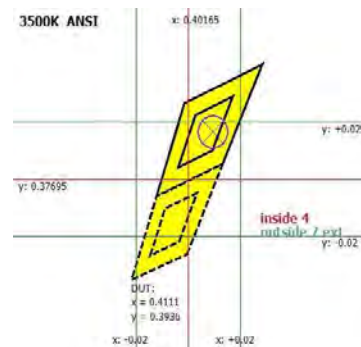
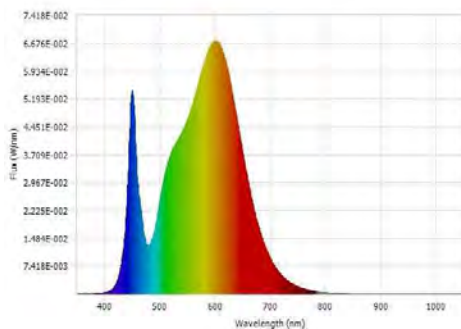
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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	Orientation
25.1	119.94	60	0.2190	26.082	0.9928	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3399	82	5.0	0.0000	3604.53	138.20	901.03



Luminous Flux (lm)	3604.53	Chrom x	0.4111
Chrom y	0.3936	Chrom u	0.2383
Chrom v	0.3422	Duv	0.0000
Chrom u'	0.2383	Chrom v'	0.5133
CCT (K)	399	Luminous Efficacy (lm/W)	138.20
Ra	82	R1	81.0
R2	89.0	R3	96.0
R4	82.0	R5	81.0
R6	86.0	R7	84.0
R8	61.0	R9	5.0
R10	74.0	R11	81.0
R12	66.0	R13	82.0
R14	98.0	R15	73.0
Rf	84	Rg	97
Rcs,h1	-12%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

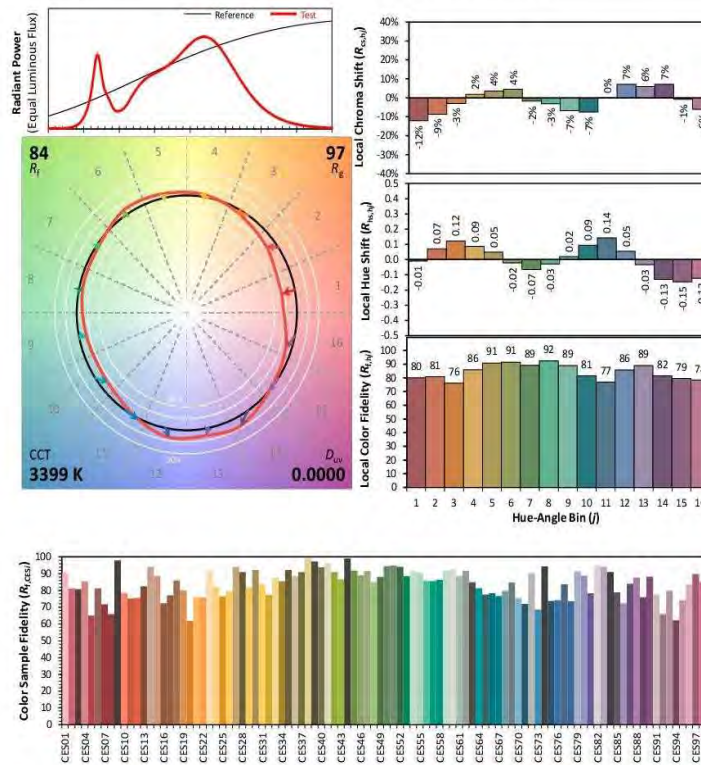
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-11M-3AA

Manufacturer: P.Q.L., Inc.

Date: 9/27/2022

Model: 55762-25W-35K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4111  
 y 0.3936  
 u' 0.2383  
 v' 0.5133

CIE 13.3-1995 (CRI)
$R_a$ 82
$R_9$ 5

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



## Integrating Sphere Test

<b>Model No.</b>	55762-18W-35K		<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	45	

### Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assumed 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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

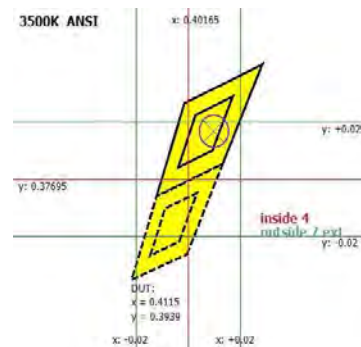
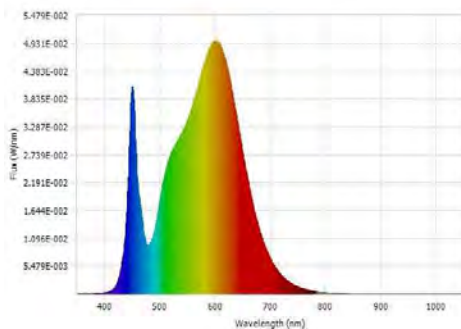
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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	Orientation
25.1	119.98	60	0.1528	18.092	0.9867	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3392	83	6.0	0.0001	2658.96	146.97	664.74



Luminous Flux (lm)	2658.96	Chrom x	0.4115
Chrom y	0.3939	Chrom u	0.2384
Chrom v	0.3423	Duv	0.0001
Chrom u'	0.2384	Chrom v'	0.5135
CCT (K)	3392	Luminous Efficacy (lm/W)	146.97
Ra	83	R1	81.0
R2	89.0	R3	96.0
R4	82.0	R5	81.0
R6	86.0	R7	85.0
R8	61.0	R9	6.0
R10	75.0	R11	81.0
R12	66.0	R13	83.0
R14	98.0	R15	74.0
Rf	84	Rg	97
Rcs,h1	-12%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

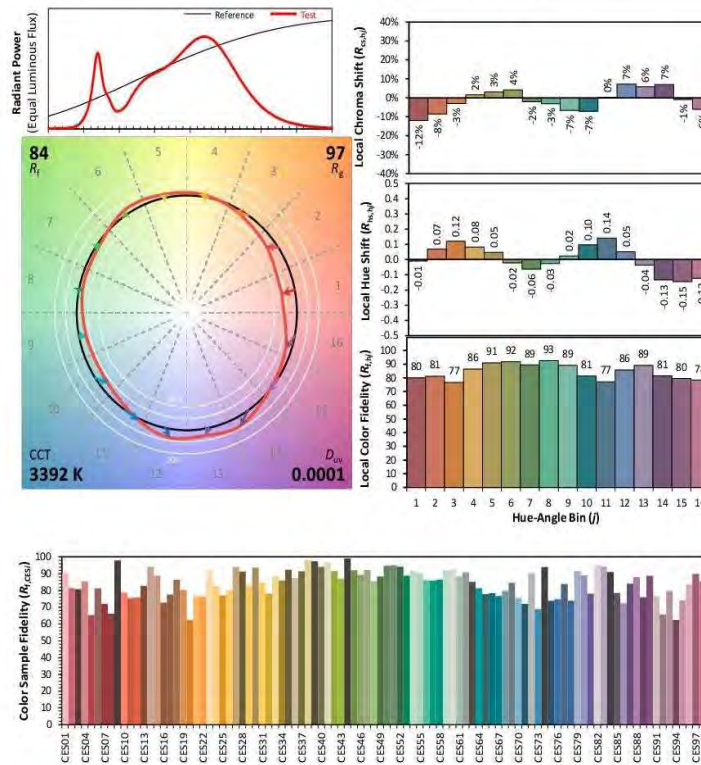
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-11M-3AA

Manufacturer: P.Q.L., Inc.

Date: 9/27/2022

Model: 55762-18W-35K



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4115  
 y 0.3939  
 u' 0.2384  
 v' 0.5135

CIE 13.3-1995  
 (CRI)  
 $R_a$  83  
 $R_9$  6

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



### Goniophotometer Test

<b>Model No.</b>	55762-30W-35K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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 a type C goniophotometer and software.
- 3.The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The reference standard lamp is rated current 3.8581A, 3.8558A, 3.8466A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
- 4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

#### Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
25.1	120.08	60	0.2631	31.274	0.9895	7.02%	Horizontal

#### Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	0°-60°	N/A	Horizontal Spread	Vertical Spread	
4080.3	60.00%	N/A	141.1	110.8	130.47

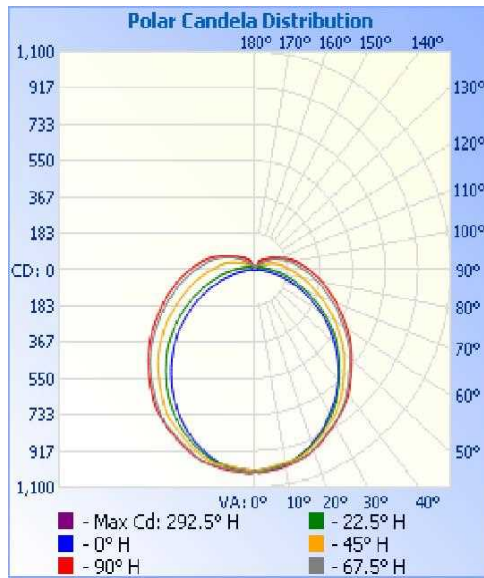
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
N/A	N/A	N/A	N/A

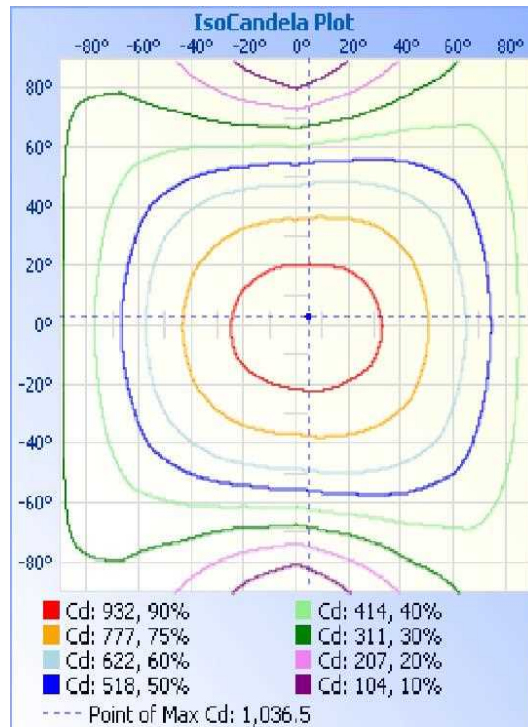


### Goniophotometer Test (Cont'd)

Polar Candela Distribution



### IsoCandela Plot







**Goniophotometer Test (Cont'd)**  
Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	804.1	19.70%
0-40	1332.9	32.70%
0-60	2446.6	60.00%
60-90	1103.9	27.10%
70-100	822.1	20.10%
90-120	403.3	9.90%
0-90	3550.5	87.00%
90-180	529.8	13.00%
0-180	4080.3	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	24.4	0.60%	90-95	101.6	2.50%
5-10	72.6	1.80%	95-100	86.8	2.10%
10-15	118.6	2.90%	100-105	72.8	1.80%
15-20	160.9	3.90%	105-110	58.9	1.40%
20-25	198.0	4.90%	110-115	46.3	1.10%
25-30	229.7	5.60%	115-120	37.0	0.90%
30-35	255.3	6.30%	120-125	29.5	0.70%
35-40	273.4	6.70%	125-130	23.5	0.60%
40-45	282.8	6.90%	130-135	18.8	0.50%
45-50	284.9	7.00%	135-140	15.2	0.40%
50-55	279.6	6.90%	140-145	12.1	0.30%
55-60	266.4	6.50%	145-150	9.5	0.20%
60-65	247.1	6.10%	150-155	7.0	0.20%
65-70	223.2	5.50%	155-160	4.7	0.10%
70-75	197.2	4.80%	160-165	3.2	0.10%
75-80	171.0	4.20%	165-170	1.9	0.00%
80-85	145.0	3.60%	170-175	0.9	0.00%
85-90	120.5	3.00%	175-180	0.2	0.00%



**Goniophotometer Test (Cont'd)**  
**Intensity Data(cd)**

Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018
1	1015	1015	1015	1025	1025	1020	1017	1016	1016	1014	1015	1027	1027	1023	1020	1017	1015
2	1016	1011	1013	1024	1025	1024	1022	1018	1015	1012	1014	1028	1028	1028	1024	1020	1016
3	1016	1010	1012	1020	1024	1027	1025	1019	1013	1011	1013	1025	1028	1031	1028	1020	1016
4	1015	1006	1006	1019	1020	1029	1028	1021	1016	1008	1011	1024	1026	1036	1031	1022	1014
5	1014	1005	1002	1014	1020	1030	1029	1019	1014	1008	1008	1022	1026	1036	1033	1024	1014
6	1012	1004	999	1012	1018	1030	1028	1020	1013	1008	1006	1020	1025	1036	1034	1023	1011
7	1010	1002	996	1009	1017	1028	1027	1018	1012	1007	1004	1018	1025	1036	1033	1021	1010
8	1008	1000	993	1006	1014	1024	1025	1016	1009	1007	1002	1019	1025	1034	1030	1020	1006
9	1003	996	991	1004	1010	1019	1020	1013	1005	1004	1001	1016	1025	1031	1028	1016	1004
10	1002	995	989	1002	1008	1014	1016	1008	1002	1003	1003	1016	1022	1026	1026	1012	1001
11	997	991	989	1000	1006	1009	1010	1004	998	1000	1003	1015	1023	1024	1019	1009	996
12	991	987	988	997	1002	1005	1004	997	994	997	1004	1015	1019	1019	1016	1002	992
13	986	983	986	996	999	999	997	992	988	993	1002	1014	1018	1016	1009	998	986
14	981	977	984	995	996	994	992	987	983	990	1001	1016	1016	1013	1004	991	980
15	973	973	980	992	990	990	983	979	976	985	1000	1016	1012	1008	998	983	974
16	966	968	976	990	987	984	976	971	970	980	996	1014	1012	1006	991	977	967
17	958	960	971	987	984	979	969	963	963	974	990	1012	1010	1002	984	970	959
18	951	954	962	981	980	973	962	956	956	966	984	1009	1007	999	979	962	952
19	944	946	956	974	975	969	956	947	948	962	978	1002	1004	995	974	954	945
20	935	940	950	967	969	964	950	940	941	955	973	995	1001	991	969	947	937
25	893	900	909	927	934	934	918	900	899	919	941	965	974	967	941	909	893
30	842	854	871	894	898	896	878	856	849	877	908	939	948	935	908	869	844
35	789	800	828	856	862	854	830	803	794	828	871	910	916	901	862	816	786
40	726	738	769	805	817	809	776	743	732	770	817	866	879	864	816	762	726
45	657	673	709	750	764	752	718	680	664	709	765	815	831	812	765	704	659
50	585	608	653	698	712	694	653	611	592	643	712	767	781	759	702	636	588
55	510	535	588	641	657	638	584	532	513	572	650	713	732	706	638	561	509
60	426	456	520	578	598	578	519	456	429	496	584	654	675	649	575	490	427
65	341	377	454	518	541	519	454	380	345	418	518	594	618	589	510	414	343
70	260	302	391	461	487	462	391	304	261	342	451	534	562	532	448	339	260
75	182	236	333	409	436	412	336	237	183	273	393	481	510	479	391	272	182
80	107	180	284	362	390	364	286	180	109	212	340	430	460	428	337	212	108
85	46	130	239	317	346	319	239	129	44	156	288	380	411	379	286	158	46
90	10	93	200	276	305	277	200	93	8	114	241	333	365	332	240	115	10
95	9	73	170	243	269	243	170	73	7	87	207	292	323	291	206	87	9
100	9	54	146	214	237	215	146	54	8	63	177	257	285	256	176	65	9
105	8	43	118	184	206	185	118	45	8	47	142	220	247	220	143	52	9
110	8	33	88	151	171	151	97	39	7	36	104	181	207	182	115	44	9
115	9	27	66	125	140	125	83	36	7	29	76	148	168	149	96	41	9
120	9	25	52	98	119	107	72	34	8	27	59	114	140	125	83	38	9
125	9	24	43	74	102	91	63	31	8	26	48	86	118	105	72	35	10
130	9	24	37	56	87	78	56	29	8	25	41	64	98	89	63	32	10
135	10	23	34	42	75	69	50	26	8	24	37	49	84	78	56	29	10
140	10	22	33	33	65	60	45	24	9	23	36	38	72	67	50	27	10
145	11	22	31	29	55	52	39	23	10	23	33	33	62	58	44	26	10
150	11	21	29	25	46	43	34	21	10	21	30	27	52	49	38	24	11
155	11	19	26	21	31	35	29	19	11	19	28	22	39	39	32	22	12
160	12	18	23	19	16	29	24	17	11	17	24	20	18	33	28	20	12
165	13	16	19	17	13	22	20	15	11	16	20	17	15	26	24	18	13
170	13	14	16	13	9	16	15	14	12	14	16	14	10	18	18	16	13
175	13	12	12	10	6	10	11	11	12	12	12	10	7	11	13	13	13
180	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9



### Goniophotometer Test

<b>Model No.</b>	55762-30W-50K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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 a type C goniophotometer and software.
- 3.The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The reference standard lamp is rated current 3.8581A, 3.8558A, 3.8466A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
- 4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

#### Goniophotometer Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
25.1	120.10	60	0.2622	31.16	0.9896	6.99%	Horizontal

#### Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	0°-60°	N/A	Horizontal Spread	Vertical Spread	
4212.9	59.70%	N/A	141.6	110.8	135.20

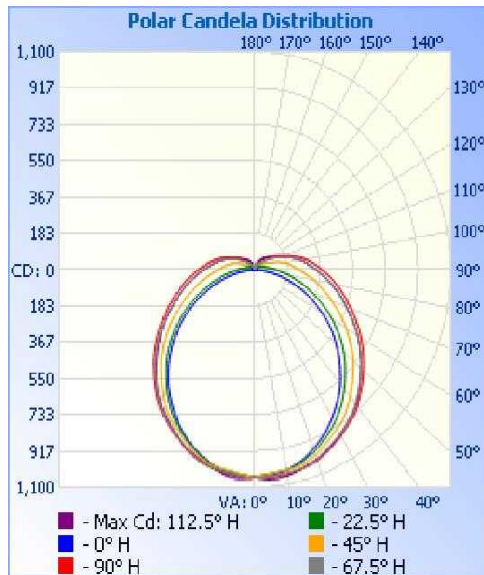
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
N/A	N/A	N/A	N/A

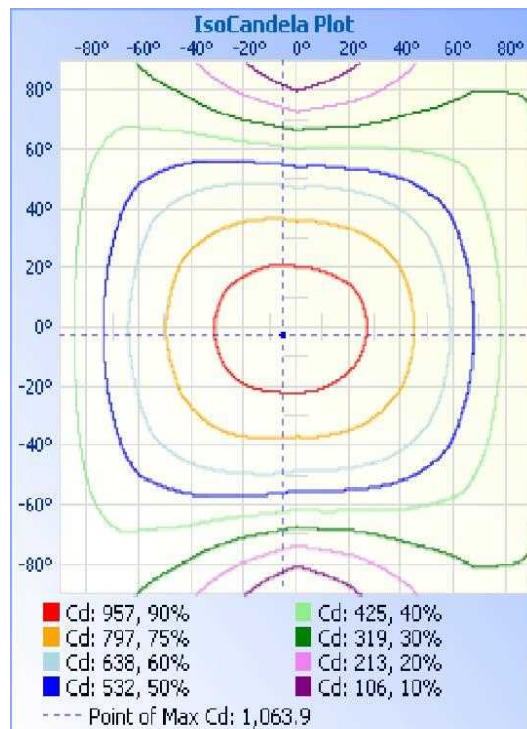


## Goniophotometer Test (Cont'd)

### Polar Candela Distribution



### IsoCandela Plot





**Goniophotometer Test (Cont'd)**  
Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	827.7	19.60%
0-40	1372.4	32.60%
0-60	2521.1	59.80%
60-90	1140.3	27.10%
70-100	850.2	20.20%
90-120	419.2	9.90%
0-90	3661.4	86.90%
90-180	551.5	13.10%
0-180	4212.9	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	25.1	0.60%	90-95	105.3	2.50%
5-10	74.6	1.80%	95-100	90.1	2.10%
10-15	122.0	2.90%	100-105	75.7	1.80%
15-20	165.6	3.90%	105-110	61.3	1.50%
20-25	203.9	4.80%	110-115	48.3	1.10%
25-30	236.6	5.60%	115-120	38.6	0.90%
30-35	263.0	6.20%	120-125	30.8	0.70%
35-40	281.7	6.70%	125-130	24.7	0.60%
40-45	291.7	6.90%	130-135	19.7	0.50%
45-50	293.9	7.00%	135-140	15.9	0.40%
50-55	288.2	6.80%	140-145	12.7	0.30%
55-60	274.9	6.50%	145-150	9.9	0.20%
60-65	255.2	6.10%	150-155	7.3	0.20%
65-70	230.2	5.50%	155-160	4.9	0.10%
70-75	203.6	4.80%	160-165	3.3	0.10%
75-80	176.6	4.20%	165-170	2.0	0.00%
80-85	149.8	3.60%	170-175	0.9	0.00%
85-90	124.8	3.00%	175-180	0.3	0.00%



**Goniophotometer Test (Cont'd)**  
**Intensity Data(cd)**

Candela Table - Type C																	
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046
1	1042	1043	1042	1054	1053	1049	1046	1046	1045	1043	1046	1055	1055	1051	1044	1045	1041
2	1043	1039	1041	1054	1055	1055	1051	1049	1044	1041	1044	1053	1056	1053	1048	1047	1042
3	1042	1036	1039	1052	1055	1059	1056	1049	1044	1039	1041	1052	1054	1057	1053	1048	1042
4	1042	1035	1038	1050	1054	1063	1058	1052	1044	1036	1038	1049	1054	1060	1056	1050	1041
5	1040	1033	1034	1047	1053	1064	1062	1051	1044	1035	1032	1046	1051	1061	1056	1049	1040
6	1037	1032	1031	1047	1053	1064	1062	1051	1043	1032	1029	1043	1048	1061	1056	1047	1039
7	1036	1030	1029	1045	1051	1064	1062	1052	1042	1031	1026	1040	1046	1059	1056	1047	1038
8	1034	1029	1026	1043	1051	1062	1061	1050	1039	1031	1023	1038	1045	1056	1053	1045	1034
9	1032	1028	1027	1043	1052	1058	1057	1046	1036	1030	1023	1037	1042	1050	1049	1042	1033
10	1028	1027	1026	1041	1051	1056	1055	1043	1031	1026	1020	1033	1041	1046	1046	1036	1028
11	1024	1024	1026	1040	1049	1052	1050	1038	1028	1025	1021	1032	1037	1040	1039	1032	1024
12	1017	1020	1026	1040	1048	1048	1046	1034	1023	1020	1021	1029	1034	1036	1034	1026	1018
13	1014	1017	1025	1039	1044	1044	1040	1027	1018	1017	1019	1029	1031	1030	1027	1020	1015
14	1006	1012	1023	1039	1042	1042	1032	1022	1013	1012	1018	1028	1028	1025	1021	1014	1008
15	1001	1008	1022	1040	1039	1037	1027	1014	1005	1005	1014	1026	1024	1022	1013	1007	1001
16	994	1002	1018	1038	1036	1032	1021	1007	998	999	1009	1025	1018	1017	1007	998	995
17	987	995	1012	1035	1034	1029	1014	1001	991	994	1004	1021	1015	1010	999	989	987
18	979	989	1007	1031	1031	1026	1009	994	984	988	998	1015	1013	1004	991	981	979
19	970	984	1002	1026	1029	1021	1003	985	977	982	991	1009	1009	999	985	973	971
20	962	977	996	1020	1026	1018	996	978	969	973	984	1002	1004	994	978	965	962
25	918	938	960	986	997	993	969	940	925	933	945	964	969	966	946	922	919
30	867	894	925	957	968	960	933	897	875	888	908	929	935	926	906	878	866
35	809	842	887	927	936	924	889	846	817	834	864	894	897	885	855	823	809
40	746	783	834	881	898	886	841	789	755	772	807	842	852	839	802	762	746
45	675	719	776	829	848	832	786	727	685	705	745	786	797	782	743	698	676
50	602	653	722	781	799	778	722	658	610	636	684	730	743	722	675	628	603
55	523	580	659	726	747	723	658	580	528	559	616	670	685	662	605	548	522
60	436	503	594	667	691	667	593	506	444	480	548	606	625	602	538	471	438
65	350	423	526	605	632	606	526	428	356	395	476	543	564	540	468	392	352
70	266	346	460	545	575	548	464	351	270	317	408	483	507	479	403	314	266
75	185	278	401	491	522	495	405	280	189	248	349	428	454	428	346	245	186
80	110	215	346	440	473	444	350	217	112	188	297	379	406	377	293	184	110
85	46	161	294	390	425	393	299	163	47	136	249	331	361	330	247	134	46
90	8	117	248	342	377	345	252	120	10	97	209	288	318	288	207	96	9
95	8	90	214	303	335	304	215	93	9	74	177	252	280	250	175	74	8
100	8	66	183	267	296	268	186	69	9	55	151	221	246	220	150	56	7
105	8	51	147	229	257	230	150	56	9	43	122	191	215	190	122	45	8
110	8	38	109	188	214	190	122	50	9	33	90	158	180	156	98	39	8
115	8	31	80	155	176	158	104	45	9	28	67	129	146	129	83	36	8
120	8	28	62	120	148	134	91	42	9	26	52	100	122	109	73	34	8
125	8	26	51	91	127	114	80	38	9	25	43	76	105	92	63	31	8
130	8	26	44	69	107	97	70	35	10	25	38	58	88	78	56	28	8
135	9	26	40	52	92	85	61	32	11	24	35	44	75	68	50	26	9
140	9	25	38	40	80	73	55	30	11	23	33	34	65	60	46	24	10
145	9	24	35	35	67	64	48	28	11	22	31	30	55	52	40	23	10
150	10	22	32	29	57	53	41	24	12	21	30	26	47	45	34	21	10
155	10	20	29	24	38	43	35	22	12	19	27	21	35	36	30	20	11
160	11	18	25	21	19	35	30	20	12	18	24	19	16	30	25	18	11
165	12	16	20	18	15	27	24	18	13	17	20	17	14	24	20	16	12
170	12	14	16	15	11	18	18	16	13	15	16	14	9	17	16	14	12
175	12	12	11	10	8	11	13	13	13	13	13	10	7	11	12	12	12
180	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9



## THD and PF Test

<b>Model No.</b>	55762-30W-35K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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
25.1	120.08	60	0.2631	31.27	0.9895	7.02%	Horizontal
25.1	277.07	60	0.1124	30.12	0.9675	12.74%	Horizontal



## THD and PF Test

<b>Model No.</b>	55762-30W-40K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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
25.1	119.98	60	0.2508	29.82	0.9908	6.58%	Horizontal
25.1	277.08	60	0.1078	28.83	0.9653	12.68%	Horizontal





## THD and PF Test

<b>Model No.</b>	55762-30W-50K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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
25.1	120.09	60	0.2621	31.16	0.9896	6.99%	Horizontal
25.1	277.08	60	0.1121	30.04	0.9674	12.74%	Horizontal



## THD and PF Test

<b>Model No.</b>	55762-25W-35K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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
25.1	120.10	60	0.2183	26.05	0.9936	7.91%	Horizontal
25.1	277.08	60	0.0968	25.67	0.9577	14.08%	Horizontal



## THD and PF Test

<b>Model No.</b>	55762-18W-35K	<b>Sample ID.</b>	5350102
<b>Operate time (Min.)</b>	90	<b>Stabilization time (Min.)</b>	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
25.1	120.10	60	0.1518	18.02	0.9881	11.33%	Horizontal
25.1	277.11	60	0.0729	18.76	0.9291	17.67%	Horizontal



### In-Situ Temperature Measurement Test

<b>Model No.</b>	55762-30W-35K	<b>Sample ID.</b>	5350102
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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.  
 3. The data and photos in LM-80 test report is provided by the customer/ The data and photos in driver specification is provided by the customer.

#### In-Situ Temperature Measurement Test Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
23.4	120.08	60	0.2631	31.27	0.9895	7.02%	Horizontal

#### Test Results (LEDs)

Thermocouple Location	Declared Light Source Current (mA)	Temperature for Light Source (°C)		Max Chromaticity Shift (1000-6000h)	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	23.4	25.0				
TMP of Location 1	110	45.0	46.6	0.0022	BXEN-(A)E-11M-3AA	150	105

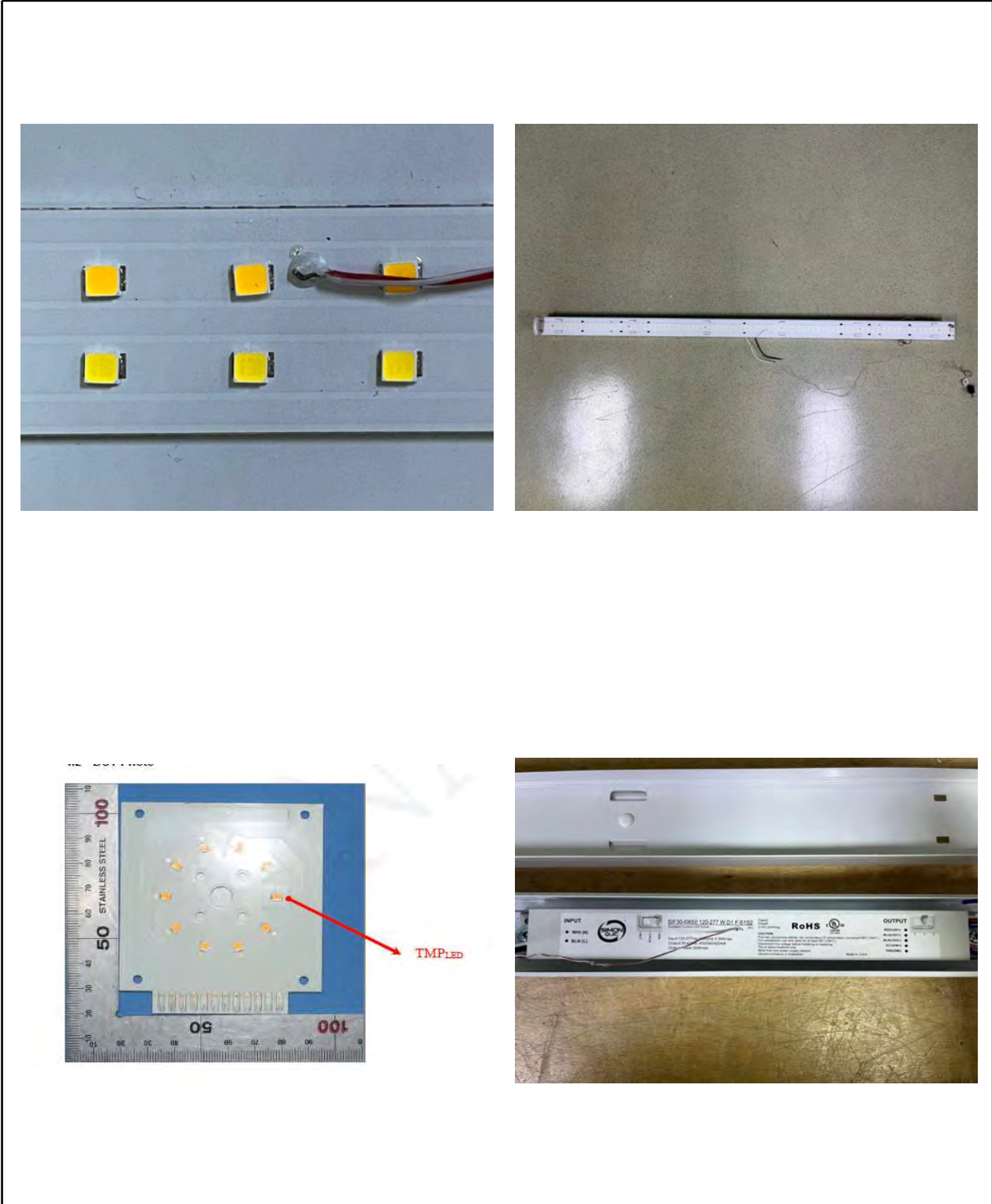
#### Test Results (Drivers)

Thermocouple Location	Temperature for Driver (°C)		Driver Model Number	Driver Limit Temp (°C)
	Test Result	Test Result (Correct to 25 °C)		
Ambient TEMP	23.4	25.0		
TMP of Location 1	58.2	59.8	SIF 30-I0650 120-277 W D1 F-S1S2	90



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

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





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