



## 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

55716, 55717

### Project Number

4790484059

### Report Number

4790484059\_18

### Test Date

2022-09-16~2022-10-20

### Issue Date

2022-10-20

### Revision Date

N/A

### Prepared By

*Elaine Zhou*

Zhao, Elaine

### Approved By

*Elvis Wu*

Wu, Elvis

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

This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government. The laboratory is not responsible for the information which provided by customer, its authenticity can affect the validity of the result in the test report.



## Test Summary

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

Requirement Category	Test Method	Requirements	Tolerance	Test Result
Minimum Light Output (lm)-Luminaires	IES LM-79-2008	≥10000	-10%	29284.7
Zonal Lumen Requirement 1(20°-50°)	IES LM-79-2008	≥30%	-10%	53.20%
Minimum Luminaire Efficacy (lm/W)-Luminaires	IES LM-79-2008	≥135	-3%	151.77
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	3981
Allowable CCT (5000K)	IES LM-79-2008/ANSI C78.377-2015	5029±283	N/A	4880
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	3975
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	3970
Minimum CRI	IES LM-79-2008/CIE 13.3-1995	≥70	-1	79
Minimum R9	IES LM-79-2008	≥40	-1	-15.0
Minimum Rg	IES LM-79-2008	≥89	-1	93
Minimum Rf	IES LM-79-2008	≥70	-1	81
Rcs,h1	IES LM-79-2008	-18%-23%	-1%	-15%
Unified Glare Rating (UGR)	IES LM-79-2008	≤28	N/A	27.3
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	0.9233
Total Harmonic Distortion (A%)	ANSI C82.77-10-2014	≤20%	5%	12.30%
In-Situ Temperature Measurement Test for LED 1 (°C)	UL1598-2008	≤105	N/A	53.8
In-Situ Temperature Measurement Test for Driver 1 (°C)	UL1598-2008	≤90	N/A	51.4
Max Chromaticity Shift (1000-6000h)	N/A	≤0.007	0.0004	0.0020
Minimum Luminaire Warranty (Years)	N/A	≥5	N/A	≥5



## Test List

Sample Received Date: 2022-08-04

Test Item	Test Date	Model Number	Tests Conducted By
Integrating Sphere Test	2022-09-17	55716-270W	Yang, Gavin X
Integrating Sphere Test	2022-09-17	55717-270W	Yang, Gavin X
Integrating Sphere Test	2022-09-17	55716-230W	Yang, Gavin X
Integrating Sphere Test	2022-09-17	55716-185W	Yang, Gavin X
Goniophotometer Test	2022-09-16	55716-270W	Yang, Gavin X
THD and PF Test	2022-09-16	55716-270W	Yang, Gavin X
THD and PF Test	2022-09-16	55717-270W	Yang, Gavin X
THD and PF Test	2022-09-16	55716-230W	Yang, Gavin X
THD and PF Test	2022-09-16	55716-185W	Yang, Gavin X
In-Situ Temperature Measurement Test	2022-10-20	55716-270W	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:** High-bay Luminaires for Commercial and Industrial Buildings

**Model Number:** 55716, 55717

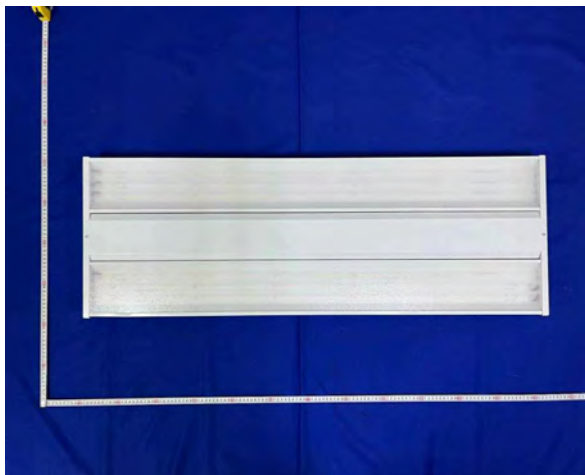
**Electrical Parameter:** 120-277V, 50/60Hz

**LED Package:** BXEN-(A)E-21L-3A

**Dimming Information:** Continuous dimming capability

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
55716	4000K	40500	270	150
55717	5000k	40770	270	151
55716	4000K	34960	230	152
55717	5000K	35190	230	153
55716	4000k	28490	185	154
55717	5000K	28675	185	155





## Integrating Sphere Test

<b>Model No.</b>	55716-270W	<b>Sample ID.</b>	5210392
<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.

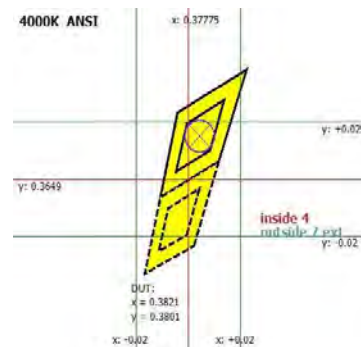
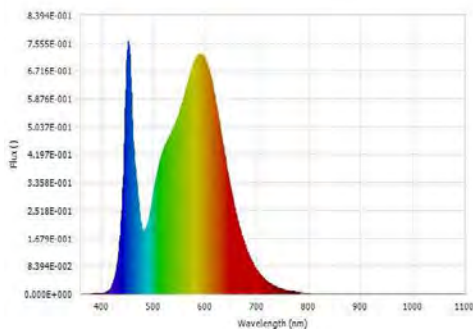
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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
25.2	120	60	2.2312	266.95	0.9970	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3981	79	-15.0	0.0011	40516.1	151.77	N/A



Luminous Flux (lm)	40516.1	Chrom x	0.3821
Chrom y	0.3801	Chrom u	0.2248
Chrom v	0.3355	Duv	0.0011
Chrom u'	0.2248	Chrom v'	0.5033
CCT (K)	3981	Luminous Efficacy (lm/W)	151.77
Ra	79	R1	76.0
R2	87.0	R3	95.0
R4	76.0	R5	76.0
R6	82.0	R7	83.0
R8	55.0	R9	-15.0
R10	69.0	R11	74.0
R12	57.0	R13	78.0
R14	97.0	R15	68.0
Rf	81	Rg	93
Rcs,h1	-15%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

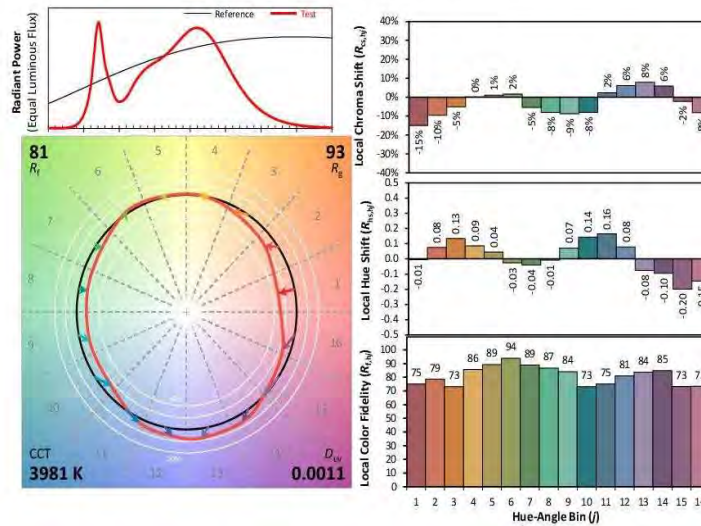
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-21L-3A

Manufacturer: P.Q.L., Inc.

Date: 9/17/2022

Model: 55716-270W



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

x 0.3821  
 y 0.3801  
 u' 0.2248  
 v' 0.5033

CIE 13.3-1995  
 (CRI)  
 $R_a$  79  
 $R_g$  -15

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>	55717-270W	<b>Sample ID.</b>	5210393
<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.

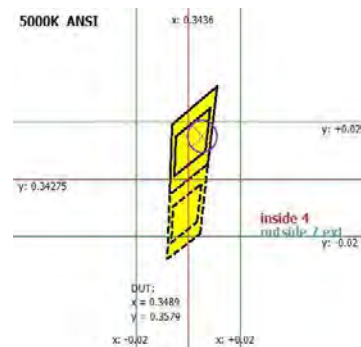
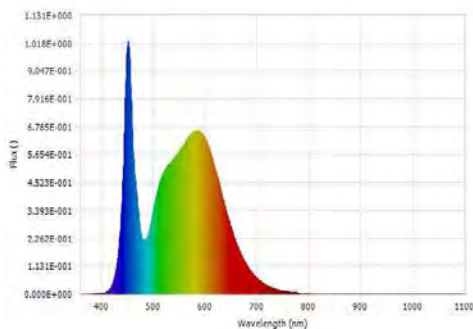
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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
25.2	120.03	60	2.2307	266.93	0.9969	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4880	80	-10.0	0.0016	41025.9	153.70	N/A



Luminous Flux (lm)	41025.9	Chrom x	0.3489
Chrom y	0.3579	Chrom u	0.2116
Chrom v	0.3255	Duv	0.0016
Chrom u'	0.2116	Chrom v'	0.4883
CCT (K)	4880	Luminous Efficacy (lm/W)	153.70
Ra	80	R1	77.0
R2	86.0	R3	92.0
R4	78.0	R5	77.0
R6	80.0	R7	85.0
R8	61.0	R9	-10.0
R10	66.0	R11	77.0
R12	53.0	R13	79.0
R14	96.0	R15	70.0
Rf	81	Rg	95
Rcs,h1	-15%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

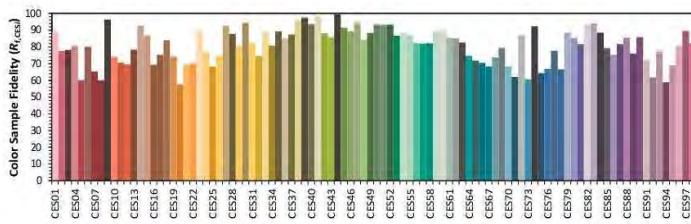
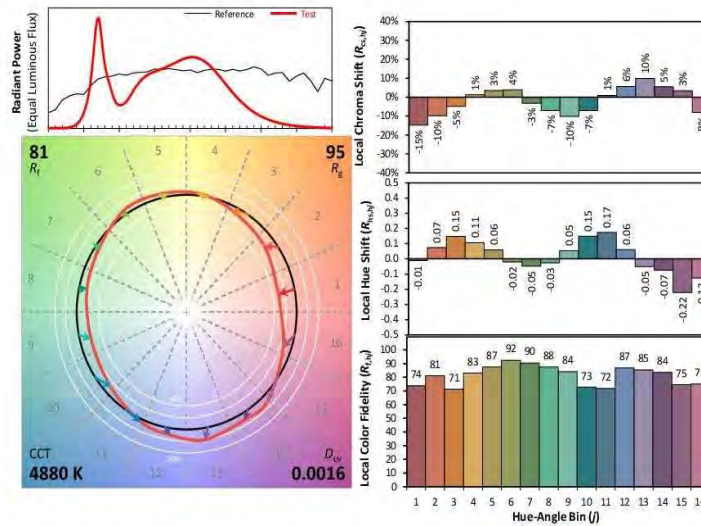
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-21L-3A

Manufacturer: P.Q.L., Inc.

Date: 9/17/2022

Model: 55717-270W



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

x 0.3489  
 y 0.3579  
 u' 0.2116  
 v' 0.4883

CIE 13.3-1995  
 (CRI)  
 $R_a$  80  
 $R_g$  -10

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>	55716-230W	<b>Sample ID.</b>	5210392
<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.

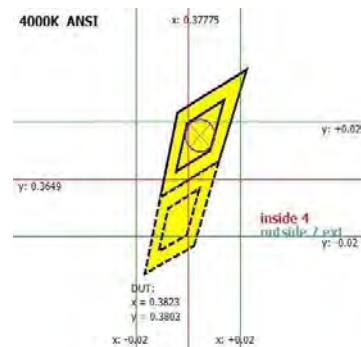
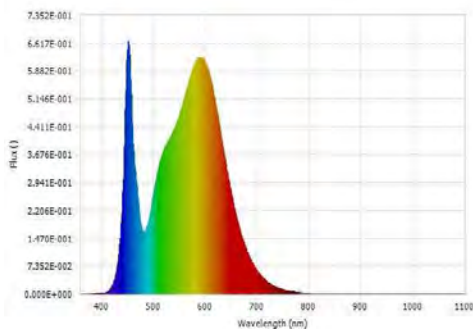
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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
25.2	120.03	60	1.8698	223.62	0.9967	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3975	79	-15.0	0.0011	35005.6	156.54	N/A



Luminous Flux (lm)	35005.6	Chrom x	0.3823
Chrom y	0.3803	Chrom u	0.2249
Chrom v	0.3356	Duv	0.0011
Chrom u'	0.2249	Chrom v'	0.5034
CCT (K)	3975	Luminous Efficacy (lm/W)	156.54
Ra	79	R1	76.0
R2	87.0	R3	95.0
R4	76.0	R5	76.0
R6	82.0	R7	83.0
R8	55.0	R9	-15.0
R10	70.0	R11	75.0
R12	57.0	R13	79.0
R14	97.0	R15	68.0
Rf	81	Rg	93
Rcs,h1	-15%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

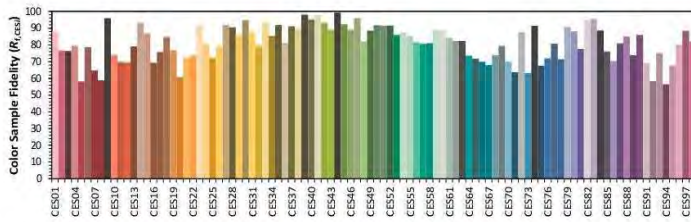
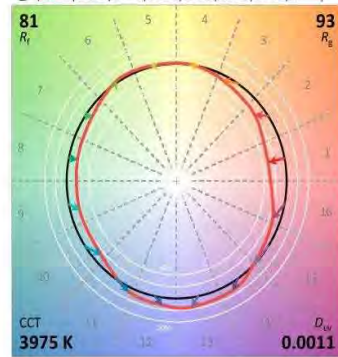
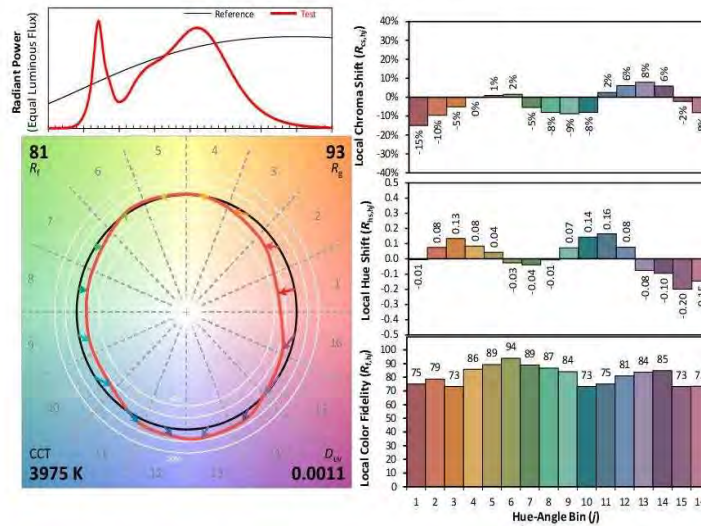
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-21L-3A

Manufacturer: P.Q.L., Inc.

Date: 9/17/2022

Model: 55716-230W



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

x 0.3823  
 y 0.3803  
 u' 0.2249  
 v' 0.5034

CIE 13.3-1995  
 (CRI)  
 $R_a$  79  
 $R_g$  -15

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>	55716-185W	<b>Sample ID.</b>	5210392
<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.

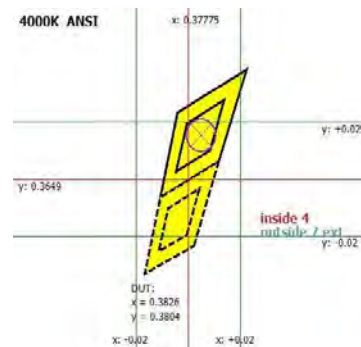
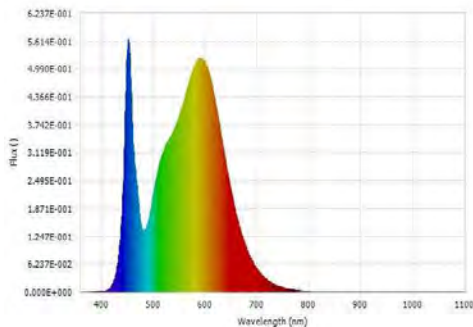
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using  $4\pi$  geometry. The self-absorption 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
25.2	119.99	60	1.5243	182.11	0.9957	Horizontal

### Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3970	79	-15.0	0.0011	29284.7	160.81	N/A



Luminous Flux (lm)	29284.7	Chrom x	0.3826
Chrom y	0.3804	Chrom u	0.2250
Chrom v	0.3357	Duv	0.0011
Chrom u'	0.2250	Chrom v'	0.5035
CCT (K)	3970	Luminous Efficacy (lm/W)	160.81
Ra	79	R1	76.0
R2	87.0	R3	95.0
R4	77.0	R5	77.0
R6	82.0	R7	83.0
R8	56.0	R9	-15.0
R10	70.0	R11	75.0
R12	57.0	R13	79.0
R14	97.0	R15	68.0
Rf	81	Rg	93
Rcs,h1	-15%		



## Integrating Sphere Test (Cont'd)

### TM-30 Report

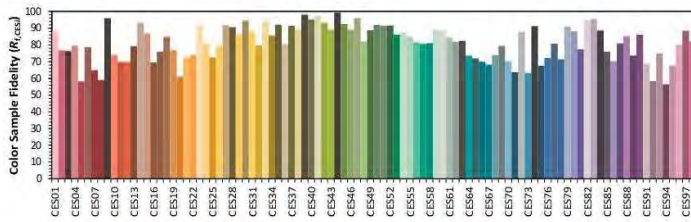
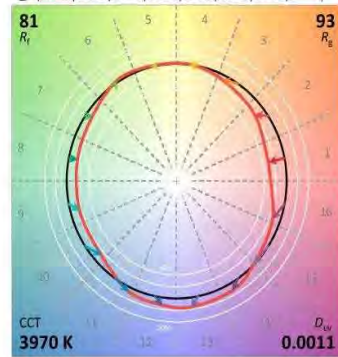
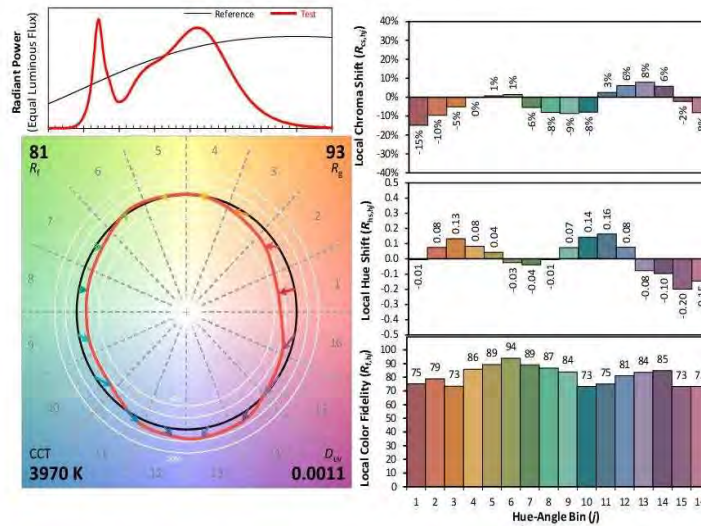
#### ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-21L-3A

Manufacturer: P.Q.L., Inc.

Date: 9/17/2022

Model: 55716-185W



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

x 0.3826  
 y 0.3804  
 u' 0.2250  
 v' 0.5035

CIE 13.3-1995  
 (CRI)  
 $R_a$  79  
 $R_g$  -15

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>	55716-270W	<b>Sample ID.</b>	5210392
<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
24.7	119.99	60	2.2377	267.72	0.9971	3.81%	Horizontal

#### Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	20°-50°	N/A	Horizontal Spread	Vertical Spread	
40680.6	53.20%	N/A	103.0	105.6	151.95

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

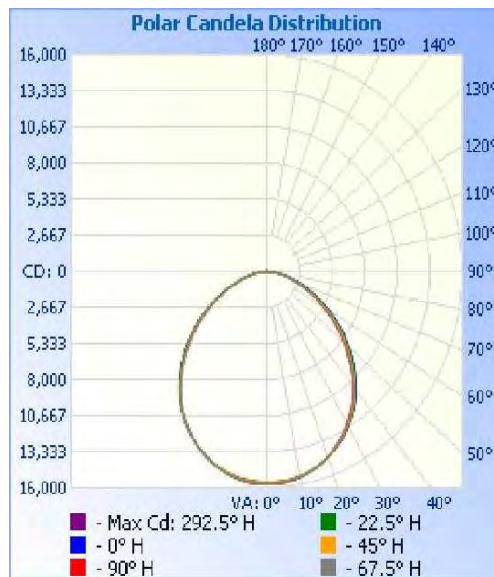
UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
27.3	26.6	N/A	N/A



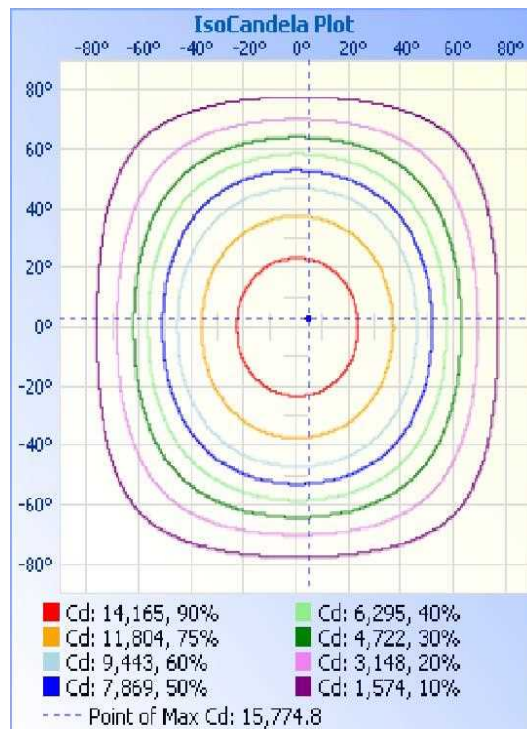


## Goniophotometer Test (Cont'd)

### Polar Candela Distribution



### IsoCandela Plot







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

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	12159.6	29.90%
0-40	19797.6	48.70%
0-60	33708.1	82.90%
60-90	6863.6	16.90%
70-100	2616.6	6.40%
90-120	29.4	0.10%
0-90	40571.7	99.70%
90-180	108.9	0.30%
0-180	40680.6	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	374.0	0.90%	90-95	6.1	0.00%
5-10	1111.8	2.70%	95-100	5.0	0.00%
10-15	1810.1	4.40%	100-105	4.5	0.00%
15-20	2444.4	6.00%	105-110	4.5	0.00%
20-25	2990.4	7.40%	110-115	4.5	0.00%
25-30	3428.9	8.40%	115-120	4.8	0.00%
30-35	3737.6	9.20%	120-125	5.5	0.00%
35-40	3900.4	9.60%	125-130	6.4	0.00%
40-45	3883.7	9.50%	130-135	7.2	0.00%
45-50	3701.6	9.10%	135-140	8.1	0.00%
50-55	3385.8	8.30%	140-145	8.4	0.00%
55-60	2939.4	7.20%	145-150	8.5	0.00%
60-65	2405.5	5.90%	150-155	8.3	0.00%
65-70	1852.7	4.60%	155-160	8.0	0.00%
70-75	1312.2	3.20%	160-165	7.3	0.00%
75-80	811.8	2.00%	165-170	6.3	0.00%
80-85	386.8	1.00%	170-175	4.0	0.00%
85-90	94.7	0.20%	175-180	1.4	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	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613	15613
1	15593	15561	15613	15678	15670	15683	15631	15587	15579	15557	15615	15677	15670	15683	15636	15587	15580
2	15590	15559	15601	15685	15708	15739	15680	15611	15575	15549	15600	15687	15707	15733	15678	15614	15586
3	15588	15550	15583	15683	15716	15761	15705	15618	15569	15540	15584	15680	15719	15765	15708	15625	15583
4	15582	15536	15568	15664	15716	15765	15719	15625	15562	15526	15564	15663	15722	15775	15727	15638	15576
5	15572	15512	15547	15630	15695	15753	15718	15624	15549	15497	15540	15626	15699	15759	15733	15637	15568
6	15566	15490	15529	15590	15653	15722	15695	15605	15527	15470	15516	15586	15662	15730	15715	15625	15557
7	15540	15460	15499	15550	15602	15681	15664	15583	15503	15438	15493	15547	15622	15700	15692	15606	15537
8	15514	15425	15474	15508	15554	15641	15625	15549	15482	15406	15466	15509	15572	15656	15650	15576	15509
9	15484	15386	15434	15472	15501	15592	15580	15510	15445	15368	15423	15465	15505	15602	15601	15537	15476
10	15442	15342	15383	15430	15436	15532	15517	15459	15404	15324	15373	15418	15436	15541	15541	15484	15434
11	15381	15299	15319	15377	15365	15461	15443	15390	15343	15274	15306	15366	15374	15472	15468	15425	15378
12	15317	15246	15257	15317	15299	15375	15356	15304	15278	15209	15239	15311	15307	15395	15393	15356	15316
13	15247	15189	15193	15249	15222	15284	15261	15220	15199	15148	15168	15245	15237	15318	15314	15284	15253
14	15172	15124	15129	15173	15149	15187	15168	15137	15118	15080	15100	15179	15170	15232	15232	15202	15180
15	15101	15049	15062	15096	15070	15095	15069	15047	15041	15005	15033	15097	15092	15140	15135	15111	15099
16	15021	14968	14994	15011	14987	15000	14979	14957	14956	14928	14962	15006	15003	15036	15037	15013	15011
17	14921	14881	14913	14924	14898	14908	14881	14864	14865	14844	14881	14914	14901	14937	14934	14912	14916
18	14824	14790	14826	14832	14795	14800	14774	14755	14765	14748	14792	14812	14798	14830	14828	14810	14817
19	14720	14698	14721	14726	14679	14690	14662	14644	14657	14641	14685	14710	14686	14725	14717	14702	14716
20	14612	14595	14606	14616	14559	14568	14544	14521	14542	14526	14565	14603	14572	14615	14607	14594	14616
25	14026	13985	13959	13916	13869	13907	13906	13902	13929	13913	13913	13915	13906	13976	13991	13998	14021
30	13284	13246	13191	13115	13044	13074	13104	13141	13176	13151	13140	13103	13080	13152	13210	13254	13286
35	12393	12342	12276	12179	12105	12110	12147	12207	12249	12234	12218	12191	12175	12226	12294	12359	12398
40	11339	11258	11154	11050	10992	11013	11074	11160	11189	11150	11092	11025	11031	11112	11209	11306	11329
45	10101	10026	9856	9712	9646	9676	9779	9888	9942	9881	9786	9695	9701	9813	9950	10083	10120
50	8781	8722	8524	8346	8252	8259	8378	8510	8613	8560	8453	8350	8336	8426	8579	8728	8820
55	7426	7321	7159	6941	6827	6842	6967	7130	7245	7194	7089	6955	6919	6978	7146	7312	7406
60	5980	5878	5693	5474	5376	5397	5535	5694	5795	5738	5622	5484	5451	5558	5732	5904	5985
65	4573	4505	4287	4127	4038	4064	4184	4328	4416	4360	4231	4137	4131	4222	4382	4534	4602
70	3321	3236	3076	2931	2869	2880	2979	3107	3165	3128	3028	2947	2941	3003	3139	3268	3312
75	2194	2125	2004	1880	1832	1838	1908	1996	2048	2020	1956	1898	1898	1966	2070	2166	2198
80	1219	1182	1081	1009	969	968	1012	1072	1107	1094	1048	1023	1034	1070	1139	1208	1230
85	478	450	402	351	323	323	345	376	394	394	378	364	362	389	430	468	476
90	28	23	15	14	12	12	12	12	12	11	13	14	18	23	26	30	28
95	12	10	7	10	12	10	10	9	11	10	11	10	11	10	9	12	10
100	10	9	7	8	8	10	7	8	9	9	10	8	8	9	10	7	9
105	8	8	8	8	8	10	10	9	8	9	7	7	8	10	9	8	9
110	9	8	8	8	10	8	9	10	7	10	8	8	11	8	8	10	9
115	10	10	8	9	7	11	7	10	9	9	10	9	9	6	8	8	9
120	12	11	12	11	12	10	10	13	11	11	12	10	11	10	10	12	10
125	13	14	15	14	12	12	13	14	14	14	14	13	12	13	13	13	12
130	19	15	18	16	16	19	16	15	17	16	17	16	15	17	16	17	17
135	18	22	17	20	21	22	20	20	20	19	20	19	20	19	19	20	20
140	26	24	26	24	23	22	23	24	23	23	24	23	25	23	24	24	24
145	27	28	27	26	29	26	27	27	28	26	28	26	29	26	27	28	27
150	30	31	31	30	32	32	31	30	30	31	30	31	32	31	30	31	30
155	33	36	34	36	37	38	35	35	34	35	34	36	36	36	35	34	35
160	39	42	41	40	41	40	42	42	41	40	41	40	42	42	41	40	41
165	51	49	49	50	51	50	50	48	50	50	48	51	49	49	49	49	47
170	54	54	56	57	57	56	56	56	54	54	55	58	56	58	54	55	55
175	60	57	56	56	58	58	58	58	56	56	57	58	57	58	57	56	56
180	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60



### THD and PF Test

<b>Model No.</b>	55716-270W	<b>Sample ID.</b>	5210392
<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
24.7	119.99	60	2.2377	267.72	0.9971	3.81%	Horizontal
24.7	276.99	60	0.9939	263.57	0.9675	8.59%	Horizontal



## THD and PF Test

<b>Model No.</b>	55717-270W	<b>Sample ID.</b>	5210393
<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  $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ . 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 ( $^{\circ}\text{C}$ )	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.7	119.98	60	2.2353	267.45	0.9971	3.51%	Horizontal
24.7	276.97	60	0.9932	263.39	0.9575	8.66%	Horizontal



## THD and PF Test

<b>Model No.</b>	55716-230W	<b>Sample ID.</b>	5210392
<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
24.7	119.94	60	1.8739	224.00	0.9967	3.79%	Horizontal
24.7	277.00	60	0.8467	221.31	0.9437	10.27%	Horizontal



## THD and PF Test

<b>Model No.</b>	55716-185W	<b>Sample ID.</b>	5210392
<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
24.7	120.00	60	1.5261	182.30	0.9957	3.09%	Horizontal
24.7	277.01	60	0.7078	181.06	0.9233	12.30%	Horizontal





## In-Situ Temperature Measurement Test

<b>Model No.</b>	55716-270W	<b>Sample ID.</b>	5210392
------------------	------------	-------------------	---------

### 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
23.1	119.99	60	2.2377	267.72	0.9971	3.81%	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	23.1	25.0				
TMP of Location 1	90	51.9	53.8	0.0020	BXEN-(A)E-21L-3A	240	105

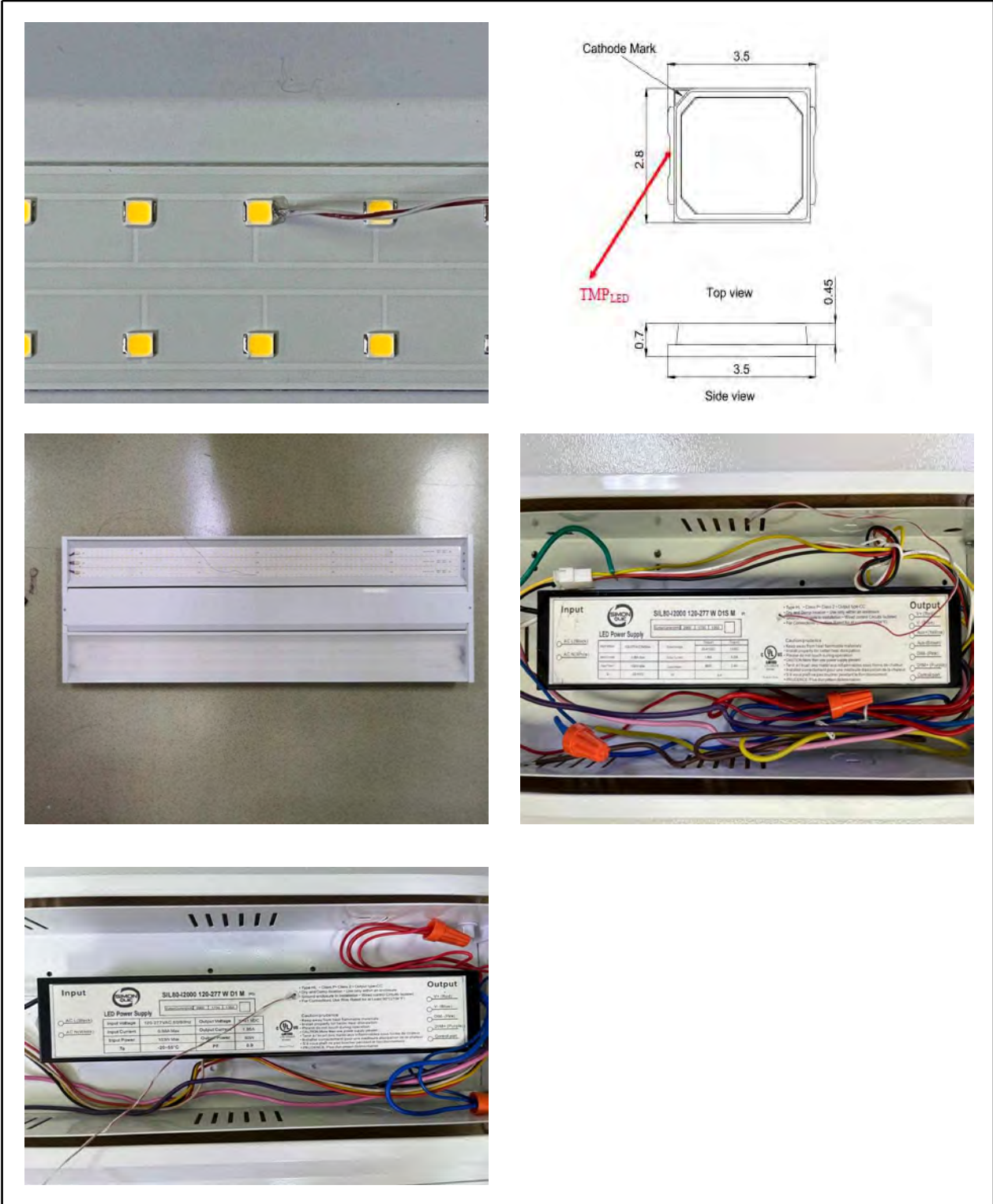
### Test Results (Drivers)

Thermocouple Location	Temperature for Driver (°C)		Driver Model Number	Driver Limit Temp (°C)
	Test Result	Test Result (Correct to 25 °C)		
Ambient TEMP	23.1	25.0		
TMP of Location 1	49.5	51.4	SIL80-I2000 120-277 W D1 M	90
TMP of Location 2	48.3	50.2	SIL80-I2000 120-277 W D1S M	90



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

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





\*\*\*\*\* END OF REPORT. THIS PAGE INTENTIONALLY LEFT BLANK \*\*\*\*\*