



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

55750

Project Number

4790652658

Report Number

4790652658_3

Test Date

2022-12-03~2022-12-05

Issue Date

2022-12-08

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)-Luminaires	IES LM-79-2008	≥1500	-10%	2622.91
Minimum Luminaire Efficacy (lm/W)-Luminaires	IES LM-79-2008	≥110	-3%	125.44
Spacing Criteria (0-180°)	IES LM-79-2008	1.0-2.0	±0.1	1.28
Spacing Criteria (90-270°)	IES LM-79-2008	1.0-2.0	±0.1	1.28
Zonal Lumen Requirement 1(0°-60°)	IES LM-79-2008	≥75%	-3%	77.60%
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3416
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	4051
Allowable CCT (5000K)	IES LM-79-2008/ANSI C78.377-2015	5029±283	N/A	4924
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3415
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3410
Minimum CRI	IES LM-79-2008/CIE 13.3-1995	≥80	-1	83
Minimum R9	IES LM-79-2008	≥0	-1	7.0
Minimum Rg	IES LM-79-2008	≥89	-1	97
Minimum Rf	IES LM-79-2008	≥70	-1	84
Rcs,h1	IES LM-79-2008	-12%-23%	-1%	-12%
Unified Glare Rating (UGR)	IES LM-79-2008	≤22	N/A	21.9
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	0.8995
Total Harmonic Distortion (A%)	ANSI C82.77-10-2014	≤20%	5%	16.30%
In-Situ Temperature Measurement Test for LED 1 (°C)	UL1598-2008	≤105	N/A	36.1
In-Situ Temperature Measurement Test for Driver 1 (°C)	UL1598-2008	≤90	N/A	51.0
Max Chromaticity Shift (1000-6000h)	N/A	≤0.004	0.0004	0.0016
Minimum Luminaire Warranty (Years)	N/A	≥5	N/A	≥5



Test List

Sample Received Date: 2022-11-18

Test Item	Test Date	Model Number	Tests Conducted By
Integrating Sphere Test	2022-12-03	55750-30W-35K	Yang, Gavin X
Integrating Sphere Test	2022-12-03	55750-30W-40K	Yang, Gavin X
Integrating Sphere Test	2022-12-03	55750-30W-50K	Yang, Gavin X
Integrating Sphere Test	2022-12-03	55750-25W-35K	Yang, Gavin X
Integrating Sphere Test	2022-12-03	55750-20W-35K	Yang, Gavin X
Goniophotometer Test	2022-12-03	55750-30W-35K	Yang, Gavin X
Goniophotometer Test	2022-12-03	55750-30W-50K	Yang, Gavin X
THD and PF Test	2022-12-03	55750-30W-35K	Yang, Gavin X
THD and PF Test	2022-12-03	55750-30W-40K	Yang, Gavin X
THD and PF Test	2022-12-03	55750-30W-50K	Yang, Gavin X
THD and PF Test	2022-12-03	55750-25W-35K	Yang, Gavin X
THD and PF Test	2022-12-03	55750-20W-35K	Yang, Gavin X
In-Situ Temperature Measurement Test	2022-12-05	55750-30W-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: 1X4 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model Number: 55750

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

LED Package: BXEN-(A)E-13H-9RB

Dimming Information: Continuous dimming capability

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
55750-30W-35K	3500K	3750	30	125
55750-30W-40K	4000K	4050	30	135
55750-30W-50K	5000K	3810	30	127
55750-25W-35K	3500K	3200	25	128
55750-25W-40K	4000K	3450	25	138
55750-25W-50K	5000K	3250	25	130
55750-20W-35K	3500K	2620	20	131
55750-20W-40K	4000K	2820	20	141
55750-20W-50K	5000K	2660	20	133





Integrating Sphere Test

Model No.	55750-30W-35K		Sample ID.	5550476,5580366
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 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.

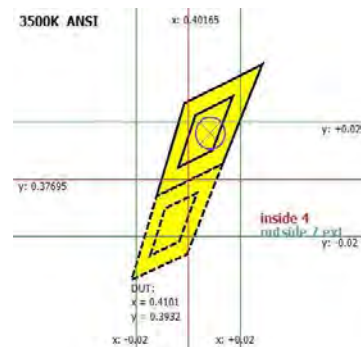
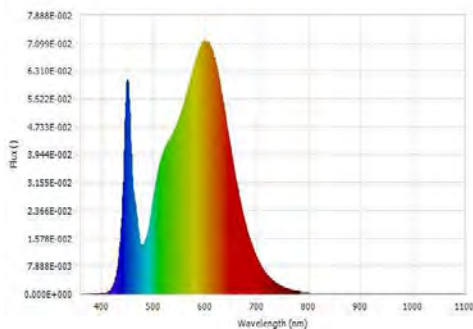
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using 4π geometry. The self-absorption 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	Orientation
24.8	120.01	60	0.2757	30.127	0.9107	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3416	83	7.0	0.0000	3828.43	127.08	



Luminous Flux (lm)	3828.43	Chrom x	0.4101
Chrom y	0.3932	Chrom u	0.2378
Chrom v	0.3420	Duv	0.0000
Chrom u'	0.2378	Chrom v'	0.5130
CCT (K)	3416	Luminous Efficacy (lm/W)	127.08
Ra	83	R1	81.0
R2	89.0	R3	96.0
R4	82.0	R5	81.0
R6	86.0	R7	85.0
R8	62.0	R9	7.0
R10	75.0	R11	82.0
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

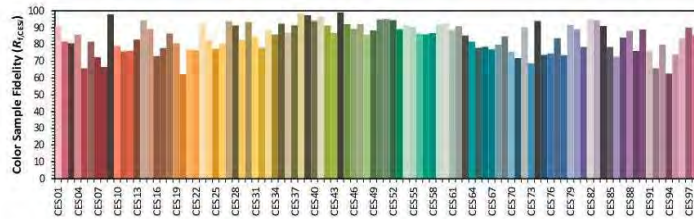
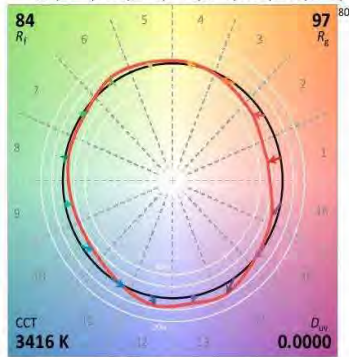
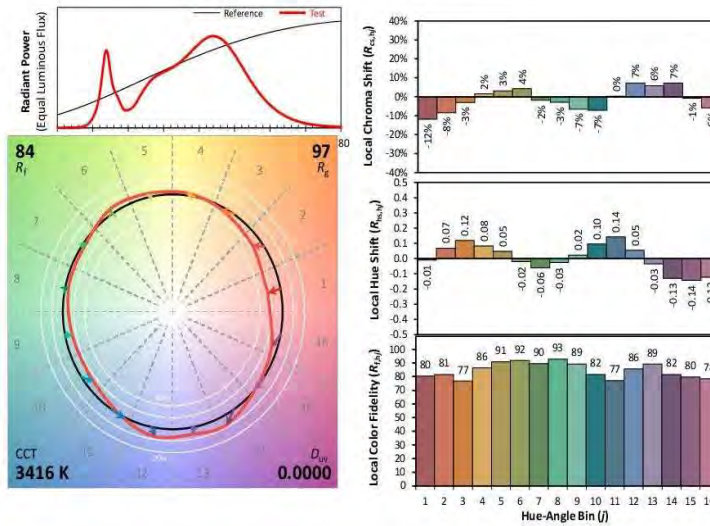
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-13H-9RB

Manufacturer: P.Q.L., Inc.

Date: 12/3/2022

Model: 55750-30W-35K



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

x 0.4101
 y 0.3932
 u' 0.2378
 v' 0.5130

CIE 13.3-1995
 (CRI)

R_a 83
 R_g 7

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



Integrating Sphere Test

Model No.	55750-30W-40K		Sample ID.	5550476,5580366
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 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.

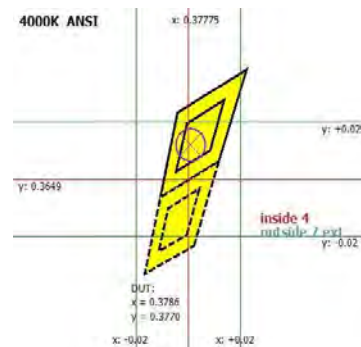
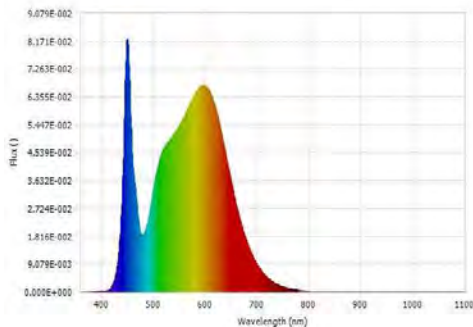
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using 4π geometry. The self-absorption 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	Orientation
24.8	120.02	60	0.2645	28.906	0.9107	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4051	84	13.0	0.0006	3952.57	136.74	N/A



Luminous Flux (lm)	3952.57	Chrom x	0.3786
Chrom y	0.3770	Chrom u	0.2238
Chrom v	0.3343	Duv	0.0006
Chrom u'	0.2238	Chrom v'	0.5014
CCT (K)	4051	Luminous Efficacy (lm/W)	136.74
Ra	84	R1	83.0
R2	89.0	R3	95.0
R4	84.0	R5	83.0
R6	85.0	R7	87.0
R8	67.0	R9	13.0
R10	75.0	R11	84.0
R12	63.0	R13	84.0
R14	97.0	R15	76.0
Rf	85	Rg	97
Rcs,h1	-11%		

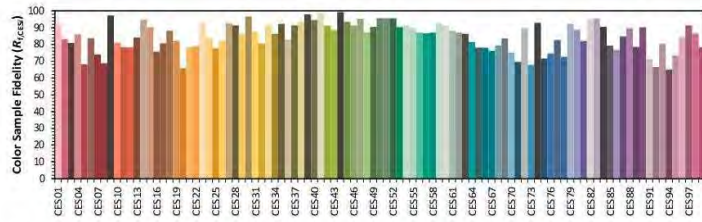
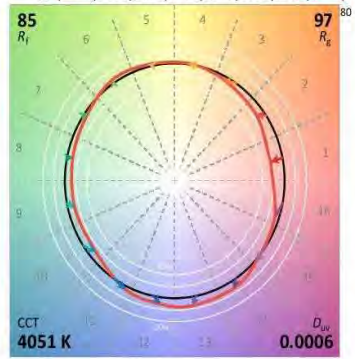
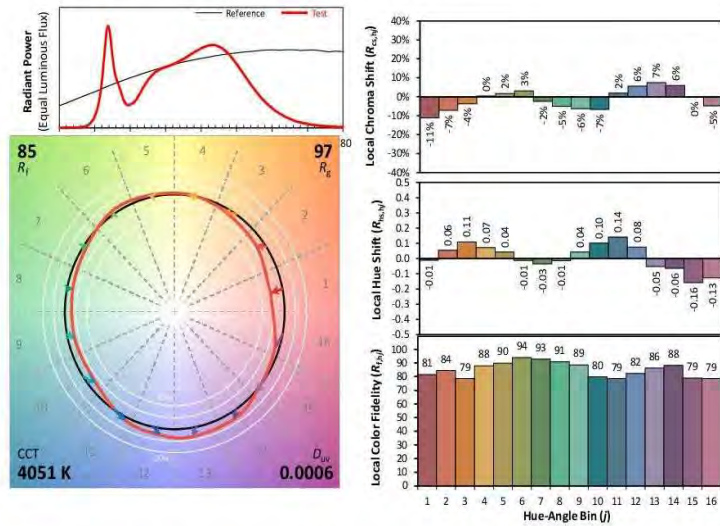


Integrating Sphere Test (Cont'd)

TM-30 Report

ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-13H-9RB Manufacturer: P.Q.L., Inc.
 Date: 12/3/2022 Model: 55750-30W-40K



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

x	0.3786	CIE 13.3-1995 (CRI)
y	0.3770	
u'	0.2238	
v'	0.5014	

R_a 84
 R_g 13

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



Integrating Sphere Test

Model No.	55750-30W-50K		Sample ID.	5550476,5580366
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 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.

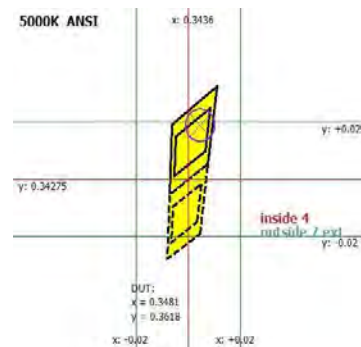
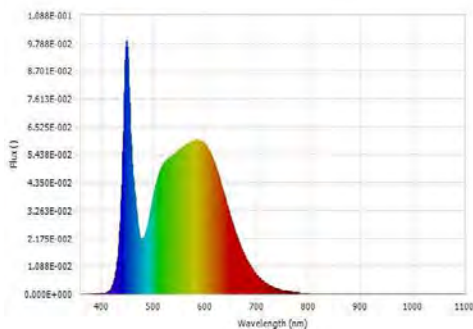
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions were using 4π geometry. The self-absorption 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	Orientation
24.8	120.15	60	0.2760	30.228	0.9117	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4924	83	8.0	0.0039	3864.17	127.83	N/A



Luminous Flux (lm)	3864.17	Chrom x	0.3481
Chrom y	0.3618	Chrom u	0.2095
Chrom v	0.3267	Duv	0.0039
Chrom u'	0.2095	Chrom v'	0.4900
CCT (K)	4924	Luminous Efficacy (lm/W)	127.83
Ra	83	R1	81.0
R2	87.0	R3	92.0
R4	83.0	R5	81.0
R6	82.0	R7	88.0
R8	68.0	R9	8.0
R10	69.0	R11	83.0
R12	59.0	R13	82.0
R14	96.0	R15	74.0
Rf	84	Rg	97
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

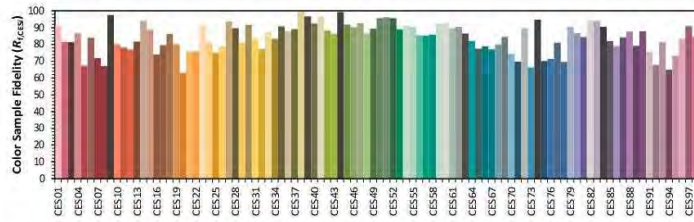
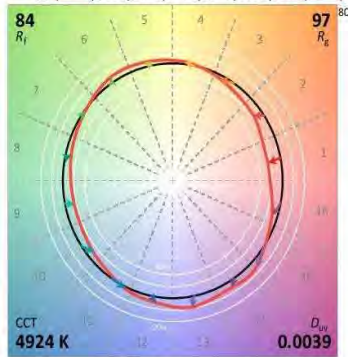
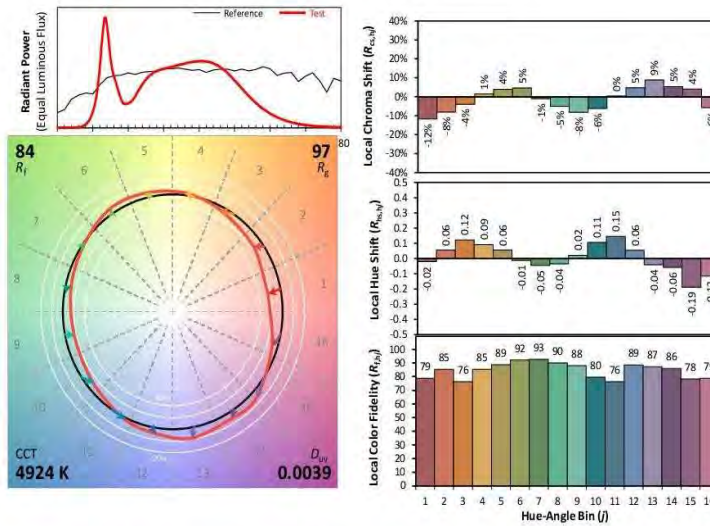
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-13H-9RB

Manufacturer: P.Q.L., Inc.

Date: 12/3/2022

Model: 55750-30W-50K



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

x 0.3481
 y 0.3618
 u' 0.2095
 v' 0.4900

CIE 13.3-1995
 (CRI)

R_a 83
 R_g 8

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



Integrating Sphere Test

Model No.	55750-25W-35K		Sample ID.	5550476,5580366
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 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.

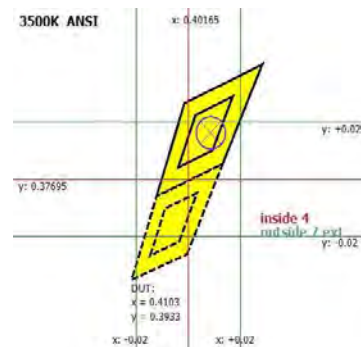
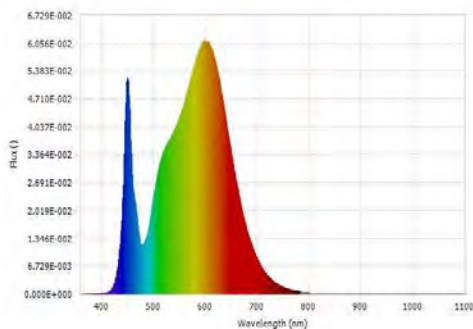
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Integrating Sphere Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120.04	60	0.2119	24.963	0.9815	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3415	83	8.0	0.0001	3263.08	130.72	N/A



Luminous Flux (lm)	3263.08	Chrom x	0.4103
Chrom y	0.3933	Chrom u	0.2379
Chrom v	0.3420	Duv	0.0001
Chrom u'	0.2379	Chrom v'	0.5131
CCT (K)	3415	Luminous Efficacy (lm/W)	130.72
Ra	83	R1	81.0
R2	89.0	R3	96.0
R4	82.0	R5	81.0
R6	86.0	R7	85.0
R8	62.0	R9	8.0
R10	75.0	R11	82.0
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

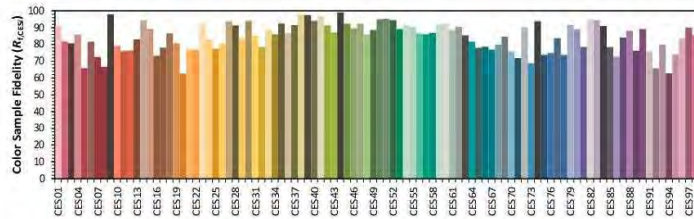
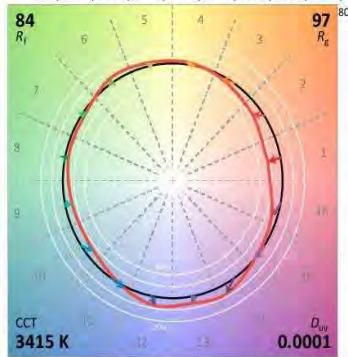
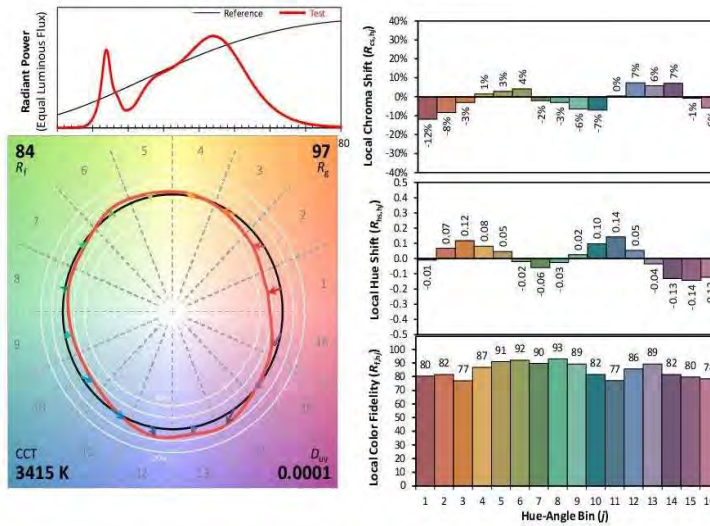
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-13H-9RB

Manufacturer: P.Q.L., Inc.

Date: 12/3/2022

Model: 55750-25W-35K



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

x 0.4103
 y 0.3933
 u' 0.2379
 v' 0.5131

CIE 13.3-1995
 (CRI)

R_a 83
 R_g 8

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



Integrating Sphere Test

Model No.	55750-20W-35K		Sample ID.	5550476,5580366
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 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.

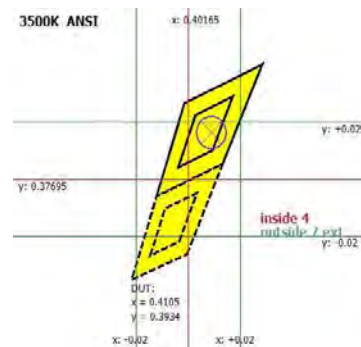
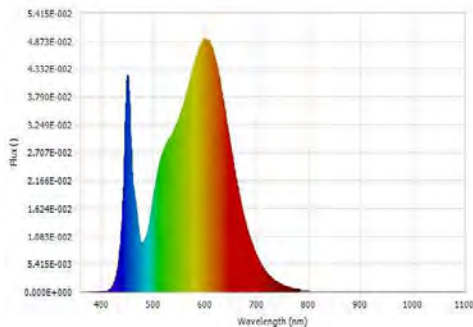
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Integrating Sphere Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120.07	60	0.1676	19.468	0.9674	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3410	83	8.0	0.0001	2622.91	134.73	N/A



Luminous Flux (lm)	2622.91	Chrom x	0.4105
Chrom y	0.3934	Chrom u	0.2380
Chrom v	0.3421	Duv	0.0001
Chrom u'	0.2380	Chrom v'	0.5131
CCT (K)	3410	Luminous Efficacy (lm/W)	134.73
Ra	83	R1	81.0
R2	89.0	R3	96.0
R4	82.0	R5	82.0
R6	86.0	R7	85.0
R8	62.0	R9	8.0
R10	76.0	R11	82.0
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

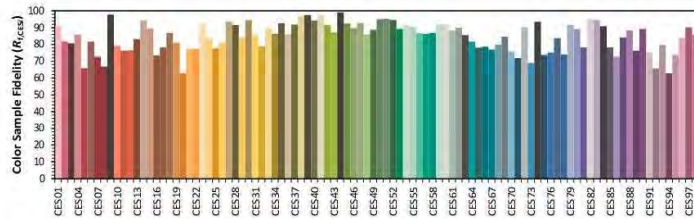
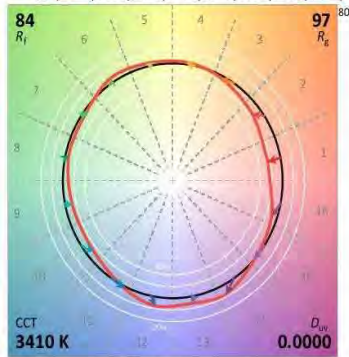
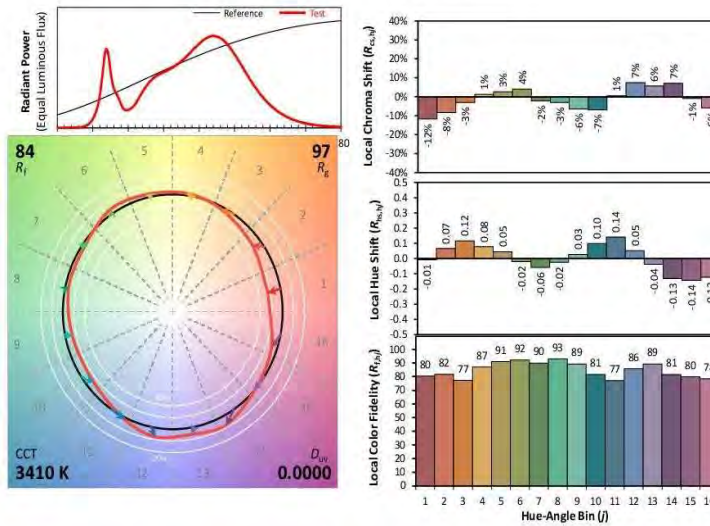
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-(A)E-13H-9RB

Manufacturer: P.Q.L., Inc.

Date: 12/3/2022

Model: 55750-20W-35K



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

x 0.4105
 y 0.3934
 u' 0.2380
 v' 0.5131

CIE 13.3-1995
 (CRI)

R_a 83
 R_g 8

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



Goniophotometer Test

Model No.	55750-30W-35K	Sample ID.	5550476,5580366
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 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
24.6	120.10	60	0.2544	30.12	0.9859	4.83%	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	
3778.3	77.60%	N/A	112.5	114.1	125.44

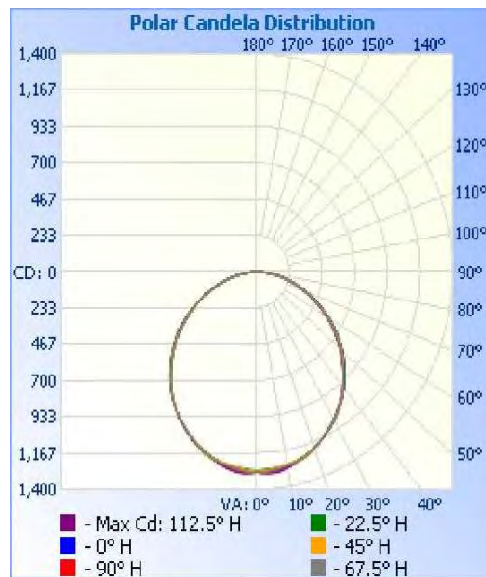
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
21.9	21.5	1.28	1.28

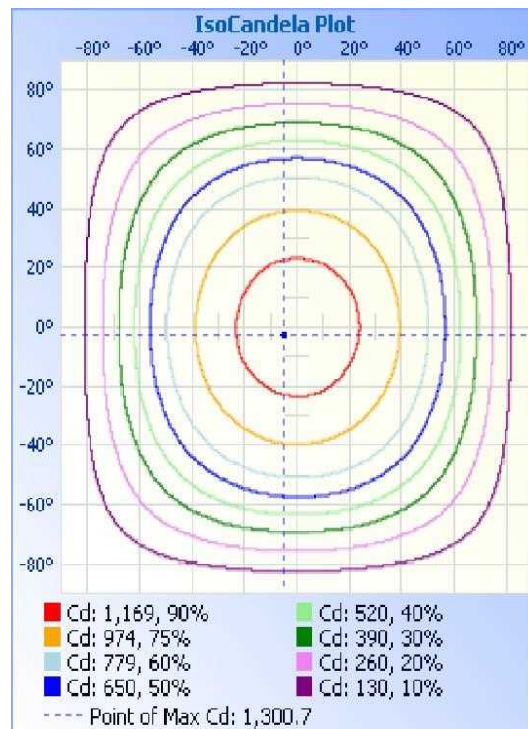


Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot





Goniophotometer Test (Cont'd)
Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1004.3	26.60%
0-40	1651.5	43.70%
0-60	2938.7	77.80%
60-90	828.7	21.90%
70-100	363.2	9.60%
90-120	3.7	0.10%
0-90	3767.4	99.70%
90-180	10.9	0.30%
0-180	3778.3	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	30.7	0.80%	90-95	0.9	0.00%
5-10	91.4	2.40%	95-100	0.7	0.00%
10-15	149.0	3.90%	100-105	0.6	0.00%
15-20	201.4	5.30%	105-110	0.5	0.00%
20-25	247.0	6.50%	110-115	0.6	0.00%
25-30	284.8	7.50%	115-120	0.5	0.00%
30-35	314.2	8.30%	120-125	0.5	0.00%
35-40	333.0	8.80%	125-130	0.6	0.00%
40-45	339.6	9.00%	130-135	0.7	0.00%
45-50	335.4	8.90%	135-140	0.7	0.00%
50-55	319.8	8.50%	140-145	0.8	0.00%
55-60	292.4	7.70%	145-150	0.8	0.00%
60-65	255.7	6.80%	150-155	0.7	0.00%
65-70	211.3	5.60%	155-160	0.7	0.00%
70-75	162.9	4.30%	160-165	0.6	0.00%
75-80	114.2	3.00%	165-170	0.5	0.00%
80-85	65.3	1.70%	170-175	0.3	0.00%
85-90	19.3	0.50%	175-180	0.1	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	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283	1283
1	1277	1276	1282	1293	1296	1290	1281	1280	1278	1275	1280	1292	1295	1289	1282	1281	1277
2	1278	1274	1282	1292	1298	1293	1287	1282	1278	1275	1280	1292	1298	1293	1288	1284	1278
3	1278	1272	1278	1290	1298	1297	1291	1284	1277	1272	1277	1290	1298	1297	1292	1286	1278
4	1279	1269	1275	1288	1297	1299	1295	1287	1276	1268	1273	1286	1297	1300	1295	1288	1279
5	1278	1269	1271	1283	1294	1301	1296	1286	1277	1267	1270	1282	1294	1300	1296	1288	1278
6	1278	1268	1267	1279	1291	1299	1296	1287	1276	1267	1265	1280	1290	1300	1296	1289	1278
7	1276	1268	1265	1276	1288	1296	1295	1286	1275	1265	1262	1276	1288	1296	1294	1288	1276
8	1274	1264	1263	1272	1284	1292	1291	1282	1270	1262	1260	1271	1284	1291	1292	1285	1274
9	1272	1263	1260	1268	1280	1287	1285	1279	1268	1260	1257	1266	1280	1285	1288	1281	1272
10	1267	1260	1259	1265	1276	1280	1281	1276	1266	1258	1255	1264	1274	1280	1281	1277	1267
11	1263	1257	1256	1261	1269	1273	1273	1268	1261	1255	1254	1259	1270	1273	1274	1270	1263
12	1258	1253	1254	1259	1266	1266	1268	1264	1256	1250	1251	1257	1264	1266	1267	1265	1258
13	1252	1248	1251	1256	1258	1259	1258	1257	1250	1244	1249	1252	1258	1260	1259	1258	1252
14	1248	1245	1248	1252	1253	1251	1250	1249	1244	1241	1245	1250	1251	1251	1250	1251	1248
15	1241	1239	1244	1248	1247	1242	1241	1241	1237	1235	1240	1244	1245	1243	1243	1243	1241
16	1233	1232	1236	1244	1241	1236	1231	1233	1230	1228	1234	1238	1237	1235	1234	1236	1233
17	1226	1226	1231	1237	1234	1227	1223	1225	1222	1221	1226	1233	1231	1227	1224	1226	1226
18	1219	1218	1222	1228	1227	1219	1214	1214	1215	1215	1218	1223	1224	1217	1216	1219	1219
19	1212	1210	1214	1218	1218	1211	1205	1204	1206	1208	1209	1215	1216	1209	1207	1210	1212
20	1203	1204	1205	1208	1209	1204	1196	1196	1198	1199	1199	1206	1208	1202	1198	1202	1203
25	1157	1157	1153	1152	1154	1155	1152	1151	1152	1150	1147	1147	1153	1156	1154	1156	1157
30	1105	1104	1101	1098	1098	1097	1098	1098	1096	1097	1094	1093	1095	1095	1099	1104	1105
35	1043	1043	1042	1038	1036	1031	1030	1033	1035	1034	1034	1032	1031	1032	1034	1040	1043
40	971	967	962	960	959	958	957	961	963	958	953	952	956	957	961	968	971
45	890	886	877	872	872	871	875	879	877	875	867	865	865	869	877	886	890
50	802	800	791	784	780	776	780	789	787	789	780	775	773	775	784	795	802
55	702	702	693	685	680	678	679	686	692	690	681	675	675	676	683	695	702
60	597	596	587	578	573	573	576	582	585	584	575	569	567	572	580	590	597
65	489	486	478	470	465	465	470	476	475	473	466	460	460	464	474	484	489
70	380	376	367	360	355	357	362	367	369	364	356	350	351	356	367	375	380
75	278	274	265	257	253	256	260	266	268	262	254	248	249	254	264	274	278
80	182	179	170	163	160	162	165	170	170	167	160	156	156	161	168	178	182
85	87	83	77	73	71	71	72	76	79	73	70	68	69	71	76	83	87
90	4	3	3	2	2	2	2	2	2	1	2	2	2	2	3	3	4
95	2	2	2	1	2	1	1	1	1	2	1	1	1	1	1	1	2
100	1	1	1	2	1	1	1	1	1	2	1	2	1	1	1	1	1
105	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
110	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2
115	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
120	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1
125	1	1	2	1	1	1	1	1	1	2	1	2	1	1	1	1	1
130	2	1	2	1	1	1	1	2	1	2	2	2	1	2	2	2	2
135	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
140	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2
145	2	2	2	2	2	2	2	2	2	3	3	2	3	2	2	3	2
150	2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	2
155	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
160	4	3	4	4	3	4	4	4	4	3	4	4	4	3	4	4	4
165	4	4	4	4	4	5	4	4	4	4	4	4	4	4	5	4	4
170	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5
175	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4
180	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5



Goniophotometer Test

Model No.	55750-30W-50K	Sample ID.	5550476,5580366
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 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	120.12	60	0.2550	30.20	0.9858	4.81%	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	
3827.9	77.60%	N/A	112.8	114.4	126.75

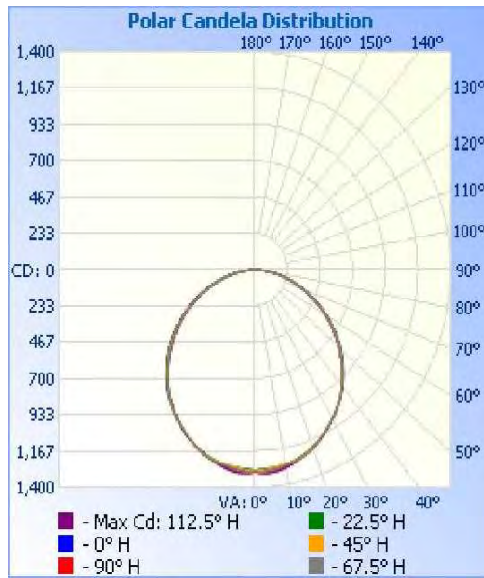
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria (0-180°)	Spacing Criteria (90°-270°)
Crosswise	Endwise		
21.9	21.6	1.28	1.28

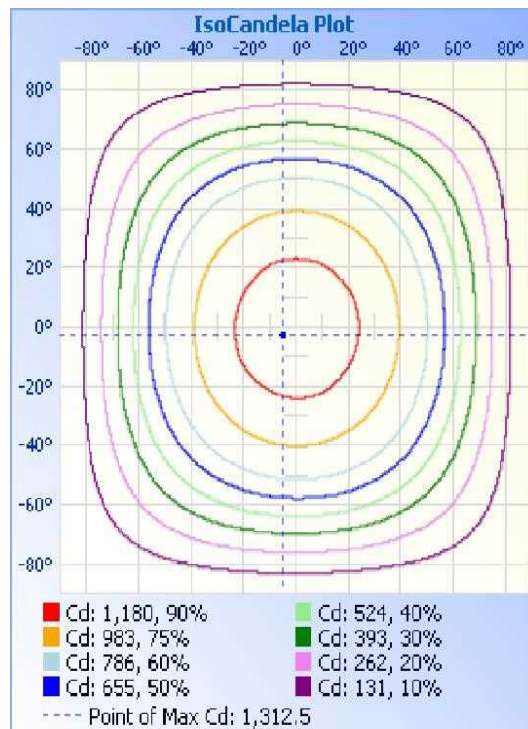


Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot





Goniophotometer Test (Cont'd)
Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1014.1	26.50%
0-40	1668.2	43.60%
0-60	2971.6	77.60%
60-90	845.2	22.10%
70-100	372.8	9.70%
90-120	3.9	0.10%
0-90	3816.8	99.70%
90-180	11.1	0.30%
0-180	3827.9	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	31.0	0.80%	90-95	1.0	0.00%
5-10	92.2	2.40%	95-100	0.7	0.00%
10-15	150.4	3.90%	100-105	0.6	0.00%
15-20	203.3	5.30%	105-110	0.6	0.00%
20-25	249.4	6.50%	110-115	0.5	0.00%
25-30	287.7	7.50%	115-120	0.5	0.00%
30-35	317.5	8.30%	120-125	0.6	0.00%
35-40	336.6	8.80%	125-130	0.7	0.00%
40-45	343.6	9.00%	130-135	0.7	0.00%
45-50	339.5	8.90%	135-140	0.7	0.00%
50-55	323.8	8.50%	140-145	0.8	0.00%
55-60	296.6	7.70%	145-150	0.8	0.00%
60-65	259.5	6.80%	150-155	0.7	0.00%
65-70	214.5	5.60%	155-160	0.7	0.00%
70-75	166.3	4.30%	160-165	0.6	0.00%
75-80	116.7	3.00%	165-170	0.5	0.00%
80-85	67.4	1.80%	170-175	0.3	0.00%
85-90	20.8	0.50%	175-180	0.1	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	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294	1294
1	1288	1286	1292	1304	1308	1301	1293	1291	1290	1285	1292	1304	1309	1301	1294	1292	1288
2	1288	1284	1291	1304	1310	1307	1299	1294	1289	1283	1291	1304	1311	1306	1300	1295	1288
3	1288	1283	1289	1302	1311	1310	1305	1297	1289	1283	1289	1302	1309	1309	1303	1298	1288
4	1289	1280	1285	1298	1309	1312	1308	1298	1289	1280	1285	1298	1308	1312	1308	1300	1289
5	1289	1279	1281	1294	1306	1312	1309	1301	1288	1278	1282	1294	1306	1312	1309	1301	1289
6	1288	1278	1278	1291	1303	1310	1309	1300	1288	1278	1278	1291	1304	1311	1308	1300	1288
7	1286	1276	1275	1288	1299	1308	1308	1300	1287	1276	1276	1288	1299	1308	1306	1298	1286
8	1284	1275	1272	1283	1296	1303	1305	1297	1284	1275	1273	1284	1296	1304	1303	1295	1284
9	1281	1274	1269	1279	1292	1299	1300	1292	1282	1274	1271	1278	1291	1297	1299	1292	1281
10	1277	1270	1268	1274	1287	1293	1295	1288	1277	1269	1267	1276	1286	1291	1294	1286	1277
11	1273	1268	1266	1272	1282	1285	1287	1283	1273	1268	1267	1271	1282	1283	1287	1282	1273
12	1268	1263	1264	1268	1278	1279	1280	1276	1269	1263	1263	1268	1276	1278	1277	1276	1268
13	1262	1259	1261	1265	1270	1271	1272	1270	1264	1258	1262	1265	1270	1269	1270	1270	1262
14	1256	1253	1258	1262	1264	1264	1263	1264	1256	1253	1258	1261	1264	1261	1261	1262	1256
15	1250	1247	1253	1258	1259	1256	1254	1254	1252	1248	1253	1257	1258	1254	1250	1253	1250
16	1243	1241	1248	1253	1252	1247	1245	1246	1245	1242	1248	1252	1252	1246	1243	1245	1243
17	1237	1234	1240	1246	1244	1239	1234	1239	1236	1236	1241	1246	1245	1237	1234	1237	1237
18	1228	1227	1231	1238	1238	1231	1226	1229	1229	1228	1232	1238	1237	1229	1225	1228	1228
19	1221	1220	1224	1230	1230	1222	1218	1219	1221	1220	1223	1228	1229	1221	1217	1218	1221
20	1213	1211	1215	1219	1222	1214	1210	1211	1212	1212	1213	1218	1220	1213	1208	1209	1213
25	1166	1165	1161	1161	1166	1167	1167	1165	1169	1167	1162	1161	1164	1166	1164	1164	1166
30	1112	1112	1109	1107	1108	1107	1110	1113	1113	1113	1109	1106	1107	1106	1109	1111	1112
35	1048	1049	1049	1046	1044	1044	1045	1050	1050	1051	1050	1046	1041	1042	1042	1046	1048
40	976	973	969	967	969	971	972	975	979	974	968	965	965	967	968	972	976
45	894	891	883	880	880	882	889	896	895	892	884	876	877	877	884	892	894
50	804	803	796	790	788	787	792	804	806	805	797	789	785	783	786	800	804
55	704	704	697	691	688	688	692	702	709	706	697	698	684	682	686	696	704
60	597	597	590	584	581	584	590	598	601	600	590	581	578	578	585	592	597
65	487	484	478	472	469	473	481	489	492	489	480	472	467	468	475	484	487
70	378	374	369	362	361	366	374	381	384	377	369	361	358	361	368	375	378
75	276	273	264	259	258	264	272	278	280	276	266	259	256	258	265	273	276
80	178	175	168	163	163	167	174	180	184	179	170	163	161	162	168	174	178
85	84	80	76	74	75	77	81	85	89	84	78	74	72	73	76	80	84
90	3	2	2	2	2	4	4	5	5	4	3	2	3	3	2	2	3
95	1	1	2	2	1	2	1	2	2	2	1	1	2	1	1	2	1
100	1	1	1	2	1	1	1	2	2	2	2	1	2	2	2	1	1
105	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
110	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
115	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
120	1	1	1	1	1	1	1	2	2	1	2	2	1	1	1	1	1
125	2	2	1	2	2	1	2	1	1	2	2	2	2	2	1	1	2
130	1	2	2	2	2	1	2	1	2	1	2	1	1	2	2	2	1
135	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
140	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
145	3	2	2	2	3	2	2	3	3	2	2	3	3	2	3	3	3
150	3	3	3	3	3	3	2	3	3	3	3	3	3	3	2	3	3
155	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
160	4	3	4	4	3	3	3	4	4	4	3	4	4	3	4	3	4
165	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
170	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5
175	5	5	5	4	5	5	5	4	4	5	5	5	5	5	4	4	5
180	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5



THD and PF Test

Model No.	55750-30W-35K	Sample ID.	5550476,5580366
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
24.6	120.10	60	0.2544	30.12	0.9859	4.83%	Horizontal
24.6	277.09	60	0.1140	29.72	0.9400	15.50%	Horizontal



THD and PF Test

Model No.	55750-30W-40K	Sample ID.	5550476,5580366
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
24.6	120.06	60	0.2447	28.99	0.9867	4.65%	Horizontal
24.6	277.11	60	0.1105	28.68	0.9362	15.89%	Horizontal



THD and PF Test

Model No.	55750-30W-50K	Sample ID.	5550476,5580366
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
24.6	120.12	60	0.2550	30.20	0.9858	4.81%	Horizontal
24.6	277.12	60	0.1146	29.77	0.9402	15.21%	Horizontal



THD and PF Test

Model No.	55750-25W-35K	Sample ID.	5550476,5580366
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
24.6	120.07	60	0.2103	24.93	0.9878	5.37%	Horizontal
24.6	277.12	60	0.0985	25.20	0.9239	15.87%	Horizontal



THD and PF Test

Model No.	55750-20W-35K	Sample ID.	5550476,5580366
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
24.6	120.10	60	0.1636	19.39	0.9853	6.33%	Horizontal
24.6	277.14	60	0.0815	20.20	0.8995	16.30%	Horizontal



In-Situ Temperature Measurement Test

Model No.	55750-30W-35K	Sample ID.	5550476,5580366
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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
24.0	120.10	60	0.2544	30.12	0.9859	4.83%	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	24.0	25.0				
TMP of Location 1	35	35.1	36.1	0.0016	BXEN-(A)E-13H-9RB	100	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	24.0	25.0		
TMP of Location 1	50.0	51.0	SIF 30-I0800 120-277 W D1-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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