

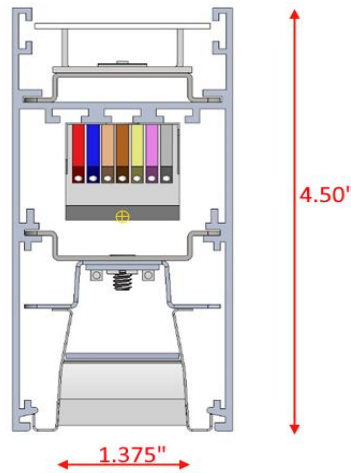
## Report of Test

LLIA001418-004A

Indoor Distribution Photometry Test Report

Catalog Number: QS2-I/D-MO/MO-K40-80-4-XX-FDC/PBF01M-FXXX-UNV-DIM1

Pendant mounted, extruded aluminum housing, white enamel aluminum reflectors, frosted plastic enclosure above LEDs, formed white enamel aluminum baffle with frosted plastic insert. 92 upper white LEDs, 128 white lower LEDs. One Osram Optotronic OTi 30/120-277/1A0 L G2 LED driver labeled as 480mA and one OTi50/120-277/1A4 DIM-1 L G2 driver labeled as 730mA.



Prepared For:

Precision Architectural Lighting  
4830 Timber Creek Drive  
Houston, TX 77017, USA

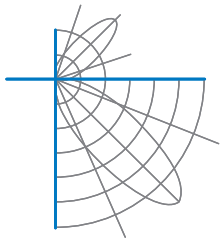
Performance Summary			
Input Voltage	120.0 V	Luminous Flux	4209.9 Lumens
Input Current	0.3272 A	Total Efficacy	112.8 Lm/W
Input Power	37.31 W	Downward Flux	1666.9 Lumens
Frequency	60.00 Hz	Downward Flux	39.6 % of Total
Power Factor	0.950		
Current THD	11.9 %		

This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

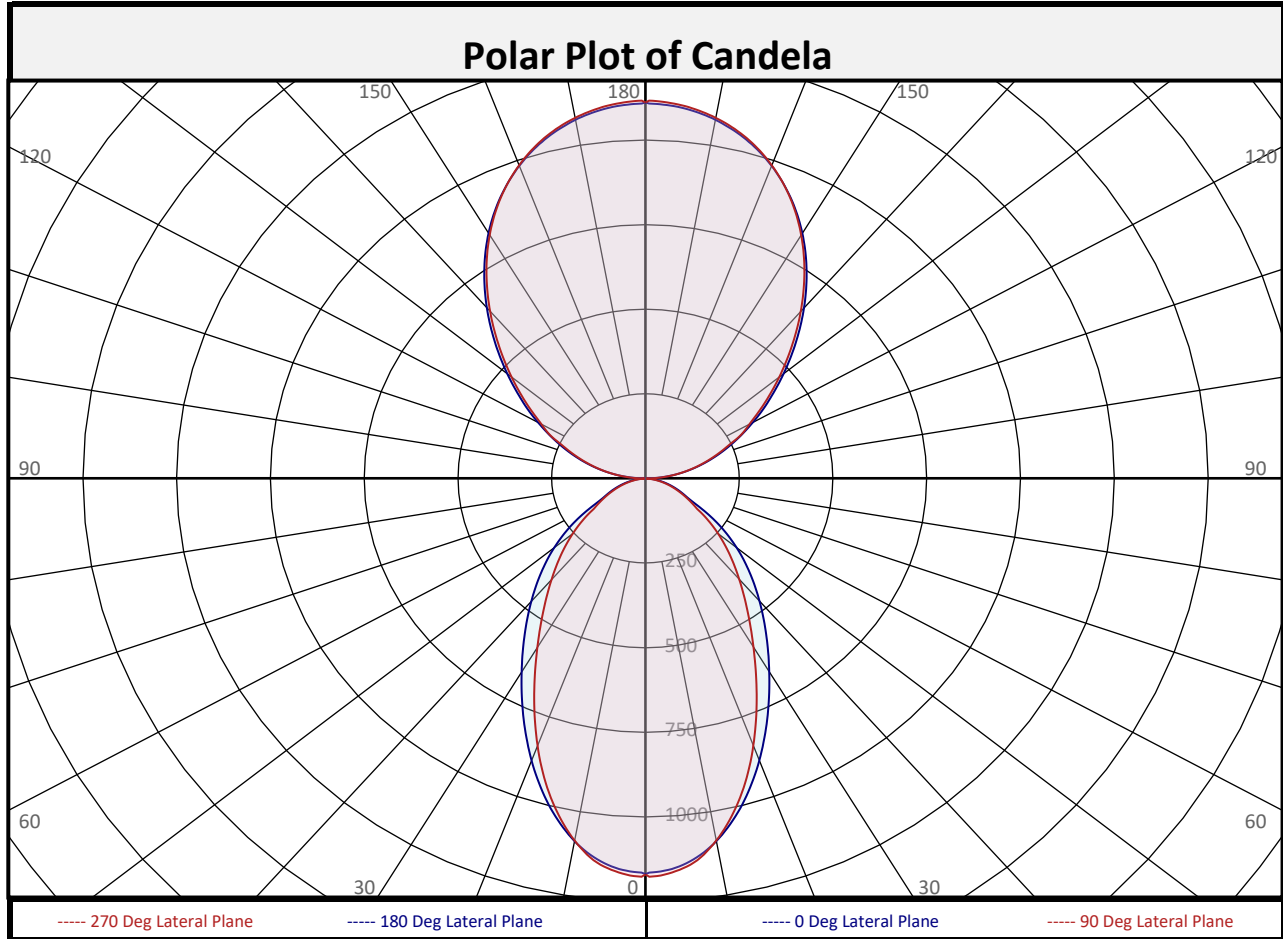
Test date: 03/05/2021

Report date: 03/08/2021

Signed: \_\_\_\_\_

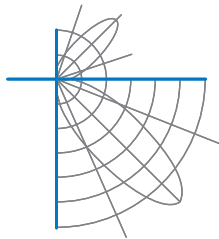


Report of Test  
LLIA001418-004A



### Zonal Flux Summary

Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total	Zone (Deg Vert)	Flux (Lumens)	Percent of Total
0-10	107.9	2.6%	90-100	52.2	1.2%	0-20	383.0	9.1%
10-20	275.1	6.5%	100-110	159.5	3.8%	0-30	718.8	17.1%
20-30	335.8	8.0%	110-120	261.3	6.2%	0-40	1034	24.6%
30-40	315.0	7.5%	120-130	355.3	8.4%	0-60	1480	35.2%
40-50	260.6	6.2%	130-140	432.8	10.3%	0-80	1651	39.2%
50-60	185.6	4.4%	140-150	464.9	11.0%	10-90	1559	37.0%
60-70	111.0	2.6%	150-160	420.2	10.0%	20-50	911.4	21.6%
70-80	60.0	1.4%	160-170	292.3	6.9%	40-90	633.1	15.0%
80-90	15.9	0.4%	170-180	104.6	2.5%	60-90	187.0	4.4%
0-90	1667	39.6%	90-180	2543	60.4%	0-180	4210	100.0%

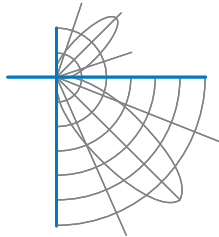


## Report of Test

### LLIA001418-004A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	0	1170	1170	1170	1170	1170	1170	1170	1170	1170
	2.5	1160	1161	1164	1168	1171	1168	1164	1161	1160
	5	1147	1146	1149	1152	1155	1152	1149	1146	1147
	7.5	1122	1122	1124	1127	1129	1127	1124	1122	1122
	10	1088	1088	1090	1085	1086	1085	1090	1088	1088
	12.5	1046	1045	1042	1035	1035	1035	1042	1045	1046
	15	998	997	986	977	976	977	986	997	998
	17.5	944	942	925	913	910	913	925	942	944
	20	887	882	862	845	841	845	862	882	887
	22.5	829	820	795	775	771	775	795	820	829
	25	771	757	729	706	702	706	729	757	771
	27.5	714	696	664	640	637	640	664	696	714
	30	660	638	603	578	577	578	603	638	660
	32.5	609	583	545	522	522	522	545	583	609
	35	561	531	492	471	474	471	492	531	561
	37.5	516	483	443	425	430	425	443	483	516
	40	473	439	399	384	389	384	399	439	473
	42.5	432	397	359	346	353	346	359	397	432
	45	393	358	323	312	318	312	323	358	393
	47.5	355	322	289	279	285	279	289	322	355
50	316	287	258	249	253	249	258	287	316	
52.5	278	253	229	219	221	219	229	253	278	
55	240	221	202	191	190	191	202	221	240	
57.5	200	190	176	164	160	164	176	190	200	
60	161	159	152	141	142	141	152	159	161	
62.5	131	131	130	124	125	124	130	131	131	
65	114	111	110	109	109	109	110	111	114	
67.5	99	97	94	94	94	94	94	97	99	
70	85	83	81	80	80	80	81	83	85	
72.5	72	70	68	68	67	68	68	70	72	
75	59	58	56	55	55	55	56	58	59	
77.5	47	46	44	44	43	44	44	46	47	
80	35	34	33	33	32	33	33	34	35	
82.5	24	24	23	23	22	23	23	24	24	
85	14	13	13	13	13	13	13	13	14	
87.5	4	5	6	5	5	5	6	5	4	
90	1	2	2	2	3	2	2	2	1	

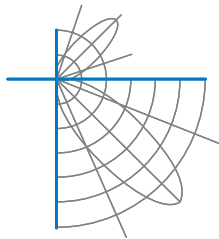


## Report of Test

### LLIA001418-004A

Luminous Intensity (Candela) Table

		Lateral (C-Plane) Angles								
		0	22.5	45	67.5	90	112.5	135	157.5	180
Vertical (Gamma) Angles	90	1	2	2	2	3	2	2	2	1
	92.5	21	22	22	22	22	22	22	22	21
	95	47	48	48	47	47	47	48	48	47
	97.5	73	74	74	73	72	73	74	74	73
	100	100	101	99	98	97	98	99	101	100
	102.5	126	127	125	123	122	123	125	127	126
	105	152	153	151	149	147	149	151	153	152
	107.5	179	180	179	175	173	175	179	180	179
	110	207	208	209	201	199	201	209	208	207
	112.5	236	236	235	230	227	230	235	236	236
	115	265	266	264	263	258	263	264	266	265
	117.5	297	297	294	291	293	291	294	297	297
	120	330	331	327	321	320	321	327	331	330
	122.5	366	365	361	355	352	355	361	365	366
	125	402	401	397	391	387	391	397	401	402
	127.5	440	440	435	430	425	430	435	440	440
	130	480	480	475	470	466	470	475	480	480
	132.5	523	522	517	512	507	512	517	522	523
	135	567	566	561	556	552	556	561	566	567
	137.5	612	611	606	602	597	602	606	611	612
140	657	656	652	649	644	649	652	656	657	
142.5	703	702	698	696	692	696	698	702	703	
145	749	747	744	742	739	742	744	747	749	
147.5	794	792	789	789	786	789	789	792	794	
150	837	835	833	833	831	833	833	835	837	
152.5	877	876	874	876	874	876	874	876	877	
155	916	914	914	915	914	915	914	914	916	
157.5	951	950	950	952	951	952	950	950	951	
160	983	982	983	986	985	986	983	982	983	
162.5	1012	1011	1012	1016	1016	1016	1012	1011	1012	
165	1037	1036	1038	1042	1042	1042	1038	1036	1037	
167.5	1058	1058	1060	1064	1064	1064	1060	1058	1058	
170	1076	1076	1078	1082	1082	1082	1078	1076	1076	
172.5	1090	1089	1092	1097	1096	1097	1092	1089	1090	
175	1100	1099	1102	1108	1107	1108	1102	1099	1100	
177.5	1106	1106	1108	1113	1114	1113	1108	1106	1106	
180	1111	1111	1111	1111	1111	1111	1111	1111	1111	



## Report of Test

### LLIA001418-004A

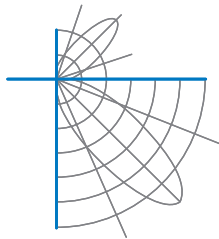
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	105	105	105	105	95	95	95	95	78	78	78	61	61	61	47	47	47	40				
1	96	92	89	85	87	84	81	78	69	67	65	55	54	53	42	41	41	35				
2	88	81	76	71	80	74	70	66	61	58	55	49	47	45	38	37	36	30				
3	81	72	66	60	74	66	60	56	55	51	47	44	42	39	35	33	31	27				
4	75	65	57	52	68	59	53	48	49	45	41	40	37	34	32	29	28	24				
5	69	58	50	45	63	53	47	42	45	40	36	36	33	30	29	27	25	21				
6	64	52	45	39	58	48	42	37	41	36	32	33	30	27	27	24	22	19				
7	59	48	40	35	54	44	37	33	37	32	28	31	27	24	25	22	20	18				
8	55	43	36	31	50	40	34	29	34	29	26	28	25	22	23	20	18	16				
9	51	40	33	28	47	37	31	26	31	27	23	26	23	20	21	19	17	15				
10	48	37	30	25	44	34	28	24	29	24	21	24	21	18	20	17	16	14				

For absolute test reports, RUs are expressed as a percentage of total lumen output. For relative test reports, CUs are expressed as a percentage of total lamp output. Calculations were based on published IES procedures, and are based on the zonal cavity method. Basic assumptions: 1) Room surfaces are lambertian reflectors. 2) Incident flux on each surface is uniformly distributed. 3) The room is spectrally neutral. When luminaires are not evenly distributed throughout the room, or do not exhibit lateral symmetry, CU values may differ from actual performance.

Circle of Light Plot				
Height(ft)	Illuminance at Nadir (fc)	Ground-level distance to half-of-nadir illuminance (ft)		
		0-180 deg	90-270 deg	
6.0	32.5	5.51	5.13	
8.0	18.3	7.34	6.84	
10.0	11.7	9.18	8.56	
12.0	8.1	11.02	10.27	
14.0	6.0	12.85	11.98	
16.0	4.6	14.69	13.69	

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	28278	28278	28278
45	13422	11039	10880
55	10108	8502	8029
65	6508	6287	6214
75	5550	5228	5143
85	3796	3700	3712

Spacing Criterion	
0 degree plane:	0.9
90 degree plane:	0.9
180 degree plane:	0.9
270 degree plane:	0.9



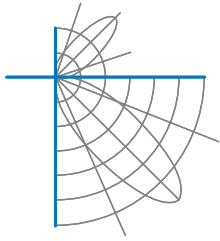
## Report of Test

### LLIA001418-004A

#### UGR TABLE - CORRECTED

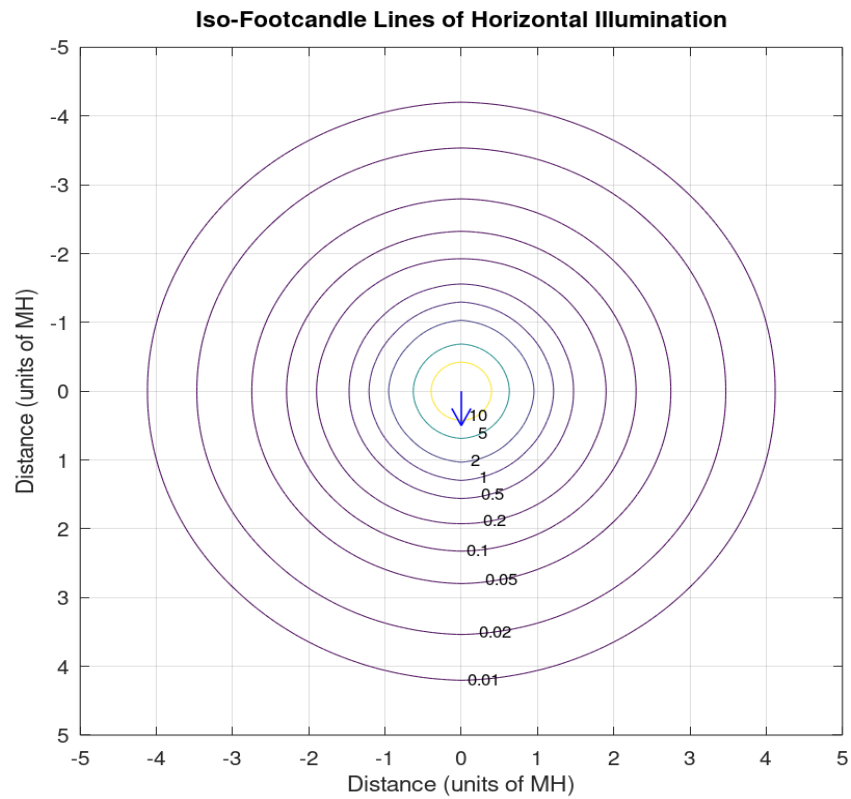
Reflectances											
Ceiling Cavity	70	70	50	50	30	70	70	50	50	30	
Walls	50	30	50	30	30	50	30	50	30	30	
Floor Cavity	20	20	20	20	20	20	20	20	20	20	
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	13.6	14.3	14.6	15.3	16.7	12.4	13.2	13.5	14.2	15.6
	3H	14.7	15.3	15.7	16.4	17.8	13.8	14.5	14.9	15.5	17.0
	4H	15.1	15.7	16.2	16.8	18.2	14.3	14.9	15.4	16.0	17.4
	6H	15.4	16.0	16.5	17.1	18.5	14.7	15.2	15.8	16.3	17.8
	8H	15.5	16.1	16.6	17.1	18.6	14.8	15.3	15.9	16.4	17.8
	12H	15.6	16.1	16.7	17.1	18.6	14.8	15.3	15.9	16.4	17.9
4H	2H	13.8	14.4	14.9	15.5	16.9	12.9	13.5	13.9	14.5	16.0
	3H	15.1	15.6	16.2	16.7	18.2	14.4	15.0	15.5	16.0	17.5
	4H	15.7	16.2	16.8	17.3	18.7	15.1	15.5	16.2	16.6	18.1
	6H	16.2	16.6	17.3	17.7	19.1	15.6	15.9	16.7	17.0	18.5
	8H	16.3	16.7	17.4	17.8	19.3	15.7	16.1	16.8	17.2	18.6
	12H	16.4	16.7	17.5	17.8	19.3	15.8	16.1	16.9	17.2	18.7
8H	4H	15.9	16.2	17.0	17.3	18.8	15.3	15.6	16.4	16.7	18.2
	6H	16.4	16.7	17.6	17.9	19.4	15.9	16.2	17.0	17.3	18.8
	8H	16.6	16.9	17.8	18.0	19.5	16.1	16.4	17.2	17.5	19.0
	12H	16.8	17.0	17.9	18.1	19.7	16.2	16.5	17.4	17.6	19.1
12H	4H	15.8	16.2	17.0	17.3	18.8	15.3	15.6	16.4	16.7	18.2
	6H	16.4	16.7	17.6	17.8	19.3	15.9	16.2	17.0	17.3	18.8
	8H	16.7	16.9	17.8	18.0	19.6	16.2	16.4	17.3	17.5	19.1

Maximum UGR = 19.7

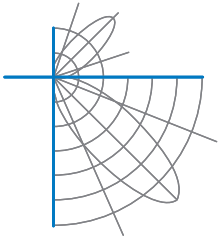


Report of Test  
LLIA001418-004A

**Iso-Illuminance Plot**

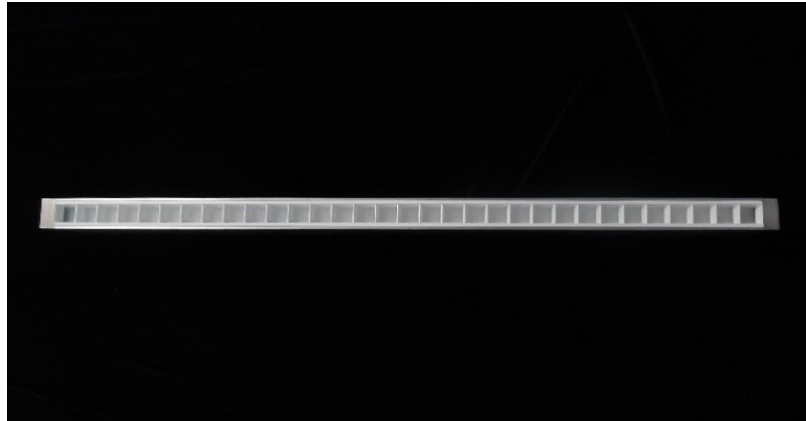


The isofootcandle values shown in the plot above are based on a mounting height of  $h = 8.0$  feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the contribution of room reflections.

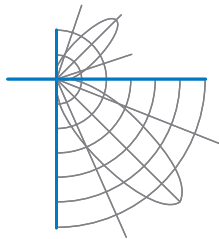


Report of Test  
LLIA001418-004A

**Additional Pictures of Test Subject**







## Report of Test

### LLIA001418-004A

Test Distance                    9.5 m  
Ambient Temperature        25.1 °C

#### Notes

The laboratory has not participated in the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Tested in accordance with the applicable sections of IES LM-79-19. Format of reports and angular increments based on IES LM-41-14 and LM-46-04.

The luminous intensity values, and other derived quantities, contained in this report are based on the absolute data, as measured.

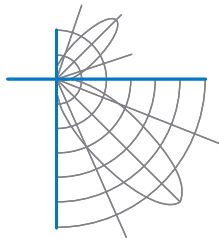
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE C-Gamma coordinate system as defined in CIE publication number 121.

This report may contain data that are not covered by the NVLAP accreditation. Quantities marked with ‡ are not covered.

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.



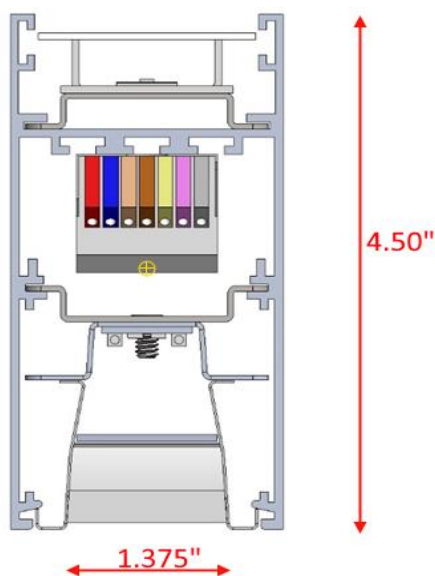
## Report of Test

LLIA001418-004B

Integrating Sphere Report

Catalog Number: QS2-I/D-MO/MO-K40-80-4-XX-FDC/PBF01M-FXXX-UNV-DIM1

Pendant mounted, extruded aluminum housing, white enamel aluminum reflectors, frosted plastic enclosure above LEDs, formed white enamel aluminum baffle with frosted plastic insert. 92 upper white LEDs, 128 white lower LEDs. One Osram Optotronic OTi 30/120-277/1A0 L G2 LED driver labeled as 480mA and one OTi50/120-277/1A4 DIM-1 L G2 driver labeled as 730mA.



### Performance Summary

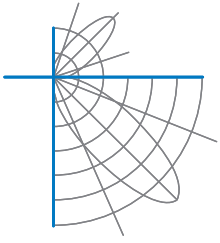
Voltage	120.0 Vac
Current	0.3214 A
Power	37.34 W
Frequency	59.99 Hz
Power Factor	0.968
Current THD	12.8 %
Total Luminous Flux	4201.8 lm
Efficacy	112.5 lm/W
Chromaticity (x,y)	(0.3829, 0.3817)
(u',v')	(0.2248, 0.5041)
Duv	0.0016
CCT	3970 K
CRI (Ra)	83
R9	6
TM-30: Rf	81
TM-30: Rg	93
TM-30: Rcs,h1	-12

Prepared For:

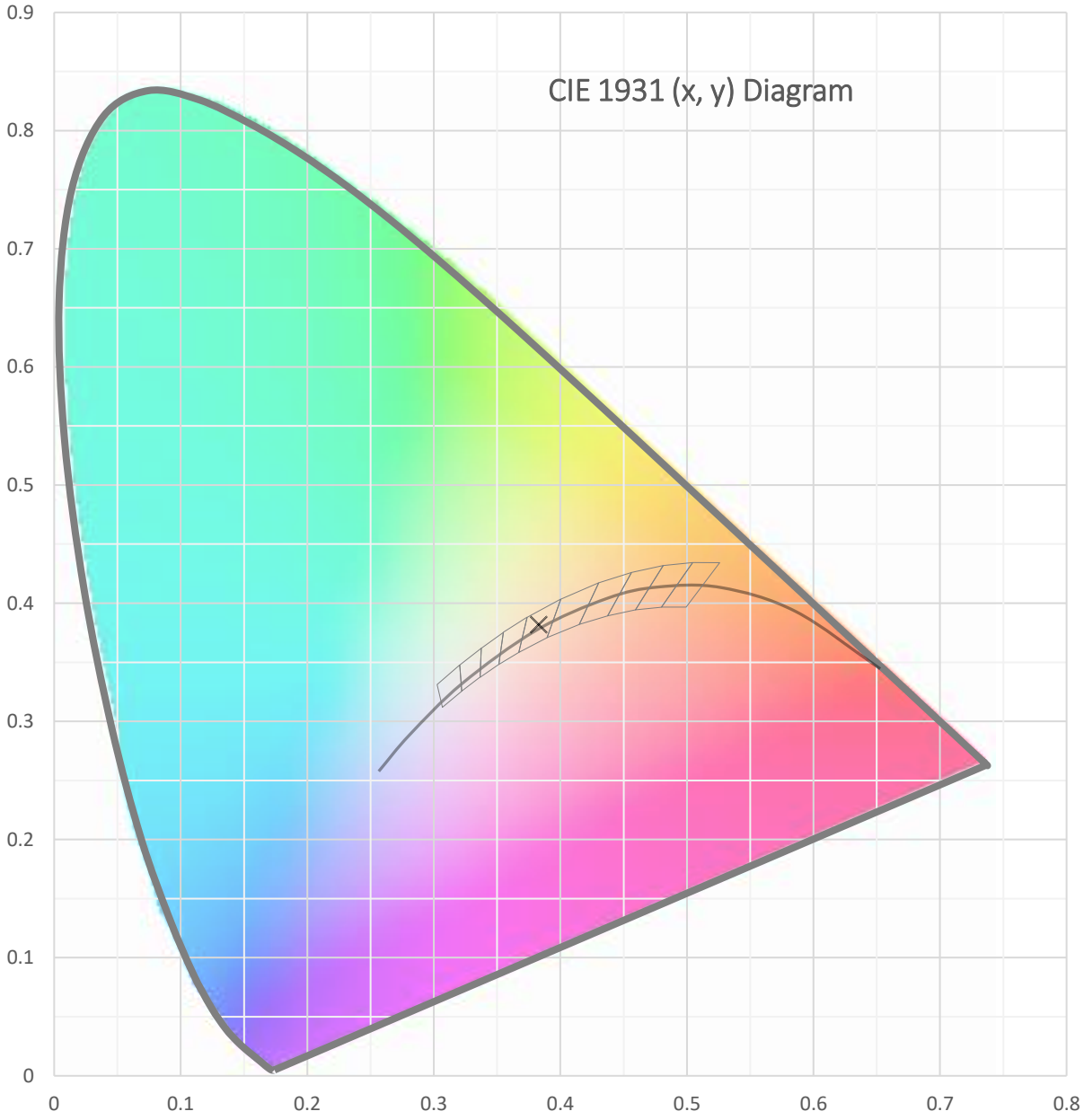
Precision Architectural Lighting  
4830 Timber Creek Drive  
Houston, TX 77017, USA

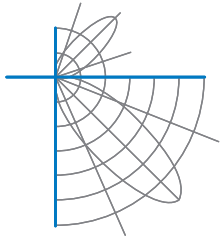
Test date: 03/05/2021

Report date: 03/08/2021

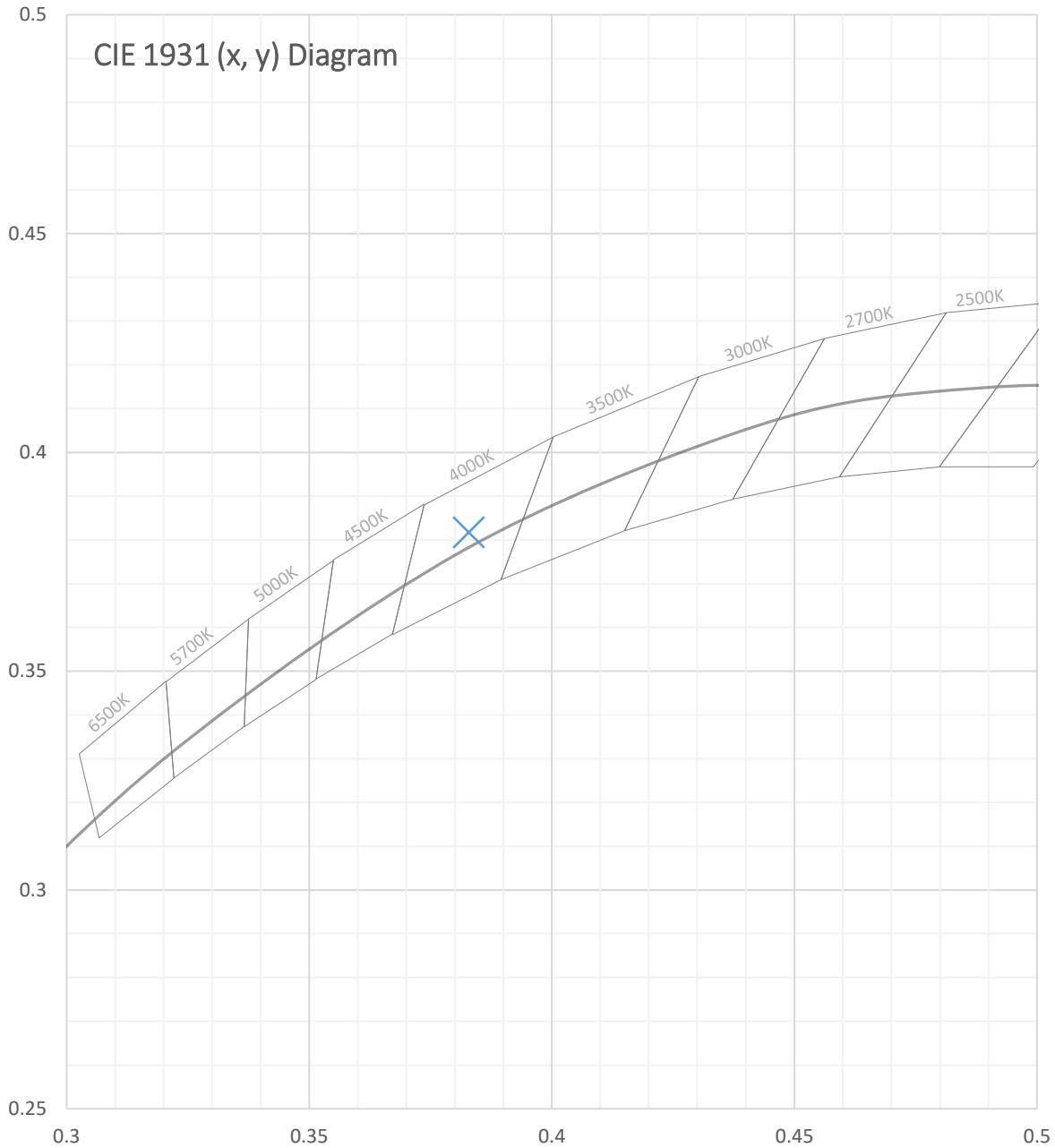


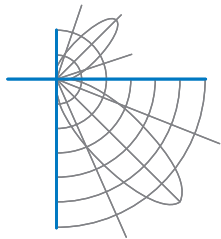
Test Report Number: LLIA001418-004B





Test Report Number: LLIA001418-004B



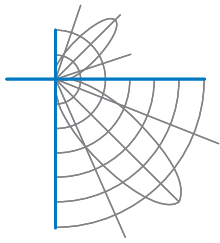


Test Report Number: LLIA001418-004B

Total Radiant Flux	12.70 W
Total Luminous Flux	4201.8 Lm
Chromaticity CIE 1931 (x, y)	(0.3829, 0.3817)
Chromaticity CIE 1976 (u', v')	(0.2248, 0.5041)
Correlated Color Temperature (CCT)	3970 K
Color Rendering Index (Ra)	83
R1	81
R2	90
R3	96
R4	80
R5	81
R6	86
R7	85
R8	63
R9	6
R10	76
R11	79
R12	59
R13	84
R14	98
TM-30: Rf	81
TM-30: Rg	93
TM-30: Rcs,h1	-12
Distance from Planckian Locus (Duv)	0.0016
Scotopic/Photopic Ratio ‡	1.693

**Electrical Data**

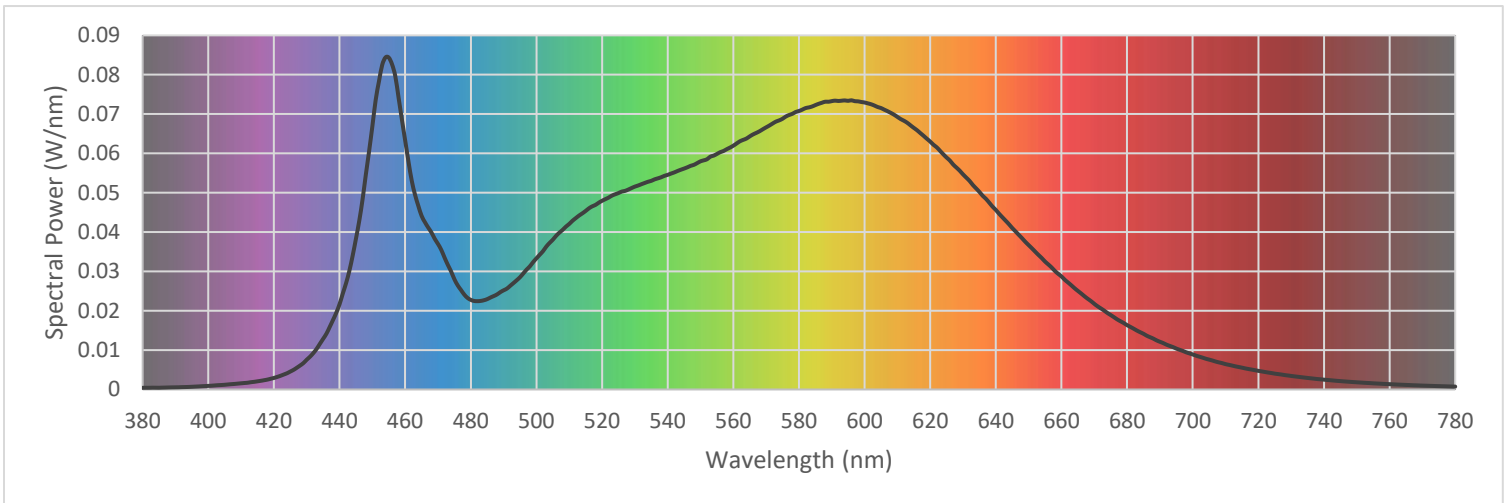
Voltage	120.0 Vac
Current	0.3214 A
Power	37.34 W
Frequency	59.99 Hz
Power Factor	0.968
Current THD	12.8 %

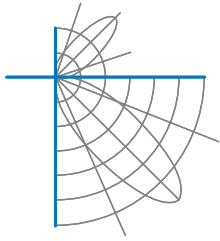


Test Report Number: LLIA001418-004B

Summary Spectral Power Distribution (wavelength - nm, spectral power - W/nm)

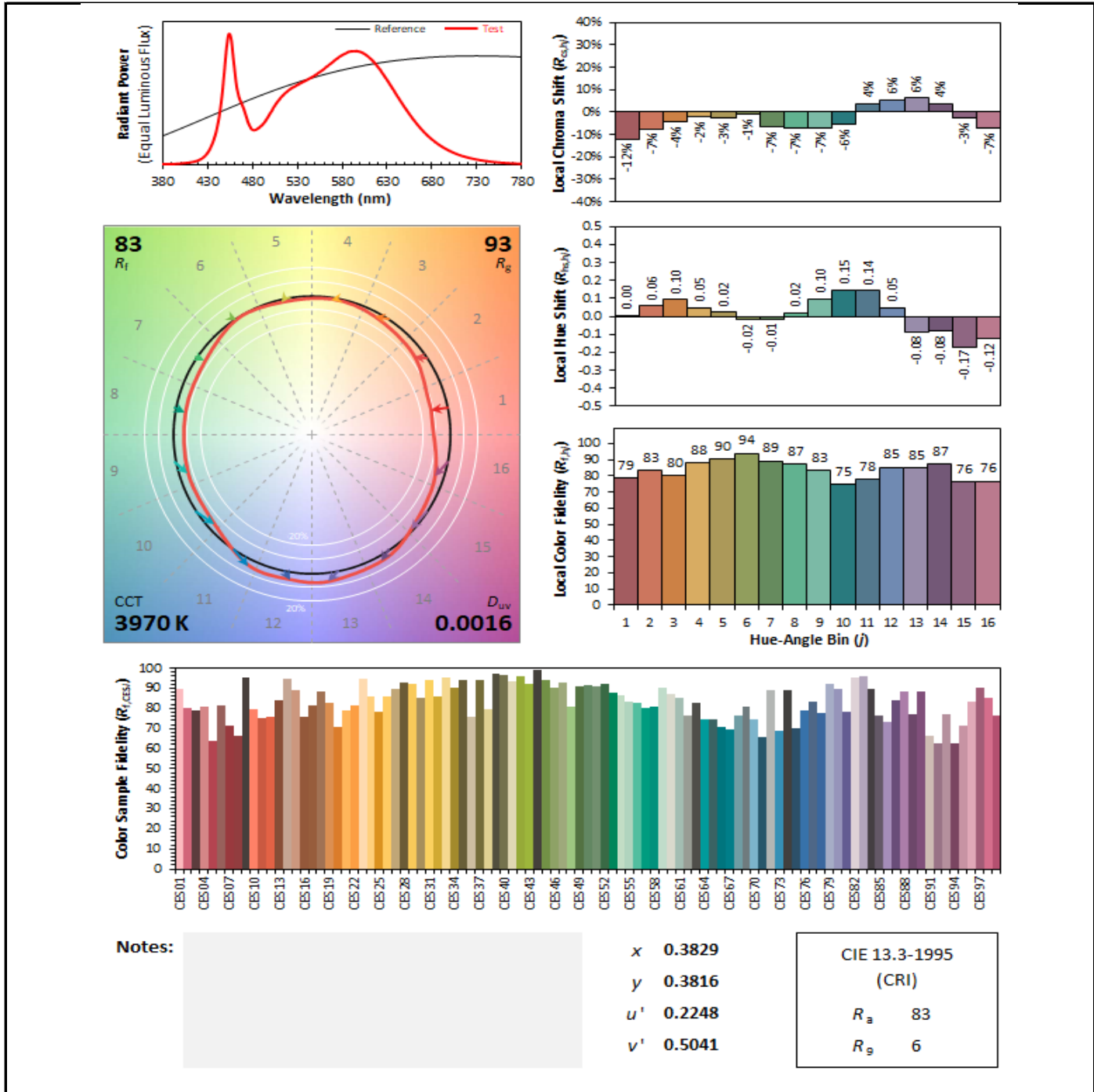
380	0.000422	480	0.022772	580	0.070777	680	0.016348
385	0.000440	485	0.022962	585	0.072276	685	0.014149
390	0.000545	490	0.025205	590	0.073284	690	0.012126
395	0.000682	495	0.028536	595	0.073362	695	0.010395
400	0.000909	500	0.033328	600	0.072940	700	0.008906
405	0.001193	505	0.038068	605	0.071529	705	0.007586
410	0.001568	510	0.042074	610	0.069283	710	0.006440
415	0.002072	515	0.045372	615	0.066489	715	0.005544
420	0.002929	520	0.047959	620	0.063007	720	0.004731
425	0.004559	525	0.049924	625	0.058936	725	0.004025
430	0.007566	530	0.051561	630	0.054675	730	0.003443
435	0.012871	535	0.053028	635	0.050202	735	0.002925
440	0.021685	540	0.054553	640	0.045623	740	0.002490
445	0.038345	545	0.056147	645	0.041040	745	0.002126
450	0.066898	550	0.057985	650	0.036695	750	0.001822
455	0.084349	555	0.059858	655	0.032501	755	0.001566
460	0.063234	560	0.061960	660	0.028737	760	0.001348
465	0.044134	565	0.064328	665	0.025052	765	0.001153
470	0.036985	570	0.066622	670	0.021776	770	0.000987
475	0.028014	575	0.068805	675	0.018915	775	0.000851
						780	0.000731

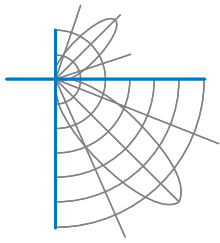




Test Report Number: LLIA001418-004B

IES TM-30 Details





## Test Report Number: LLIA001418-004B

**Test Equipment Configuration:** LightLab International Allentown 2m Integrating Sphere  
Measurements acquired using a Labsphere CDS 2600 spectroradiometer  
Testing was performed using 4 $\pi$  geometry

**Test Temperature:** 25.2 °C

**Test Procedure:** Tested in accordance with the applicable sections of:  
LM-79-19, LM-78-07, LM-58-13, ANSI\_ANSLG C78.377-2017, TM-30-18

**Significance:** The laboratory has not participated in the selection of samples to be tested.  
All testing is performed on the understanding that the significance of the report  
is limited to the extent that the test sample is representative of production units.

**Notes:** The measurements and other derived quantities contained in this report  
are based on the absolute data as measured.

Prorating the performance of the sample for the use of other component  
combinations (such as lamp / LED / Ballast / driver), or for use in different  
environmental conditions than that tested, may produce erroneous results.

This report is free of erasures and corrections

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Quantities marked with ‡ are not covered.

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