

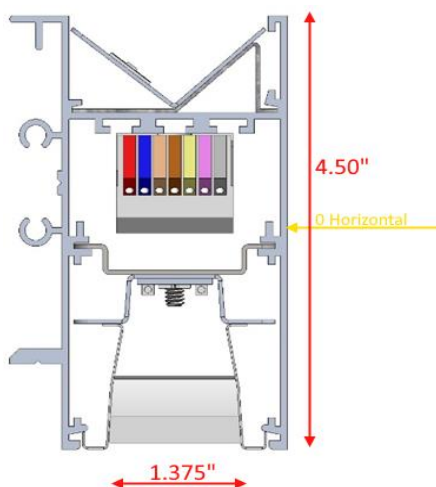
## Report of Test

LLIA001418-006A

Indoor Distribution Photometry Test Report

Catalog Number: QP2-IASY/D-MO/MO-K40-80-4-XX-OP/PBF01M-FXXX-UNV-DIM1

Wall mounted, extruded aluminum housing, white enamel aluminum reflectors, clear 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:

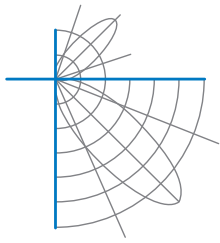
Precision Architectural Lighting  
4830 Timber Creek Drive  
Houston, TX 77017, USA

Performance Summary			
Input Voltage	120.0 V	Luminous Flux	4413.0 Lumens
Input Current	0.3259 A	Total Efficacy	118.7 Lm/W
Input Power	37.17 W	Downward Flux	1665.5 Lumens
Frequency	60.00 Hz	Downward Flux	37.7 % of Total
Power Factor	0.951		
Current THD	12.9 %		

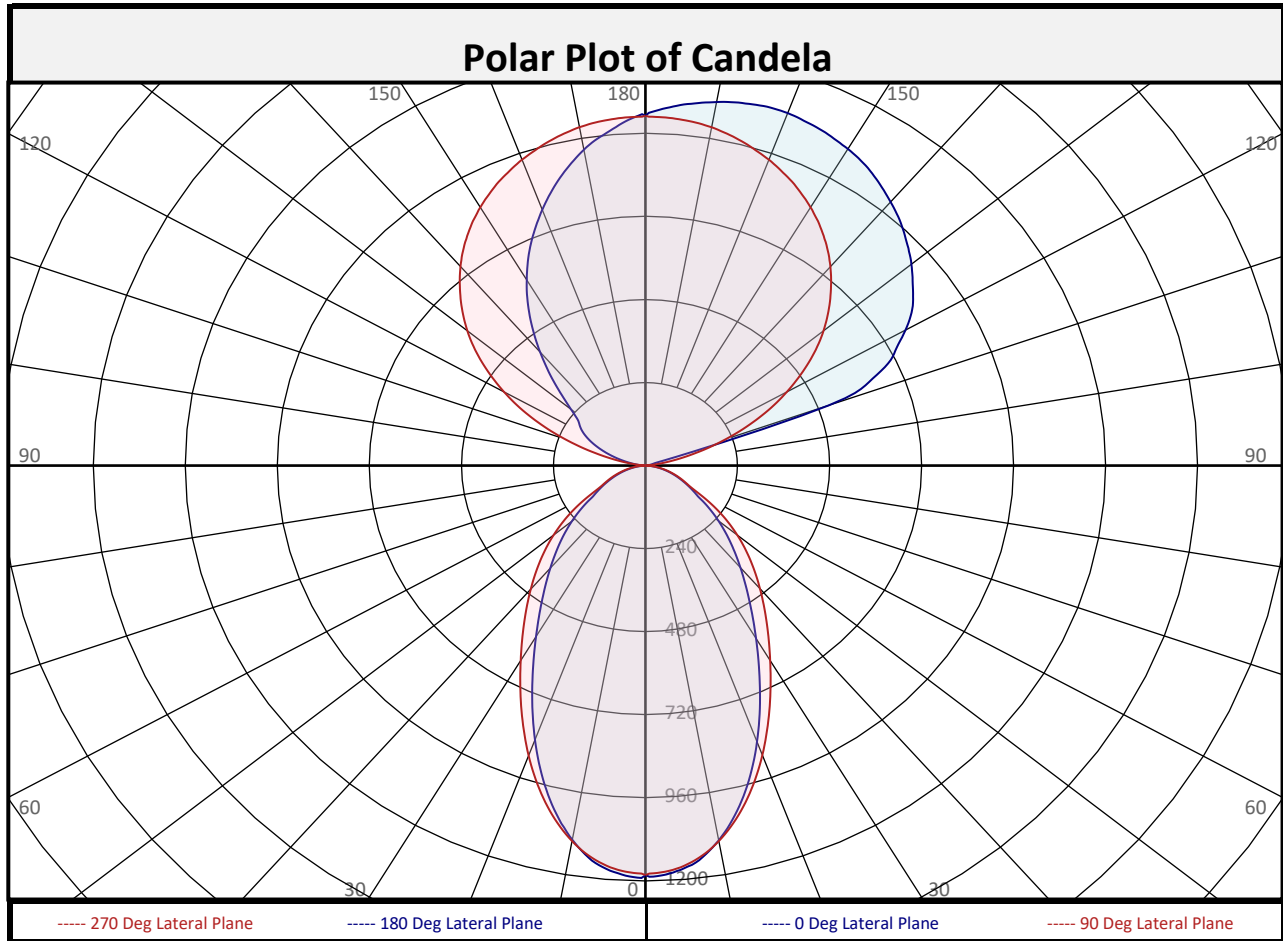
This test report was issued by LightLab International Allentown, LLC without alterations or erasures.

Test date: 03/05/2021  
Report date: 03/08/2021

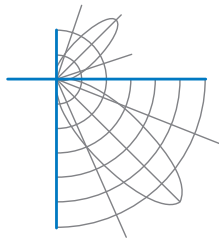
Signed: \_\_\_\_\_



Report of Test  
LLIA001418-006A



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	Zone (Deg Vert)	Flux (Lumens)	Percent of Total						
0-10	109.2	2.5%	90-100	13.9	0.3%	0-20	387.4	8.8%	10-20	278.2	6.3%	100-110	137.6	3.1%	0-30	723.8	16.4%
20-30	336.4	7.6%	110-120	356.4	8.1%	0-40	1036	23.5%	30-40	312.1	7.1%	120-130	455.5	10.3%	0-60	1478	33.5%
40-50	257.7	5.8%	130-140	506.4	11.5%	0-80	1650	37.4%	50-60	184.1	4.2%	140-150	495.0	11.2%	0-90	1556	35.3%
60-70	111.5	2.5%	150-160	413.3	9.4%	10-90	906.3	20.5%	70-80	60.7	1.4%	160-170	273.6	6.2%	20-50	906.3	20.5%
80-90	15.6	0.4%	170-180	95.7	2.2%	40-90	629.6	14.3%	0-90	1666	37.8%	180-190	27.6	0.6%	60-90	187.8	4.3%
			90-180	2747	62.2%	0-180	4413	100.0%									

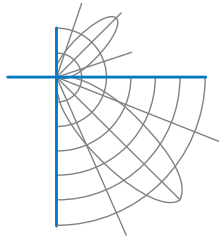


## Report of Test

### LLIA001418-006A

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	1184	1184	1184	1184	1184	1184	1184	1184	1184
	2.5	1184	1182	1178	1175	1175	1175	1178	1182	1186
	5	1168	1167	1164	1161	1161	1161	1162	1166	1170
	7.5	1142	1142	1139	1136	1137	1136	1138	1140	1142
	10	1100	1101	1105	1102	1102	1102	1103	1097	1098
	12.5	1049	1050	1057	1058	1059	1058	1054	1046	1045
	15	989	993	1001	1008	1008	1008	997	986	984
	17.5	922	927	939	951	952	950	934	920	916
	20	850	857	873	888	891	887	868	849	844
	22.5	778	785	805	823	829	821	800	777	771
	25	706	713	736	757	767	756	731	706	700
	27.5	639	645	669	693	707	692	664	638	633
	30	577	580	605	632	651	631	600	575	573
	32.5	521	522	545	576	599	575	541	518	518
	35	471	470	490	524	551	523	487	467	470
	37.5	426	423	441	476	507	475	439	422	427
	40	385	381	396	432	465	431	395	381	387
	42.5	348	343	356	391	425	391	355	344	351
	45	313	309	319	354	387	354	320	310	317
	47.5	280	276	286	318	350	318	287	278	284
50	249	246	255	284	313	284	256	248	252	
52.5	218	217	227	251	275	251	228	219	220	
55	187	189	200	219	237	220	201	191	189	
57.5	159	163	174	188	198	189	175	164	160	
60	141	141	151	158	159	159	152	141	142	
62.5	125	124	129	131	131	132	130	125	125	
65	109	109	110	112	114	112	111	109	109	
67.5	95	95	95	98	100	98	95	95	94	
70	81	81	82	84	87	84	82	81	81	
72.5	68	68	69	71	73	71	69	68	68	
75	56	56	57	59	61	59	56	56	55	
77.5	44	44	45	47	48	47	44	44	43	
80	33	33	33	35	36	35	33	33	32	
82.5	22	22	23	24	25	24	22	22	22	
85	12	13	13	13	14	13	13	13	12	
87.5	4	5	5	5	4	5	5	5	4	
90	1	1	2	1	1	1	1	1	1	

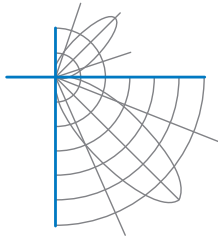


## Report of Test

### LLIA001418-006A

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	1	2	1	1	1	1	1	1
	92.5	2	2	2	2	2	3	3	4	4
	95	5	5	4	5	11	9	9	10	11
	97.5	7	7	8	47	29	19	20	20	21
	100	12	12	12	135	56	34	33	34	34
	102.5	17	17	43	184	89	50	50	50	51
	105	22	24	323	235	129	67	68	69	69
	107.5	85	256	398	286	175	89	88	89	89
	110	509	534	454	342	224	116	107	109	110
	112.5	631	604	508	400	276	150	125	130	131
	115	698	658	558	453	327	188	141	150	151
	117.5	739	703	601	503	378	230	158	168	169
	120	783	749	646	552	426	274	181	183	186
	122.5	823	783	689	599	474	321	212	196	200
	125	852	814	729	644	520	368	248	211	211
	127.5	878	845	770	688	565	415	290	238	227
	130	905	874	807	726	607	461	334	271	255
	132.5	930	902	839	762	645	506	381	313	291
	135	953	929	869	795	682	549	428	358	334
	137.5	976	954	896	824	717	591	475	405	380
140	995	977	922	851	751	631	521	453	428	
142.5	1013	997	945	877	782	670	566	502	478	
145	1031	1015	965	900	810	706	609	549	527	
147.5	1045	1031	985	919	838	741	652	596	575	
150	1057	1044	1000	938	861	774	692	641	620	
152.5	1065	1055	1012	955	884	805	730	685	666	
155	1074	1065	1023	969	905	833	767	726	708	
157.5	1079	1070	1032	980	923	860	802	765	748	
160	1085	1073	1038	991	941	885	835	802	788	
162.5	1085	1075	1042	1000	956	908	865	838	826	
165	1081	1073	1043	1007	970	929	893	871	862	
167.5	1076	1068	1044	1013	983	948	919	901	895	
170	1067	1061	1041	1017	993	965	942	930	927	
172.5	1057	1052	1037	1018	1000	979	963	955	954	
175	1046	1042	1030	1017	1005	991	981	978	977	
177.5	1032	1030	1022	1013	1008	1000	997	998	1001	
180	1011	1011	1011	1011	1011	1011	1011	1011	1011	



## Report of Test

### LLIA001418-006A

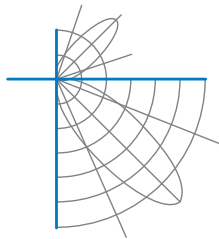
Coefficients of Utilization/Room Utilization - Zonal Cavity Method																						
Effective Floor Cavity Reflectance 0.20																						
RC	80					70					50				30				10			0
RW	70	50	30	10		70	50	30	10		50	30	10		50	30	10		50	30	10	0
RCR																						
0	104	104	104	104		95	95	95	95		77	77	77		60	60	60		45	45	45	38
1	96	92	88	85		87	84	81	78		68	66	64		54	53	51		41	40	39	33
2	88	81	75	71		80	74	69	65		60	57	54		48	46	44		37	35	34	29
3	81	72	65	60		73	66	60	55		54	50	47		43	41	38		33	32	30	26
4	74	64	57	51		67	59	52	48		49	44	40		39	36	33		30	28	27	23
5	68	58	50	44		62	53	46	41		44	39	35		36	32	30		28	26	24	20
6	63	52	44	39		57	48	41	36		40	35	31		33	29	26		26	23	21	18
7	59	47	40	35		53	43	37	32		36	32	28		30	26	24		24	21	19	17
8	55	43	36	31		50	40	33	29		33	29	25		28	24	21		22	20	18	15
9	51	39	32	28		46	37	30	26		31	26	23		26	22	20		20	18	16	14
10	48	36	30	25		44	34	28	24		29	24	21		24	20	18		19	17	15	13

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	32.9	5.10	5.43	
8.0	18.5	6.80	7.24	
10.0	11.8	8.50	9.05	
12.0	8.2	10.20	10.86	
14.0	6.0	11.90	12.68	
16.0	4.6	13.60	14.49	

Average Luminance (cd/m <sup>2</sup> )			
	0 deg Plane	45 deg Plane	90 deg Plane
0	28623	28623	28623
45	10712	10918	13243
55	7900	8413	9997
65	6243	6301	6545
75	5206	5301	5652
85	3346	3649	3803

Spacing Criterion	
0 degree plane:	0.9
90 degree plane:	0.9
180 degree plane:	0.8
270 degree plane:	0.9



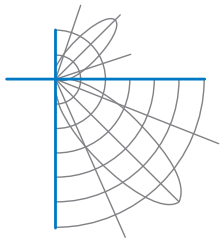
## Report of Test

### LLIA001418-006A

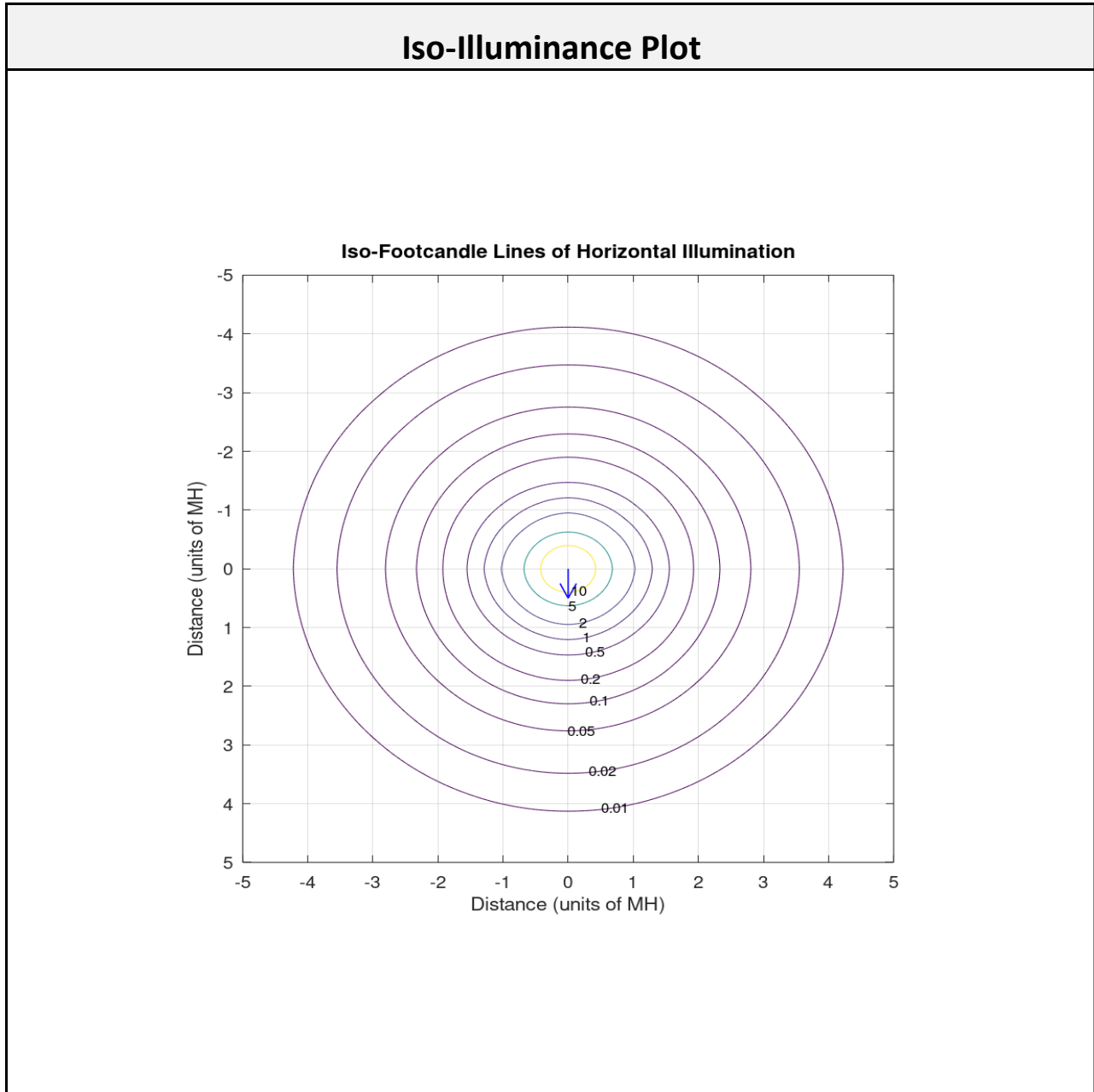
#### UGR TABLE - CORRECTED

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	12.2	12.9	13.3	14.0	15.4	13.3	14.0	14.4	15.1	16.5	
	3H	13.6	14.3	14.7	15.4	16.8	14.5	15.1	15.6	16.2	17.7	
	4H	14.2	14.8	15.3	15.8	17.3	15.0	15.6	16.0	16.6	18.1	
	6H	14.5	15.1	15.6	16.2	17.6	15.3	15.8	16.4	16.9	18.4	
	8H	14.6	15.1	15.7	16.2	17.7	15.4	15.9	16.5	17.0	18.5	
	12H	14.7	15.2	15.8	16.2	17.7	15.4	15.9	16.5	17.0	18.5	
4H	2H	12.6	13.2	13.7	14.3	15.8	13.6	14.2	14.7	15.2	16.7	
	3H	14.3	14.8	15.4	15.9	17.4	15.0	15.5	16.1	16.6	18.0	
	4H	14.9	15.4	16.0	16.5	18.0	15.6	16.0	16.7	17.1	18.6	
	6H	15.4	15.8	16.5	16.9	18.4	16.0	16.4	17.1	17.5	19.0	
	8H	15.6	15.9	16.7	17.0	18.5	16.2	16.5	17.3	17.6	19.2	
	12H	15.6	15.9	16.7	17.1	18.6	16.2	16.6	17.4	17.7	19.2	
8H	4H	15.1	15.5	16.2	16.6	18.1	15.7	16.1	16.8	17.2	18.7	
	6H	15.7	16.0	16.9	17.2	18.7	16.3	16.6	17.4	17.7	19.2	
	8H	15.9	16.2	17.1	17.3	18.9	16.5	16.8	17.6	17.9	19.4	
	12H	16.1	16.3	17.2	17.4	19.0	16.6	16.9	17.8	18.0	19.5	
12H	4H	15.1	15.5	16.2	16.6	18.1	15.7	16.0	16.8	17.1	18.6	
	6H	15.8	16.0	16.9	17.2	18.7	16.3	16.6	17.4	17.7	19.2	
	8H	16.0	16.2	17.2	17.4	18.9	16.5	16.8	17.7	17.9	19.5	

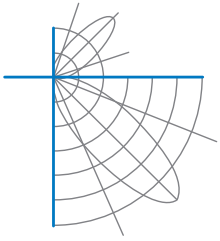
Maximum UGR = 19.5



Report of Test  
LLIA001418-006A

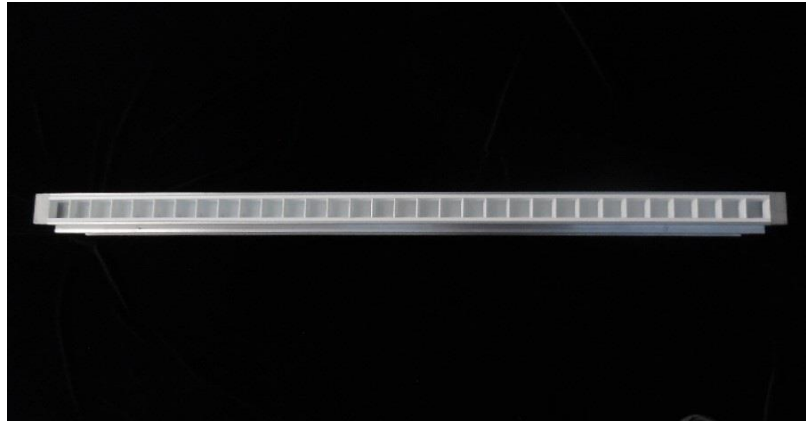


The isofootcandle values shown in the plot above are based on a mounting height of  $h = 8.0$  feet. Grid values show multiples of mounting height. The isoilluminance contour lines are expressed in units of footcandles. The values expressed are based on the direct light from a single unit without the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

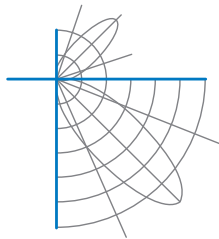


Report of Test  
LLIA001418-006A

**Additional Pictures of Test Subject**







## Report of Test

### LLIA001418-006A

Test Distance                    9.5 m  
Ambient Temperature        25.2 °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.

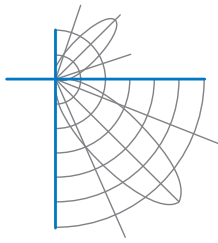
Prorating the performance of the sample for the use of other component combinations (such as lamp / LED / Ballast / driver), or for use in different environmental conditions than that tested, may produce erroneous results.

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.



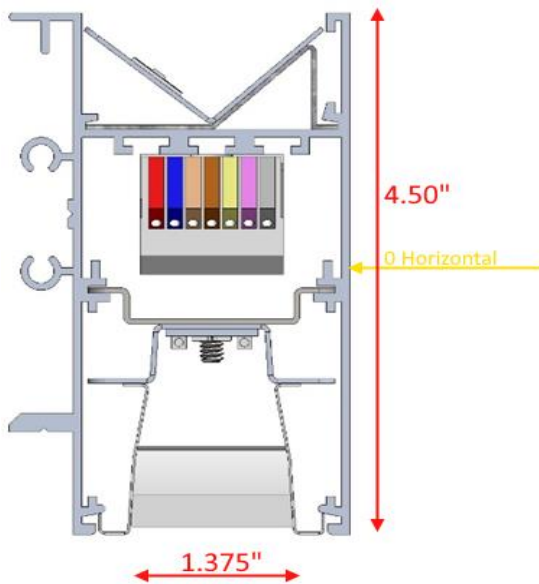
## Report of Test

**LLIA001418-006B**

Integrating Sphere Report

Catalog Number: QP2-IASY/D-MO/MO-K40-80-4-XX-OP/PBF01M-FXXX-UNV-DIM1

Wall mounted, extruded aluminum housing, white enamel aluminum reflectors, clear 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

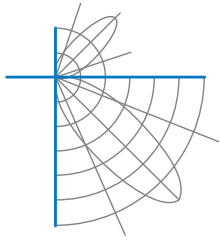
Voltage	120.0 Vac
Current	0.3186 A
Power	37.17 W
Frequency	59.99 Hz
Power Factor	0.972
Current THD	12.7 %
Total Luminous Flux	4428.4 lm
Efficacy	119.1 lm/W
Chromaticity (x,y)	(0.3808, 0.3795)
(u',v')	(0.2242, 0.5028)
Duv	0.0012
CCT	4011 K
CRI (Ra)	83
R9	8
TM-30: Rf	81
TM-30: Rg	93
TM-30: Rcs,h1	-12

Prepared For:

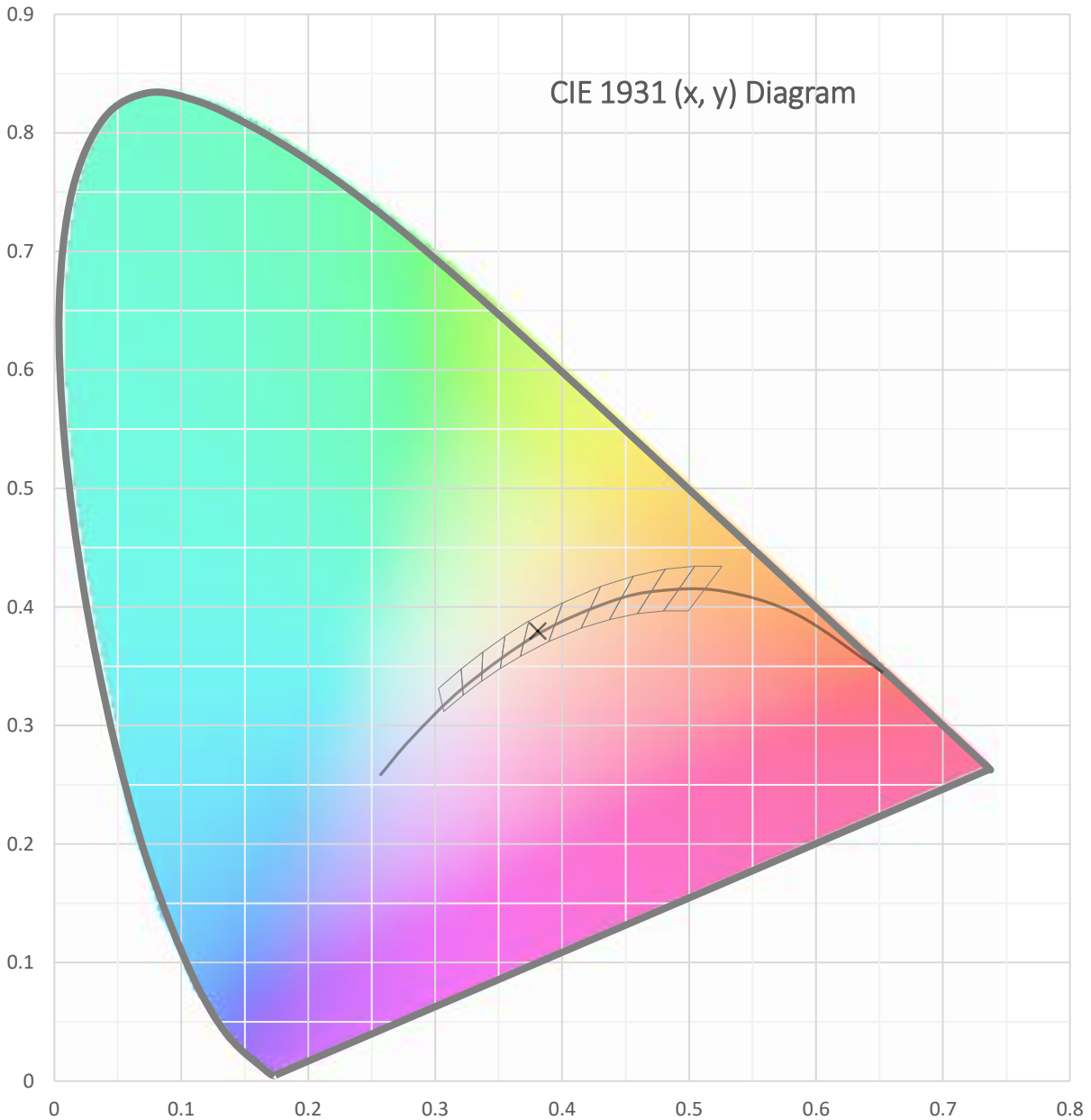
Precision Architectural Lighting  
4830 Timber Creek Drive  
Houston, TX 77017, USA

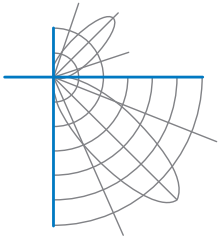
Test date: 03/02/2021

Report date: 03/08/2021

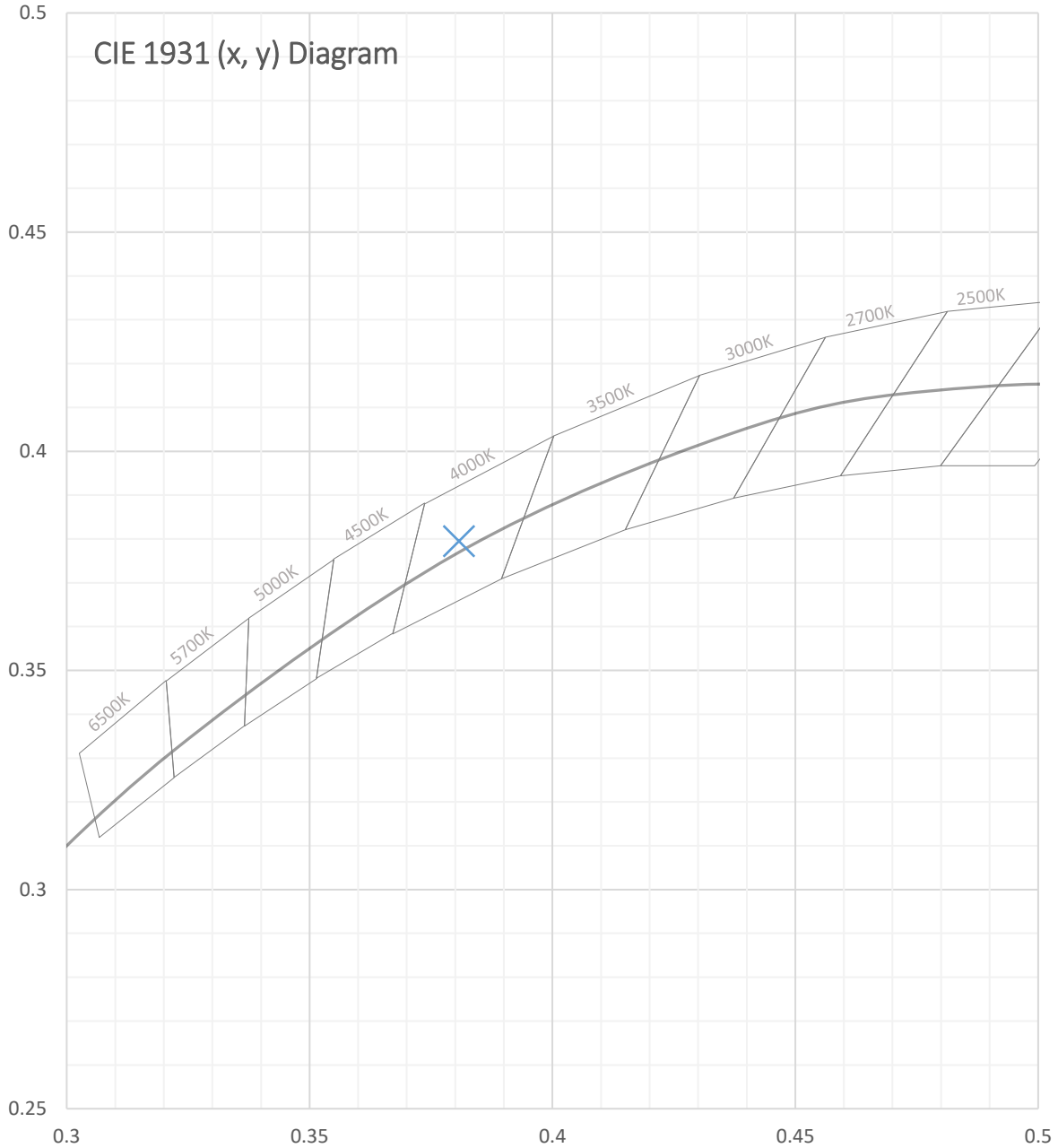


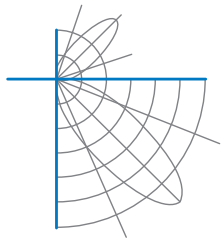
Test Report Number: LLIA001418-006B





Test Report Number: LLIA001418-006B



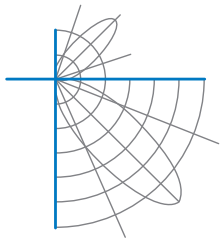


Test Report Number: LLIA001418-006B

Total Radiant Flux	13.45 W
Total Luminous Flux	4428.4 Lm
Chromaticity CIE 1931 (x, y)	(0.3808, 0.3795)
Chromaticity CIE 1976 (u', v')	(0.2242, 0.5028)
Correlated Color Temperature (CCT)	4011 K
Color Rendering Index (Ra)	83
R1	82
R2	91
R3	96
R4	80
R5	81
R6	87
R7	85
R8	63
R9	8
R10	78
R11	79
R12	60
R13	84
R14	98
TM-30: Rf	81
TM-30: Rg	93
TM-30: Rcs,h1	-12
Distance from Planckian Locus (Duv)	0.0012
Scotopic/Photopic Ratio ‡	1.713

**Electrical Data**

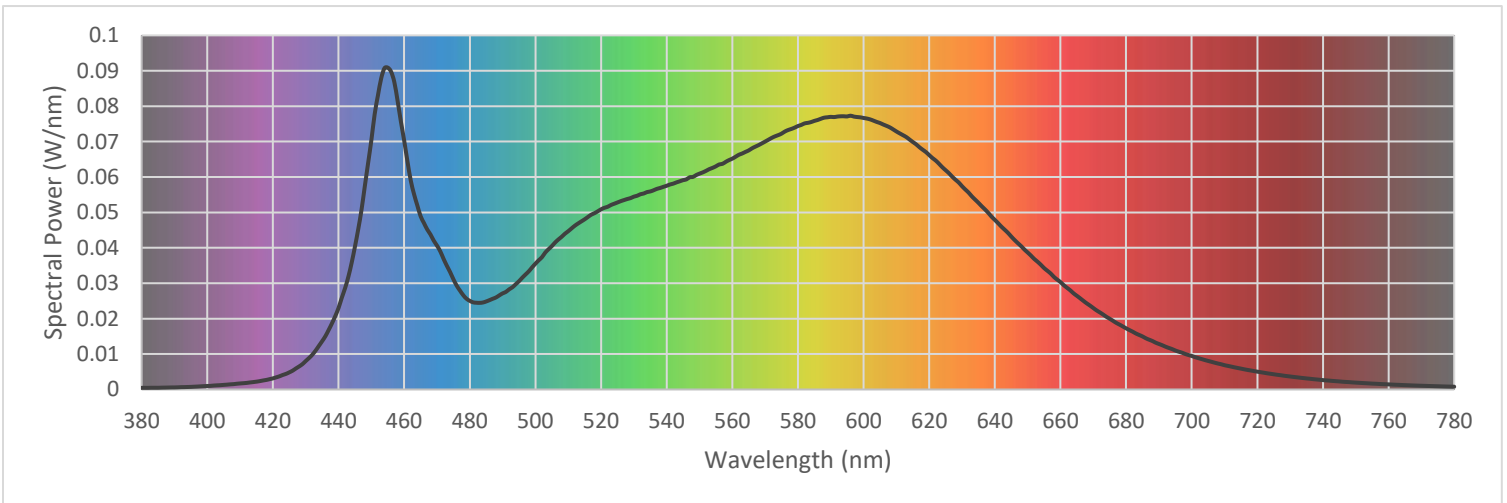
Voltage	120.0 Vac
Current	0.3186 A
Power	37.17 W
Frequency	59.99 Hz
Power Factor	0.972
Current THD	12.7 %

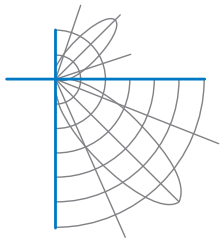


Test Report Number: LLIA001418-006B

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

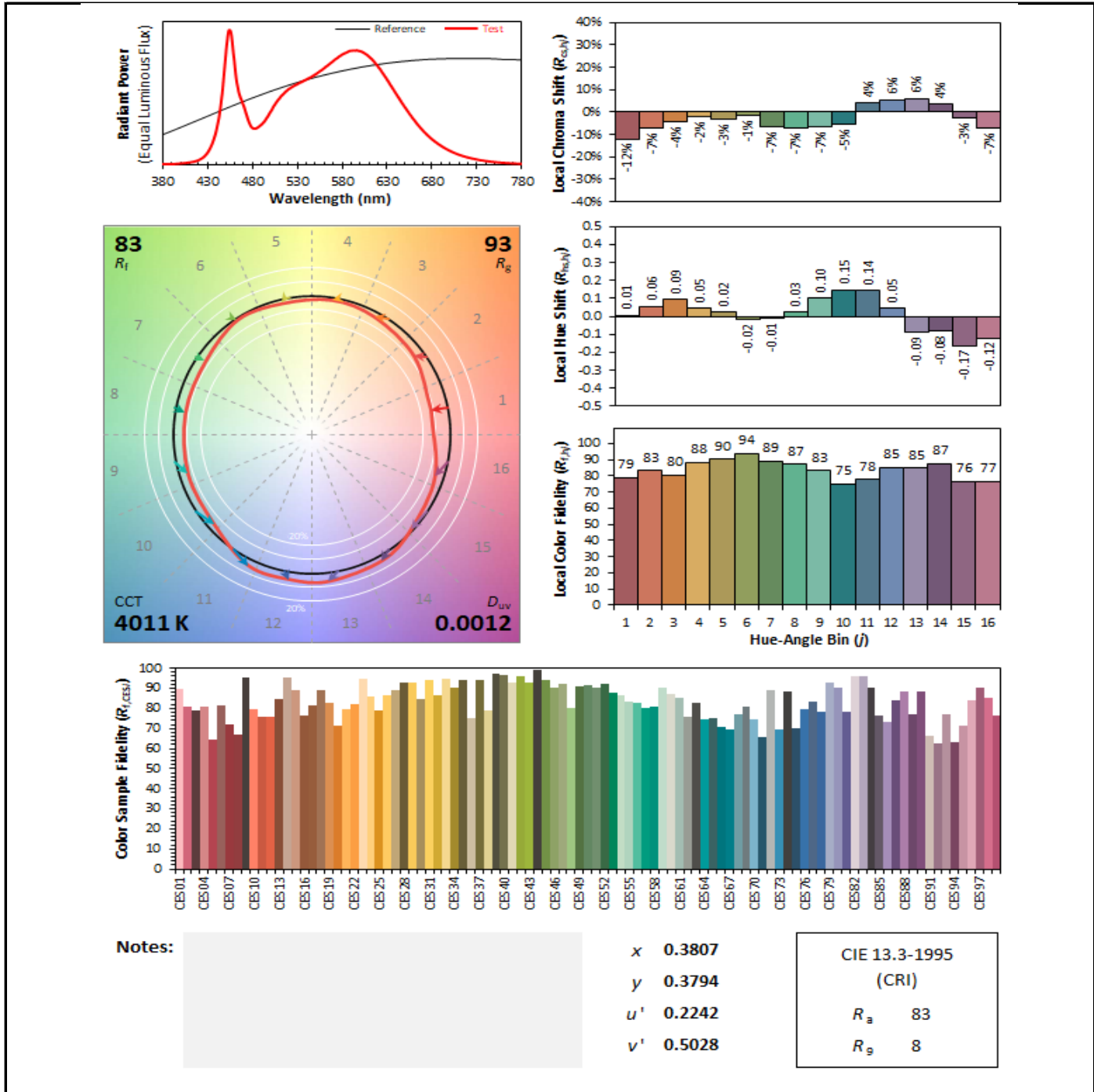
380	0.000463	480	0.025027	580	0.074397	680	0.017267
385	0.000483	485	0.024857	585	0.075851	685	0.014979
390	0.000581	490	0.027139	590	0.076987	690	0.012860
395	0.000731	495	0.030577	595	0.077100	695	0.011011
400	0.000979	500	0.035527	600	0.076671	700	0.009465
405	0.001291	505	0.040491	605	0.075248	705	0.008066
410	0.001702	510	0.044693	610	0.072868	710	0.006856
415	0.002207	515	0.048054	615	0.069892	715	0.005886
420	0.003134	520	0.050877	620	0.066186	720	0.005029
425	0.004841	525	0.052811	625	0.061925	725	0.004290
430	0.008030	530	0.054452	630	0.057405	730	0.003663
435	0.013638	535	0.055919	635	0.052714	735	0.003117
440	0.023038	540	0.057524	640	0.047890	740	0.002643
445	0.040367	545	0.059111	645	0.043197	745	0.002267
450	0.070405	550	0.060953	650	0.038690	750	0.001937
455	0.090882	555	0.063025	655	0.034291	755	0.001658
460	0.070248	560	0.065182	660	0.030333	760	0.001433
465	0.048943	565	0.067509	665	0.026452	765	0.001223
470	0.040620	570	0.070006	670	0.023012	770	0.001049
475	0.031123	575	0.072248	675	0.019978	775	0.000908
						780	0.000779

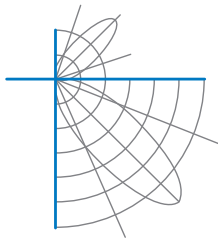




Test Report Number: LLIA001418-006B

IES TM-30 Details





## Test Report Number: LLIA001418-006B

**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:** 25.7 °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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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.