



# Report of Test

## LLIA000817-010A

Catalog Number: MLS2-D-HO-K40-80-4-XX-AL-XXX-UNV  
Pendant mounted, extruded aluminum housing, formed white enamel  
aluminum reflectors, translucent white plastic enclosure.  
92 white LEDs  
One Osram Optotronic OT30W/PRG1050C/UNV/DIM/L LED driver  
120.0Vac, 60.00Hz, 0.2315A, 27.69W, 0.997PF, 6.2%THD(i)



### Performance Summary

Total Light Output	2713 lm
Luminaire Power	27.7 W
Luminous Efficacy	97.9 lm/W

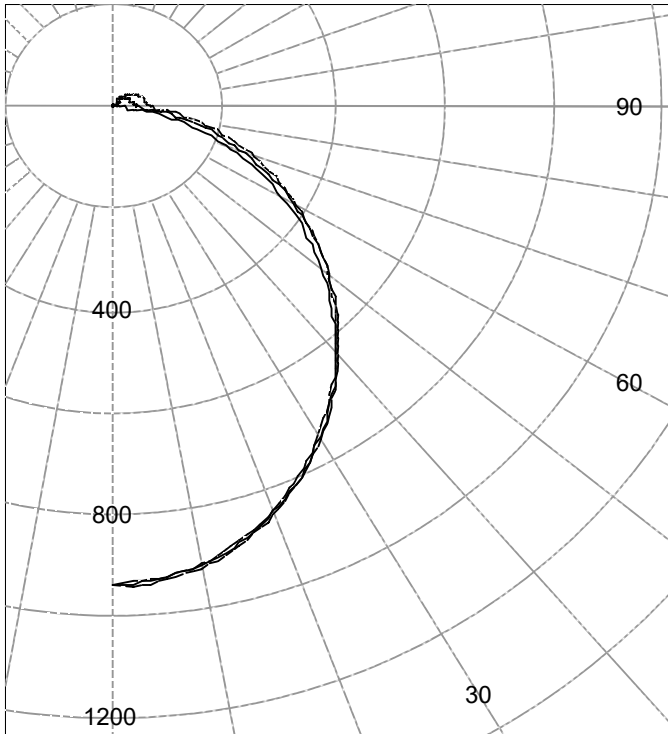
**PREPARED FOR : Precision Architectural Lighting, 4830 Timber Creek Drive, Houston, TX 77017**



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Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



(Two plane symmetry) C0-C90

**AVERAGE LUMINANCE (cd / m<sup>2</sup>)**

Gamma	C0	C45	C90
45.0	11574	11035	10685
55.0	10760	10221	9933
65.0	9769	9252	9164
75.0	8104	8031	8324
85.0	5362	6884	7842

**INTENSITY SUMMARY (cd)**

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	938	938	938	938	938	
5.0	932	928	936	935	929	88
10.0	914	910	919	917	912	
15.0	886	883	891	888	883	250
20.0	848	845	852	849	844	
25.0	806	799	805	802	796	369
30.0	749	746	752	748	744	
35.0	691	688	696	691	687	432
40.0	626	627	635	631	628	
45.0	560	563	572	569	568	438
50.0	492	498	509	507	507	
55.0	423	433	443	444	446	393
60.0	354	367	377	381	385	
65.0	284	299	311	319	323	305
70.0	214	230	245	258	262	
75.0	145	163	183	199	204	191
80.0	84	102	126	144	150	
85.0	34	53	77	96	102	82
90.0	0	19	41	59	65	

**ZONAL FLUX AND PERCENTAGES**

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	707	N / A	26.1
0-40	1140	N / A	42.0
0-60	1970	N / A	72.6
0-90	2548	N / A	93.9
40-90	1408	N / A	51.9
60-90	578	N / A	21.3
90-180	165	N / A	6.1
0-180	2713	N / A	100.0

Total Light Output = 2,713 lm

Signed:

Authorized Signatory

Spacing Criterion: 0-180 1.2  
Spacing Criterion: 90-270 1.2

Date of test 12-Jul-2017  
Date of report 14-Jul-2017



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**Intensity data (cd)**

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	938	938	938	938	938
2.5	936	932	941	939	933
5.0	932	928	936	935	929
7.5	924	920	929	928	922
10.0	914	910	919	917	912
12.5	901	898	906	904	899
15.0	886	883	891	888	883
17.5	868	865	873	870	864
20.0	848	845	852	849	844
22.5	826	823	830	826	821
25.0	806	799	805	802	796
27.5	776	777	780	776	771
30.0	749	746	752	748	744
32.5	720	718	725	720	716
35.0	691	688	696	691	687
37.5	659	660	665	661	658
40.0	626	627	635	631	628
42.5	593	595	604	600	599
45.0	560	563	572	569	568
47.5	526	531	541	538	538
50.0	492	498	509	507	507
52.5	457	466	476	476	477
55.0	423	433	443	444	446
57.5	389	400	410	413	415
60.0	354	367	377	381	385
62.5	319	333	344	350	354
65.0	284	299	311	319	323
67.5	249	265	278	288	293
70.0	214	230	245	258	262
72.5	179	196	214	228	233
75.0	145	163	183	199	204
77.5	113	131	153	171	176
80.0	84	102	126	144	150
82.5	57	76	100	119	125
85.0	34	53	77	96	102
87.5	15	34	57	75	82
90.0	0	19	41	59	65



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**Intensity data (cd)**

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
90.0	0	19	41	59	65
92.5	0	18	40	57	63
95.0	0	18	39	56	62
97.5	0	17	39	55	61
100.0	0	17	38	55	60
102.5	0	17	38	54	59
105.0	0	17	37	52	58
107.5	0	17	36	51	57
110.0	0	16	36	50	56
112.5	0	16	35	49	54
115.0	0	16	34	47	53
117.5	0	15	33	46	51
120.0	0	15	32	44	50
122.5	0	14	31	43	48
125.0	0	14	30	42	45
127.5	0	13	29	40	43
130.0	0	13	28	38	41
132.5	0	12	26	36	39
135.0	0	12	25	34	37
137.5	0	11	23	32	35
140.0	0	10	22	30	33
142.5	0	10	20	28	31
145.0	0	9	19	26	28
147.5	0	8	17	24	26
150.0	0	7	16	22	24
152.5	0	7	14	19	21
155.0	0	6	13	17	19
157.5	0	5	11	15	17
160.0	0	4	10	13	14
162.5	0	4	8	11	12
165.0	0	3	6	9	10
167.5	0	3	5	8	8
170.0	0	2	4	6	6
172.5	0	0	3	4	5
175.0	0	0	0	3	3
177.5	0	0	0	0	0
180.0	0	0	0	0	0



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**Coefficients Of Utilization - Zonal Cavity Method**

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	
0	118	118	118	118	114	114	114	114	108	108	108	102	102	102	96	96	96	94
1	107	102	97	93	103	99	95	91	94	90	87	89	86	84	84	82	80	78
2	97	89	82	76	94	86	80	75	82	76	72	78	73	69	74	70	67	64
3	88	78	70	63	85	76	68	62	72	66	60	68	63	58	65	61	57	54
4	81	69	60	53	78	67	59	53	64	57	51	61	55	50	58	53	49	46
5	75	62	53	46	72	60	52	46	57	50	44	55	48	43	52	47	42	40
6	69	56	47	40	67	54	46	40	52	44	39	50	43	38	47	42	37	35
7	64	50	42	36	62	49	41	35	47	40	35	45	39	34	43	38	33	31
8	59	46	38	32	58	45	37	31	43	36	31	42	35	30	40	34	30	28
9	56	42	34	29	54	41	34	28	40	33	28	38	32	27	37	31	27	25
10	52	39	31	26	51	38	31	26	37	30	25	36	29	25	34	29	25	23

For absolute test reports, CUs are expressed as a percentage of total lumen 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)	Beam Width (across 50% Nadir Illum)	
		0-180	90-270
6.0	26.1	7.15	7.11
8.0	14.7	9.53	9.48
10.0	9.4	11.91	11.85
12.0	6.5	14.30	14.22
14.0	4.8	16.68	16.59
16.0	3.7	19.06	18.96



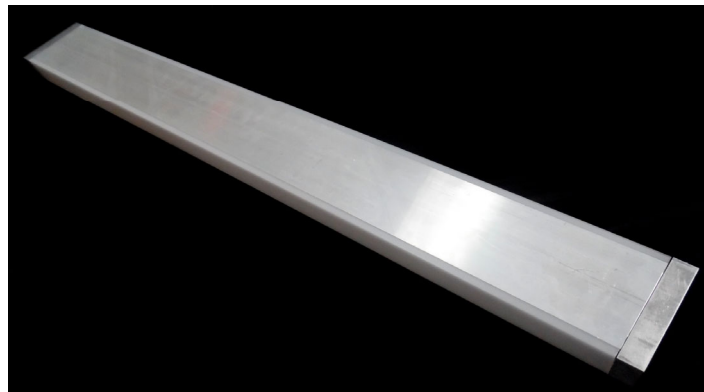
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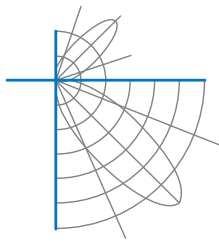
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**Test Distance** 9.5 m  
**Test Temperature** 25.0 °C

**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 publications: IES LM-79-08 (Sec. 12), IES LM-16-93, IES LM-58-13, CIE 13.3:1995, CIE 15:2004, ANSI C78.377:2015, ANSI C82.77-10:2014.

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 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

**LLIA000817-010B**

Integrating Sphere Report

Catalog Number: MLS2-D-HO-K40-80-4-XX-AL-XXX-UNV

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### Performance Summary

Voltage	120.0 Vac
Current	0.2319 A
Power	27.75 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	6.2 %

Total Luminous Flux	2785.5 lm
Efficacy	100.4 lm/W
Chromaticity (x,y)	(0.3801, 0.3790)
(u',v')	(0.2240, 0.5025)
Duv	0.0012
CCT	4026 K
CRI (Ra)	84
R9	18

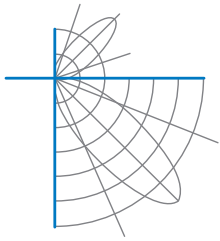
Prepared For:

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

Test date: 07/10/2017

Report date: 07/14/2017





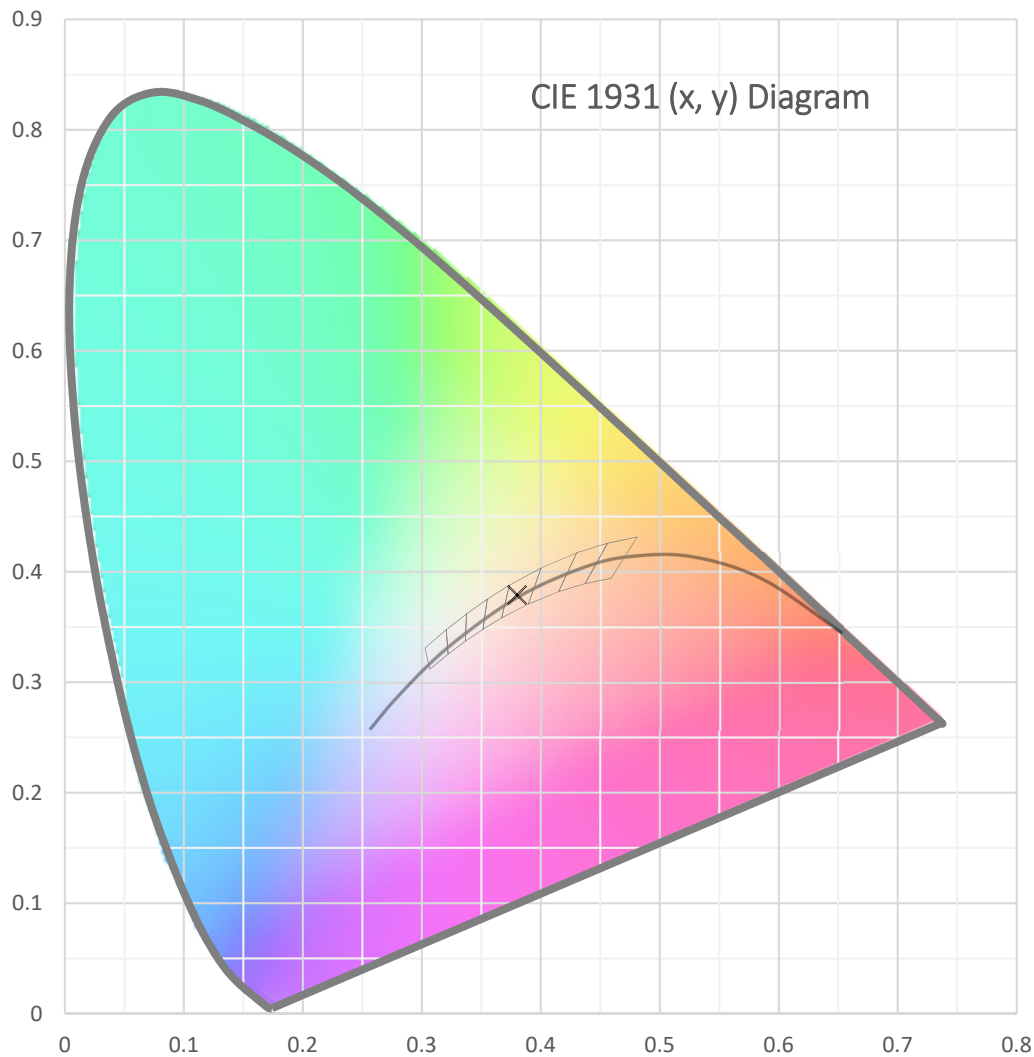
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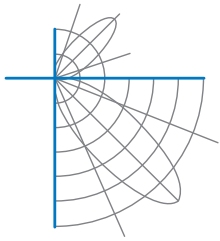
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92 white LEDs

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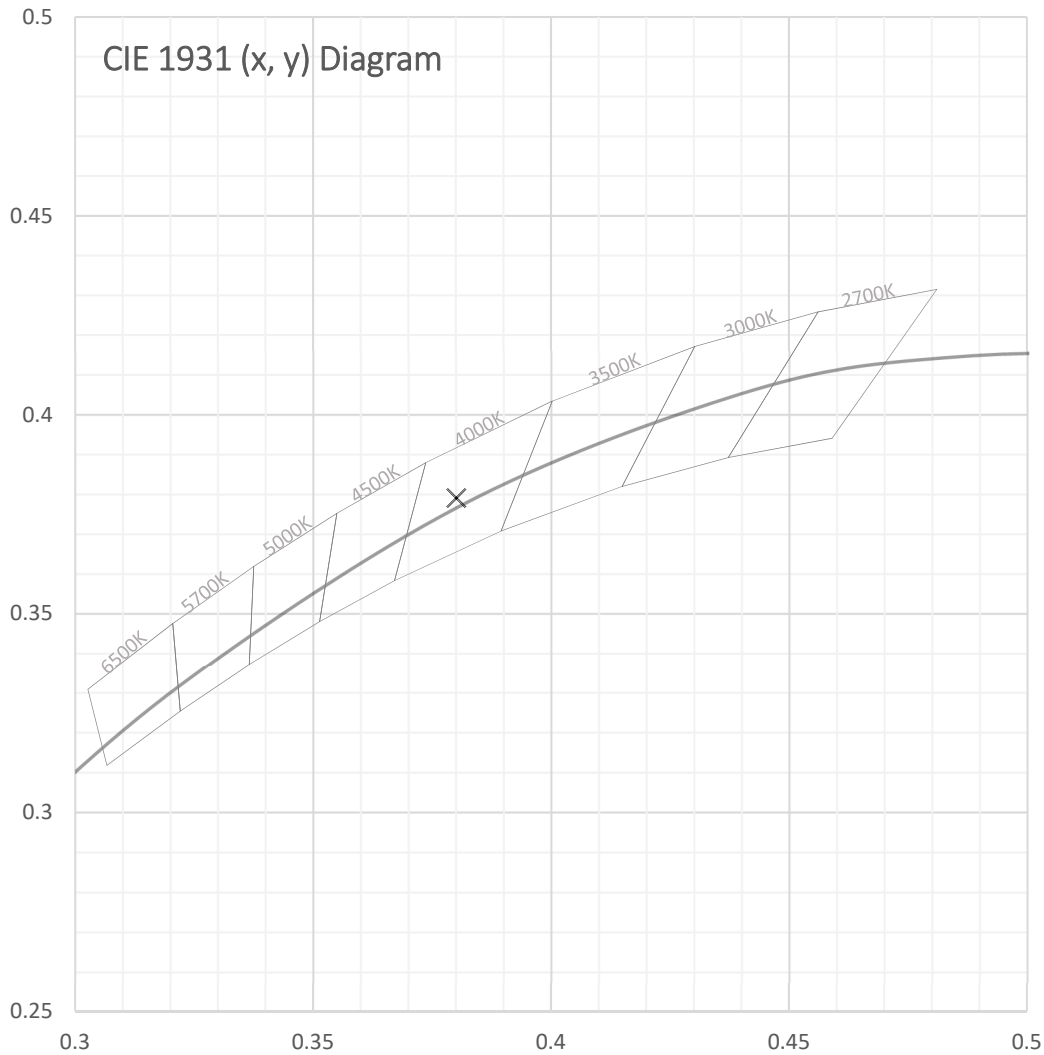
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**Spectral Data**

Total Radiant Flux	8.677 W
Total Luminous Flux	2785.5 Lm
Chromaticity CIE 1931 (x, y)	(0.3801, 0.3790)
Chromaticity CIE 1976 (u', v')	(0.2240, 0.5025)
Correlated Color Temperature (CCT)	4026 K
Color Rendering Index (Ra)	84
R1	83
R2	91
R3	96
R4	81
R5	82
R6	87
R7	87
R8	68
R9	18
R10	78
R11	80
R12	60
R13	85
R14	98
Distance from Planckian Locus (Duv)	0.0012
Scotopic/Photopic Ratio *	1.724

**Electrical Data**

Voltage	120.0 Vac
Current	0.2319 A
Power	27.75 W
Frequency	60.00 Hz
Power Factor	0.997
Current THD	6.2 %



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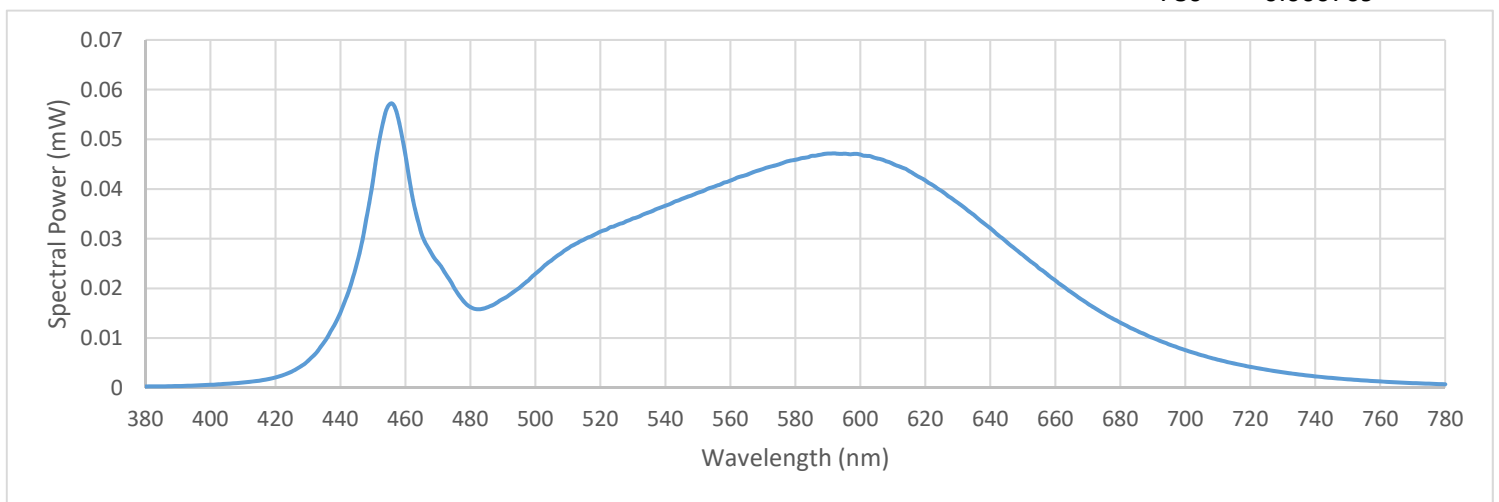
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Summary Spectral Power Distribution (wavelength - nm, spectral power - mW)

380	0.000268	480	0.016242	580	0.045884	680	0.013107
385	0.000290	485	0.016135	585	0.046669	685	0.011510
390	0.000354	490	0.017879	590	0.047123	690	0.010038
395	0.000453	495	0.020087	595	0.047104	695	0.008725
400	0.000598	500	0.022945	600	0.046937	700	0.007594
405	0.000801	505	0.025658	605	0.046171	705	0.006564
410	0.001060	510	0.028025	610	0.045068	710	0.005652
415	0.001426	515	0.029834	615	0.043616	715	0.004896
420	0.002072	520	0.031424	620	0.041717	720	0.004218
425	0.003249	525	0.032724	625	0.039603	725	0.003628
430	0.005410	530	0.034053	630	0.037224	730	0.003125
435	0.009207	535	0.035316	635	0.034755	735	0.002682
440	0.015155	540	0.036642	640	0.032109	740	0.002297
445	0.024884	545	0.037981	645	0.029368	745	0.001981
450	0.041657	550	0.039249	650	0.026728	750	0.001706
455	0.056951	555	0.040473	655	0.024048	755	0.001468
460	0.046849	560	0.041692	660	0.021617	760	0.001276
465	0.030905	565	0.042836	665	0.019189	765	0.001101
470	0.025224	570	0.044013	670	0.016935	770	0.000947
475	0.020099	575	0.044972	675	0.014914	775	0.000820
						780	0.000709





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**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:** 25.0 °C

**Test Procedure:** Tested in accordance with the applicable sections of:  
LM-79-08, LM-78-07, LM-58-13, ANSI\_ANSLG C78.377-2015, ANSI C82-77-10:2014

**Significance:** The laboratory has not participated in the selection of samples to be tested.  
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