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## Photometric Test Report

Relevant Standards  
IES LM-79-2008  
ANSI C82.77-2002

Prepared For  
**Precision Architectural Lighting**

Fred Compton  
4830 Timber Creek Drive  
Houston, TX 77017

Catalog Number  
**ML5IP65-D-MO-K40-4'-W-LOH-FXXX-EF-UNIV**

Order Number  
10822132  
Test Number  
1094336

Test Date

2015-06-04 - 2015-06-05

Prepared By

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Approved By

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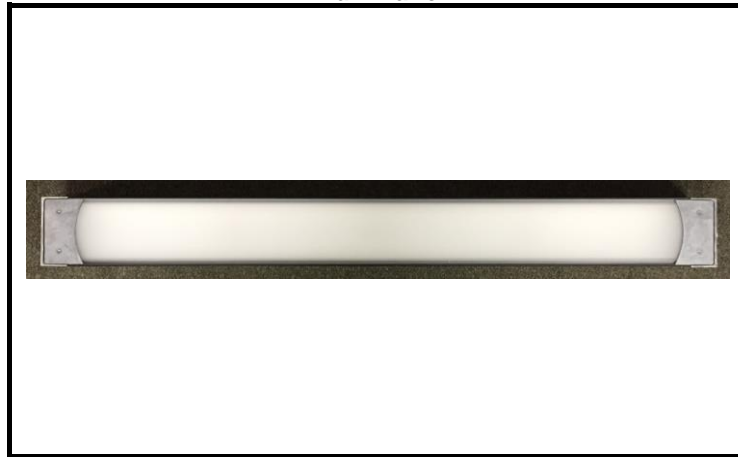
Laboratory results may not be representative of field performance  
Ballast factors have not been applied

Testing was performed in a 2-meter integrating sphere using the  $4\pi$  geometry method.  
Absorption correction was employed for Sphere measurement



**Luminaire Description:** Aluminum housing, white enamel aluminum reflector, frosted plastic lens  
**Lamp:** 144 white LEDs  
**Mounting:** Recessed  
**Ballast/Driver:** Osram OT30W/PRG1050C/UNV/DIM/L

**Luminaire**



**Luminaire Characteristics**

Luminous Length: 47.00 in.  
Luminous Width: 5.000 in.

**Summary of Results**

**Integrating Sphere**

Luminous Flux: 2030 Lumens  
Efficacy: 90.7 lm/w  
CCT: 3980 K  
CRI (Ra): 82.8

**Distribution**

Total Luminaire Output: 1949 Lumens  
Luminaire Efficacy: 86.9 lm/w  
Maximum Candela: 812 Candela

**Electrical Data at 120 VAC**

Test Temperature: 25.1 °C  
Voltage: 120.0 VAC  
Current: 0.1875 A  
Power: 22.39 W  
Power Factor: 0.995  
Frequency: 60 Hz  
Current THD: 5.30 %



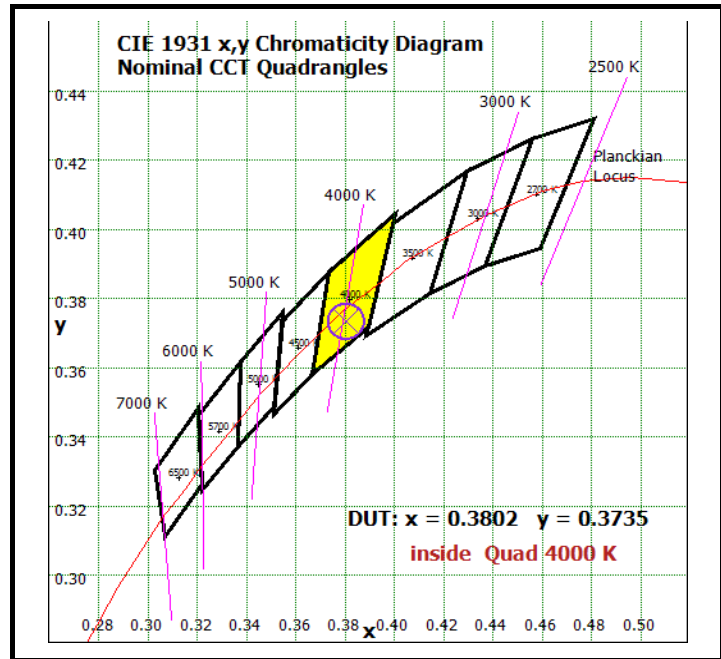
## Color Quality - Integrating Sphere

### Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.1 °C	120.0 VAC	0.1875 A	22.39 W	0.995	60 Hz	5.30 %

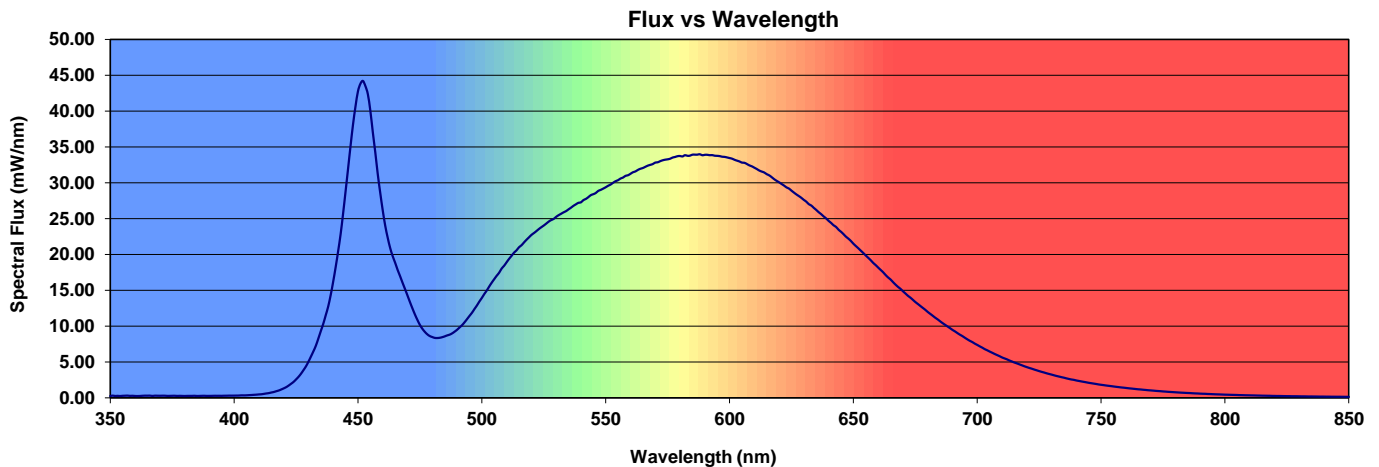
### Summary of Results

<b>Total Output:</b>	2030 Lumens
<b>Efficacy:</b>	90.7 lm/w
<b>CCT:</b>	3980 K
<b>CRI (Ra):</b>	82.8
<b>CRI (R9):</b>	22.7
Chromaticity (x):	0.3802
Chromaticity (y):	0.3735
Chromaticity (u):	0.2262
Chromaticity (v):	0.3334
Chromaticity (u')	0.2262
Chromaticity (v')	0.5001
Duv:	-0.0015



### Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
82.8	81.5	87.8	91.2	81.4	80.6	81.4	87.9	70.3	22.7	69.8	78.6	55.8	82.8	94.9





## Distribution - Goniophotometer

### Distribution Test Conditions

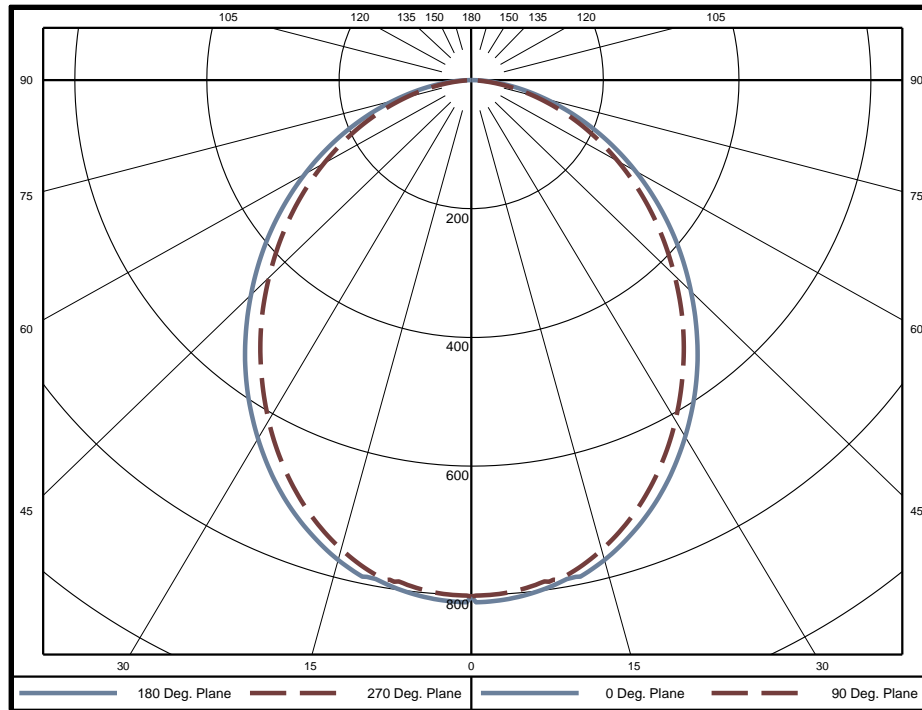
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.7 °C	120.0 VAC	0.1877 A	22.42 W	0.995	60 Hz	5.12 %

### Summary of Results

**Spacing Criteria**  
 0-180: 1.19  
 90-270: 1.19

**Total Lumen Output:** 1949 Lumens  
**Luminaire Efficacy:** 86.9 lm/w  
**Maximum Candela:** 812 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	19.1	1.0%	60-65	117.0	6.0%	120-125	0	0.0%
5-10	56.6	2.9%	65-70	94.1	4.8%	125-130	0	0.0%
10-15	91.8	4.7%	70-75	69.9	3.6%	130-135	0	0.0%
15-20	122.1	6.3%	75-80	46.0	2.4%	135-140	0	0.0%
20-25	146.7	7.5%	80-85	23.8	1.2%	140-145	0	0.0%
25-30	164.5	8.4%	85-90	5.3	0.3%	145-150	0	0.0%
30-35	175.2	9.0%	90-95	0	0.0%	150-155	0	0.0%
35-40	179.2	9.2%	95-100	0	0.0%	155-160	0	0.0%
40-45	176.7	9.1%	100-105	0	0.0%	160-165	0	0.0%
45-50	168.3	8.6%	105-110	0	0.0%	165-170	0	0.0%
50-55	155.0	8.0%	110-115	0	0.0%	170-175	0	0.0%
55-60	137.6	7.1%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	955	49.0%
0-60	1428	81.7%
0-90	1949	100.0%
90-180	0	0.0%



**Candela Tabulation**  
Horizontal Angle (Degrees)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6	802.6
5	806.4	796.4	793.3	797.4	796.0	797.4	793.3	796.4	806.4	796.4	793.3	797.4	796.0	797.4	793.3	796.4
10	790.6	787.7	783.8	787.2	785.4	787.2	783.8	787.7	790.6	787.7	783.8	787.2	785.4	787.2	783.8	787.7
15	772.4	761.4	756.1	757.7	755.5	757.7	756.1	761.4	772.4	761.4	756.1	757.7	755.5	757.7	756.1	761.4
20	736.7	725.6	719.0	718.3	715.4	718.3	719.0	725.6	736.7	725.6	719.0	718.3	715.4	718.3	719.0	725.6
25	693.0	681.7	673.3	670.5	666.6	670.5	673.3	681.7	693.0	681.7	673.3	670.5	666.6	670.5	673.3	681.7
30	642.2	631.1	621.1	615.9	611.5	615.9	621.1	631.1	642.2	631.1	621.1	615.9	611.5	615.9	621.1	631.1
35	587.5	575.8	564.8	557.6	552.6	557.6	564.8	575.8	587.5	575.8	564.8	557.6	552.6	557.6	564.8	575.8
40	528.7	517.4	506.1	497.5	492.8	497.5	506.1	517.4	528.7	517.4	506.1	497.5	492.8	497.5	506.1	517.4
45	467.9	457.0	445.7	436.1	431.1	436.1	445.7	457.0	467.9	457.0	445.7	436.1	431.1	436.1	445.7	457.0
50	407.7	396.2	384.8	375.8	370.9	375.8	384.8	396.2	407.7	396.2	384.8	375.8	370.9	375.8	384.8	396.2
55	347.0	336.6	325.8	316.6	312.2	316.6	325.8	336.6	347.0	336.6	325.8	316.6	312.2	316.6	325.8	336.6
60	287.0	277.8	268.1	259.3	254.9	259.3	268.1	277.8	287.0	277.8	268.1	259.3	254.9	259.3	268.1	277.8
65	228.5	221.2	212.7	203.8	200.3	203.8	212.7	221.2	228.5	221.2	212.7	203.8	200.3	203.8	212.7	221.2
70	171.7	166.5	159.4	151.8	148.3	151.8	159.4	166.5	171.7	166.5	159.4	151.8	148.3	151.8	159.4	166.5
75	118.7	115.5	109.5	102.4	99.4	102.4	109.5	115.5	118.7	115.5	109.5	102.4	99.4	102.4	109.5	115.5
80	71.5	69.6	64.2	58.2	56.0	58.2	64.2	69.6	71.5	69.6	64.2	58.2	56.0	58.2	64.2	69.6
85	32.5	29.9	24.7	19.8	18.2	19.8	24.7	29.9	32.5	29.9	24.7	19.8	18.2	19.8	24.7	29.9
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Average Luminance (cd/m<sup>2</sup>)**  
Horizontal Angle (Degrees)

	0	45	90
0	5294	5294	5294
45	4364	4157	4022
55	3991	3747	3591
65	3567	3320	3126
75	3025	2790	2533
85	2459	1870	1374



### Utilization of Lumens - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%

Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **																	
0	2320	2320	2320	2320	2266	2266	2266	2266	2166	2166	2166	2073	2073	2073	1989	1989	1989	1949
1	2130	2041	1962	1890	2078	1997	1925	1859	1915	1855	1801	1839	1790	1746	1769	1730	1694	1654
2	1945	1791	1663	1556	1895	1755	1637	1538	1686	1587	1502	1623	1540	1468	1564	1496	1435	1394
3	1780	1582	1429	1306	1733	1551	1409	1295	1494	1372	1272	1441	1337	1250	1391	1304	1229	1187
4	1635	1409	1243	1116	1591	1383	1228	1109	1335	1200	1093	1290	1173	1079	1248	1147	1064	1023
5	1508	1264	1094	969	1467	1243	1083	963	1202	1061	953	1164	1040	943	1128	1020	933	892
6	1396	1143	973	851	1359	1124	964	847	1090	947	840	1057	930	833	1027	914	825	786
7	1297	1040	873	756	1263	1024	866	753	994	852	748	966	838	743	940	825	737	699
8	1209	952	789	678	1179	938	784	676	913	772	672	889	761	668	866	750	664	627
9	1132	876	719	613	1104	864	714	611	842	705	608	821	695	605	802	686	602	567
10	1062	810	659	558	1038	800	655	557	781	647	554	763	639	552	745	632	550	516

### Cone of Light Tabulation

Mounting Height	Footcandles at Nadir	Diameter (Feet)
4.00	50.2	4.66
6.00	22.3	6.98
8.00	12.5	9.31
10.0	8.03	11.6
12.0	5.57	14.0
14.0	4.09	16.3
16.0	3.14	18.6

### Cone of Light Plot

