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## Photometric Test Report

Relevant Standards  
IES LM-79-2008  
ANSI C78.377-2011, ANSI C82.77-2002  
CIE 13.3-1995, CIE 15-2004, IES TM-30-15, UL 1598-2008

**Prepared For**  
**RLE Industries**

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**Catalog Number**

**OS4 3000K**

Order Number

11524480

Test Number

11524880.09

Test Date

2017-01-11 - 2017-01-26

Prepared By

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Approved By

Tiffany Hamm, Project Handler

The results contained in this report pertain only to the tested sample.  
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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:** White aluminum housing, white aluminum reflectors, no enclosure  
**Lamp:** 192 white LEDs, four boards with 48 LEDs each  
**Mounting:** Pendant  
**Ballast/Driver:** One Philips Advance Xitanium XI075C200V054BST1

**Luminaire**



**Luminaire Characteristics**

Luminous Length: 44.25 in.  
Luminous Width: 3.750 in.  
Luminous Height: 2.75 in.

**Summary of Results**

**Integrating Sphere**

Luminous Flux: 4615 Lumens  
Efficacy: 74.5 lm/w  
CCT: 3103 K  
CRI (Ra): 83.4

**Distribution**

Total Luminaire Output: 4439 Lumens  
Luminaire Efficacy: 71.5 lm/w  
Maximum Candela: 1411 Candela

**Electrical Data at 277 VAC**

Test Temperature: 25.6 °C  
Voltage: 277.0 VAC  
Current: 0.2260 A  
Power: 62.14 W  
Power Factor: 0.991  
Frequency: 60 Hz  
Current THD: 9.40 %

**In-Situ**

LED Temperature: 43.2 °C  
Driver Temperature: 45.1 °C  
Measured LED Current: 0.09530 A

Temperature is offset to an ambient temperature of 25°C as described in UL1598-2008.



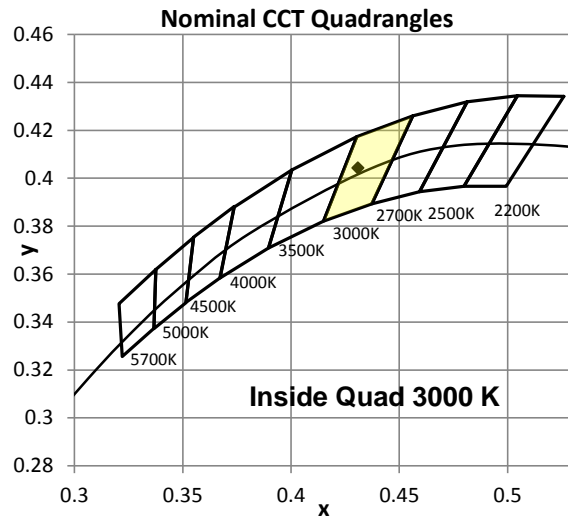
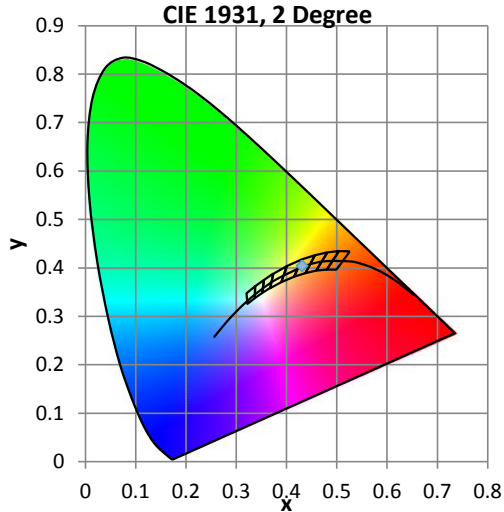
## Color Quality - Integrating Sphere

### Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.5 °C	120.0 VAC	0.5177 A	61.91 W	0.996	60 Hz	8.13 %

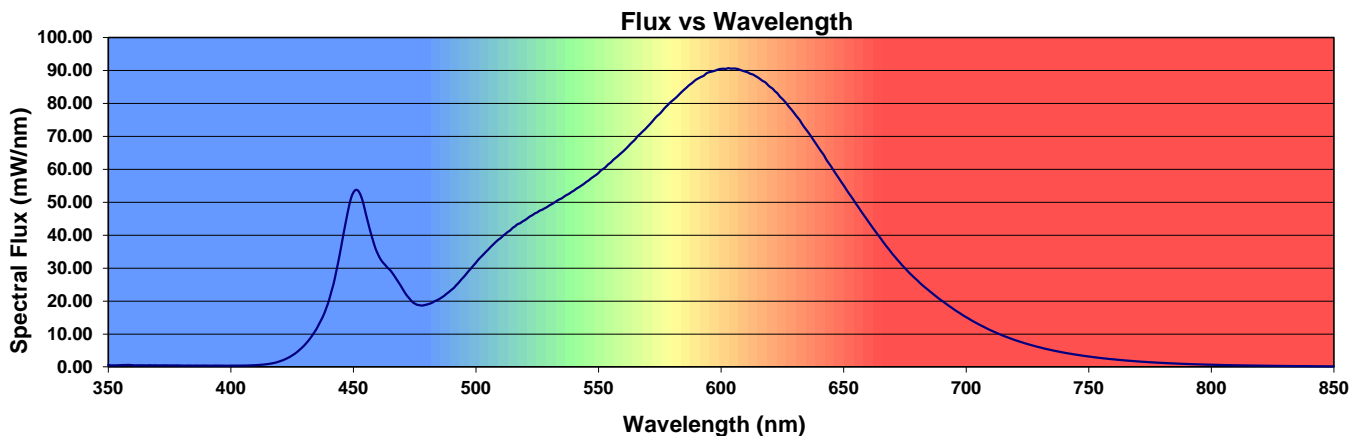
### Summary of Results

<b>Total Output:</b>	4615 Lumens	<b>Chromaticity (x):</b>	0.4309
<b>Efficacy:</b>	74.5 lm/w	<b>Chromaticity (y):</b>	0.4042
<b>CCT:</b>	3103 K	<b>Chromaticity (u'):</b>	0.2466
<b>CRI (Ra):</b>	83.4	<b>Chromaticity (v'):</b>	0.5205
<b>CRI (R9):</b>	11.9	<b>TM-30 R<sub>f</sub>:</b>	83.7
<b>Peak Wavelength:</b>	603.6 nm	<b>TM-30 R<sub>g</sub>:</b>	95.8
<b>Dominant Wavelength:</b>	582 nm	<b>Duv:</b>	0.0004
<b>S/P Ratio:</b>	1.385		



### Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
83.4	81.7	90.9	97.0	81.4	81.7	88.7	84.3	61.8	11.9	79.1	80.6	69.5	83.8	98.8





## Distribution - Goniophotometer

### Distribution Test Conditions

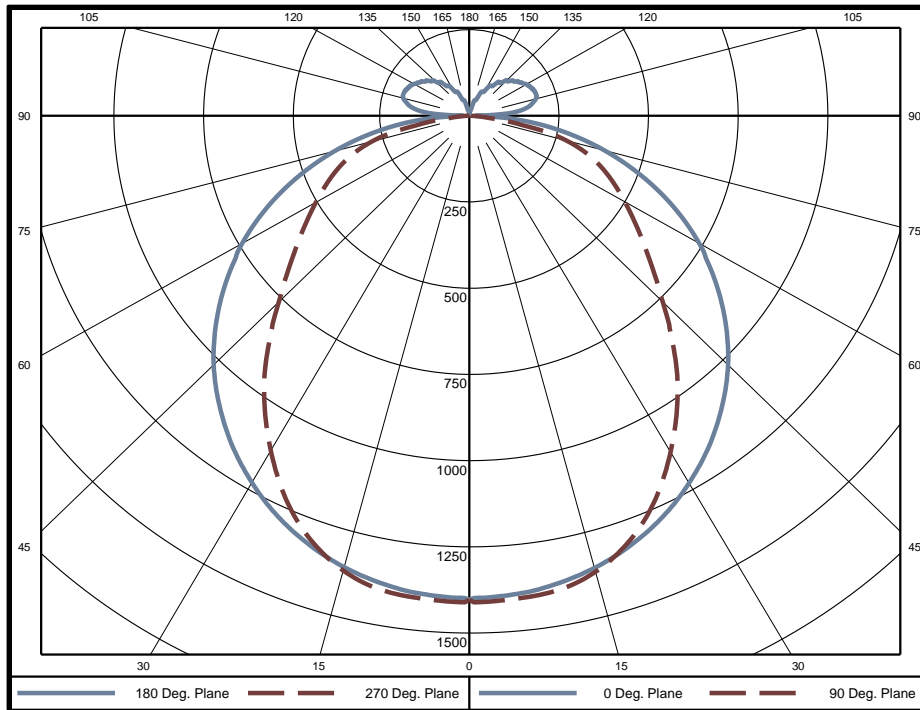
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	120.0 VAC	0.5192 A	62.09 W	0.996	60 Hz	8.11 %

### Summary of Results

**Spacing Criteria**  
 0-180: 1.30  
 90-270: 1.30

**Total Lumen Output:** 4439 Lumens  
**Luminaire Efficacy:** 71.5 lm/w  
**Maximum Candela:** 1411 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	33.5	0.8%	60-65	265.5	6.0%	120-125	37.2	0.8%
5-10	99.7	2.2%	65-70	231.6	5.2%	125-130	31.7	0.7%
10-15	163.2	3.7%	70-75	194.0	4.4%	130-135	25.0	0.6%
15-20	221.3	5.0%	75-80	148.7	3.3%	135-140	19.2	0.4%
20-25	271.1	6.1%	80-85	89.5	2.0%	140-145	13.4	0.3%
25-30	310.0	7.0%	85-90	42.7	1.0%	145-150	8.5	0.2%
30-35	336.4	7.6%	90-95	31.5	0.7%	150-155	5.6	0.1%
35-40	350.2	7.9%	95-100	34.8	0.8%	155-160	3.7	0.1%
40-45	350.9	7.9%	100-105	38.5	0.9%	160-165	2.4	0.1%
45-50	340.1	7.7%	105-110	41.0	0.9%	165-170	0.9	0.0%
50-55	320.4	7.2%	110-115	41.2	0.9%	170-175	0.2	0.0%
55-60	294.9	6.6%	115-120	40.4	0.9%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	1785	40.2%
0-60	3092	69.6%
0-90	4064	91.5%
90-180	375	8.5%



**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	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403	1403
5	1393	1398	1399	1399	1406	1399	1399	1398	1393	1398	1399	1399	1406	1399	1399	1398
10	1379	1384	1388	1389	1397	1389	1388	1384	1379	1384	1388	1389	1397	1389	1388	1384
15	1357	1362	1366	1362	1366	1362	1366	1362	1357	1362	1366	1362	1366	1362	1366	1362
20	1324	1331	1330	1310	1308	1310	1330	1331	1324	1331	1330	1310	1308	1310	1330	1331
25	1281	1290	1273	1235	1224	1235	1273	1290	1281	1290	1273	1235	1224	1235	1273	1290
30	1228	1238	1198	1137	1119	1137	1198	1238	1228	1238	1198	1137	1119	1137	1198	1238
35	1168	1172	1105	1030	1007	1030	1105	1172	1168	1172	1105	1030	1007	1030	1105	1172
40	1098	1096	1001	915	882	915	1001	1096	1098	1096	1001	915	882	915	1001	1096
45	1022	1010	891	793	757	793	891	1010	1022	1010	891	793	757	793	891	1010
50	934	909	774	679	654	679	774	909	934	909	774	679	654	679	774	909
55	840	800	653	588	570	588	653	800	840	800	653	588	570	588	653	800
60	742	686	551	511	497	511	551	686	742	686	551	511	497	511	551	686
65	632	563	466	444	433	444	466	563	632	563	466	444	433	444	466	563
70	515	443	394	379	366	379	394	443	515	443	394	379	366	379	394	443
75	394	348	326	301	280	301	326	348	394	348	326	301	280	301	326	348
80	269	272	238	171	139	171	238	272	269	272	238	171	139	171	238	272
85	143	186	113	61	36	61	113	186	143	186	113	61	36	61	113	186
90	17	117	68	25	2	25	68	117	17	117	68	25	2	25	68	117
95	130	102	61	21	0	21	61	102	130	102	61	21	0	21	61	102
100	173	105	57	20	0	20	57	105	173	105	57	20	0	20	57	105
105	193	136	54	19	0	19	54	136	193	136	54	19	0	19	54	136
110	197	140	64	18	0	18	64	140	197	140	64	18	0	18	64	140
115	191	130	81	23	0	23	81	130	191	130	81	23	0	23	81	130
120	183	122	87	32	0	32	87	122	183	122	87	32	0	32	87	122
125	170	109	80	33	0	33	80	109	170	109	80	33	0	33	80	109
130	159	92	71	29	0	29	71	92	159	92	71	29	0	29	71	92
135	147	74	59	23	0	23	59	74	147	74	59	23	0	23	59	74
140	129	58	50	20	0	20	58	129	129	58	50	20	0	20	58	129
145	106	42	25	12	0	12	25	42	106	42	25	12	0	12	25	42
150	80	43	8	4	0	4	8	43	80	43	8	4	0	4	8	43
155	72	40	4	3	0	3	4	40	72	40	4	3	0	3	4	40
160	49	35	7	0	0	0	7	35	49	35	7	0	0	0	7	35
165	25	20	6	0	0	0	6	20	25	20	6	0	0	0	6	20
170	15	12	4	0	0	0	4	12	15	12	4	0	0	0	4	12
175	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

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

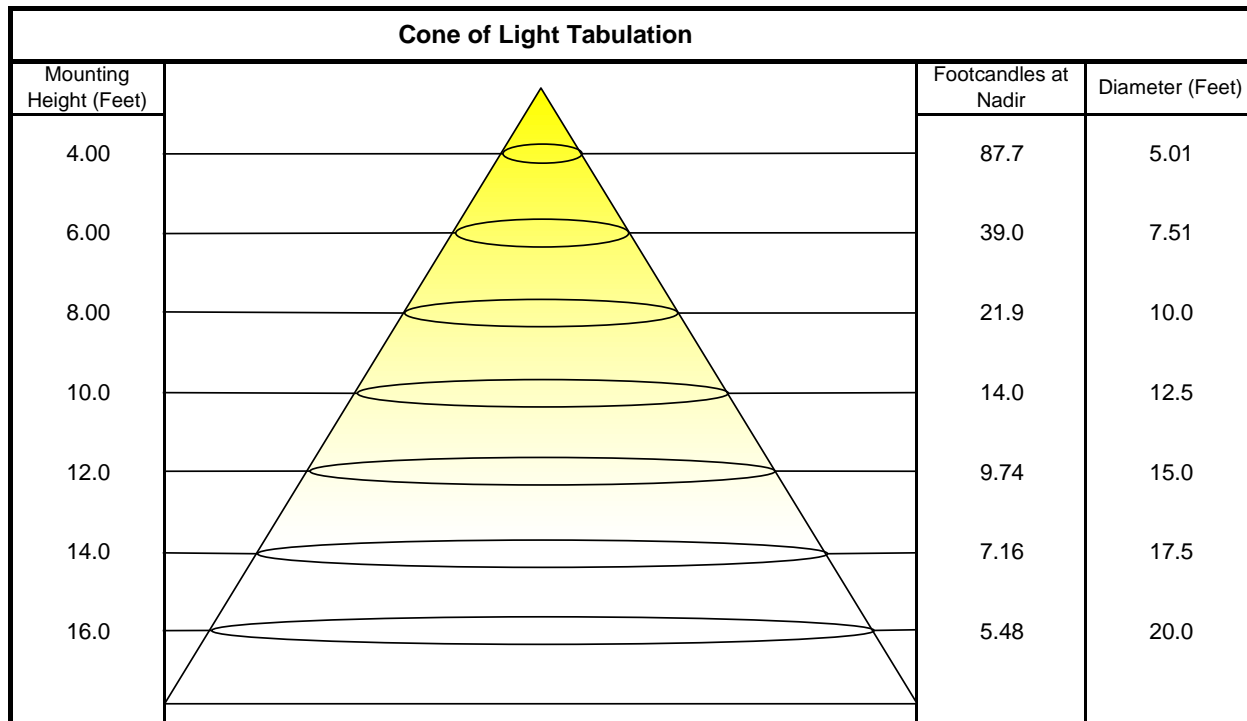
	0	45	90
0	13110	13110	13110
45	12710	7530	5767
55	12560	5901	4533
65	12330	4671	3718
75	11530	3794	2702
85	8962	1632	412



### 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	5195	5195	5195	5195	5031	5031	5031	5031	4724	4724	4724	4443	4443	4443	4185	4185	4185	4064
1	4712	4489	4289	4109	4552	4351	4171	4007	4093	3946	3812	3856	3738	3629	3637	3544	3456	3337
2	4274	3898	3586	3324	4121	3781	3497	3255	3562	3326	3123	3360	3166	2996	3174	3016	2875	2758
3	3891	3416	3048	2754	3748	3317	2978	2705	3130	2845	2610	2958	2718	2517	2798	2599	2428	2314
4	3561	3023	2630	2329	3429	2939	2574	2293	2780	2468	2221	2632	2366	2151	2494	2269	2083	1973
5	3273	2700	2299	2003	3153	2627	2254	1975	2491	2167	1919	2364	2084	1864	2245	2004	1811	1706
6	3022	2430	2032	1747	2912	2367	1995	1724	2250	1923	1679	2139	1854	1635	2036	1787	1592	1493
7	2802	2202	1814	1541	2702	2148	1782	1523	2046	1722	1486	1950	1664	1450	1860	1607	1415	1320
8	2607	2009	1632	1374	2517	1962	1606	1358	1872	1554	1328	1788	1505	1297	1709	1457	1268	1179
9	2436	1843	1480	1235	2353	1802	1457	1222	1723	1413	1196	1649	1370	1170	1579	1329	1145	1061
10	2283	1700	1350	1118	2208	1663	1331	1107	1594	1293	1085	1528	1256	1063	1466	1220	1041	961

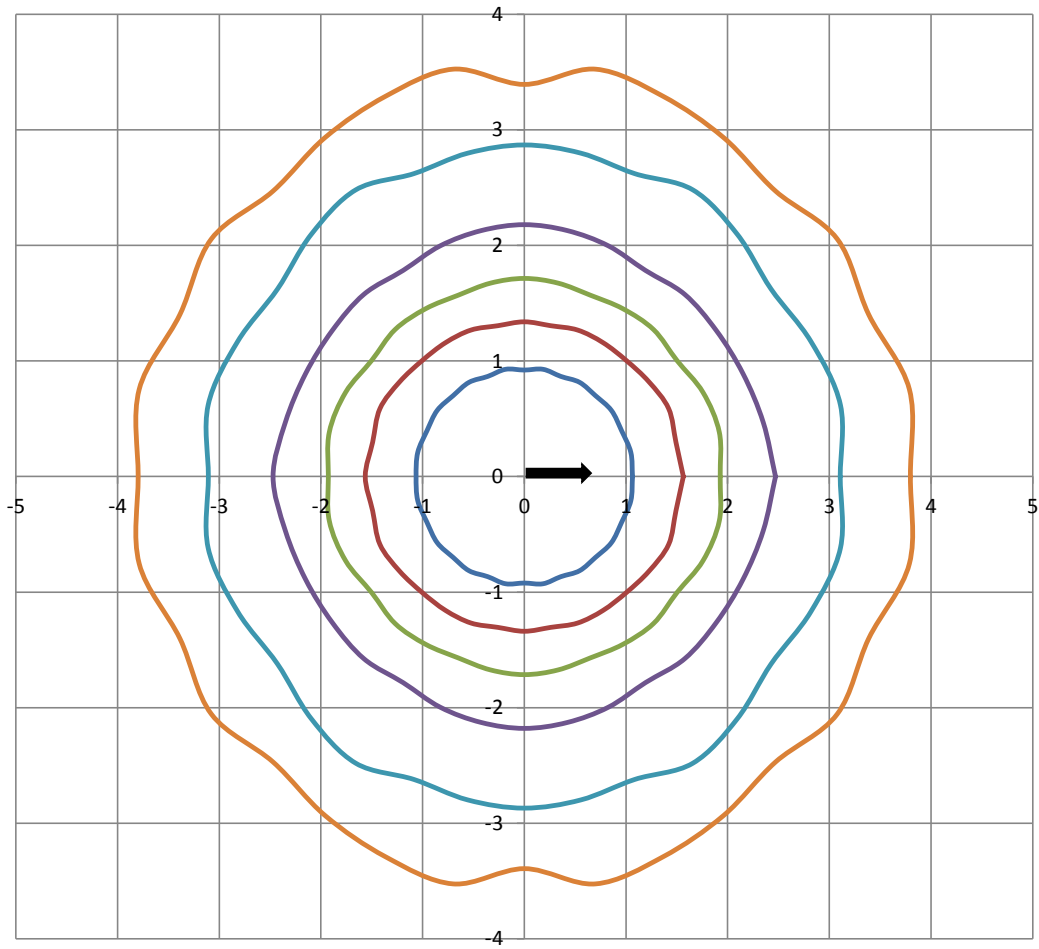
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	1403 Candela
Central Cone Intensity:	1402 Candela
Beam Flux:	2770.3 Lumens
Beam Angle (0-180):	123.8 Degrees
Beam Angle (90-270):	95.2 Degrees
Field Angle (0-180):	170.2 Degrees
Field Angle (90-270):	159.9 Degrees





# ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height







## In-Situ Test

### In-Situ Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.3 °C	120.6 VAC	N/A	N/A	N/A	60 Hz	N/A

### Summary of Results

LED Temperature: 43.2 °C  
Driver Temperature: 45.1 °C  
Measured LED Current: 0.09530 A

Temperatures are offset to an ambient temperature of 25°C as described in UL1598-2008

### LED Temperature Location



### Driver Temperature Location

