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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
RD2-4 3000K
Order Number
11524480
Test Number
11524880.03

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 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: White aluminum housing, aluminum reflectors, frosted plastic lens enclosure
Lamp: 96 white LEDs, two boards with 48 LEDs each
Mounting: Pendant
Ballast/Driver: One Philips Advance Xitanium XI054C150V054BST1

Luminaire



Luminaire Characteristics

Luminous Length: 47.75 in.
Luminous Width: 4.000 in.

Summary of Results

Integrating Sphere

Luminous Flux: 3066 Lumens
Efficacy: 95.5 lm/w
CCT: 3051 K
CRI (Ra): 83.6

Distribution

Total Luminaire Output: 2947 Lumens
Luminaire Efficacy: 91.7 lm/w
Maximum Candela: 1207 Candela

Electrical Data at 277 VAC

Test Temperature: 25.1 °C
Voltage: 277.0 VAC
Current: 0.1220 A
Power: 32.26 W
Power Factor: 0.951
Frequency: 60 Hz
Current THD: 13.5 %

In-Situ

LED Temperature: 41.3 °C
Driver Temperature: 54.2 °C
Measured LED Current: 0.1009 A

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



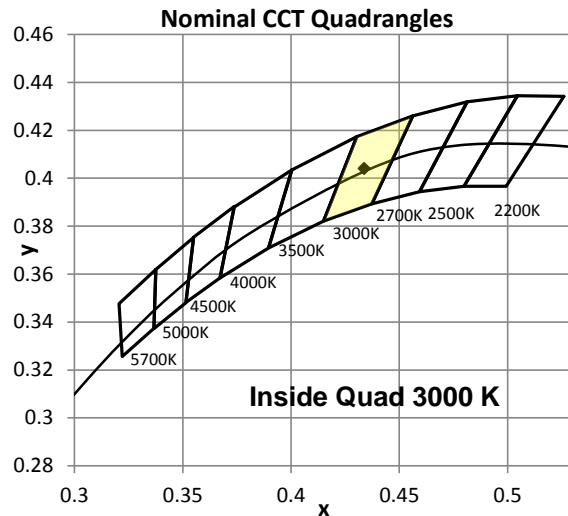
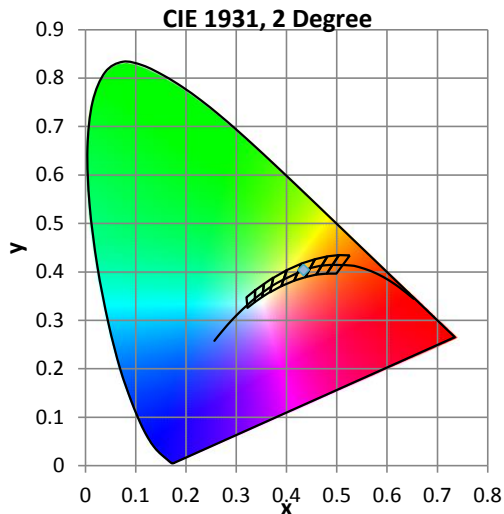
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.1 °C	120.0 VAC	0.2695 A	32.12 W	0.993	60 Hz	9.84 %

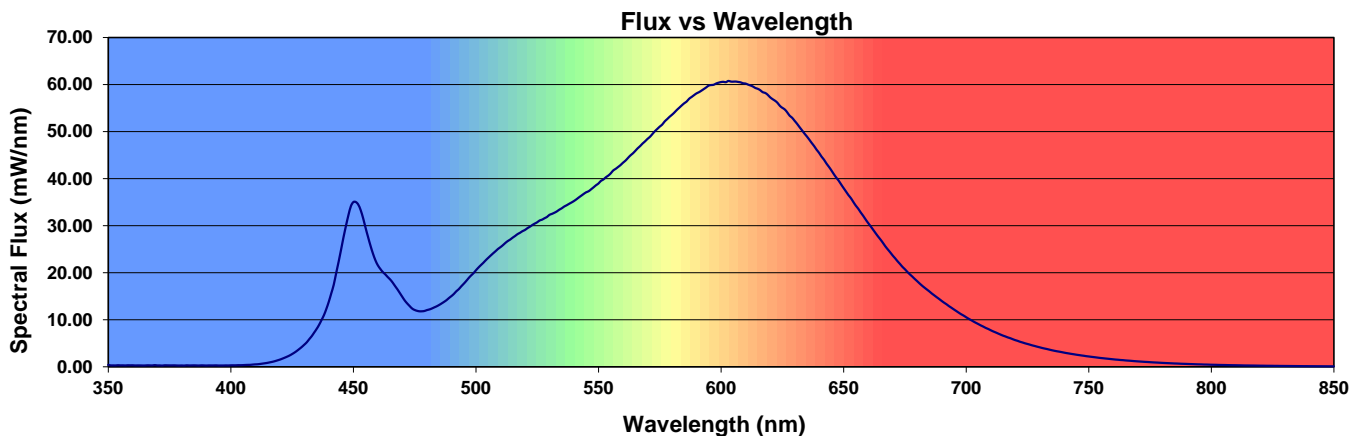
Summary of Results

Total Output:	3066 Lumens	Chromaticity (x):	0.4338
Efficacy:	95.5 lm/w	Chromaticity (y):	0.4040
CCT:	3051 K	Chromaticity (u'):	0.2486
CRI (Ra):	83.6	Chromaticity (v'):	0.5209
CRI (R9):	13.7	TM-30 R_f:	83.8
Peak Wavelength:	603.5 nm	TM-30 R_g:	96.2
Dominant Wavelength:	582.5 nm	Duv:	0.0004
S/P Ratio:	1.363		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
83.6	81.9	90.9	97.0	81.7	81.9	88.7	84.4	62.3	13.7	79.1	80.8	70.5	84.0	98.8





Distribution - Goniophotometer

Distribution Test Conditions

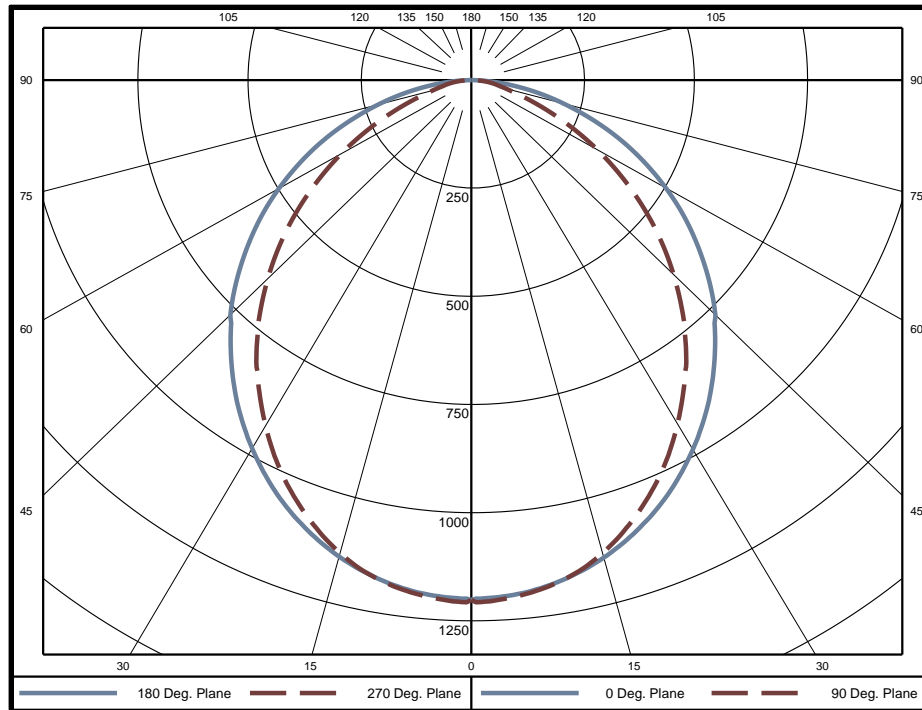
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	120.0 VAC	0.2697 A	32.15 W	0.993	60 Hz	9.82 %

Summary of Results

Spacing Criteria
 0-180: 1.22
 90-270: 1.22

Total Lumen Output: 2947 Lumens
Luminaire Efficacy: 91.7 lm/w
Maximum Candela: 1207 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	28.7	1.0%	60-65	176.3	6.0%	120-125	0	0.0%
5-10	84.7	2.9%	65-70	134.0	4.5%	125-130	0	0.0%
10-15	137.0	4.6%	70-75	91.0	3.1%	130-135	0	0.0%
15-20	183.3	6.2%	75-80	54.4	1.8%	135-140	0	0.0%
20-25	221.7	7.5%	80-85	27.7	0.9%	140-145	0	0.0%
25-30	250.7	8.5%	85-90	8.6	0.3%	145-150	0	0.0%
30-35	269.5	9.1%	90-95	0	0.0%	150-155	0	0.0%
35-40	278.3	9.4%	95-100	0	0.0%	155-160	0	0.0%
40-45	277.2	9.4%	100-105	0	0.0%	160-165	0	0.0%
45-50	265.8	9.0%	105-110	0	0.0%	165-170	0	0.0%
50-55	244.1	8.3%	110-115	0	0.0%	170-175	0	0.0%
55-60	213.7	7.3%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	1454	49.3%
0-60	2455	83.3%
0-90	2947	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	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202	1202
5	1193	1196	1194	1193	1198	1193	1194	1196	1193	1196	1194	1193	1198	1193	1194	1196
10	1174	1175	1172	1170	1174	1170	1172	1175	1174	1175	1172	1170	1174	1170	1172	1175
15	1143	1143	1136	1131	1133	1131	1136	1143	1143	1143	1136	1131	1133	1131	1136	1143
20	1101	1099	1089	1075	1075	1075	1089	1099	1101	1099	1089	1075	1075	1075	1089	1099
25	1049	1044	1027	1007	1005	1007	1027	1044	1049	1044	1027	1007	1005	1007	1027	1044
30	988	981	955	929	923	929	955	981	988	981	955	929	923	929	955	981
35	920	908	875	843	836	843	875	908	920	908	875	843	836	843	875	908
40	845	830	793	754	743	754	793	830	845	830	793	754	743	754	793	830
45	771	750	705	659	644	659	705	750	771	750	705	659	644	659	705	750
50	685	662	610	558	542	558	610	662	685	662	610	558	542	558	610	662
55	596	569	511	455	436	455	511	569	596	569	511	455	436	455	511	569
60	503	474	408	351	332	351	408	474	503	474	408	351	332	351	408	474
65	408	377	305	250	233	250	305	377	408	377	305	250	233	250	305	377
70	312	278	204	159	147	159	204	278	312	278	204	159	147	159	204	278
75	218	180	116	90	86	90	116	180	218	180	116	90	86	90	116	180
80	131	89	57	54	54	54	57	89	131	89	57	54	54	54	57	89
85	55	28	28	28	28	28	28	28	55	28	28	28	28	28	28	28
90	1	4	5	5	5	5	5	4	1	4	5	5	5	5	5	4
95	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
105	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
115	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
125	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
135	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
145	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
155	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
165	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
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/m²)

Horizontal Angle (Degrees)

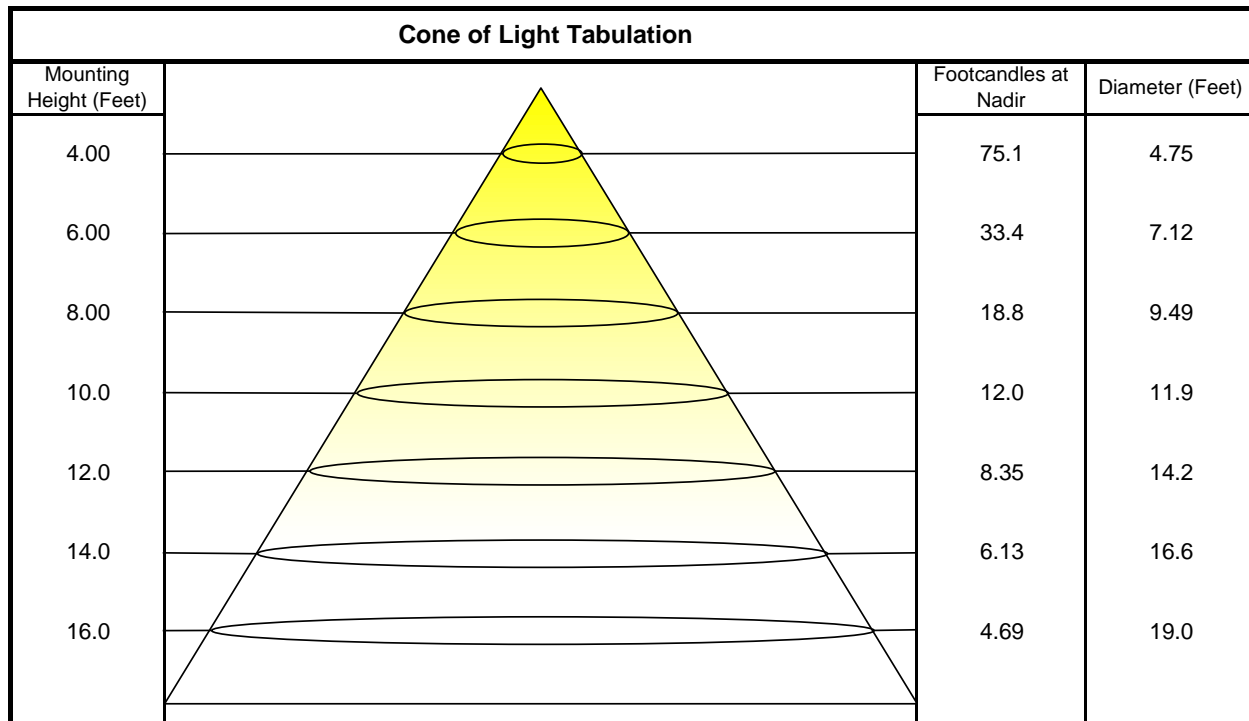
	0	45	90
0	9753	9753	9753
45	8846	8088	7391
55	8431	7227	6168
65	7840	5862	4476
75	6819	3624	2706
85	5105	2586	2601



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	3508	3508	3508	3508	3426	3426	3426	3426	3274	3274	3274	3135	3135	3135	3007	3007	3007	2947
1	3229	3098	2981	2875	3150	3032	2925	2829	2907	2820	2739	2793	2722	2656	2688	2631	2577	2517
2	2953	2724	2535	2375	2877	2669	2495	2347	2565	2419	2293	2470	2348	2241	2382	2281	2191	2130
3	2704	2408	2179	1997	2632	2362	2150	1979	2275	2094	1944	2195	2041	1911	2121	1990	1879	1816
4	2483	2144	1896	1707	2417	2106	1874	1695	2033	1831	1672	1965	1791	1650	1902	1752	1628	1566
5	2289	1924	1669	1480	2229	1891	1651	1472	1830	1618	1456	1772	1586	1441	1719	1556	1425	1365
6	2118	1738	1483	1299	2063	1710	1469	1294	1658	1443	1282	1609	1417	1271	1563	1393	1260	1201
7	1967	1580	1329	1153	1917	1556	1318	1149	1511	1297	1141	1469	1276	1132	1430	1257	1124	1067
8	1834	1445	1201	1033	1788	1425	1192	1030	1386	1174	1023	1350	1158	1017	1316	1142	1011	956
9	1715	1329	1092	933	1674	1311	1085	930	1278	1071	925	1247	1057	921	1217	1043	916	863
10	1609	1228	1000	848	1572	1213	994	846	1184	982	843	1157	970	839	1131	959	835	785

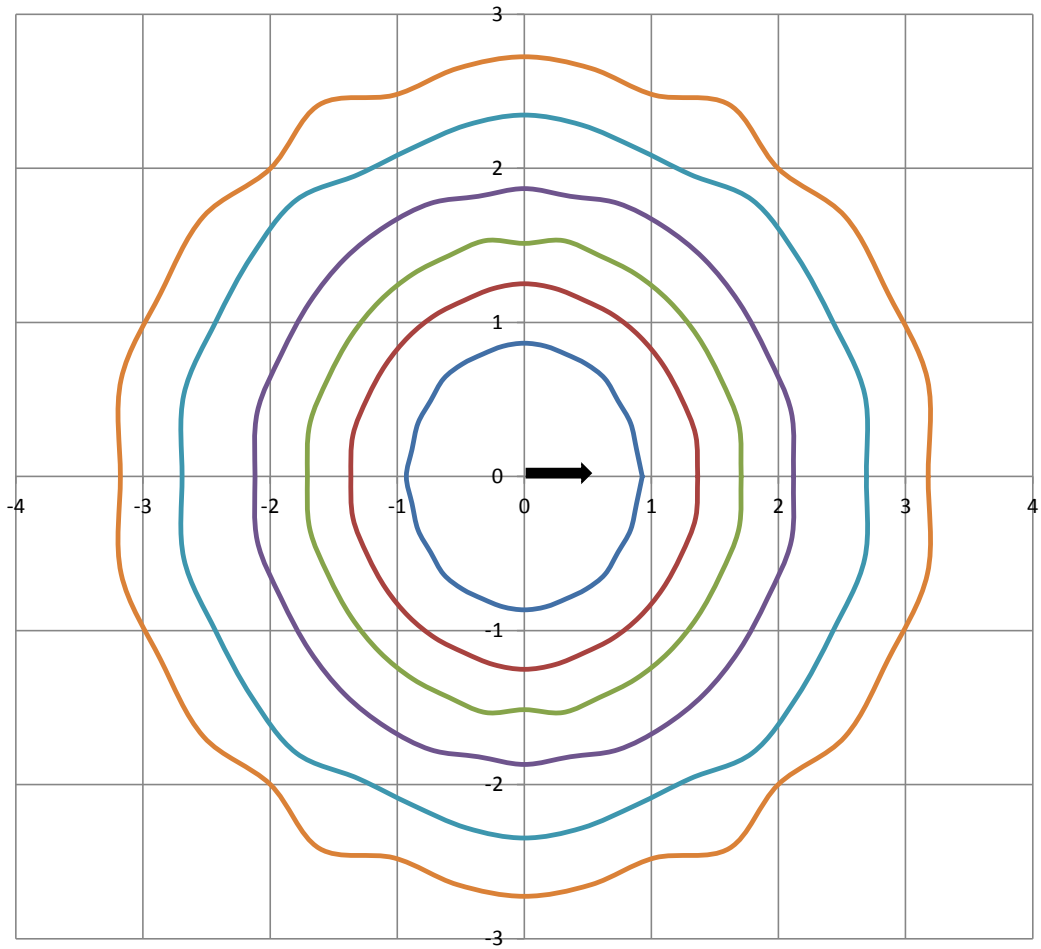
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	1202 Candela
Central Cone Intensity:	1199 Candela
Beam Flux:	2038.5 Lumens
Beam Angle (0-180):	109.4 Degrees
Beam Angle (90-270):	94.3 Degrees
Field Angle (0-180):	161.3 Degrees
Field Angle (90-270):	143.7 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height





In-Situ Test

In-Situ Test Conditions

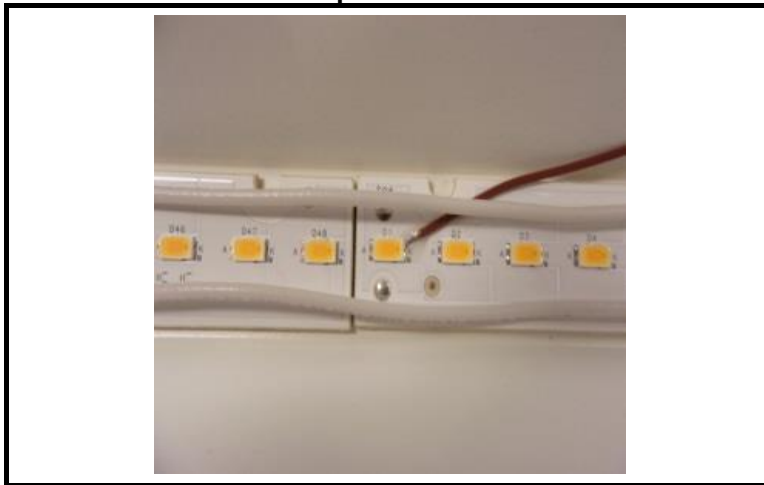
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.3 °C	120.4 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

LED Temperature: 41.3 °C
Driver Temperature: 54.2 °C
Measured LED Current: 0.1009 A

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

LED Temperature Location



Driver Temperature Location

