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Photometric Test Report

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

Prepared For
LF Illumination LLC

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Catalog Number
MF31DNT22L9030NTDLDUWW

Order Number
10804087
Test Number
1096481

Test Date

2015-06-09 - 2015-06-10

Prepared By

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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: Aluminum housing, specular plastic reflector, no enclosure
Lamp: One white LED
Mounting: Recessed
Ballast/Driver: ERP ESS030W-0700-42

Luminaire



Luminaire Characteristics
Luminous Diameter: 4.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 1751 Lumens
Efficacy: 72.1 lm/w
CCT: 3040 K
CRI (Ra): 92.4

Distribution

Total Luminaire Output: 1751 Lumens
Luminaire Efficacy: 72.1 lm/w
Maximum Candela: 16496 Candela

Electrical Data at 120 VAC

Test Temperature: 24.9 °C
Voltage: 120.0 VAC
Current: 0.2055 A
Power: 24.27 W
Power Factor: 0.984
Frequency: 60 Hz
Current THD: 11.3 %



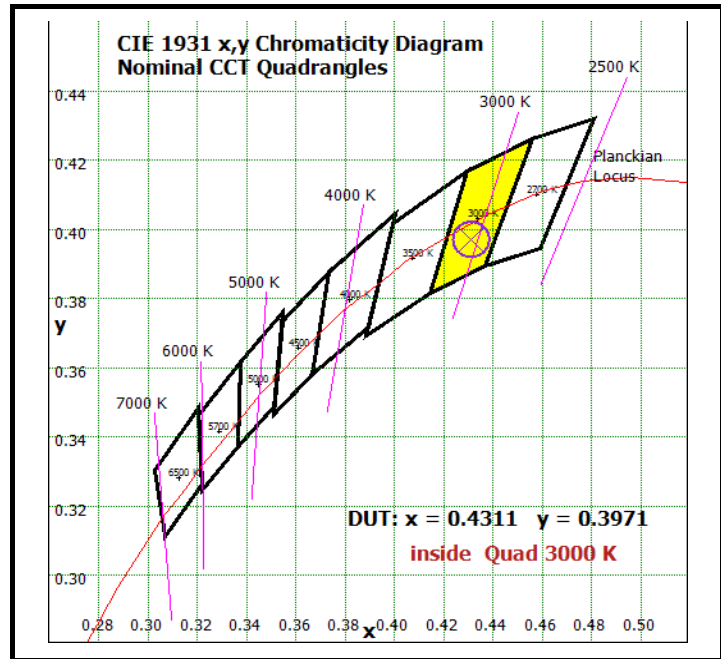
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.9 °C	120.0 VAC	0.2055 A	24.27 W	0.984	60 Hz	11.3 %

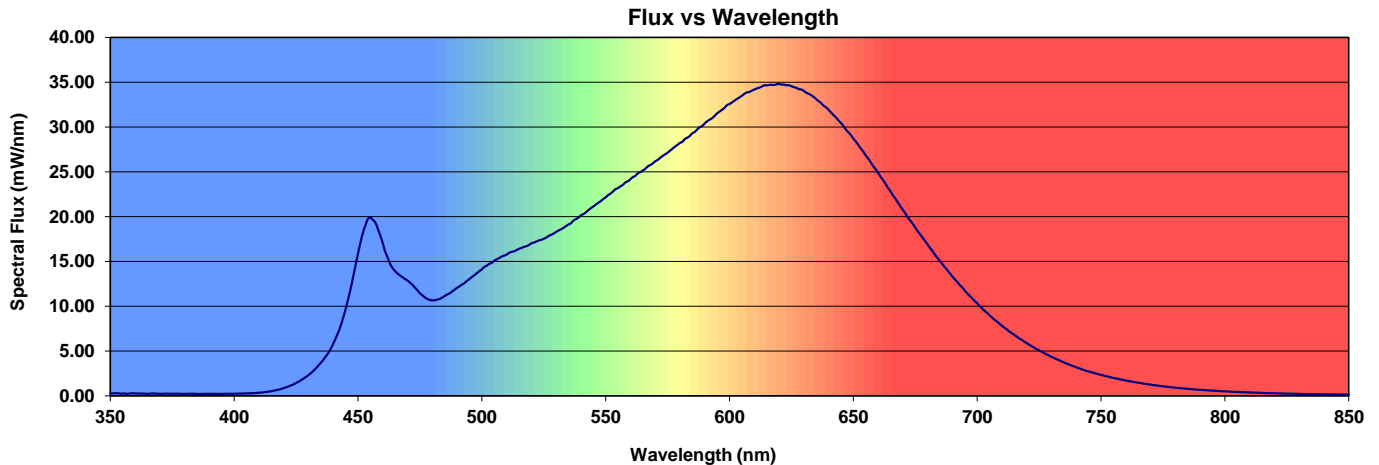
Summary of Results

Total Output:	1751 Lumens
Efficacy:	72.1 lm/w
CCT:	3040 K
CRI (Ra):	92.4
CRI (R9):	59.4
Chromaticity (x):	0.4311
Chromaticity (y):	0.3971
Chromaticity (u):	0.2498
Chromaticity (v):	0.3451
Chromaticity (u')	0.2498
Chromaticity (v')	0.5177
Duv:	-0.0021



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
92.4	93.5	98.8	96.4	91.1	93.5	96.4	89.6	80.4	59.4	96.4	91.8	83.1	95.2	98.9





Distribution - Goniophotometer

Distribution Test Conditions

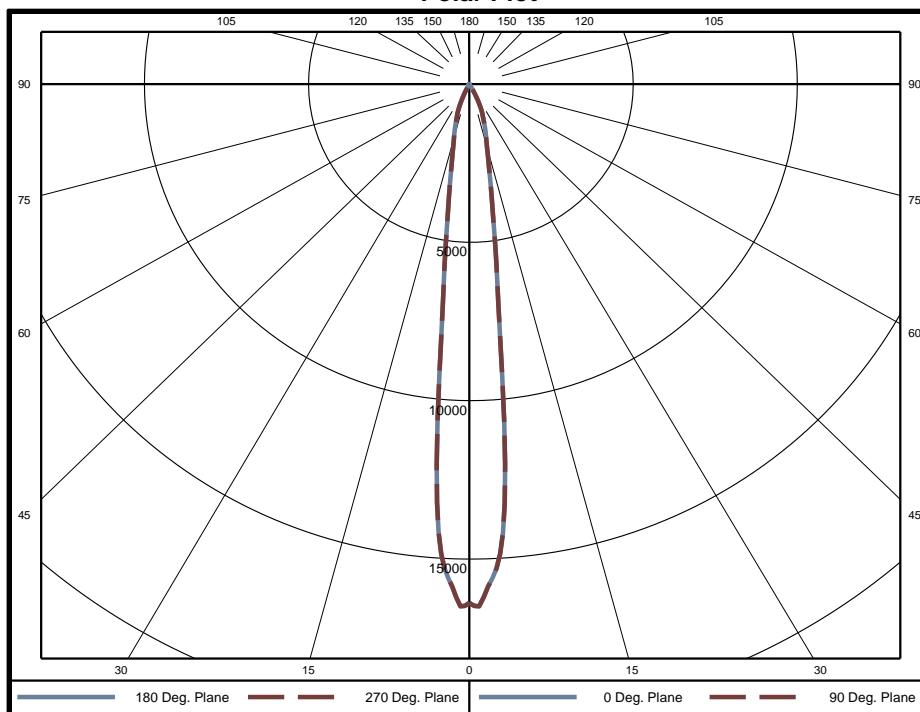
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.0 °C	120.0 VAC	0.2054 A	24.28 W	0.986	60 Hz	11.3 %

Summary of Results

Spacing Criteria
 0-180: 0.22
 90-270: 0.22

Total Lumen Output: 1751 Lumens
Luminaire Efficacy: 72.1 lm/w
Maximum Candela: 16496 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	350.6	20.0%	60-65	4.0	0.2%	120-125	0	0.0%
5-10	461.3	26.3%	65-70	4.8	0.3%	125-130	0	0.0%
10-15	319.4	18.2%	70-75	4.8	0.3%	130-135	0	0.0%
15-20	260.1	14.9%	75-80	3.3	0.2%	135-140	0	0.0%
20-25	203.3	11.6%	80-85	2.4	0.1%	140-145	0	0.0%
25-30	96.4	5.5%	85-90	0.7	0.0%	145-150	0	0.0%
30-35	16.4	0.9%	90-95	0	0.0%	150-155	0	0.0%
35-40	5.1	0.3%	95-100	0	0.0%	155-160	0	0.0%
40-45	4.5	0.3%	100-105	0	0.0%	160-165	0	0.0%
45-50	5.3	0.3%	105-110	0	0.0%	165-170	0	0.0%
50-55	4.4	0.3%	110-115	0	0.0%	170-175	0	0.0%
55-60	4.0	0.2%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	1713	97.8%
0-60	1731	98.8%
0-90	1751	100.0%
90-180	0	0.0%



Candela Tabulation
Horizontal Angle (Degrees)

Vertical 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	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390	16390
	5	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070	12070
	10	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884	3884
	15	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978	1978
	20	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243	1243
	25	694	694	694	694	694	694	694	694	694	694	694	694	694	694	694	694
	30	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129
	35	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
	40	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	45	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	50	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
	55	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
	60	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	65	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
	70	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	75	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
80	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
85	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
90	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	
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)

Vertical Angle (Degrees)	0	45	90	
	0	2021000	2021000	2021000
	45	2434	2434	2434
	55	1975	1975	1975
	65	2548	2548	2548
	75	3527	3527	3527
	85	3616	3616	3616



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	2084	2084	2084	2084	2036	2036	2036	2036	1945	1945	1945	1862	1862	1862	1786	1786	1786	1751
1	2015	1978	1945	1915	1973	1941	1912	1885	1871	1848	1828	1807	1790	1774	1748	1735	1723	1694
2	1951	1890	1838	1795	1916	1861	1815	1776	1806	1770	1738	1756	1727	1701	1710	1687	1667	1641
3	1893	1815	1754	1705	1863	1792	1737	1692	1749	1703	1666	1709	1672	1641	1673	1642	1617	1594
4	1840	1750	1684	1634	1813	1732	1671	1624	1698	1647	1606	1666	1623	1588	1636	1601	1571	1551
5	1791	1693	1625	1574	1767	1678	1615	1568	1651	1596	1555	1625	1579	1542	1601	1561	1530	1511
6	1745	1642	1573	1524	1724	1630	1566	1519	1608	1552	1510	1586	1538	1500	1567	1524	1491	1474
7	1702	1596	1528	1480	1684	1587	1522	1476	1568	1511	1469	1550	1500	1463	1534	1489	1456	1439
8	1662	1555	1487	1441	1646	1546	1483	1438	1531	1474	1433	1516	1465	1428	1502	1457	1423	1407
9	1624	1516	1450	1405	1610	1509	1446	1403	1496	1439	1399	1483	1432	1395	1472	1425	1391	1376
10	1589	1481	1416	1373	1576	1475	1413	1372	1464	1407	1368	1453	1402	1365	1443	1396	1362	1348

Cone of Light Tabulation

Mounting Height	Footcandles at Nadir	Diameter (Feet)
4.00	1020	0.890
6.00	455	1.33
8.00	256	1.78
10.0	164	2.22
12.0	114	2.67
14.0	83.6	3.11
16.0	64.0	3.56

Cone of Light Plot

