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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
MF31BNT16L9030NTDLDUWW

Order Number
10804087
Test Number
1096469

Test Date

2015-06-08 - 2015-06-09

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Approved By

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The results contained in this report pertain only to the tested sample.
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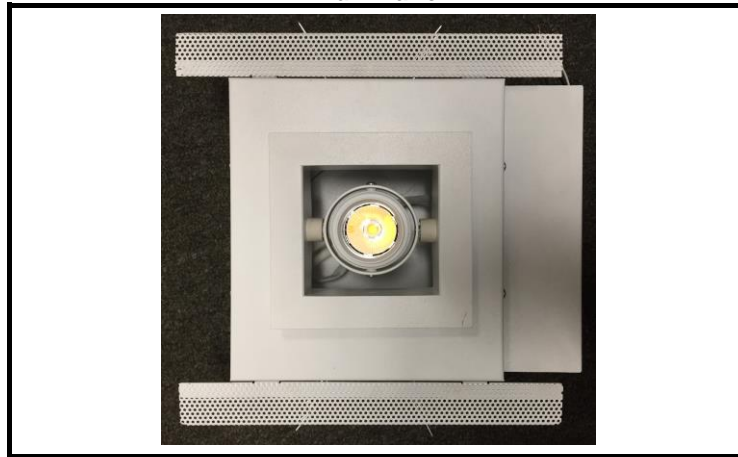
Laboratory results may not be representative of field performance
Ballast factors have not been applied

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, faceted specular plastic reflector, no enclosure
Lamp: One white LED
Mounting: Recessed
Ballast/Driver: ERP ESS030W-0500-42

Luminaire



Luminaire Characteristics
Luminous Diameter: 2.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 942 Lumens
Efficacy: 60.9 lm/w
CCT: 3023 K
CRI (Ra): 92.1

Distribution

Total Luminaire Output: 942.4 Lumens
Luminaire Efficacy: 60.8 lm/w
Maximum Candela: 3502 Candela

Electrical Data at 120 VAC

Test Temperature: 24.9 °C
Voltage: 120.0 VAC
Current: 0.1311 A
Power: 15.48 W
Power Factor: 0.984
Frequency: 60 Hz
Current THD: 13.4 %



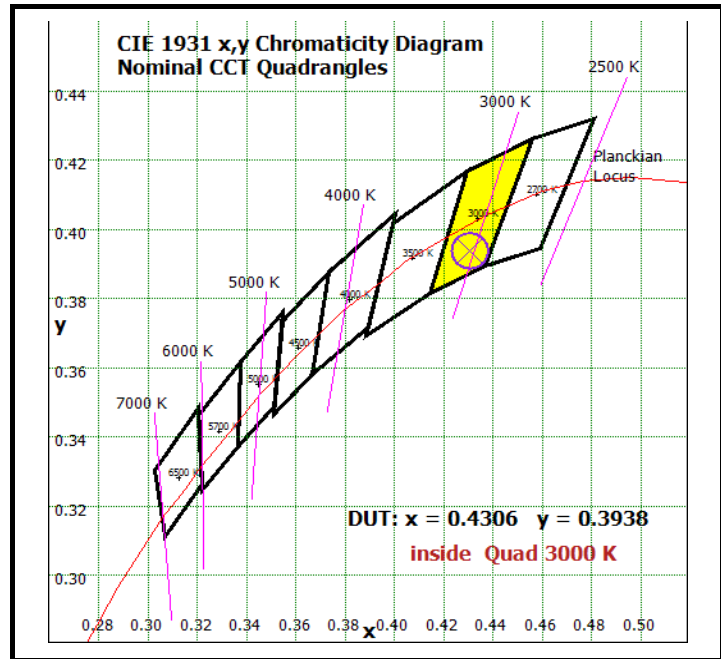
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.9 °C	120.0 VAC	0.1311 A	15.48 W	0.984	60 Hz	13.4 %

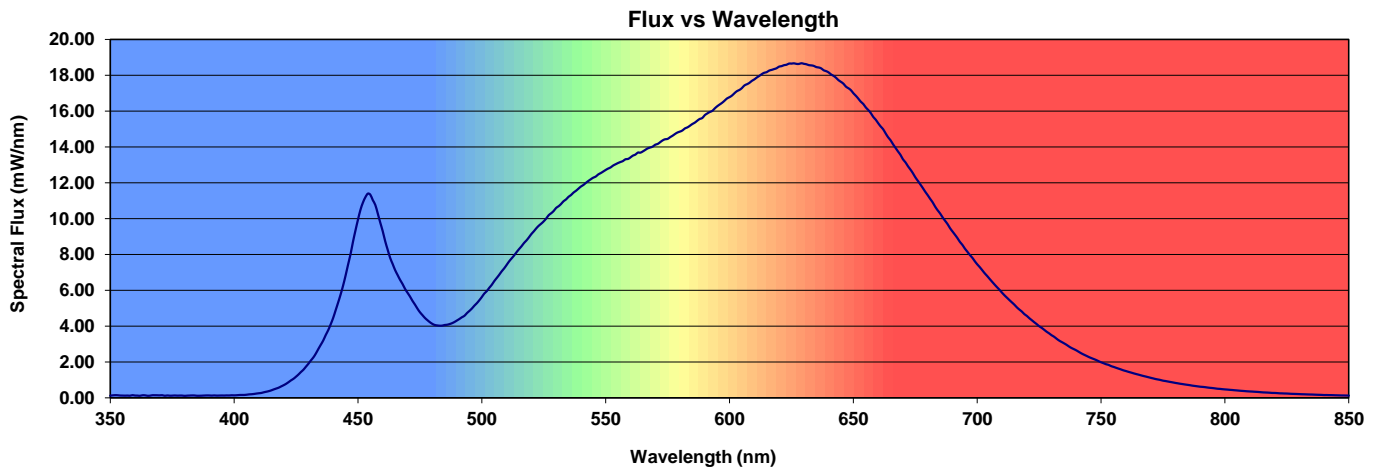
Summary of Results

Total Output:	942 Lumens
Efficacy:	60.9 lm/w
CCT:	3023 K
CRI (Ra):	92.1
CRI (R9):	69.1
Chromaticity (x):	0.4306
Chromaticity (y):	0.3938
Chromaticity (u):	0.2509
Chromaticity (v):	0.3442
Chromaticity (u'):	0.2509
Chromaticity (v'):	0.5163
Duv:	-0.0033



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
92.1	93.1	95.2	94.0	91.2	91.6	92.1	93.4	86.4	69.1	86.2	89.6	76.3	93.7	95.7





Distribution - Goniophotometer

Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.0 °C	120.0 VAC	0.1311 A	15.50 W	0.985	60 Hz	13.7 %

Summary of Results

Spacing Criteria

0-180: 0.38

90-270: 0.38

Total Lumen Output:

942.4 Lumens

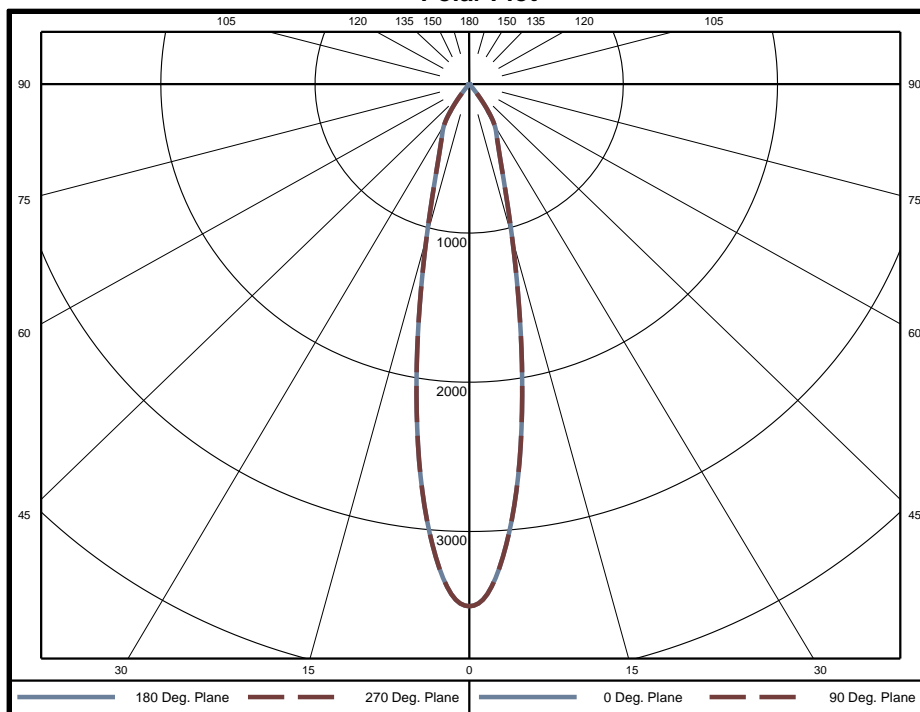
Luminaire Efficacy:

60.8 lm/w

Maximum Candela:

3502 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	77.9	8.3%	60-65	5.0	0.5%	120-125	0	0.0%
5-10	177.5	18.8%	65-70	4.5	0.5%	125-130	0	0.0%
10-15	178.2	18.9%	70-75	4.0	0.4%	130-135	0	0.0%
15-20	138.2	14.7%	75-80	3.4	0.4%	135-140	0	0.0%
20-25	111.5	11.8%	80-85	2.1	0.2%	140-145	0	0.0%
25-30	99.3	10.5%	85-90	0.7	0.1%	145-150	0	0.0%
30-35	83.1	8.8%	90-95	0	0.0%	150-155	0	0.0%
35-40	37.2	3.9%	95-100	0	0.0%	155-160	0	0.0%
40-45	6.3	0.7%	100-105	0	0.0%	160-165	0	0.0%
45-50	4.2	0.4%	105-110	0	0.0%	165-170	0	0.0%
50-55	4.4	0.5%	110-115	0	0.0%	170-175	0	0.0%
55-60	4.8	0.5%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	903	95.8%
0-60	923	97.9%
0-90	942	100.0%
90-180	0	0.0%



Candela Tabulation
Horizontal Angle (Degrees)

Vertical Angle (Degrees)	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	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502	3502
5	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020	3020
10	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012	2012
15	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115
20	649	649	649	649	649	649	649	649	649	649	649	649	649	649	649	649
25	449	449	449	449	449	449	449	449	449	449	449	449	449	449	449	449
30	347	347	347	347	347	347	347	347	347	347	347	347	347	347	347	347
35	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202	202
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
45	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
50	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
55	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
60	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
65	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
70	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
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	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
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)	Horizontal Angle (Degrees)		
	0	45	90
0	1728000	1728000	1728000
45	7659	7659	7659
55	8713	8713	8713
65	11270	11270	11270
75	13690	13690	13690
85	13270	13270	13270



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	1122	1122	1122	1122	1096	1096	1096	1096	1047	1047	1047	1003	1003	1003	962	962	962	942
1	1075	1052	1030	1011	1052	1031	1012	995	993	978	965	959	947	936	927	917	909	893
2	1031	990	957	928	1011	974	944	918	944	920	898	917	897	879	891	875	861	846
3	989	937	896	864	971	924	887	857	900	869	844	878	852	831	857	836	818	804
4	950	890	845	811	935	879	838	807	860	825	797	842	812	788	825	800	779	767
5	914	848	801	767	900	839	796	764	823	786	757	809	776	751	795	767	744	732
6	880	810	763	729	868	803	759	727	790	751	722	777	743	717	766	736	713	701
7	848	776	729	696	837	770	725	694	759	719	690	748	713	687	739	707	683	672
8	819	745	698	666	809	740	695	665	730	690	662	721	685	659	713	681	657	646
9	791	716	670	639	782	712	668	638	704	664	636	696	660	634	689	656	632	622
10	765	690	645	615	757	686	643	614	679	640	613	673	637	611	666	633	610	599

Cone of Light Tabulation

Mounting Height	Footcandles at Nadir	Diameter (Feet)
4.00	219	1.53
6.00	97.3	2.29
8.00	54.7	3.05
10.0	35.0	3.81
12.0	24.3	4.58
14.0	17.9	5.34
16.0	13.7	6.10

Cone of Light Plot

