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Photometric Test Report

Relevant Standards
IES LM-79-2008
ANSI C82.77-2002
UL1598-2008

Prepared For
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Catalog Number
LE121-P22-4-2R-V1-D3-C2-P-5-PW-OC
Order Number
10772159
Test Number
1050085

Test Date
2015-04-29 - 2015-04-30

Prepared By

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Approved By

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DLC Results Summary

Technical Requirements v2.1

High-Bay Luminaires for Commercial and Industrial Buildings		
Requirement Category	Requirement	Test Results
Minimum Light Output	≥9000 Lumens	18680 Lumens
Minimum Lamp Output	N/A	N/A
Spacing Criteria (0-180°)	N/A	N/A
Spacing Criteria (90-270°)	N/A	N/A
Zonal Lumen Requirement (20-50°)	≥20%	57%
Zonal Lumen Requirement 2	N/A	N/A
Minimum Luminaire Efficacy	≥77.6 lm/w	104 lm/w
Minimum Lamp Efficacy	N/A	N/A
Allowable CCTs*	≤5700 K	5404 K
Minimum CRI	≥68	84.5
L70 Lumen maintenance	35000 Hours	TM-21 must be completed
Minimum Luminaire Warranty	5 Years	N/A
Power Factor 120 / 277	≥0.87	0.983 at 277 V
Total Harmonic Distortion (A-%)	≤25%	10.2% at 277 V

*Defined by ANSI C78.377-2011‡

‡ANSI C78.377-2011 also referred to for Duv and (x,y) chromaticity coordinates tolerances for indoor categories

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

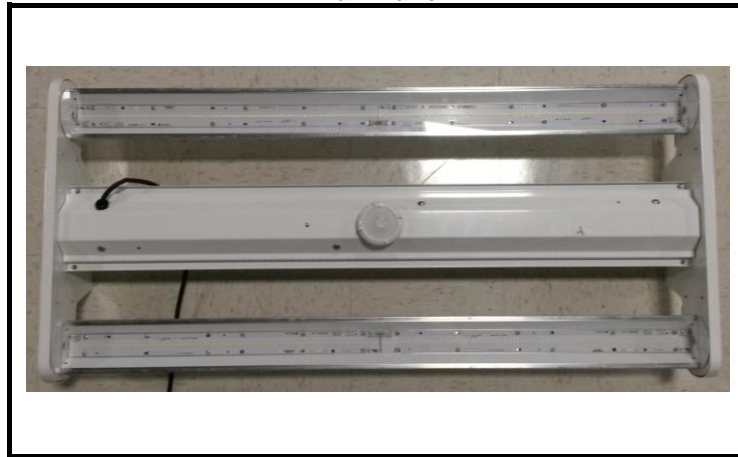
Testing was performed in a 3-meter integrating sphere using the 4π geometry method.

Absorption correction was employed for Sphere measurement



Luminaire Description: White steel housing, aluminum heatsink, clear plastic lenses
Lamp: 384 white LEDs
Mounting: High Bay
Ballast/Driver: Two Everline D21CC80UNVTW-D

Luminaire



Luminaire Characteristics

Luminous Length: 44.00 in.
Luminous Width: 20.75 in.
Luminous Height: 2.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 19170 Lumens
Efficacy: 107.2 lm/w
CCT: 5404 K
CRI (Ra): 84.5

Distribution

Total Luminaire Output: 18680 Lumens
Luminaire Efficacy: 104.4 lm/w
Maximum Candela: 7667 Candela

Electrical Data at 277 VAC

Test Temperature: 25.9 °C
Voltage: 277.0 VAC
Current: 0.6454 A
Power: 175.7 W
Power Factor: 0.983
Frequency: 60 Hz
Current THD: 10.2 %

In-Situ

LED Temperature: 61.3 °C
Driver Temperature: 47.3 °C
Maximum LED Current: 0.1325 A

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



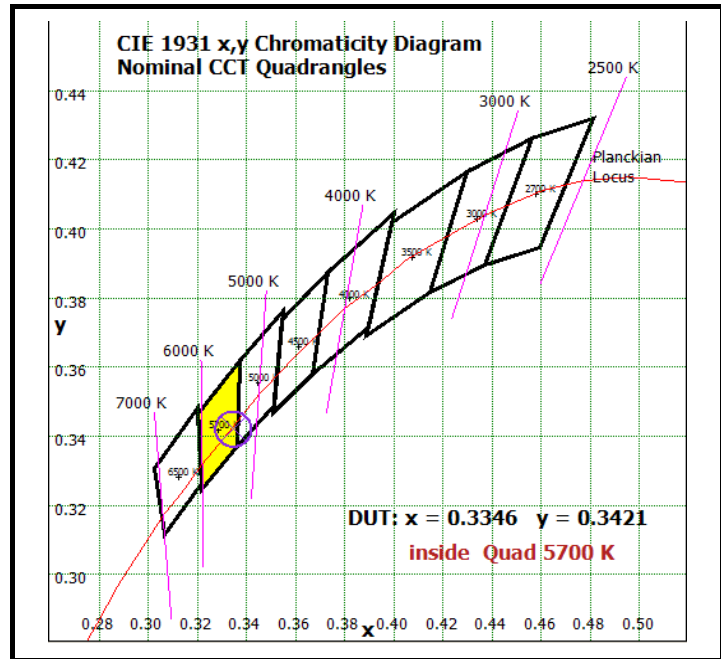
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.4 °C	120.0 VAC	1.493 A	178.9 W	0.998	60 Hz	4.64 %

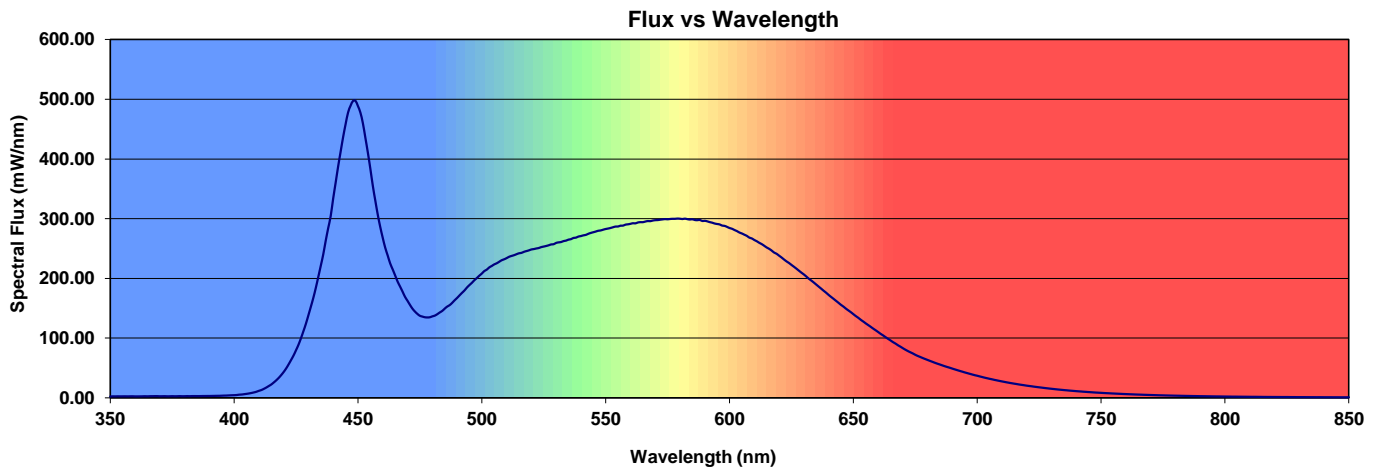
Summary of Results

Total Output:	19170 Lumens
Efficacy:	107.2 lm/w
CCT:	5404 K
CRI (Ra):	84.5
CRI (R9):	16.1
Chromaticity (x):	0.3346
Chromaticity (y):	0.3421
Chromaticity (u):	0.2079
Chromaticity (v):	0.3189
Chromaticity (u')	0.2079
Chromaticity (v')	0.4784
Duv:	-0.0006



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
84.5	83.5	88.5	91.7	85.5	84.8	84.0	87.2	71.1	16.1	72.6	85.7	69.6	84.5	95.5





Distribution - Goniophotometer

Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.7 °C	120.0 VAC	1.494 A	178.9 W	0.998	60 Hz	4.67 %

Summary of Results

Spacing Criteria

0-180: 1.27
90-270: 1.27

Total Lumen Output

18680 Lumens

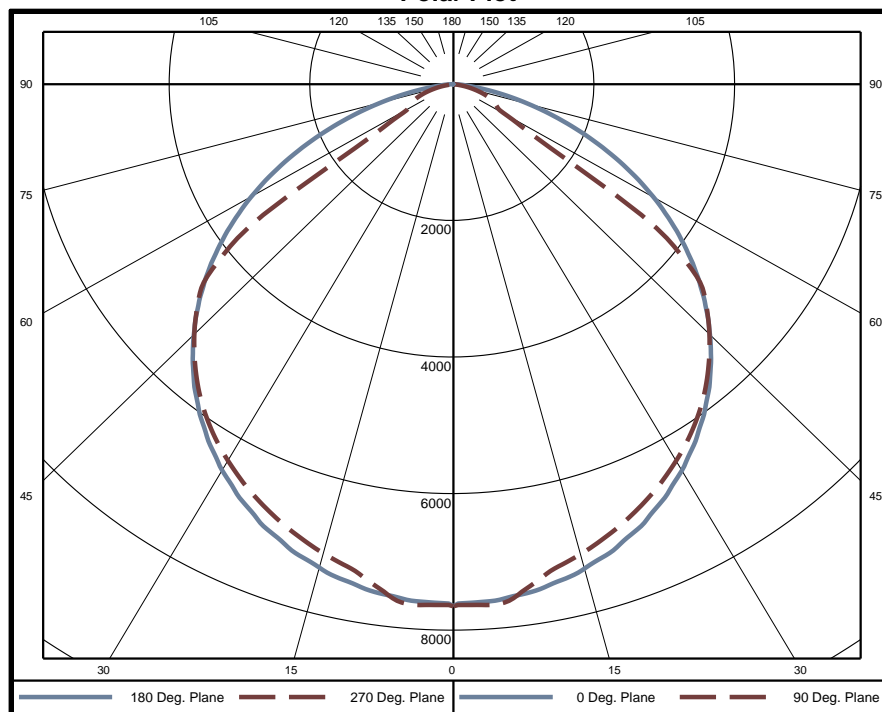
Luminaire Efficacy:

104.4 lm/w

Maximum Candela:

7667 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	183	1.0%	60-65	906	4.9%	120-125	0	0.0%
5-10	541	2.9%	65-70	568	3.0%	125-130	0	0.0%
10-15	870	4.7%	70-75	395	2.1%	130-135	0	0.0%
15-20	1169	6.3%	75-80	186	1.0%	135-140	0	0.0%
20-25	1429	7.6%	80-85	78	0.4%	140-145	0	0.0%
25-30	1642	8.8%	85-90	24	0.1%	145-150	0	0.0%
30-35	1805	9.7%	90-95	10	0.1%	150-155	0	0.0%
35-40	1910	10.2%	95-100	8	0.0%	155-160	0	0.0%
40-45	1947	10.4%	100-105	0	0.0%	160-165	0	0.0%
45-50	1911	10.2%	105-110	0	0.0%	165-170	0	0.0%
50-55	1777	9.5%	110-115	0	0.0%	170-175	0	0.0%
55-60	1319	7.1%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	9549	51.1%
0-60	14861	88.3%
0-90	18660	99.9%
90-180	18	0.1%



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	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652	7652
5	7586	7640	7666	7651	7643	7651	7666	7640	7586	7640	7666	7651	7643	7651	7666	7640
10	7487	7564	7488	7376	7334	7376	7488	7564	7487	7564	7488	7376	7334	7376	7488	7564
15	7331	7398	7150	7117	7114	7117	7150	7398	7331	7398	7150	7117	7114	7117	7150	7398
20	7119	7061	6905	6888	6902	6888	6905	7061	7119	7061	6905	6888	6902	6888	6905	7061
25	6854	6665	6603	6628	6655	6628	6603	6665	6854	6665	6603	6628	6655	6628	6603	6665
30	6534	6252	6261	6318	6369	6318	6261	6252	6534	6252	6261	6318	6369	6318	6261	6252
35	6138	5835	5871	5971	6038	5971	5871	5835	6138	5835	5871	5971	6038	5971	5871	5835
40	5700	5342	5435	5564	5637	5564	5435	5342	5700	5342	5435	5564	5637	5564	5435	5342
45	5184	4808	4940	5090	5173	5090	4940	4808	5184	4808	4940	5090	5173	5090	4940	4808
50	4611	4222	4388	4558	4645	4558	4388	4222	4611	4222	4388	4558	4645	4558	4388	4222
55	3980	3601	3779	3661	2816	3661	3779	3601	3980	3601	3779	3661	2816	3661	3779	3601
60	3295	2942	3119	984	770	984	3119	2942	3295	2942	3119	984	770	984	3119	2942
65	2555	2253	1005	638	650	638	1005	2253	2555	2253	1005	638	650	638	1005	2253
70	1800	1578	481	517	513	517	481	1578	1800	1578	481	517	513	517	481	1578
75	1097	759	357	344	329	344	357	759	1097	759	357	344	329	344	357	759
80	508	216	199	172	149	172	199	216	508	216	199	172	149	172	199	216
85	154	103	70	43	23	43	70	103	154	103	70	43	23	43	70	103
90	4	34	31	20	7	20	31	34	4	34	31	20	7	20	31	34
95	6	22	21	14	4	14	21	22	6	22	21	14	4	14	21	22
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	12990	12990	12990
45	11910	10780	11330
55	11060	9784	7327
65	9350	3323	2164
75	6152	1703	1586
85	1970	632	215



Utilization of Lumens - Zonal Cavity Method

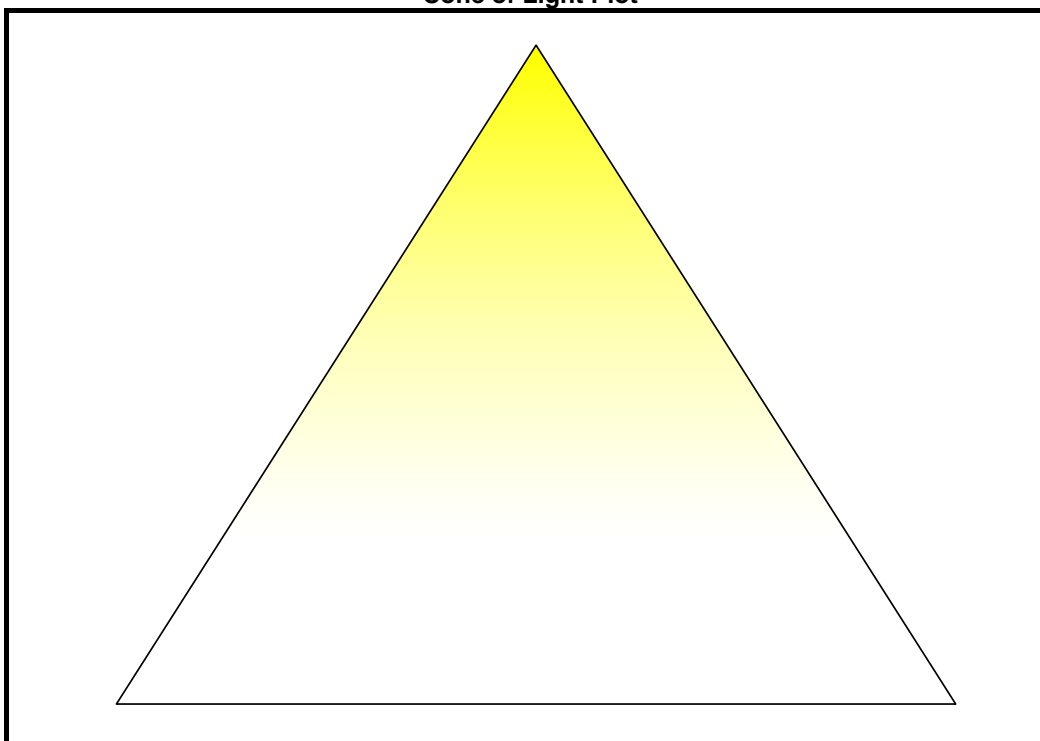
Effective Floor Cavity Reflectance 20%

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	22230	22230	22230	22230	21711	21711	21711	21711	20742	20742	20742	19856	19856	19856	19042	19042	19042	18659
1	20601	19832	19143	18523	20106	19413	18788	18221	18627	18116	17647	17906	17491	17108	17240	16910	16601	16227
2	18926	17556	16422	15468	18454	17209	16169	15285	16559	15686	14932	15959	15233	14595	15404	14806	14273	13893
3	17375	15584	14198	13093	16930	15295	14011	12976	14750	13653	12749	14246	13314	12530	13778	12992	12319	11935
4	15980	13907	12390	11231	15567	13665	12248	11153	13206	11976	11002	12780	11716	10855	12384	11469	10712	10330
5	14738	12486	10913	9751	14358	12281	10803	9698	11893	10591	9594	11531	10389	9492	11194	10195	9392	9016
6	13634	11277	9695	8560	13287	11103	9608	8522	10772	9441	8448	10463	9279	8375	10174	9124	8303	7936
7	12654	10244	8682	7588	12339	10096	8613	7560	9812	8478	7506	9547	8347	7452	9298	8221	7399	7043
8	11786	9360	7834	6785	11500	9232	7777	6765	8988	7666	6724	8759	7559	6683	8543	7456	6643	6300
9	11014	8596	7115	6115	10755	8486	7068	6099	8275	6977	6068	8076	6888	6037	7888	6803	6006	5676
10	10327	7935	6503	5550	10092	7839	6464	5538	7655	6387	5513	7481	6313	5489	7317	6241	5465	5147

Cone of Light Tabulation

Mounting Height (Feet)	Footcandles at Nadir	Diameter (Feet)
4.00	478	4.93
6.00	213	7.39
8.00	120	9.86
10.0	76.5	12.3
12.0	53.1	14.8
14.0	39.0	17.3
16.0	29.9	19.7

Cone of Light Plot





In-Situ Test

In-Situ Test Conditions

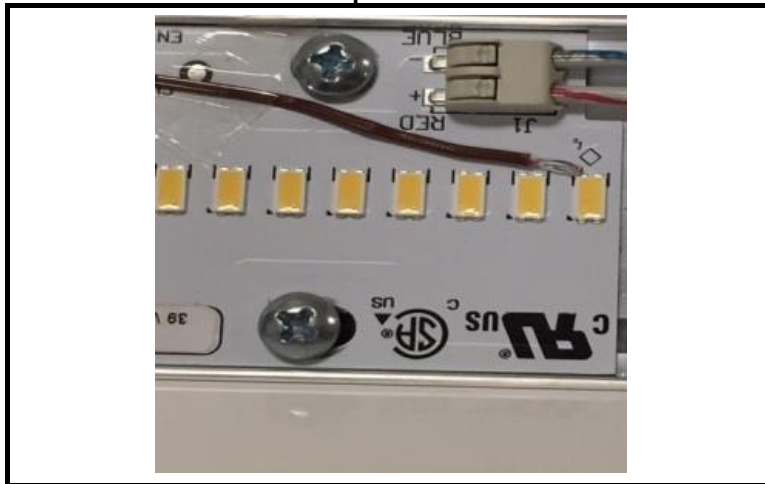
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
23.9 °C	120.0 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

LED Temperature: 61.3 °C
Driver Temperature: 47.3 °C
Maximum LED Current: 0.1325 A

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

LED Temperature Location



Driver Temperature Location

