



8165 E Kaiser Blvd. Anaheim, CA 92808  
 p. 714.282.2270  
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Test #: L10137801R01

Date: 11/4/2013



NVLAP LAB CODE 200927-0

**Test Report:** L10137801R01

**Model Number:** ALX3- RL- LED- L- 35K- 120- BE- PC- S- 4'

**Report Prepared For:** Primus Lighting Inc.  
 3570 Lexington Ave. El Monte, CA. 91731

**Test:** Electrical and Photometric tests as required by the IESNA test standards.

**Standards Used:** Appropriate part or all test guidelines were used for test performed:  
*IESNA LM79: 2008* Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products  
*ANSI NEMA ANSLG C78.377: 2008* Specification of the Chromaticity of Solid State Lighting Products  
*ANSI C82.77:2002:* Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

**Description of Sample:** Client submitted the sample. Fixture catalog number is ALX3- RL- LED- L- 35K- 120- BE- PC- S- 4'. Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 10/11/13

**Date of Tests:** 10/17/13 - 10/22/13

**Seasoning of Sample SSL:** No seasoning was performed in accordance with IESNA LM-79.

**Equipment List**

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

**LM-79 Test Summary**

<b>Manufacturer:</b>	Primus Lighting Inc.
<b>Model Number:</b>	ALX3- RL- LED- L- 35K- 120- BE- PC- S- 4'
<b>LAMPCAT:</b>	N/A
<b>Driver Model Number:</b>	EPTRONICS LD17W-24 (2 DRIVERS)
<b>Total Lumens:</b>	1257.74
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.20
<b>Input Power (W):</b>	23.46
<b>Input Power Factor:</b>	0.98
<b>Total Harmonic Distortion @ 120V(%):</b>	9%
<b>Total Harmonic Distortion @ 277V(%):</b>	N/A
<b>Efficacy:</b>	54
<b>Color Rendering Index (CRI):</b>	85
<b>Correlated Color Temperature (K):</b>	3460
<b>Chromaticity Coordinate x:</b>	0.4052
<b>Chromaticity Coordinate y:</b>	0.3856
<b>Ambient Temperature (°F):</b>	77.0
<b>Stabilization Time (Hours):</b>	0:35
<b>Total Operating Time (Hours):</b>	1:10
<b>Off State Power(W):</b>	0.00
<b>LED Model Number:</b>	OSRAM #71797, L5LRE/24V/835/SMLS/12in.

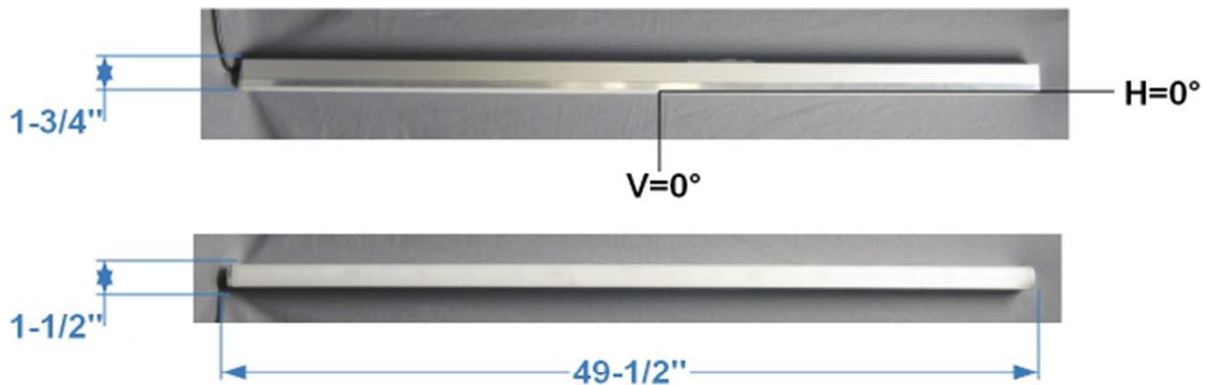
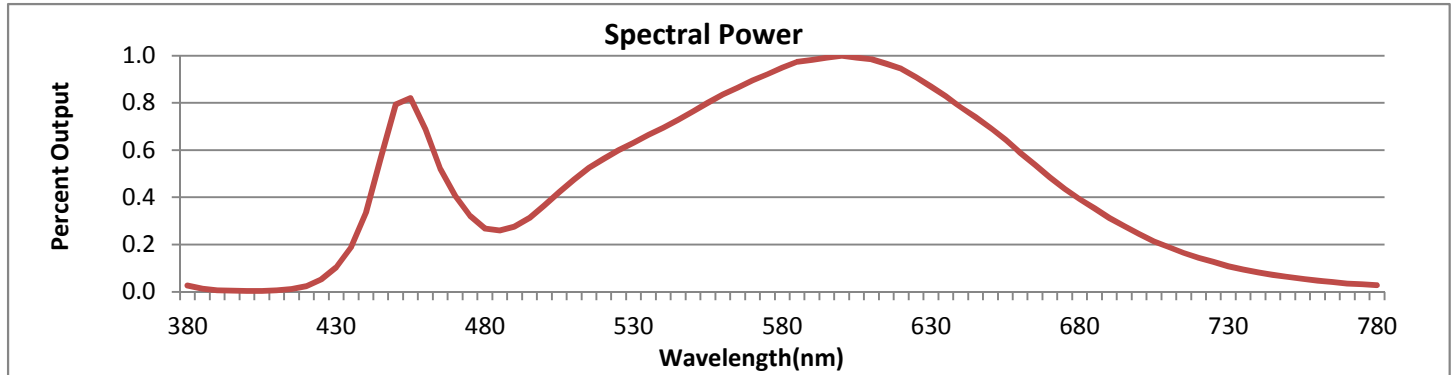


FIG1. LUMINAIRE

\*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



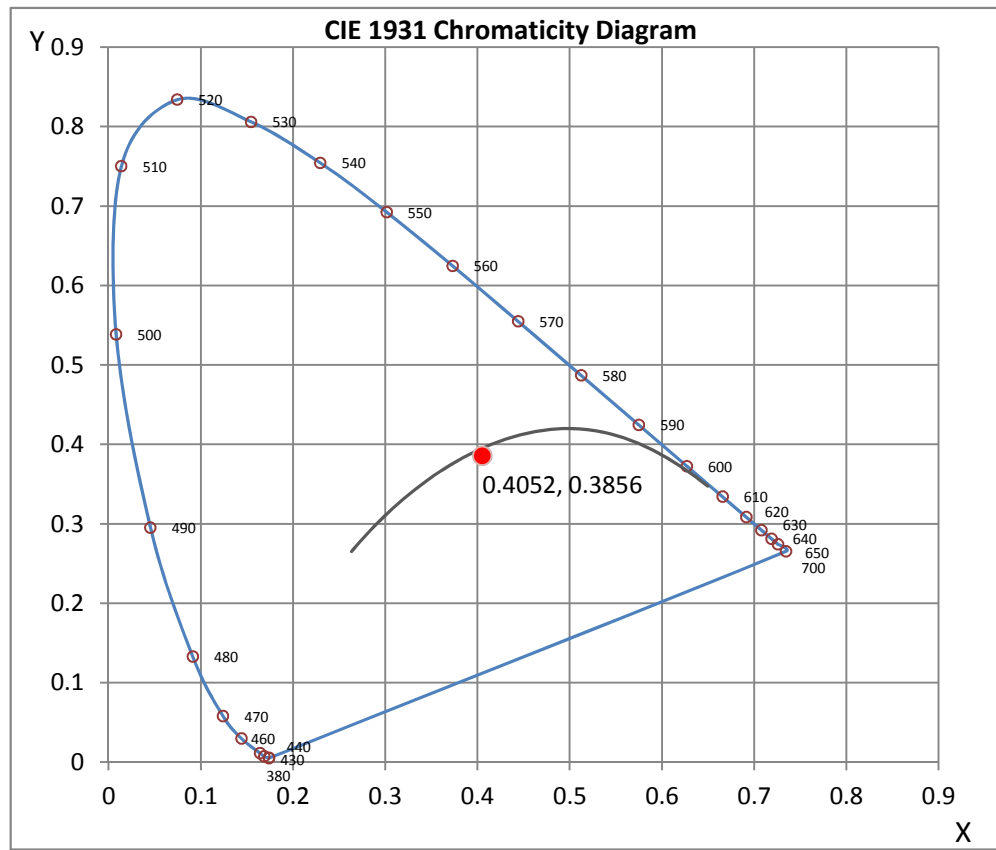
Wavelength	W/m <sup>2</sup> nm	440	0.0321	510	0.0455	580	0.0909	650	0.0665	720	0.0137
380	0.0025	450	0.0759	520	0.0539	590	0.0940	660	0.0563	730	0.0103
390	0.0006	460	0.0659	530	0.0604	600	0.0957	670	0.0463	740	0.0079
400	0.0003	470	0.0388	540	0.0665	610	0.0943	680	0.0375	750	0.0060
410	0.0005	480	0.0256	550	0.0732	620	0.0904	690	0.0299	760	0.0045
420	0.0023	490	0.0264	560	0.0799	630	0.0832	700	0.0235	770	0.0034
430	0.0099	500	0.0350	570	0.0857	640	0.0748	710	0.0181	780	0.0026

**CRI & CCT**

x	0.4052
y	0.3856
u'	0.2378
v'	0.5091
CRI	84.90
CCT	3460
Duv	-0.00224

**R Values**

R1	83.79
R2	91.16
R3	95.18
R4	82.22
R5	82.79
R6	86.49
R7	87.28
R8	69.91
R9	28.74
R10	77.78
R11	79.65
R12	64.68
R13	85.84
R14	97.11



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**Test Methods**

**Photometric Measurements - Goniophotometer**

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

**Spectral Measurements - Integrating Sphere**

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

**Disclaimers:**

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Released by:

Test Report Reviewed by:

Jeff Ahn  
 Engineering Manager

Steve Kang  
 Quality Assurance

*\*Attached are photometric data reports. Total number of pages: 10*

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## Photometric Test Report

### IES INDOOR REPORT

PHOTOMETRIC FILENAME : L10137801R01.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L10137801R01  
[TESTLAB] LIGHT LABORATORY, INC.  
[ISSUEDATE] 11/4/2013  
[MANUFAC] PRIMUS LIGHTING, INC.  
[LUMCAT] ALX3- RL- LED- L- 35K- 120- BE- PC- S- 4'  
[LUMINAIRE] 49-1/2"L. X 1-1/2"W. X 1-3/4"H. LED FIXTURE  
[MORE] ACRYLIC LINEAR PRISMATIC LENS  
[BALLASTCAT] EPTRONICS LD17W-24 (2 DRIVERS)  
[BALLAST] INPUT: 100-277VAC, 0.30A, 47-63Hz OUTPUT: 24VDC, 700mA  
[LAMPPOSITION] 0,0  
[LAMPCAT] N/A  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[\_INPUT] 120VAC, 23.46W  
[\_TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1258
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	54
Total Luminaire Watts	23.46
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.18
Spacing Criterion (90-270)	1.26
Spacing Criterion (Diagonal)	1.34
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	4.03 ft
Luminous Width (90-270)	0.11 ft
Luminous Height	0.02 ft

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L10137801R01.IES**

**LUMINANCE DATA (cd/sq.m)**

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	8364	8212	8360
55	7475	7365	7622
65	6588	6531	6897
75	5705	5776	6310
85	5005	5434	6149

**IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L10137801R01.IES**

**CANDELA TABULATION**

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>
<b>0</b>	432	432	432	432	432
<b>5</b>	430	430	430	430	430
<b>10</b>	422	422	424	425	425
<b>15</b>	409	410	412	415	415
<b>20</b>	390	393	397	401	403
<b>25</b>	367	371	378	384	386
<b>30</b>	336	346	355	363	365
<b>35</b>	311	318	330	337	340
<b>40</b>	279	287	301	312	316
<b>45</b>	245	255	271	283	288
<b>50</b>	212	221	239	254	257
<b>55</b>	178	188	207	223	227
<b>60</b>	146	157	176	192	198
<b>65</b>	116	125	146	163	167
<b>70</b>	88	96	118	134	139
<b>75</b>	62	72	92	108	113
<b>80</b>	39	48	69	85	90
<b>85</b>	19	28	49	64	68
<b>90</b>	2	14	33	47	50
<b>95</b>	0	7	21	33	37
<b>100</b>	0	3	14	23	26
<b>105</b>	0	2	9	16	19
<b>110</b>	0	2	6	11	13
<b>115</b>	0	1	4	8	9
<b>120</b>	0	0	3	6	7
<b>125</b>	0	0	3	5	5
<b>130</b>	0	0	2	3	4
<b>135</b>	0	0	0	3	3
<b>140</b>	0	0	0	2	3
<b>145</b>	0	0	0	0	2
<b>150</b>	0	0	0	0	0
<b>155</b>	0	0	0	0	0
<b>160</b>	0	0	0	0	0
<b>165</b>	0	0	0	0	0
<b>170</b>	0	0	0	0	0
<b>175</b>	0	0	0	0	0
<b>180</b>	0	0	0	0	0

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L10137801R01.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	157.11	N.A.	12.50
0-30	330.82	N.A.	26.30
0-40	535.75	N.A.	42.60
0-60	927.06	N.A.	73.70
0-80	1165.57	N.A.	92.70
0-90	1217.05	N.A.	96.80
10-90	1176.21	N.A.	93.50
20-40	378.64	N.A.	30.10
20-50	586.10	N.A.	46.60
40-70	534.29	N.A.	42.50
60-80	238.50	N.A.	19.00
70-80	95.52	N.A.	7.60
80-90	51.48	N.A.	4.10
90-110	32.70	N.A.	2.60
90-120	37.24	N.A.	3.00
90-130	39.52	N.A.	3.10
90-150	40.70	N.A.	3.20
90-180	40.70	N.A.	3.20
110-180	8.00	N.A.	0.60
0-180	1257.74	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	40.84
10-20	116.27
20-30	173.71
30-40	204.93
40-50	207.46
50-60	183.85
60-70	142.98
70-80	95.52
80-90	51.48
90-100	22.66
100-110	10.04
110-120	4.55
120-130	2.28
130-140	0.95
140-150	0.22
150-160	0.00
160-170	0.00
170-180	0.00



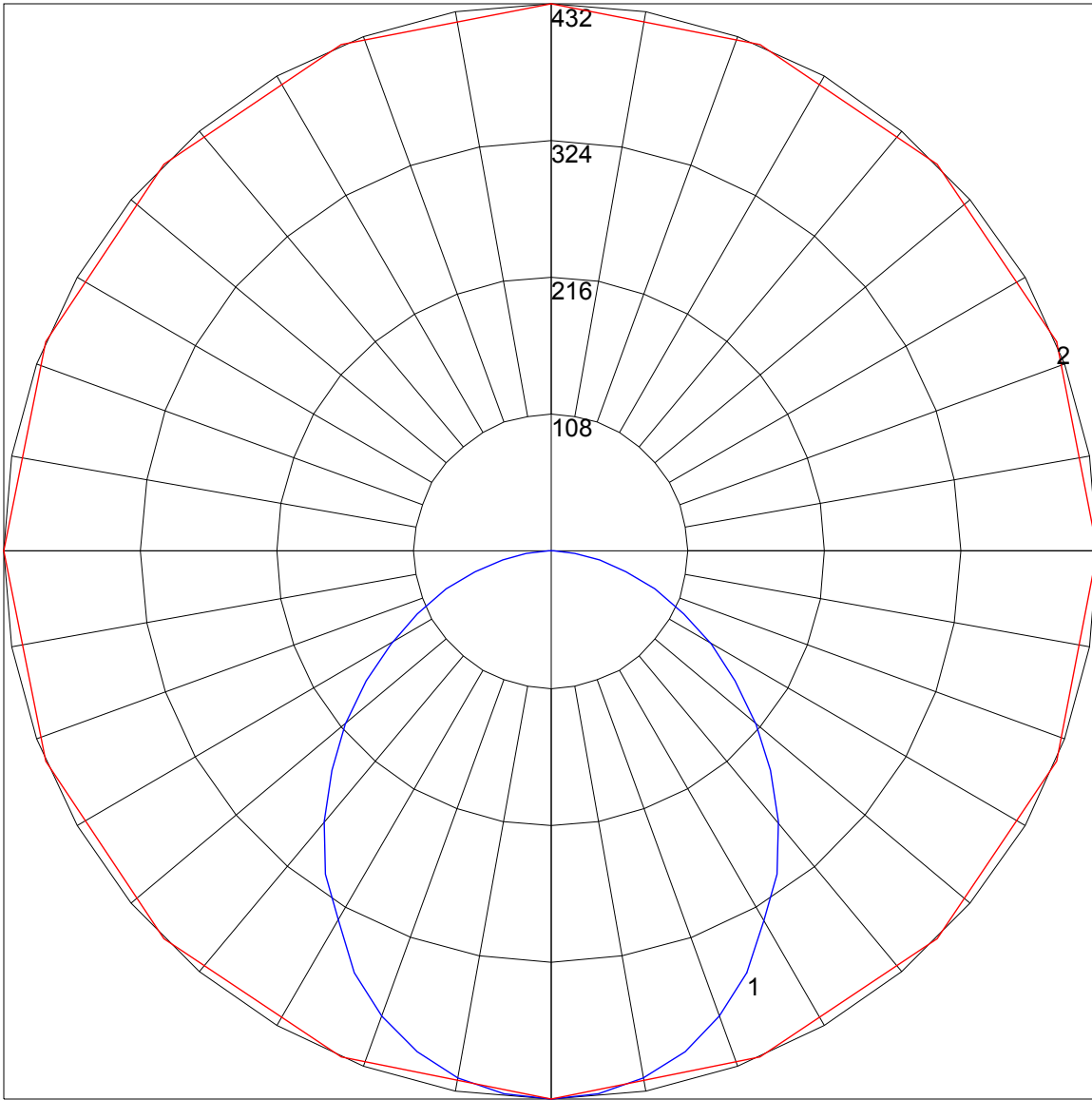
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0	
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	118	118	118	118	115	115	115	115	109	109	109	104	104	104	99	99	99	97	97
1	107	102	97	93	104	99	95	91	94	91	88	90	87	84	86	83	81	79	79
2	97	89	81	75	94	86	80	74	82	77	72	78	74	70	75	71	68	65	65
3	89	78	69	63	86	76	68	62	72	66	60	69	64	59	66	61	57	55	55
4	81	69	60	53	78	67	59	52	64	57	51	62	55	50	59	54	49	47	47
5	75	62	52	46	72	60	52	45	58	50	44	55	49	44	53	47	43	41	41
6	69	55	46	40	67	54	46	40	52	45	39	50	43	38	48	42	38	36	36
7	64	50	41	35	62	49	41	35	47	40	35	46	39	34	44	38	34	32	32
8	59	46	37	31	58	45	37	31	43	36	31	42	35	31	41	35	30	28	28
9	56	42	34	28	54	41	34	28	40	33	28	39	32	28	37	32	27	25	25
10	52	39	31	26	51	38	31	26	37	30	25	36	30	25	35	29	25	23	23

POLAR GRAPH



Maximum Candela = 432 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)