



8165 E Kaiser Blvd. Anaheim, CA 92808
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Report No: L041507501

Date: 5/8/2015



NVLAP LAB CODE 200927-0

Report No: L041507501

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

Model Number: ALX3-DR-LED-H-35K-WAR

Test: Electrical and Photometric tests

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. Catalog number is ALX3-DR-LED-H-35K-WAR . Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 5/4/15

Date of Tests: 5/5/15 - 5/5/15

Seasoning of Sample: 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	11/10/15
Xitron Power Analysis System	2503AH	MT-EL01	10/20/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/05/16
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.

Test Summary

Manufacturer:	Primus Lighting Inc.
Model Number:	ALX3-DR-LED-H-35K-WAR
Driver Model Number:	OSRAM OPTOTRONIC OT50W/PRG1400C/UNV/DIM/L
Total Lumens:	3550.05
Input Voltage (VAC/60Hz):	120.04
Input Current (Amp):	0.41
Input Power (W):	48.47
Input Power Factor:	0.99
Current ATHD @ 120V(%):	8%
Current ATHD @ 277V(%):	N/A
Efficacy:	73
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:55
Total Operating Time (Hours):	1:55
Off State Power(W):	0.00

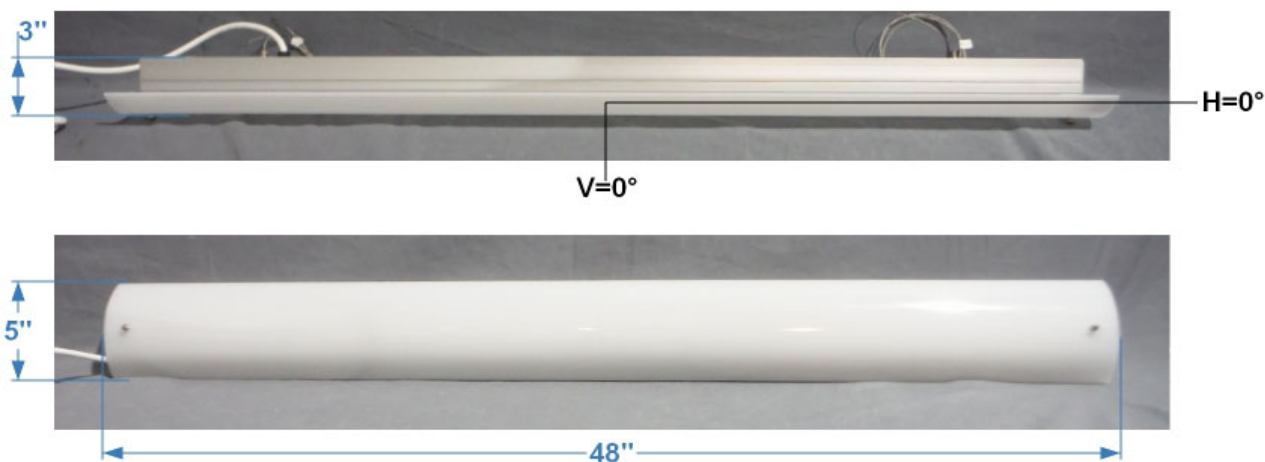


FIG.1 LUMINAIRE



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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 : Randy Chau

Test Report Released by:

Jeff Ahn
Engineering Manager

Test Report Reviewed by:

Steve Kang
Quality Assurance

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

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



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Photometric Test Report

IES INDOOR REPORT

PHOTOMETRIC FILENAME : L041507501.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L041507501
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 5/8/2015
[MANUFAC] PRIMUS LIGHTING INC.
[LUMCAT] ALX3-DR-LED-H-35K-WAR
[LUMINAIRE] 48"L. X 5"W. X 3"H. LED LUMINAIRE
[MORE] WHITE TEXTURED ACRYLIC LENS
[BALLASTCAT] OSRAM OPTOTRONIC OT50W/PRG1400C/UNV/DIM/L
[BALLAST] INPUT: 120-277VAC, 0.52-0.23A, 50/60Hz. OUTPUT: 50W, 10-55VDC, 400-1400mA
[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, 48.47W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3550
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	73
Total Luminaire Watts	48.47
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.26
Spacing Criterion (90-270)	1.28
Spacing Criterion (Diagonal)	1.38
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	4.00 ft
Luminous Width (90-270)	0.42 ft
Luminous Height	0.08 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041507501.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4473	4058	4015
55	4242	3746	3773
65	3965	3467	3602
75	3360	3085	3412
85	2511	2991	3606

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041507501.IES

CANDELA TABULATION

	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>
0	771	771	771	771	771	771	771	771	771	771
5	766	766	766	765	766	767	767	768	767	768
10	755	755	754	754	755	756	756	757	757	757
15	736	736	736	736	737	737	739	739	739	740
20	712	711	711	711	712	713	714	715	716	717
25	680	680	680	680	681	683	684	685	686	687
30	643	643	643	644	645	646	648	649	650	651
35	602	602	602	602	604	605	607	608	609	610
40	555	555	555	556	557	559	561	562	563	565
45	504	504	504	505	507	508	510	511	513	515
50	449	449	450	451	452	454	456	457	459	462
55	391	391	392	393	394	396	398	401	404	407
60	337	337	338	339	341	343	346	349	353	358
65	273	273	274	276	278	282	286	291	296	302
70	209	209	210	211	214	220	226	232	239	246
75	146	146	148	151	156	162	169	177	186	194
80	87	88	92	97	104	112	120	129	138	148
85	42	44	48	55	63	72	82	91	101	110
90	15	19	26	34	40	48	56	65	74	82
95	60	31	36	43	51	59	68	76	85	93
100	142	68	55	61	64	68	74	82	90	99
105	192	121	80	84	90	94	96	98	101	106
110	220	164	116	106	113	119	124	127	129	130
115	239	202	146	133	134	141	147	152	156	159
120	256	233	168	160	153	158	165	171	176	181
125	273	259	211	180	176	174	180	186	192	198
130	291	285	244	207	197	195	195	199	205	211
135	310	306	276	240	220	214	212	212	216	221
140	329	326	305	271	245	232	229	229	228	230
145	346	345	331	303	276	256	246	243	243	242
150	364	362	354	334	309	286	269	259	255	254
155	379	378	373	361	342	321	302	286	276	269
160	392	392	389	382	370	355	339	324	310	299
165	402	402	401	398	392	385	375	364	353	342
170	410	410	409	408	406	404	401	396	391	386
175	415	415	414	414	414	414	414	413	412	411
180	417	417	417	417	417	417	417	417	417	417

Vert. Horizontal Angles

	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
0	771	771	771	771	771	771	771	771	771
5	768	768	768	767	766	766	767	767	767
10	757	758	758	757	757	757	757	757	757
15	740	741	741	741	741	740	740	741	741
20	717	718	718	718	718	718	718	719	719
25	687	688	689	689	690	690	690	690	691
30	652	653	654	655	655	655	655	656	657
35	612	613	614	615	616	616	617	618	618
40	566	568	570	571	572	573	573	574	575
45	517	519	521	523	525	525	527	528	528
50	465	468	470	473	475	476	478	479	480
55	411	415	418	421	424	426	428	429	430
60	363	367	371	375	378	381	383	384	385

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041507501.IES

CANDELA TABULATION - (Cont.)

65	308	313	318	322	326	330	332	334	335
70	253	259	265	271	275	279	282	284	284
75	202	209	216	222	227	231	234	236	236
80	156	164	172	178	183	188	191	193	193
85	119	127	135	141	147	151	154	156	156
90	91	99	106	112	117	121	124	126	127
95	100	107	112	116	120	123	125	127	127
100	108	115	122	127	132	136	139	140	141
105	112	117	123	128	132	136	138	140	141
110	132	134	136	138	140	142	143	144	145
115	161	162	163	163	164	164	164	165	165
120	184	187	189	190	190	191	191	191	190
125	202	206	209	211	212	213	214	214	214
130	216	220	224	226	229	230	231	232	232
135	226	230	234	237	240	241	243	243	244
140	233	238	241	244	247	249	250	251	251
145	242	244	246	248	251	252	253	254	254
150	254	254	254	255	255	256	256	256	256
155	265	264	264	264	264	264	264	264	264
160	290	283	279	276	274	273	272	272	272
165	332	324	317	311	307	303	301	299	299
170	380	374	369	365	361	358	355	354	353
175	410	409	408	407	406	405	404	404	403
180	417	417	417	417	417	417	417	417	417

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	281.46	N.A.	7.90
0-30	597.51	N.A.	16.80
0-40	979.08	N.A.	27.60
0-60	1743.99	N.A.	49.10
0-80	2248.01	N.A.	63.30
0-90	2366.05	N.A.	66.60
10-90	2293.17	N.A.	64.60
20-40	697.62	N.A.	19.70
20-50	1095.38	N.A.	30.90
40-70	1064.59	N.A.	30.00
60-80	504.01	N.A.	14.20
70-80	204.34	N.A.	5.80
80-90	118.04	N.A.	3.30
90-110	219.23	N.A.	6.20
90-120	377.20	N.A.	10.60
90-130	559.72	N.A.	15.80
90-150	910.19	N.A.	25.60
90-180	1184.00	N.A.	33.40
110-180	964.77	N.A.	27.20
0-180	3550.05	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	72.88
10-20	208.58
20-30	316.05
30-40	381.57
40-50	397.76
50-60	367.15
60-70	299.67
70-80	204.34
80-90	118.04
90-100	96.41
100-110	122.82
110-120	157.97
120-130	182.52
130-140	183.91
140-150	166.55
150-160	137.35
160-170	98.18
170-180	38.29

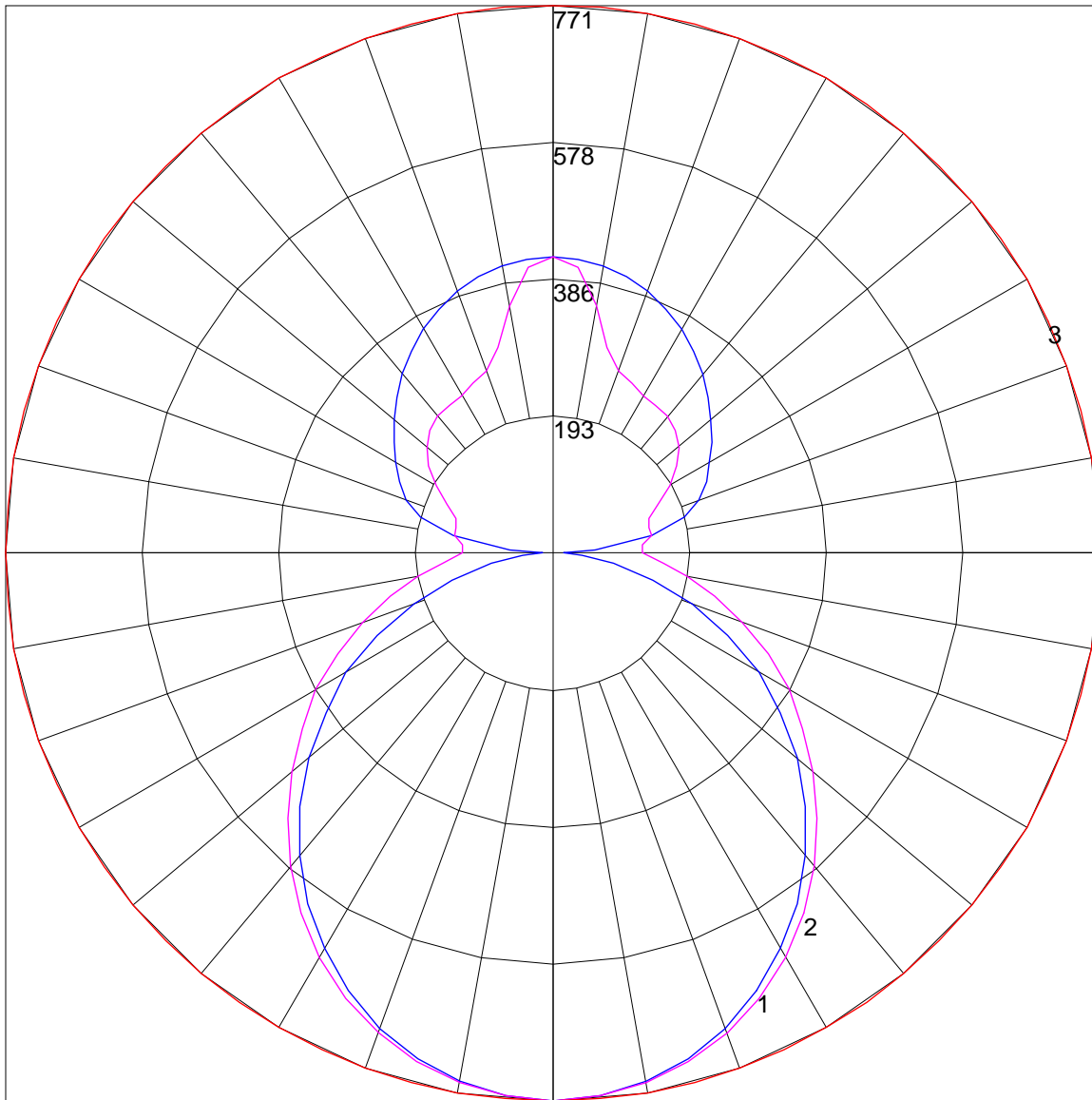
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	111	111	111	111	105	105	105	105	93	93	93	82	82	82	71	71	71	67
1	100	95	91	87	94	90	86	82	79	76	74	70	68	66	61	60	58	54
2	91	83	76	70	85	78	72	67	69	64	60	61	57	54	53	50	48	44
3	83	72	64	58	77	68	61	55	60	55	50	53	49	45	47	43	40	37
4	75	64	55	49	71	60	53	47	54	47	42	47	42	38	42	38	34	31
5	69	57	48	42	65	54	46	40	48	41	36	42	37	33	37	33	30	27
6	64	51	42	36	60	48	40	35	43	37	32	38	33	29	34	29	26	23
7	59	46	37	32	55	44	36	30	39	33	28	35	29	25	31	26	23	21
8	55	42	34	28	51	40	32	27	36	29	25	32	27	23	28	24	21	18
9	51	38	30	25	48	36	29	24	33	26	22	29	24	20	26	22	19	16
10	48	35	27	22	45	33	26	22	30	24	20	27	22	18	24	20	17	15

POLAR GRAPH



Maximum Candela = 771 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (90 - 270)
3 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)