



8165 E Kaiser Blvd. Anaheim, CA 92808
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Report No: L041507502

Date: 5/11/2015



NVLAP LAB CODE 200927-0

Report No: L041507502

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

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

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-PARD. 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-PARD
Driver Model Number:	OSRAM OPTOTRONIC OT50W/PRG1400C/UNV/DIM/L
Total Lumens:	1893.57
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.41
Input Power (W):	48.42
Input Power Factor:	0.99
Current ATHD @ 120V(%):	8%
Current ATHD @ 277V(%):	N/A
Efficacy:	39
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:40
Off State Power(W):	0.00

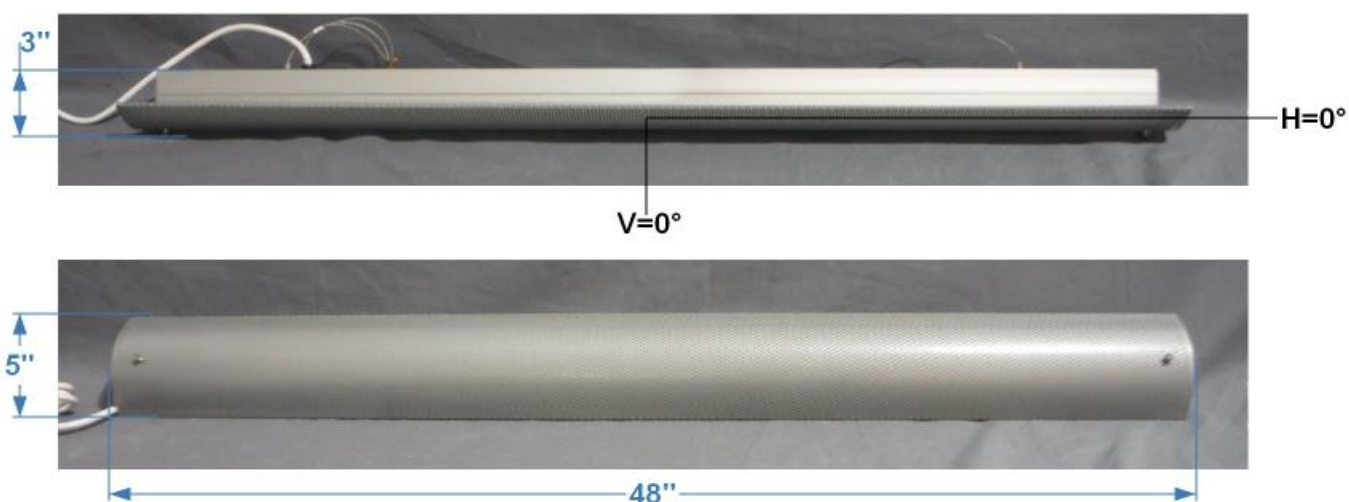


FIG.1 LUMINAIRE



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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 : L041507502.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L041507502
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 5/8/2015
[MANUFAC] PRIMUS LIGHTING INC.
[LUMCAT] ALX3-DR-LED-H-35K-PARD
[LUMINAIRE] 48"L. X 5"W. X 3"H. LED LUMINAIRE
[MORE] PERFORATED ALUMINUM WITH WHITE ACRYLIC DIFFUSER
[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, 48.42W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1894
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	39
Total Luminaire Watts	48.42
Ballast Factor	1.00
CIE Type	General Diffuse
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
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 : L041507502.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	1349	1379	1498
55	955	1086	1272
65	552	838	1086
75	552	604	911
85	1315	571	902

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041507502.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	349	349	349	349	349	349	349	349	349	349
5	345	345	345	345	345	345	346	346	346	346
10	334	334	334	334	335	335	336	337	337	337
15	318	318	318	318	319	320	321	322	323	323
20	297	297	297	298	299	300	301	303	304	305
25	272	272	273	273	275	276	278	280	281	283
30	244	245	245	246	248	250	252	254	256	259
35	215	215	216	217	219	221	224	226	229	232
40	184	184	185	186	189	191	194	197	200	203
45	152	152	153	155	157	160	164	167	171	175
50	120	120	121	124	126	130	134	138	142	146
55	88	89	91	93	97	100	105	109	114	118
60	60	61	63	66	70	74	79	84	89	94
65	38	39	41	44	48	52	57	62	67	73
70	26	27	27	28	31	34	39	43	48	53
75	24	24	23	22	22	23	27	30	34	38
80	22	21	20	19	18	18	19	21	24	29
85	22	20	18	17	16	16	16	17	19	21
90	14	15	15	16	16	17	17	18	19	21
95	44	32	28	34	37	41	45	49	52	54
100	115	81	48	54	57	59	62	67	71	75
105	150	121	79	77	84	88	89	90	91	94
110	175	166	123	101	107	115	120	122	124	124
115	198	195	160	127	127	136	144	150	154	157
120	219	217	197	157	146	151	161	169	176	181
125	240	238	225	182	167	167	173	182	191	198
130	262	260	249	226	186	185	187	193	201	209
135	283	281	272	255	228	202	202	204	209	215
140	305	301	293	280	260	236	220	217	219	223
145	325	321	314	303	288	268	249	235	231	231
150	345	341	334	325	313	298	280	265	253	244
155	362	359	353	345	336	325	311	297	284	273
160	377	375	370	364	357	349	340	329	319	308
165	389	388	385	380	375	370	364	358	351	344
170	398	397	396	393	391	388	385	381	378	374
175	404	404	404	403	402	401	400	399	398	397
180	407	407	407	407	407	407	407	407	407	407

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	349	349	349	349	349	349	349	349	349
5	347	347	347	347	346	346	346	347	347
10	338	338	339	339	339	339	339	340	340
15	324	325	326	326	327	327	328	328	328
20	306	308	309	310	311	312	312	313	313
25	285	287	288	290	291	292	293	294	294
30	261	263	265	267	269	271	271	272	273
35	234	237	240	243	245	246	248	249	249
40	207	210	213	216	219	220	222	223	223
45	178	182	186	189	192	194	195	196	197
50	150	154	158	162	164	167	169	170	170
55	123	128	132	135	139	141	143	144	145
60	99	104	108	112	115	118	120	121	122

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041507502.IES

CANDELA TABULATION - (Cont.)

65	78	83	87	91	94	97	99	100	101
70	58	63	67	71	74	77	79	80	80
75	43	47	51	54	57	60	62	63	63
80	32	35	39	42	44	46	48	49	49
85	25	29	30	33	35	37	38	39	39
90	25	27	30	32	34	36	37	38	38
95	55	56	57	58	59	60	60	60	61
100	79	84	88	92	95	98	100	101	102
105	97	100	104	107	109	111	112	113	113
110	125	125	126	127	129	130	131	131	131
115	158	159	159	159	159	160	160	160	160
120	185	187	189	189	190	191	190	191	191
125	204	208	211	214	215	216	217	218	218
130	216	222	226	230	233	235	236	237	238
135	222	229	234	239	242	244	246	248	248
140	227	232	237	242	245	248	250	251	252
145	233	236	240	242	245	247	248	249	250
150	242	242	244	245	247	248	248	249	250
155	265	258	254	253	252	252	252	252	252
160	299	290	284	280	276	273	271	270	270
165	337	330	325	320	315	312	309	308	307
170	371	367	364	361	359	357	355	354	354
175	395	394	393	391	390	390	389	389	388
180	407	407	407	407	407	407	407	407	407

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041507502.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	123.67	N.A.	6.50
0-30	253.86	N.A.	13.40
0-40	398.69	N.A.	21.10
0-60	639.18	N.A.	33.80
0-80	753.83	N.A.	39.80
0-90	782.79	N.A.	41.30
10-90	750.05	N.A.	39.60
20-40	275.02	N.A.	14.50
20-50	409.67	N.A.	21.60
40-70	311.74	N.A.	16.50
60-80	114.66	N.A.	6.10
70-80	43.40	N.A.	2.30
80-90	28.96	N.A.	1.50
90-110	162.08	N.A.	8.60
90-120	315.62	N.A.	16.70
90-130	496.81	N.A.	26.20
90-150	841.53	N.A.	44.40
90-180	1110.78	N.A.	58.70
110-180	948.70	N.A.	50.10
0-180	1893.57	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	32.74
10-20	90.93
20-30	130.19
30-40	144.83
40-50	134.65
50-60	105.84
60-70	71.25
70-80	43.40
80-90	28.96
90-100	55.06
100-110	107.02
110-120	153.54
120-130	181.19
130-140	181.72
140-150	163.00
150-160	134.86
160-170	97.20
170-180	37.19

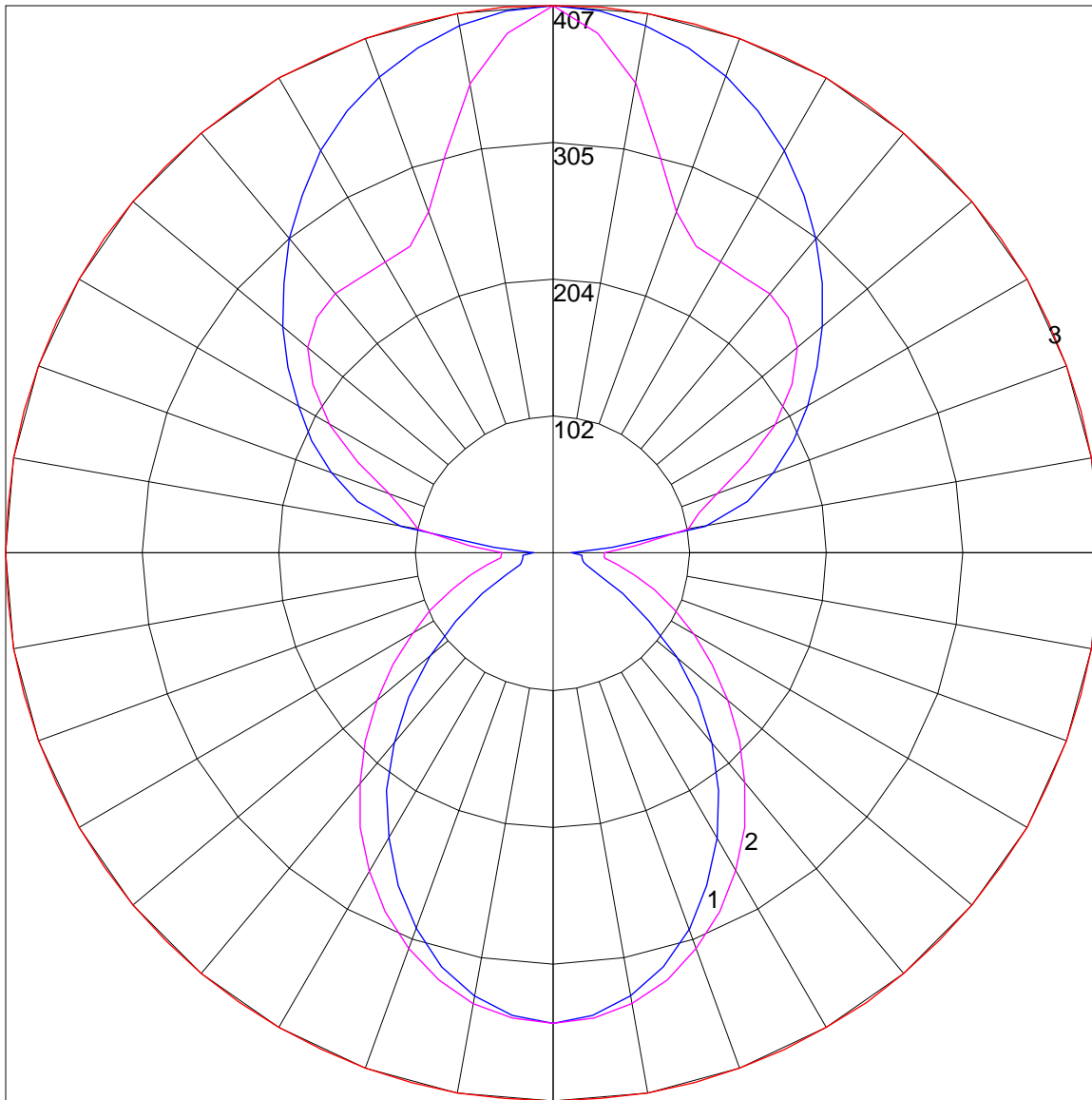
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	105	105	105	105	96	96	96	96	79	79	79	63	63	63	48	48	48	41
1	96	91	88	84	87	83	80	77	69	66	64	55	53	52	42	41	40	35
2	87	80	74	69	79	73	68	64	60	57	54	49	46	44	38	36	34	29
3	80	71	63	58	73	65	58	54	54	49	45	43	40	37	34	31	30	25
4	73	63	55	49	66	57	51	46	48	43	39	39	35	32	30	28	26	22
5	67	56	48	42	61	51	44	39	43	38	34	35	31	28	27	25	23	19
6	62	50	42	37	56	46	39	34	39	33	29	32	28	25	25	22	20	17
7	57	45	38	32	52	42	35	30	35	30	26	29	25	22	23	20	18	15
8	53	41	34	28	49	38	31	27	32	27	23	26	22	20	21	18	16	14
9	50	38	30	25	45	35	28	24	29	24	21	24	20	18	19	17	15	12
10	46	35	27	23	42	32	26	21	27	22	19	22	19	16	18	15	13	11

POLAR GRAPH



Maximum Candela = 407 Located At Horizontal Angle = 0, Vertical Angle = 180

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 (180) (Through Max. Cd.)