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Report No: L011501401

Date: 1/14/2015



NVLAP LAB CODE 200927-0

**Report No:** L011501401

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

**Model Number:** ALX3-RLR-LED-M-35K-UNV-SM-SEK-S-4'

**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-RLR-LED-M-35K-UNV-SM-SEK-S-4'. Received in working and undamaged condition. No modifications were necessary.

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

**Sample Arrival Date:** 12/20/14

**Date of Tests:** 1/7/15 - 1/14/15

**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**

<b>Manufacturer:</b>	Primus Lighting Inc.
<b>Model Number:</b>	ALX3-RLR-LED-M-35K-UNV-SM-SEK-S-4'
<b>Driver Model Number:</b>	OSRAM OPTOTRONIC OT50W/PRG1400C/UNV/DIM/L
<b>Total Lumens:</b>	3096.40
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.26
<b>Input Power (W):</b>	30.87
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	8%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	100
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:35
<b>Total Operating Time (Hours):</b>	2:05
<b>Off State Power(W):</b>	0.00

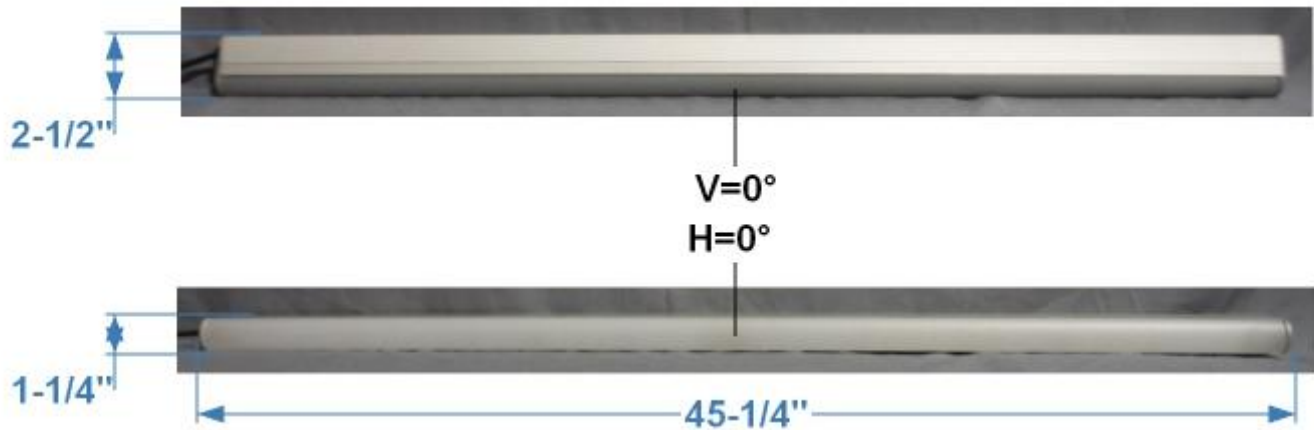


FIG.1 LUMINAIRE

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

## 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:



Jeff Ahn  
Engineering Manager

Test Report Reviewed by:



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 : L011501401.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L011501401  
[TESTLAB] LIGHT LABORATORY, INC.  
[ISSUEDATE] 1/14/2015  
[MANUFAC] PRIMUS LIGHTING INC.  
[LUMCAT] ALX3-RLR-LED-M-35K-UNV-SM-SEK-S-4'  
[LUMINAIRE] 1-1/4"L. X 45-1/4"W. X 2-1/2"H. LED SUSPENDED LINEAR MOUNT FIXTURE  
[MORE] DIFFUSED LENS  
[BALLASTCAT] OSRAM OPTOTRONIC OT50W/PRG1400C/UNV/DIM/L  
[BALLAST] INPUT: 120-277VAC, 0.52-024A, 50/60HZ. OUTPUT: 400-1400mA, 10-55VDC, 50W  
[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, 30.87W  
[TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3096
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	100
Total Luminaire Watts	30.87
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.34
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.38
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.10 ft
Luminous Width (90-270)	3.75 ft
Luminous Height	0.06 ft

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L011501401.IES**

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	16296	17406	19928
55	13128	14529	17094
65	10362	11814	14272
75	8259	9538	11566
85	6907	7945	9004

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L011501401.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>
<b>0</b>	921.83	921.83	921.83	921.83	921.83	921.83	921.83	921.83	921.83	921.83
<b>5</b>	928.12	928.29	927.91	927.78	927.15	926.48	925.77	925.06	924.01	923.05
<b>10</b>	933.32	933.19	932.65	931.73	930.47	928.87	926.99	924.93	922.58	919.82
<b>15</b>	929.71	929.46	928.79	927.07	925.14	922.58	919.27	915.67	911.51	907.28
<b>20</b>	914.70	914.24	913.15	911.39	908.58	905.31	900.82	896.12	890.17	884.09
<b>25</b>	886.52	885.81	884.55	882.25	879.18	875.16	870.17	864.34	857.51	850.04
<b>30</b>	844.00	843.63	842.37	840.15	837.00	832.72	827.48	821.07	813.52	805.01
<b>35</b>	787.40	787.02	786.14	784.38	781.73	777.92	773.01	766.60	758.59	749.66
<b>40</b>	718.46	718.33	717.75	716.66	714.81	712.00	707.85	702.23	694.64	685.67
<b>45</b>	642.90	642.86	642.69	642.23	641.10	639.00	635.90	630.95	624.36	616.15
<b>50</b>	564.74	564.78	565.12	565.37	565.03	563.73	561.55	557.27	550.86	543.44
<b>55</b>	487.58	487.92	488.46	489.13	489.60	489.26	487.75	484.40	478.69	471.36
<b>60</b>	415.13	415.29	416.05	416.97	417.73	417.89	416.80	414.04	409.00	401.58
<b>65</b>	349.21	349.54	350.26	351.14	351.98	352.27	351.39	348.79	344.05	336.75
<b>70</b>	291.51	291.72	292.31	293.02	293.65	293.69	292.73	290.00	285.30	278.13
<b>75</b>	241.44	241.57	241.99	242.45	242.70	242.41	240.94	238.09	233.14	226.01
<b>80</b>	200.27	200.39	200.64	200.81	200.60	199.76	197.96	194.56	189.32	182.07
<b>85</b>	164.96	165.04	165.04	164.88	164.29	163.07	160.81	157.12	151.63	144.37
<b>90</b>	138.29	138.33	138.17	137.70	136.66	134.94	132.30	128.10	122.48	114.89
<b>95</b>	126.05	126.01	125.75	125.25	124.29	122.53	119.88	115.90	110.62	103.61
<b>100</b>	119.93	119.84	119.51	118.92	117.70	115.82	112.96	109.02	103.70	96.95
<b>105</b>	115.23	115.15	114.68	113.76	112.38	110.24	107.14	103.03	97.62	90.82
<b>110</b>	110.95	110.74	110.16	109.02	107.30	104.91	101.60	97.20	91.75	85.04
<b>115</b>	106.00	105.75	105.00	103.70	101.77	99.09	95.69	91.16	85.63	79.13
<b>120</b>	99.97	99.67	98.79	97.41	95.31	92.50	88.94	84.54	79.08	72.84
<b>125</b>	92.59	92.25	91.33	89.90	87.85	85.04	81.47	77.20	72.04	66.29
<b>130</b>	83.95	83.70	82.82	81.39	79.38	76.61	73.30	69.31	64.74	59.92
<b>135</b>	74.64	74.39	73.59	72.29	70.45	68.01	65.25	62.10	57.99	53.00
<b>140</b>	65.83	65.67	65.08	64.11	62.60	60.68	58.33	54.34	50.03	45.87
<b>145</b>	58.29	58.08	57.53	56.61	55.31	53.42	49.82	46.21	42.73	39.21
<b>150</b>	50.65	50.49	50.03	49.23	47.80	44.49	41.55	38.70	35.60	32.83
<b>155</b>	42.85	42.77	42.31	41.51	38.12	35.56	33.34	31.45	29.81	27.89
<b>160</b>	34.38	34.17	33.76	31.32	29.27	27.63	26.54	25.54	23.78	21.68
<b>165</b>	25.33	25.20	23.61	22.27	21.26	20.67	20.25	19.50	18.16	17.11
<b>170</b>	18.20	17.36	15.60	14.84	14.76	14.93	14.55	14.09	13.50	12.87
<b>175</b>	10.82	9.60	9.52	9.73	9.90	9.98	9.98	9.85	9.69	9.48
<b>180</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Vert. Angles 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>
<b>0</b>	921.83	921.83	921.83	921.83	921.83	921.83	921.83	921.83	921.83
<b>5</b>	922.00	920.74	919.98	918.98	918.18	917.38	916.76	916.38	916.13
<b>10</b>	917.01	914.20	910.93	907.99	905.18	902.58	900.49	899.14	898.60
<b>15</b>	902.46	897.47	892.39	887.11	882.29	877.51	873.40	870.59	869.41
<b>20</b>	877.51	870.42	863.29	855.87	848.95	842.07	835.74	831.17	829.08
<b>25</b>	842.03	833.06	823.67	814.02	804.92	795.82	787.48	780.98	777.92
<b>30</b>	795.24	784.88	773.81	762.15	751.00	739.97	729.95	721.44	717.54
<b>35</b>	738.88	727.39	714.90	701.94	689.49	675.98	664.41	654.64	649.52
<b>40</b>	674.98	666.34	652.25	634.51	620.17	605.96	592.79	581.51	575.39
<b>45</b>	611.45	593.88	577.90	562.35	547.29	532.07	518.19	505.95	499.24
<b>50</b>	535.13	519.58	505.61	494.80	475.17	457.90	443.30	430.81	423.01
<b>55</b>	460.03	446.95	437.56	417.43	401.08	385.56	370.43	357.68	349.71
<b>60</b>	390.80	377.81	365.02	348.58	335.87	316.29	301.95	289.29	280.78

**IES INDOOR REPORT  
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**CANDELA TABULATION - (Cont.)**

<b>65</b>	326.90	314.24	299.77	284.42	269.20	253.48	238.51	226.18	217.54
<b>70</b>	268.24	256.08	242.03	226.22	210.75	197.46	183.03	169.32	160.77
<b>75</b>	216.20	204.42	190.96	175.74	160.39	144.58	132.88	119.72	110.62
<b>80</b>	172.51	160.89	147.56	132.80	117.66	102.36	88.14	78.41	68.01
<b>85</b>	134.77	123.41	110.53	96.11	81.73	67.05	53.34	41.05	32.37
<b>90</b>	105.29	94.10	81.56	67.47	53.55	39.29	25.62	13.38	3.10
<b>95</b>	94.81	84.49	73.00	60.13	47.38	34.47	21.76	10.57	2.43
<b>100</b>	88.43	78.71	67.76	55.64	43.74	31.58	19.83	10.06	0.00
<b>105</b>	82.73	73.38	63.07	51.66	40.46	29.10	18.87	9.48	0.00
<b>110</b>	77.24	68.35	58.62	47.89	37.36	27.72	18.12	9.02	0.00
<b>115</b>	71.62	63.23	54.05	44.20	35.31	26.38	16.82	8.34	0.00
<b>120</b>	65.83	57.95	49.77	41.51	33.55	24.91	15.85	8.14	0.00
<b>125</b>	59.80	53.13	46.25	38.66	31.24	22.69	14.84	7.59	0.00
<b>130</b>	54.30	48.10	41.55	34.64	27.51	20.09	13.42	7.00	0.00
<b>135</b>	47.64	42.27	36.73	30.23	24.24	17.78	11.74	6.75	0.00
<b>140</b>	41.39	36.86	31.49	26.33	20.92	15.89	10.32	6.58	0.00
<b>145</b>	35.39	31.41	27.05	22.31	18.07	13.59	9.44	6.50	0.00
<b>150</b>	30.36	26.46	22.56	18.95	15.56	11.74	8.76	6.46	0.00
<b>155</b>	24.74	21.34	19.04	16.35	13.38	10.74	8.18	6.71	0.00
<b>160</b>	19.92	18.20	16.02	13.75	11.74	9.85	8.01	6.75	0.00
<b>165</b>	15.81	14.51	13.08	11.57	10.27	8.93	7.88	6.79	0.00
<b>170</b>	12.20	11.28	10.53	9.77	8.93	8.26	7.55	6.46	0.00
<b>175</b>	9.14	8.85	8.51	8.22	7.84	7.30	6.67	6.12	0.00
<b>180</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L011501401.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	342.90	N.A.	11.10
0-30	730.60	N.A.	23.60
0-40	1190.48	N.A.	38.40
0-60	2052.47	N.A.	66.30
0-80	2581.77	N.A.	83.40
0-90	2719.92	N.A.	87.80
10-90	2632.02	N.A.	85.00
20-40	847.58	N.A.	27.40
20-50	1307.88	N.A.	42.20
40-70	1173.67	N.A.	37.90
60-80	529.31	N.A.	17.10
70-80	217.62	N.A.	7.00
80-90	138.15	N.A.	4.50
90-110	177.87	N.A.	5.70
90-120	246.21	N.A.	8.00
90-130	299.17	N.A.	9.70
90-150	358.85	N.A.	11.60
90-180	376.48	N.A.	12.20
110-180	198.61	N.A.	6.40
0-180	3096.4	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	87.90
10-20	255.00
20-30	387.70
30-40	459.89
40-50	460.30
50-60	401.69
60-70	311.69
70-80	217.62
80-90	138.15
90-100	96.00
100-110	81.87
110-120	68.34
120-130	52.96
130-140	36.81
140-150	22.88
150-160	12.08
160-170	4.71
170-180	0.84



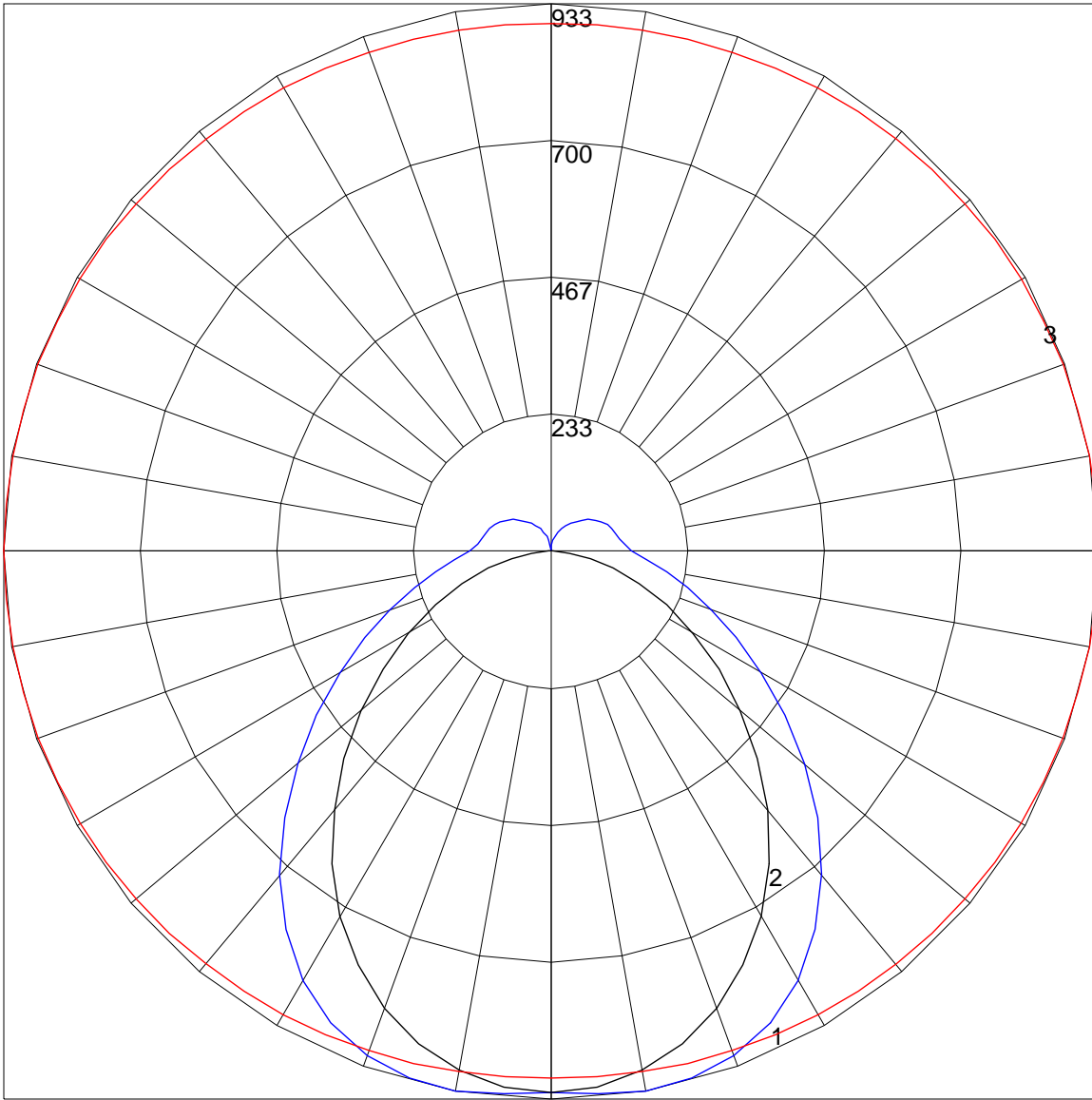
**IES INDOOR REPORT**  
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	116	116	116	116	112	112	112	112	104	104	104	97	97	97	91	91	91	88
1	105	100	95	91	101	96	92	88	90	86	83	84	81	79	78	76	74	71
2	95	87	80	74	91	84	77	72	78	73	68	73	69	65	68	65	62	59
3	87	76	68	61	83	73	66	60	69	62	57	64	59	55	60	56	52	49
4	79	67	58	52	76	65	57	51	61	54	49	57	51	47	54	49	45	42
5	73	60	51	44	70	58	50	44	55	48	42	52	45	41	48	43	39	37
6	67	54	45	39	65	53	44	38	49	42	37	47	40	36	44	39	34	32
7	62	49	40	34	60	48	39	34	45	38	33	43	36	32	40	35	31	28
8	58	45	36	30	56	44	36	30	41	34	29	39	33	28	37	31	27	25
9	54	41	33	27	52	40	32	27	38	31	26	36	30	25	34	29	25	23
10	51	38	30	25	49	37	29	24	35	28	24	33	27	23	32	26	22	21

POLAR GRAPH



Maximum Candela = 933.32 Located At Horizontal Angle = 0, Vertical Angle = 10

# 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 (10) (Through Max. Cd.)