



8165 E Kaiser Blvd. Anaheim, CA 92808
p. 714.282.2270
f. 714.676.5558

Report No: L111600701

Date: 11/9/2016



NVLAP LAB CODE 200927-0

Report No: L111600701

Report Prepared For: Cerno
1751 Mc Gaw Ave. CA 92614

Model Number: 03-150-W

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 03-150-W. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 11/7/16

Date of Tests: 11/7/16 - 11/9/16

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	11/18/16
Xitron Power Analyzer	2503AH	MT-EL01	11/30/16
ITECH DC Power Supply	IT6122	PSDC-03-S1	11/17/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/24/16
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:	Cerno
Model Number:	03-150-W
Driver Model Number:	ROAL LIVING ENERGY RLDD015L-700
Total Lumens:	426.68
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.14
Input Power (W):	15.62
Input Power Factor:	0.96
Current ATHD @ 120V(%):	20%
Current ATHD @ 277V(%):	N/A
Efficacy:	27
Color Rendering Index (CRI):	94
Correlated Color Temperature (K):	2605
Chromaticity Coordinate x:	0.4679
Chromaticity Coordinate y:	0.4124
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:25
Total Operating Time (Hours):	6:45
Off State Power(W):	0.00

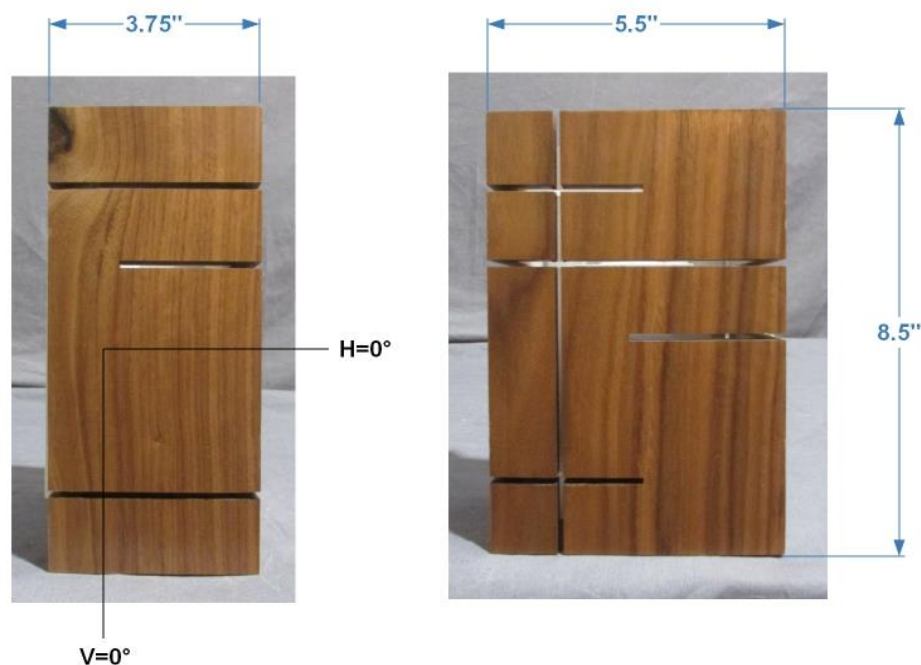
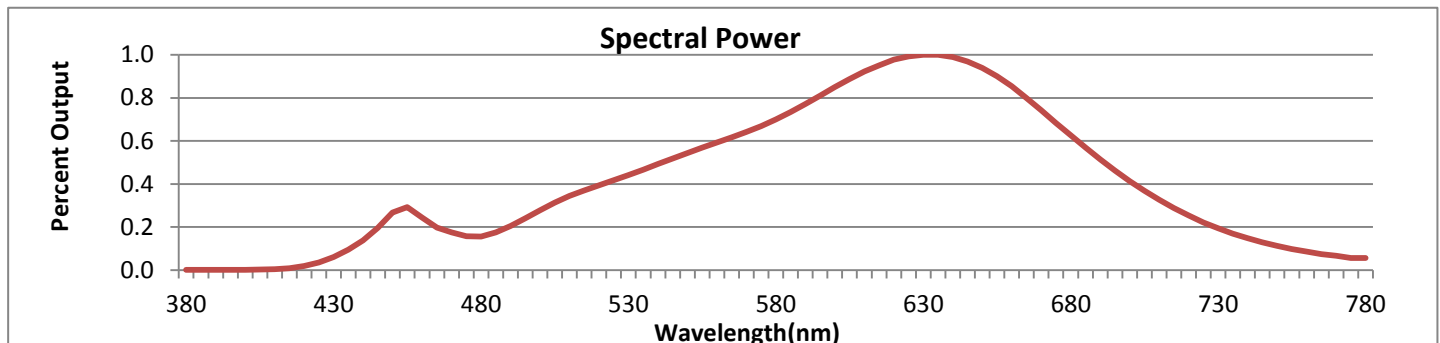


FIG. 1 LUMINAIRE



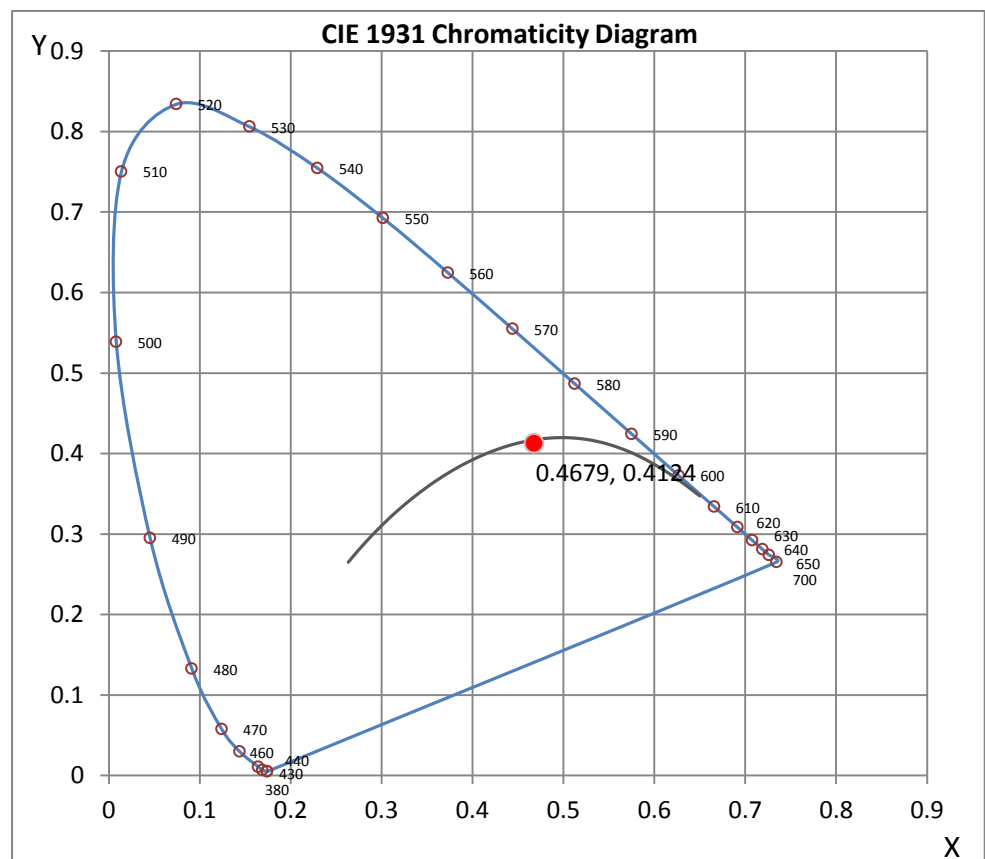
Wavelength	W/m ² nm	440	0.1373	510	0.3443	580	0.7003	650	0.9388	720	0.2534
380	0.0009	450	0.2666	520	0.3943	590	0.7718	660	0.8548	730	0.1938
390	0.0009	460	0.2435	530	0.4410	600	0.8494	670	0.7427	740	0.1478
400	0.0012	470	0.1749	540	0.4927	610	0.9226	680	0.6267	750	0.1126
410	0.0041	480	0.1563	550	0.5442	620	0.9775	690	0.5138	760	0.0855
420	0.0194	490	0.2050	560	0.5924	630	1.0000	700	0.4132	770	0.0664
430	0.0610	500	0.2780	570	0.6418	640	0.9895	710	0.3265	780	0.0555

CRI & CCT

x	0.4679
y	0.4124
u'	0.2669
v'	0.5292
CRI	94.20
CCT	2605
Duv	0.00007

R Values

R1	94.54
R2	96.80
R3	97.32
R4	94.75
R5	94.12
R6	96.35
R7	93.93
R8	86.04
R9	69.62
R10	91.42
R11	95.61
R12	86.55
R13	95.11
R14	97.53





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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:

Jeff Ahn
Engineering Manager

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 19*

**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 : L111600701.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L111600701
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 11/9/2016
[MANUFAC] CERNO
[LUMCAT] 03-150-W
[LUMINAIRE] CLAUDO SCONCE
[BALLASTCAT] ROAL LIVING ENERGY RLDD015L-700
[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, 15.62W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	427
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	27
Total Luminaire Watts	15.62
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)	0.10 ft
Luminous Width (90-270)	0.10 ft
Luminous Height	0.33 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	11625	27634	10136
55	5166	4246	3607
65	1963	1778	2609
75	880	695	1379
85	1182	910	809

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L111600701.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	119.38	119.38	119.36	119.33	119.28	119.22	119.18	119.11	119.11	118.90
5.0	121.54	121.52	121.48	121.48	121.48	121.45	121.39	121.30	121.17	121.01
7.5	123.36	123.35	123.35	123.39	123.37	123.32	123.26	123.15	122.98	122.76
10.0	124.98	125.01	125.07	125.09	125.07	125.00	124.85	124.70	124.45	124.15
12.5	126.70	126.72	126.77	126.75	126.63	126.47	126.24	125.93	125.55	125.15
15.0	128.22	128.26	128.26	128.19	128.04	127.76	127.45	127.06	126.54	125.96
17.5	129.56	129.53	129.47	129.29	129.03	128.74	128.36	127.90	127.28	126.60
20.0	130.31	130.34	130.19	129.98	129.69	129.44	128.97	128.41	127.73	126.94
22.5	130.51	130.58	130.50	130.26	129.98	129.72	129.27	128.67	127.78	126.93
25.0	130.44	130.53	130.49	130.35	130.18	129.84	129.34	128.54	127.65	126.70
27.5	130.35	130.40	130.41	130.29	130.12	129.75	129.13	128.30	127.26	126.16
30.0	129.71	129.82	129.89	129.91	129.86	129.42	128.72	127.86	126.67	125.36
32.5	127.52	127.91	128.51	128.58	128.69	128.50	127.94	127.08	125.77	124.28
35.0	117.44	118.40	120.81	123.39	125.05	126.30	126.35	125.65	124.53	122.84
37.5	93.83	95.39	99.20	105.50	111.48	118.25	122.51	123.25	122.39	121.04
40.0	65.54	67.16	71.11	77.08	85.74	96.75	109.28	117.21	119.07	118.41
42.5	44.99	45.72	48.08	52.49	59.31	69.24	84.34	99.99	109.93	113.61
45.0	32.87	33.30	33.79	36.37	40.01	47.09	58.19	72.88	89.81	102.97
47.5	28.59	28.63	28.63	29.18	29.44	32.40	39.09	48.71	62.53	74.09
50.0	25.18	25.28	25.50	25.94	26.78	27.24	28.79	32.45	38.55	46.38
52.5	20.18	20.35	20.67	21.38	22.77	23.89	24.57	24.26	24.88	26.88
55.0	15.74	15.82	16.06	16.57	17.91	19.13	20.53	20.96	19.08	17.36
57.5	12.39	12.45	12.64	13.13	13.97	14.85	15.98	16.55	15.79	14.38
60.0	9.64	9.69	9.87	10.23	10.84	11.55	12.30	12.92	12.77	12.00
62.5	7.83	7.74	7.87	8.03	8.46	8.89	9.35	9.83	9.97	9.72
65.0	6.23	6.15	6.20	6.29	6.61	6.99	7.27	7.46	7.77	7.69
67.5	4.99	4.92	4.96	4.98	5.14	5.41	5.63	5.83	6.01	6.07
70.0	4.00	3.99	4.03	3.97	4.08	4.25	4.38	4.54	4.66	4.78
72.5	3.30	3.30	3.31	3.22	3.31	3.38	3.49	3.61	3.69	3.78
75.0	2.82	2.88	2.89	2.74	2.82	2.83	2.87	2.93	3.00	3.08
77.5	2.86	3.07	3.01	2.79	2.71	2.60	2.55	2.55	2.57	2.68
80.0	3.24	3.65	3.65	3.42	3.28	3.14	2.97	2.76	2.64	2.72
82.5	3.57	4.15	4.12	3.90	3.82	3.74	3.66	3.54	3.49	3.48
85.0	3.71	4.52	4.49	4.30	4.31	4.28	4.23	4.13	4.03	4.01
87.5	3.45	4.36	4.38	4.27	4.26	4.24	4.14	4.08	4.03	3.96
90.0	4.18	4.84	4.73	4.56	4.56	4.49	4.42	4.28	4.14	4.05
92.5	3.90	4.74	4.84	4.79	4.92	5.07	5.11	5.18	5.10	5.04
95.0	5.46	6.20	6.47	6.55	6.82	7.00	7.13	7.02	6.99	7.02
97.5	6.16	6.61	6.63	6.32	6.19	5.96	5.41	4.58	3.97	3.64
100.0	4.31	4.49	4.25	3.74	3.31	3.07	2.63	2.26	2.16	2.23
102.5	2.58	2.65	2.49	2.32	2.29	2.26	2.18	2.22	2.28	2.41
105.0	2.71	2.65	2.61	2.49	2.62	2.64	2.74	2.85	2.96	3.09
107.5	3.39	3.28	3.28	3.22	3.36	3.48	3.64	3.81	3.98	4.07
110.0	4.35	4.25	4.28	4.23	4.35	4.61	4.84	5.04	5.27	5.40
112.5	5.63	5.51	5.55	5.54	5.78	6.11	6.47	6.73	7.01	7.09
115.0	7.25	7.12	7.18	7.29	7.68	8.09	8.49	8.82	9.22	9.25
117.5	9.32	9.23	9.24	9.46	9.94	10.61	11.23	11.96	12.15	11.79
120.0	11.62	11.68	11.93	12.40	13.16	14.09	15.08	15.91	15.74	14.71
122.5	15.32	15.40	15.67	16.36	17.42	18.65	20.17	20.87	19.72	18.66
125.0	19.83	19.98	20.47	21.22	23.18	24.90	26.28	25.94	24.03	22.77
127.5	26.22	26.48	26.98	28.17	29.54	30.57	30.76	31.03	34.49	37.28
130.0	32.42	32.40	32.43	32.95	33.16	33.34	37.19	43.90	54.00	64.65
132.5	35.48	35.60	35.51	36.50	38.34	43.16	53.22	66.22	84.42	97.37

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L111600701.IES

CANDELA TABULATION - (Cont.)

135.0	42.89	43.51	44.73	48.47	53.74	63.43	78.35	94.78	108.70	115.66
137.5	60.40	61.33	64.61	70.57	78.98	90.62	106.10	117.43	121.43	121.48
140.0	87.73	89.24	93.31	100.01	107.79	116.89	124.14	126.76	126.35	125.01
142.5	115.79	116.86	119.46	124.47	126.71	129.72	130.77	130.20	129.23	127.51
145.0	131.09	131.56	132.46	133.28	133.50	133.58	133.24	132.46	131.08	129.52
147.5	135.64	135.93	136.06	135.90	135.71	135.24	134.59	133.71	132.44	130.98
150.0	137.05	137.31	137.19	136.95	136.66	136.08	135.35	134.46	133.47	132.10
152.5	137.44	137.69	137.65	137.42	137.10	136.58	135.86	135.01	134.00	132.85
155.0	137.73	137.98	137.91	137.65	137.33	136.84	136.10	135.18	134.27	133.23
157.5	137.90	138.08	138.01	137.63	137.28	136.69	135.99	135.21	134.34	133.48
160.0	137.44	137.64	137.48	137.15	136.81	136.35	135.78	135.13	134.35	133.51
162.5	136.46	136.65	136.64	136.46	136.17	135.85	135.33	134.74	134.02	133.22
165.0	135.24	135.47	135.50	135.44	135.24	134.91	134.49	134.00	133.40	132.75
167.5	133.74	133.98	134.03	134.03	133.93	133.73	133.42	133.04	132.57	132.09
170.0	132.11	132.36	132.42	132.44	132.41	132.31	132.11	131.84	131.47	131.04
172.5	130.28	130.44	130.56	130.63	130.61	130.53	130.40	130.23	130.01	129.68
175.0	128.08	128.21	128.31	128.37	128.39	128.36	128.28	128.16	127.98	127.74
177.5	125.41	125.49	125.54	125.58	125.59	125.56	125.54	125.48	125.49	125.29
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

**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>	<u>95</u>
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	118.78	118.60	118.44	118.26	118.07	117.87	117.65	117.42	117.19	117.14
5.0	120.82	120.59	120.34	120.06	119.70	119.31	118.92	118.47	118.03	117.91
7.5	122.50	122.22	121.85	121.40	120.93	120.49	119.79	119.14	118.48	118.30
10.0	123.79	123.37	122.88	122.37	121.74	121.05	120.31	119.46	118.62	118.36
12.5	124.70	124.17	123.58	122.90	122.18	121.35	120.47	119.42	118.36	118.01
15.0	125.34	124.69	123.97	123.23	122.38	121.46	120.36	119.17	117.96	117.47
17.5	125.78	124.94	124.10	123.23	122.39	121.25	120.07	118.75	117.31	116.72
20.0	125.98	124.99	123.97	123.01	121.94	120.84	119.60	118.12	116.46	115.69
22.5	125.90	124.77	123.60	122.49	121.38	120.21	118.93	117.40	115.47	114.55
25.0	125.52	124.30	123.07	121.66	120.48	119.20	117.83	116.13	114.20	113.07
27.5	124.88	123.44	122.07	120.68	119.23	117.91	116.47	114.70	112.63	111.39
30.0	123.87	122.33	120.77	119.24	117.62	116.21	114.75	112.88	110.96	109.38
32.5	122.65	120.91	119.12	117.52	115.62	114.07	112.39	110.44	108.18	106.65
35.0	121.00	119.15	117.26	115.23	113.06	110.99	109.04	106.85	104.46	103.00
37.5	119.20	117.01	114.73	111.89	108.78	105.24	102.06	98.53	95.94	95.34
40.0	116.59	113.73	109.97	102.86	95.32	87.86	77.39	70.75	68.14	70.32
42.5	112.12	105.56	93.27	74.63	66.95	60.09	53.65	51.18	50.09	51.07
45.0	98.66	80.99	65.20	52.61	42.63	35.50	31.70	29.94	28.66	29.82
47.5	69.27	54.84	40.02	31.26	23.91	19.94	17.10	15.79	14.89	15.94
50.0	42.80	32.24	22.11	17.08	14.67	13.76	13.10	12.51	11.76	11.94
52.5	24.02	17.46	14.82	14.06	13.46	12.95	12.46	12.00	11.43	11.56
55.0	15.40	14.05	13.31	12.69	12.31	12.04	11.70	11.44	10.99	11.15
57.5	13.26	12.28	11.64	11.29	11.19	11.12	11.01	10.90	10.58	10.71
60.0	11.12	10.37	10.08	10.09	10.16	10.23	10.25	10.16	9.98	10.10
62.5	9.07	8.78	8.72	8.85	9.04	9.21	9.31	9.32	9.20	9.32
65.0	7.44	7.33	7.36	7.63	7.87	8.11	8.24	8.29	8.28	8.34
67.5	6.03	6.08	6.15	6.44	6.76	7.00	7.19	7.29	7.32	7.38
70.0	4.84	4.95	5.12	5.42	5.72	5.96	6.15	6.27	6.30	6.36
72.5	3.90	4.02	4.26	4.53	4.84	5.02	5.20	5.29	5.32	5.40
75.0	3.22	3.35	3.56	3.81	4.07	4.28	4.41	4.42	4.42	4.49
77.5	2.82	2.96	3.14	3.37	3.60	3.76	3.84	3.83	3.79	3.77
80.0	2.89	3.00	3.13	3.26	3.36	3.39	3.37	3.25	3.13	3.10

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L111600701.IES

CANDELA TABULATION - (Cont.)

82.5	3.47	3.39	3.30	3.24	3.17	3.11	3.00	2.83	2.64	2.61
85.0	3.92	3.79	3.63	3.46	3.29	3.13	2.96	2.75	2.54	2.54
87.5	3.88	3.77	3.64	3.50	3.33	3.14	2.96	2.74	2.52	2.49
90.0	3.93	3.79	3.62	3.44	3.27	3.06	2.85	2.64	2.44	2.37
92.5	4.81	4.44	4.10	3.76	3.47	3.24	2.99	2.78	2.56	2.47
95.0	6.97	6.84	6.25	5.65	5.09	4.67	4.03	3.45	2.82	2.61
97.5	4.28	4.93	5.17	5.27	5.28	5.21	4.79	4.12	3.25	2.75
100.0	2.50	2.79	3.11	3.42	3.73	3.97	3.94	3.69	3.24	2.97
102.5	2.57	2.80	3.00	3.20	3.40	3.53	3.60	3.59	3.57	3.65
105.0	3.24	3.40	3.60	3.81	3.98	4.15	4.25	4.28	4.31	4.37
107.5	4.18	4.33	4.56	4.75	4.93	5.06	5.16	5.18	5.22	5.31
110.0	5.44	5.57	5.71	5.91	6.08	6.20	6.28	6.32	6.33	6.36
112.5	7.03	6.95	7.03	7.20	7.35	7.42	7.46	7.47	7.41	7.47
115.0	8.86	8.60	8.52	8.56	8.65	8.70	8.65	8.58	8.42	8.52
117.5	11.05	10.39	10.15	9.99	9.97	9.91	9.75	9.62	9.43	9.49
120.0	13.55	12.45	11.84	11.49	11.25	11.02	10.77	10.55	10.26	10.35
122.5	15.89	14.61	13.64	13.02	12.50	12.08	11.71	11.37	10.91	11.09
125.0	19.81	17.50	15.51	14.54	13.72	13.07	12.48	12.00	11.38	11.65
127.5	31.77	22.85	18.53	16.04	15.04	14.10	13.25	12.53	11.71	12.03
130.0	54.57	38.49	27.36	20.90	18.13	15.05	14.02	13.13	12.14	12.48
132.5	86.19	63.98	47.42	35.57	27.20	21.88	18.92	17.06	16.00	16.66
135.0	110.15	95.46	75.37	59.04	47.33	38.17	33.33	29.53	26.78	27.86
137.5	119.61	114.18	103.50	89.71	76.76	65.29	58.01	51.67	48.56	49.25
140.0	123.01	120.40	117.25	111.47	103.97	95.45	88.48	81.74	78.75	78.90
142.5	125.54	123.51	121.19	118.58	115.74	112.12	109.29	104.87	102.16	101.00
145.0	127.69	125.75	123.74	121.76	119.59	117.76	115.57	113.13	110.72	109.07
147.5	129.32	127.59	125.75	124.05	122.28	120.68	118.80	116.45	114.10	112.52
150.0	130.59	129.04	127.49	125.89	124.41	122.89	121.11	118.89	116.70	115.20
152.5	131.51	130.22	128.75	127.33	125.99	124.49	122.81	120.79	118.67	117.28
155.0	132.10	131.01	129.69	128.41	127.11	125.67	124.02	122.06	120.08	118.87
157.5	132.50	131.39	130.25	129.15	127.94	126.57	124.94	123.18	121.23	120.22
160.0	132.53	131.55	130.59	129.54	128.37	127.08	125.56	123.82	122.17	121.33
162.5	132.38	131.56	130.60	129.60	128.65	127.29	125.85	124.34	122.84	122.20
165.0	132.06	131.28	130.43	129.51	128.48	127.38	126.05	124.73	123.42	122.92
167.5	131.50	130.80	130.06	129.21	128.32	127.30	126.17	125.05	123.94	123.56
170.0	130.58	130.05	129.41	128.77	127.90	127.02	126.14	125.23	124.32	124.04
172.5	129.29	128.85	128.33	127.73	127.10	126.51	125.79	125.12	124.44	124.24
175.0	127.46	127.13	126.81	126.45	126.06	125.64	125.21	124.75	124.29	124.16
177.5	125.17	125.00	124.85	124.66	124.47	124.26	124.04	123.81	123.57	123.52
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

Vert. Angles	Horizontal Angles									
	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	117.08	117.02	116.95	116.88	116.80	116.72	116.67	116.58	116.51	116.43
5.0	117.80	117.64	117.50	117.36	117.21	117.06	116.90	116.72	116.54	116.36
7.5	118.11	117.92	117.72	117.54	117.36	117.20	117.00	116.29	115.37	114.55
10.0	118.11	117.87	117.64	117.42	117.20	115.81	114.46	113.21	112.11	111.10
12.5	117.68	117.39	117.11	116.43	114.58	112.86	111.26	109.81	108.46	106.52
15.0	117.05	116.67	116.38	113.80	111.55	109.52	107.67	104.05	99.41	95.28
17.5	116.18	115.67	113.64	110.77	108.18	105.79	99.55	93.65	88.36	83.71
20.0	115.04	114.48	110.76	107.48	104.46	96.93	89.53	82.87	76.68	70.16
22.5	113.73	111.69	107.55	103.71	96.45	87.38	79.11	70.99	62.85	55.71
25.0	112.16	108.72	103.94	98.45	87.14	77.51	67.70	58.18	49.30	41.89
27.5	110.29	105.36	99.91	90.25	77.91	66.57	55.48	45.43	37.84	33.09

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CANDELA TABULATION - (Cont.)

30.0	108.10	101.64	95.60	81.61	68.02	55.78	44.17	35.11	29.89	24.74
32.5	104.57	97.45	88.37	72.53	57.91	45.37	33.69	28.26	22.60	20.44
35.0	100.06	92.37	80.09	62.93	48.51	35.33	27.67	22.08	19.32	19.29
37.5	93.02	85.68	71.05	52.94	39.46	27.42	22.51	18.20	18.63	18.58
40.0	73.06	70.28	58.92	43.73	30.94	23.03	18.45	17.86	18.37	18.97
42.5	51.65	51.98	43.54	33.73	23.11	19.71	17.03	17.84	18.59	19.40
45.0	31.19	31.72	28.86	24.21	18.79	17.29	17.02	17.96	18.87	19.74
47.5	17.32	19.05	18.99	17.55	16.14	15.86	16.95	17.99	19.02	19.82
50.0	12.31	12.88	13.88	14.27	14.66	15.57	16.70	17.84	18.91	19.78
52.5	11.82	12.24	12.76	13.43	14.21	15.16	16.29	17.49	18.52	19.53
55.0	11.41	11.79	12.32	12.98	13.79	14.71	15.76	16.96	18.03	18.99
57.5	10.93	11.31	11.83	12.51	13.32	14.27	15.22	16.29	17.43	18.39
60.0	10.34	10.76	11.29	11.94	12.75	13.85	14.61	15.62	16.65	17.71
62.5	9.57	10.00	10.60	11.33	12.20	13.27	13.92	14.92	15.91	16.88
65.0	8.65	9.15	9.80	10.60	11.43	12.31	13.20	14.15	15.16	16.07
67.5	7.68	8.27	8.97	9.74	10.57	11.49	12.44	13.40	14.35	15.25
70.0	6.71	7.33	8.08	8.93	9.78	10.72	11.65	12.61	13.50	14.41
72.5	5.75	6.42	7.24	8.10	8.98	9.88	10.85	11.78	12.70	13.56
75.0	4.83	5.60	6.45	7.33	8.24	9.19	10.10	11.00	11.90	12.80
77.5	4.15	4.94	5.82	6.72	7.61	8.49	9.41	10.32	11.20	12.08
80.0	3.51	4.38	5.34	6.26	7.12	8.00	8.89	9.75	10.60	11.44
82.5	3.04	3.94	4.90	5.87	6.79	7.68	8.54	9.41	10.19	10.99
85.0	2.95	3.82	4.76	5.70	6.61	7.49	8.37	9.22	10.00	10.75
87.5	2.91	3.74	4.67	5.58	6.46	7.37	8.22	9.07	9.83	10.59
90.0	2.75	3.55	4.42	5.29	6.12	6.99	7.86	8.70	9.43	10.23
92.5	2.87	3.68	4.55	5.39	6.21	7.00	7.79	8.55	9.21	9.93
95.0	2.99	3.87	4.81	5.72	6.59	7.46	8.24	9.09	9.81	10.54
97.5	3.11	4.04	4.98	5.92	6.81	7.68	8.54	9.37	10.15	10.97
100.0	3.40	4.35	5.31	6.23	7.10	7.93	8.79	9.64	10.50	11.34
102.5	4.07	4.95	5.85	6.73	7.57	8.38	9.23	10.14	11.03	11.95
105.0	4.84	5.61	6.53	7.37	8.20	9.03	9.91	10.85	11.80	12.73
107.5	5.72	6.47	7.31	8.17	9.01	9.81	10.74	11.69	12.66	13.61
110.0	6.73	7.44	8.22	9.05	9.85	10.73	11.59	12.56	13.55	14.47
112.5	7.79	8.44	9.18	9.94	10.75	11.57	12.49	13.43	14.44	15.38
115.0	8.83	9.39	10.08	10.82	11.63	12.45	13.32	14.29	15.28	16.21
117.5	9.79	10.31	10.97	11.67	12.45	13.26	14.17	15.10	16.06	17.01
120.0	10.67	11.16	11.73	12.43	13.24	14.02	14.95	15.88	16.84	17.78
122.5	11.40	11.86	12.42	13.11	13.91	14.71	15.62	16.55	17.51	18.39
125.0	11.98	12.45	13.01	13.67	14.44	15.26	16.20	17.14	18.05	18.91
127.5	12.44	12.90	13.46	14.09	14.89	15.75	16.68	17.58	18.46	19.31
130.0	12.88	13.36	13.91	14.58	15.24	16.06	16.96	17.87	18.76	19.58
132.5	18.66	18.42	17.60	16.75	15.88	16.28	17.17	18.03	18.92	19.68
135.0	28.50	28.09	25.82	22.09	17.58	17.22	17.28	18.10	18.89	19.66
137.5	49.49	47.99	40.13	31.22	21.26	19.01	17.38	18.09	18.79	19.49
140.0	77.31	73.16	57.95	41.47	29.03	21.79	18.50	18.09	18.65	19.24
142.5	98.10	88.82	72.08	51.60	37.78	25.49	21.79	18.23	18.77	18.94
145.0	105.64	96.56	82.22	62.92	47.32	33.48	26.21	21.51	19.17	19.35
147.5	110.24	101.82	91.45	73.68	57.43	44.00	31.66	26.97	21.96	20.12
150.0	113.87	106.42	99.46	83.75	68.46	55.20	42.62	33.32	28.67	23.93
152.5	116.03	110.45	104.38	93.41	79.48	66.96	55.11	43.96	36.20	31.90
155.0	117.76	113.88	108.55	102.42	90.03	78.64	67.94	57.71	48.23	40.39
157.5	119.30	117.01	112.38	108.10	99.96	89.76	80.49	71.66	62.98	55.19
160.0	120.56	119.92	115.76	112.09	108.70	100.37	92.12	84.71	77.94	71.00
162.5	121.60	121.06	118.78	115.66	112.75	110.14	103.25	96.74	90.94	85.91
165.0	122.45	122.03	121.68	118.89	116.48	114.26	112.23	108.25	103.25	98.82
167.5	123.20	122.90	122.58	121.83	119.82	117.96	116.27	114.74	113.30	111.26

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CANDELA TABULATION - (Cont.)

170.0	123.77	123.51	123.28	123.09	122.85	121.37	119.95	118.66	117.48	116.41
172.5	124.04	123.85	123.66	123.48	123.30	123.14	122.97	122.28	121.34	120.46
175.0	124.03	123.89	123.75	123.60	123.46	123.30	123.15	122.99	122.83	122.67
177.5	123.45	123.38	123.30	123.22	123.14	123.03	122.96	122.86	122.76	122.66
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

Vert. Angles	Horizontal Angles									
	150	155	160	165	170	175	180	185	190	195
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	116.36	116.30	116.27	116.26	116.25	116.25	116.25	116.30	116.36	116.42
5.0	116.21	116.07	115.94	115.83	115.75	115.75	115.76	115.84	115.93	116.04
7.5	113.79	113.09	112.50	112.02	111.68	111.49	111.45	111.60	111.86	112.21
10.0	110.12	109.28	108.56	107.94	107.46	107.20	107.14	107.33	107.62	108.05
12.5	103.42	100.69	98.38	96.55	95.16	94.37	94.11	94.46	95.28	96.58
15.0	91.64	88.55	85.95	83.82	82.30	81.38	81.08	81.44	82.34	83.82
17.5	80.11	75.01	71.29	68.28	66.06	64.69	64.25	64.71	65.99	68.12
20.0	64.38	59.37	55.18	51.87	49.44	47.92	47.41	47.86	49.27	51.58
22.5	49.21	44.33	41.60	39.34	37.62	36.48	36.09	36.41	37.41	39.01
25.0	37.95	34.28	31.14	28.51	26.53	25.23	24.77	25.15	26.31	28.18
27.5	28.59	24.44	23.16	22.71	22.27	21.87	21.74	21.85	22.10	22.45
30.0	21.80	21.36	20.73	20.05	19.41	18.86	18.71	18.90	19.31	19.90
32.5	20.10	19.41	18.91	19.21	19.37	19.35	19.38	19.38	19.26	19.07
35.0	18.78	19.11	19.56	19.87	20.05	20.03	20.04	20.03	19.91	19.70
37.5	19.15	19.70	20.19	20.54	20.72	20.71	20.70	20.70	20.56	20.33
40.0	19.66	20.23	20.74	21.12	21.38	21.39	21.36	21.38	21.19	20.90
42.5	20.09	20.68	21.24	21.60	21.78	21.77	21.78	21.80	21.63	21.41
45.0	20.41	21.08	21.50	21.81	22.09	22.13	22.19	22.19	22.00	21.68
47.5	20.61	21.14	21.63	21.95	22.14	22.28	22.18	22.19	22.12	21.86
50.0	20.48	21.08	21.59	21.91	22.03	22.39	22.16	22.19	22.10	21.72
52.5	20.25	20.85	21.35	21.80	21.77	22.11	21.86	21.79	21.84	21.54
55.0	19.86	20.42	20.99	21.32	21.27	21.80	21.57	21.35	21.40	20.99
57.5	19.24	19.91	20.40	20.82	20.74	21.22	20.92	20.66	20.80	20.44
60.0	18.56	19.24	19.74	20.08	20.02	20.62	20.28	19.93	20.04	19.73
62.5	17.80	18.48	19.02	19.38	19.18	19.49	19.29	18.89	19.16	18.94
65.0	16.94	17.70	18.20	18.42	17.88	18.23	18.30	17.83	18.21	18.07
67.5	16.08	16.84	17.30	17.51	16.66	15.79	15.62	16.28	17.28	17.14
70.0	15.21	16.00	16.47	16.55	15.24	13.29	12.94	14.87	16.60	16.26
72.5	14.36	15.15	15.82	15.88	14.35	11.71	11.51	13.95	15.92	15.80
75.0	13.66	14.45	15.17	15.34	13.31	10.45	10.09	13.18	15.11	15.40
77.5	13.00	13.78	14.44	14.40	12.45	9.53	9.31	12.37	14.34	14.71
80.0	12.35	13.22	13.93	13.90	12.23	8.69	8.52	11.68	13.55	13.97
82.5	11.83	12.63	13.38	13.42	11.55	8.18	7.64	11.04	12.93	13.46
85.0	11.53	12.28	12.99	13.20	11.14	7.85	6.75	10.37	12.85	13.05
87.5	11.36	12.12	12.79	13.27	11.28	7.55	6.13	10.62	12.81	12.79
90.0	10.99	11.79	12.49	13.08	12.42	9.08	5.51	8.94	12.73	13.11
92.5	10.67	11.46	12.15	12.69	12.14	9.03	5.87	8.04	12.07	13.53
95.0	11.30	12.00	12.62	12.72	11.73	9.50	6.23	8.07	12.09	13.87
97.5	11.73	12.43	13.09	13.34	12.08	9.79	7.01	8.51	12.41	14.19
100.0	12.20	13.01	13.72	14.06	13.24	10.51	7.79	9.33	13.24	14.72
102.5	12.89	13.73	14.47	14.85	14.16	11.30	8.71	10.43	14.05	15.42
105.0	13.70	14.54	15.13	15.46	14.89	12.01	9.64	11.51	14.98	16.27
107.5	14.53	15.33	15.98	16.32	15.93	13.28	11.31	12.82	15.93	16.84
110.0	15.33	16.14	16.86	17.05	16.59	14.42	12.98	14.46	16.44	17.43
112.5	16.21	16.98	17.67	17.77	17.58	16.28	15.95	16.79	17.64	18.16
115.0	17.10	17.86	18.39	18.64	18.49	18.00	18.92	19.03	18.68	18.92

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CANDELA TABULATION - (Cont.)

117.5	17.93	18.63	19.11	19.43	19.42	19.08	19.79	19.90	19.62	19.70
120.0	18.63	19.30	19.82	20.09	20.26	19.93	20.66	20.72	20.45	20.43
122.5	19.21	19.93	20.37	20.75	20.94	20.75	21.38	21.31	21.15	21.13
125.0	19.73	20.37	20.93	21.22	21.54	21.48	22.09	21.87	21.68	21.62
127.5	20.10	20.75	21.29	21.68	21.87	21.90	22.35	22.15	22.08	22.08
130.0	20.33	20.99	21.50	21.81	22.14	22.24	22.61	22.41	22.33	22.20
132.5	20.44	21.02	21.55	21.92	22.18	22.35	22.52	22.50	22.46	22.30
135.0	20.33	20.92	21.36	21.74	22.12	22.40	22.44	22.51	22.46	22.13
137.5	20.12	20.62	21.12	21.49	21.82	22.02	22.05	22.14	22.12	21.89
140.0	19.81	20.26	20.69	21.07	21.43	21.63	21.67	21.75	21.75	21.49
142.5	19.42	19.85	20.27	20.62	20.91	21.08	21.10	21.19	21.23	21.01
145.0	19.13	19.42	19.80	20.13	20.39	20.54	20.52	20.63	20.70	20.52
147.5	20.05	19.65	19.33	19.66	19.89	20.02	20.00	20.07	20.13	20.00
150.0	21.34	21.14	20.78	20.38	19.96	19.64	19.48	19.68	20.22	20.87
152.5	27.69	23.79	22.77	22.55	22.35	22.21	22.16	22.38	22.85	23.36
155.0	36.74	33.35	30.46	28.01	26.22	25.16	24.84	25.43	26.89	29.08
157.5	48.28	43.29	40.86	38.79	37.34	36.48	36.25	36.79	38.09	40.00
160.0	64.85	59.59	55.27	51.80	49.42	48.02	47.66	48.37	50.16	52.92
162.5	82.18	76.78	72.92	69.82	67.63	66.29	65.87	66.45	68.03	70.48
165.0	94.94	91.69	89.02	86.91	85.38	84.45	84.08	84.42	85.49	87.10
167.5	107.93	105.08	102.69	100.78	99.37	98.49	98.04	98.28	99.13	100.53
170.0	115.47	114.61	113.84	113.20	112.71	112.33	112.01	112.02	112.23	112.63
172.5	119.67	118.96	118.33	117.80	117.35	117.00	116.74	116.74	116.87	117.16
175.0	122.49	122.32	122.14	121.96	121.79	121.63	121.47	121.43	121.40	121.41
177.5	122.57	122.45	122.37	122.28	122.18	122.09	122.01	121.99	121.97	121.96
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

**Vert.
Angles**

Horizontal Angles

	<u>200</u>	<u>205</u>	<u>210</u>	<u>215</u>	<u>220</u>	<u>225</u>	<u>230</u>	<u>235</u>	<u>240</u>	<u>245</u>
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	116.48	116.53	116.61	116.68	116.76	116.83	116.91	116.97	117.06	117.13
5.0	116.16	116.28	116.43	116.58	116.72	116.86	117.01	117.14	117.30	117.44
7.5	112.67	113.22	113.85	114.55	115.33	116.19	116.84	117.03	117.21	117.41
10.0	108.61	109.27	110.03	110.90	111.88	112.97	114.18	115.50	116.88	117.13
12.5	98.34	100.53	103.17	106.24	108.17	109.51	110.96	112.54	114.26	116.09
15.0	85.79	88.31	91.35	94.99	99.13	103.81	107.46	109.34	111.43	113.65
17.5	71.02	74.70	79.88	83.35	88.09	93.50	99.53	105.89	108.33	110.99
20.0	54.87	58.99	63.98	69.85	76.51	82.83	89.69	97.26	104.88	107.93
22.5	41.22	43.95	48.81	55.39	62.80	71.09	79.36	87.89	97.18	104.55
25.0	30.78	33.91	37.54	41.62	49.13	58.18	68.03	78.02	88.34	99.58
27.5	22.89	24.07	28.23	32.77	37.57	45.36	56.05	67.58	79.09	91.63
30.0	20.50	21.07	21.46	24.34	29.62	34.93	44.35	56.49	69.22	83.07
32.5	18.74	19.26	19.89	20.17	22.28	28.05	33.56	45.80	59.19	74.08
35.0	19.35	18.99	18.70	19.09	19.04	21.82	27.50	35.44	49.40	64.54
37.5	19.94	19.54	19.03	18.50	18.44	17.90	22.31	27.28	39.95	54.10
40.0	20.49	20.02	19.48	18.81	18.21	17.64	18.33	22.80	30.84	43.05
42.5	20.96	20.42	19.82	19.12	18.33	17.62	16.89	19.42	22.26	31.32
45.0	21.20	20.74	20.03	19.31	18.46	17.57	16.75	16.96	17.76	21.69
47.5	21.28	20.75	20.14	19.31	18.46	17.49	16.56	15.66	15.40	16.36
50.0	21.21	20.67	19.94	19.11	18.22	17.22	16.26	15.34	14.56	13.91
52.5	20.93	20.39	19.63	18.78	17.76	16.81	15.84	14.94	14.14	13.44
55.0	20.55	19.89	19.17	18.19	17.24	16.27	15.30	14.45	13.65	12.93
57.5	19.92	19.32	18.45	17.54	16.60	15.64	14.72	13.84	13.06	12.35
60.0	19.20	18.57	17.74	16.84	15.88	14.94	13.99	13.15	12.40	11.69
62.5	18.41	17.78	16.97	16.06	15.11	14.15	13.23	12.37	11.64	10.93

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CANDELA TABULATION - (Cont.)

65.0	17.58	16.97	16.15	15.24	14.32	13.35	12.43	11.60	10.80	10.08
67.5	16.67	16.06	15.31	14.44	13.48	12.54	11.64	10.79	9.94	9.14
70.0	15.94	15.28	14.49	13.58	12.68	11.77	10.83	9.98	9.10	8.25
72.5	15.31	14.74	13.90	12.88	11.93	10.96	10.05	9.19	8.37	7.56
75.0	14.85	14.09	13.24	12.25	11.26	10.27	9.34	8.47	7.69	6.79
77.5	14.10	13.36	12.52	11.55	10.60	9.64	8.71	7.83	6.96	6.06
80.0	13.44	12.68	11.85	10.95	10.00	9.08	8.17	7.27	6.37	5.46
82.5	12.86	12.16	11.34	10.47	9.57	8.71	7.78	6.91	6.00	5.05
85.0	12.47	11.76	10.97	10.11	9.26	8.39	7.50	6.66	5.73	4.80
87.5	12.17	11.42	10.63	9.75	8.93	8.08	7.19	6.33	5.44	4.49
90.0	12.42	11.62	10.78	9.88	9.01	8.14	7.24	6.37	5.43	4.49
92.5	12.87	12.08	11.22	10.32	9.44	8.53	7.60	6.71	5.76	4.80
95.0	13.32	12.54	11.69	10.73	9.81	8.90	7.97	7.00	6.04	5.06
97.5	13.83	13.03	12.14	11.22	10.27	9.33	8.35	7.41	6.43	5.43
100.0	14.52	13.70	12.77	11.80	10.85	9.89	8.96	8.00	7.01	6.05
102.5	15.21	14.39	13.47	12.47	11.48	10.55	9.58	8.66	7.71	6.75
105.0	16.01	14.99	13.97	13.09	12.14	11.22	10.33	9.39	8.44	7.54
107.5	16.54	15.38	14.54	13.76	12.92	11.99	11.07	10.09	9.18	8.23
110.0	17.02	16.20	15.33	14.61	13.75	12.80	11.85	10.94	9.99	9.09
112.5	17.75	17.11	16.31	15.50	14.58	13.64	12.71	11.74	10.84	9.97
115.0	18.58	18.02	17.24	16.39	15.43	14.47	13.53	12.60	11.71	10.82
117.5	19.35	18.83	18.15	17.25	16.29	15.30	14.33	13.38	12.46	11.61
120.0	20.09	19.52	18.89	18.06	17.10	16.07	15.06	14.08	13.15	12.32
122.5	20.66	20.14	19.51	18.73	17.82	16.75	15.71	14.71	13.76	12.93
125.0	21.24	20.60	20.04	19.22	18.33	17.28	16.22	15.21	14.28	13.49
127.5	21.52	20.99	20.34	19.61	18.67	17.72	16.62	15.61	14.75	14.00
130.0	21.78	21.17	20.52	19.80	18.92	17.95	16.96	15.98	15.39	15.27
132.5	21.85	21.20	20.61	19.84	19.01	18.08	17.18	16.28	17.38	19.81
135.0	21.70	21.12	20.48	19.80	18.96	18.12	17.36	18.07	20.44	27.93
137.5	21.51	20.89	20.28	19.62	18.87	18.23	17.55	20.88	25.25	37.97
140.0	21.09	20.58	20.01	19.38	18.87	18.61	19.41	24.69	33.43	47.72
142.5	20.68	20.18	19.68	19.15	19.45	19.26	24.00	29.41	42.55	57.17
145.0	20.20	19.76	19.46	20.12	20.35	23.47	29.46	37.81	52.02	67.18
147.5	19.72	20.21	20.97	21.48	23.90	29.90	35.74	48.27	61.90	76.91
150.0	21.56	22.21	22.81	25.89	31.39	37.02	46.83	59.92	72.19	86.13
152.5	23.91	25.32	29.70	34.48	39.45	47.70	59.03	71.01	82.82	95.27
155.0	31.90	35.30	39.18	43.43	51.46	61.03	71.42	81.72	92.14	103.40
157.5	42.47	45.45	50.82	57.87	65.78	74.57	83.16	91.76	101.17	108.64
160.0	56.64	61.27	66.76	73.14	80.22	86.77	93.73	101.40	109.14	112.21
162.5	73.76	77.90	83.45	87.19	92.15	97.68	103.82	110.30	112.76	115.44
165.0	89.34	92.05	95.36	99.13	103.43	108.26	112.01	113.94	116.02	118.31
167.5	102.42	104.78	107.58	110.82	112.82	114.13	115.64	117.26	119.00	120.90
170.0	113.21	113.92	114.71	115.65	116.69	117.84	119.08	120.41	121.79	121.98
172.5	117.57	118.10	118.77	119.49	120.29	121.19	121.87	122.05	122.22	122.39
175.0	121.46	121.51	121.59	121.68	121.80	121.93	122.06	122.19	122.32	122.45
177.5	121.95	121.96	121.99	122.03	122.07	122.11	122.16	122.20	122.26	122.33
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

Vert. Angles	Horizontal Angles									
	<u>250</u>	<u>255</u>	<u>260</u>	<u>265</u>	<u>270</u>	<u>275</u>	<u>280</u>	<u>285</u>	<u>290</u>	<u>295</u>
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	117.20	117.27	117.34	117.40	117.45	117.69	117.91	118.13	118.34	118.54
5.0	117.59	117.73	117.87	118.00	118.13	118.59	119.03	119.47	119.88	120.25
7.5	117.61	117.82	118.03	118.24	118.44	119.12	119.78	120.49	120.95	121.45
10.0	117.35	117.61	117.88	118.18	118.48	119.37	120.26	121.04	121.75	122.41

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CANDELA TABULATION - (Cont.)

12.5	116.81	117.17	117.52	117.90	118.30	119.41	120.49	121.44	122.30	123.00
15.0	116.20	116.60	117.06	117.55	118.06	119.37	120.57	121.62	122.51	123.34
17.5	113.80	115.86	116.39	116.97	117.59	119.12	120.45	121.63	122.67	123.47
20.0	111.22	114.91	115.50	116.22	116.98	118.69	120.12	121.32	122.37	123.36
22.5	108.31	112.36	114.39	115.25	116.18	118.12	119.53	120.81	121.96	123.03
25.0	105.03	109.68	113.03	114.01	115.10	117.13	118.72	120.03	121.17	122.46
27.5	101.40	106.64	111.45	112.57	113.82	115.91	117.57	118.93	120.24	121.56
30.0	97.26	103.16	109.41	110.58	111.90	114.15	116.00	117.51	118.91	120.38
32.5	90.20	99.11	106.04	107.99	109.45	111.87	113.91	115.59	117.12	118.82
35.0	82.00	94.34	101.40	104.23	105.85	108.48	110.73	113.03	114.94	117.05
37.5	71.79	85.30	91.76	93.30	94.37	97.79	102.93	106.49	111.00	114.18
40.0	55.91	66.67	68.87	69.77	69.67	73.02	79.45	86.81	96.73	105.90
42.5	38.03	43.36	43.98	43.45	42.98	46.33	52.00	59.17	69.75	82.29
45.0	24.56	25.68	25.39	24.61	24.04	26.62	29.90	34.65	42.97	54.27
47.5	16.49	16.07	14.17	13.68	14.09	16.83	18.82	20.49	24.38	32.50
50.0	13.29	12.77	12.36	12.11	12.04	12.73	13.31	14.04	15.39	18.79
52.5	12.85	12.32	11.94	11.69	11.64	12.16	12.63	13.19	13.76	14.40
55.0	12.35	11.88	11.49	11.23	11.10	11.51	11.86	12.25	12.59	13.06
57.5	11.76	11.30	10.94	10.72	10.68	10.91	11.10	11.28	11.41	11.63
60.0	11.07	10.58	10.18	9.94	9.88	10.05	10.17	10.26	10.28	10.25
62.5	10.26	9.65	9.21	9.00	8.96	9.02	9.09	9.13	9.08	8.88
65.0	9.35	8.67	8.14	7.90	7.79	7.89	7.93	7.91	7.78	7.59
67.5	8.37	7.62	6.99	6.73	6.66	6.69	6.69	6.65	6.57	6.33
70.0	7.39	6.62	5.93	5.63	5.57	5.51	5.50	5.46	5.34	5.18
72.5	6.72	5.92	5.23	4.92	4.89	4.83	4.78	4.67	4.49	4.24
75.0	5.90	4.95	4.20	3.85	3.86	3.80	3.79	3.72	3.56	3.39
77.5	5.10	4.15	3.29	2.99	2.94	2.96	2.98	2.97	2.84	2.71
80.0	4.44	3.43	2.47	2.10	2.09	2.10	2.11	2.14	2.16	2.11
82.5	4.03	2.98	2.02	1.64	1.58	1.60	1.62	1.66	1.70	1.77
85.0	3.80	2.79	1.85	1.43	1.39	1.39	1.43	1.49	1.58	1.67
87.5	3.53	2.53	1.62	1.24	1.22	1.24	1.29	1.35	1.44	1.52
90.0	3.51	2.54	1.60	1.18	1.18	1.22	1.22	1.27	1.36	1.41
92.5	3.79	2.77	1.83	1.46	1.44	1.50	1.58	1.68	1.78	1.98
95.0	4.05	3.03	2.09	1.88	2.26	2.87	3.37	3.79	3.98	4.29
97.5	4.38	3.33	2.35	2.11	2.59	3.29	3.79	4.04	3.91	3.78
100.0	5.02	3.99	3.06	2.61	2.78	2.95	3.08	2.94	2.61	2.20
102.5	5.77	4.79	3.92	3.48	3.37	3.27	3.17	3.07	2.89	2.73
105.0	6.60	5.66	4.84	4.45	4.31	4.23	4.14	3.99	3.76	3.55
107.5	7.31	6.41	5.72	5.40	5.31	5.22	5.12	4.92	4.69	4.44
110.0	8.18	7.36	6.62	6.19	6.12	6.08	6.02	5.90	5.74	5.53
112.5	9.11	8.33	7.68	7.32	7.24	7.27	7.19	7.12	6.98	6.78
115.0	10.00	9.29	8.75	8.38	8.35	8.40	8.44	8.43	8.28	8.13
117.5	10.86	10.22	9.76	9.42	9.32	9.51	9.62	9.69	9.69	9.64
120.0	11.62	11.04	10.60	10.28	10.16	10.48	10.70	10.84	10.96	11.15
122.5	12.28	11.74	11.32	11.00	10.82	11.33	11.61	11.92	12.25	12.68
125.0	12.83	12.28	11.82	11.48	11.24	11.92	12.34	12.87	13.52	14.33
127.5	13.35	12.80	12.32	11.92	11.64	12.52	13.22	14.03	14.87	15.90
130.0	15.23	14.34	13.29	12.45	12.04	13.19	14.26	15.48	18.64	24.32
132.5	22.30	23.39	21.96	20.53	19.20	20.70	23.38	27.88	34.32	44.64
135.0	34.96	40.22	40.04	38.81	37.01	39.31	43.95	49.72	60.74	67.36
137.5	50.51	63.76	65.33	65.50	64.84	65.14	68.35	76.77	89.06	98.20
140.0	64.93	81.15	86.38	89.84	90.55	92.15	96.40	101.65	106.49	110.93
142.5	75.23	90.57	98.67	101.87	102.91	105.53	108.53	111.04	113.73	116.36
145.0	84.56	96.93	104.54	107.43	108.84	111.34	113.75	115.88	117.80	119.93
147.5	92.82	101.88	108.98	111.10	112.60	115.03	117.19	119.10	120.57	122.59
150.0	100.33	106.34	112.74	113.99	115.59	117.69	119.84	121.62	123.16	124.67

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CANDELA TABULATION - (Cont.)

152.5	104.82	110.20	115.09	116.22	117.49	119.69	121.72	123.47	124.99	126.42
155.0	108.92	113.70	117.16	118.10	119.24	121.32	123.30	124.93	126.36	127.52
157.5	112.49	116.65	118.74	119.58	120.50	122.56	124.28	125.82	127.15	128.28
160.0	115.60	119.41	120.00	120.65	121.40	123.18	124.84	126.28	127.56	128.64
162.5	118.36	120.43	120.93	121.48	122.08	123.63	125.13	126.48	127.75	128.71
165.0	120.92	121.26	121.66	122.08	122.55	123.87	125.20	126.48	127.55	128.52
167.5	121.62	121.91	122.20	122.53	122.88	124.03	125.17	126.24	127.26	128.12
170.0	122.18	122.40	122.63	122.87	123.14	124.06	124.99	125.89	126.76	127.58
172.5	122.57	122.74	122.92	123.11	123.30	124.00	124.69	125.44	126.01	126.62
175.0	122.58	122.72	122.86	122.98	123.10	123.58	124.05	124.49	124.93	125.35
177.5	122.39	122.45	122.51	122.56	122.62	122.86	123.10	123.33	123.56	123.77
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

Vert. Angles	Horizontal Angles									
	<u>300</u>	<u>305</u>	<u>310</u>	<u>315</u>	<u>320</u>	<u>325</u>	<u>330</u>	<u>335</u>	<u>340</u>	<u>345</u>
0.0	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74	116.74
2.5	118.73	118.89	119.06	119.19	119.40	119.39	119.43	119.44	119.47	119.48
5.0	120.53	120.75	120.99	121.19	121.37	121.50	121.58	121.63	121.66	121.65
7.5	121.91	122.29	122.60	122.89	123.13	123.29	123.41	123.50	123.54	123.53
10.0	122.95	123.44	123.85	124.19	124.49	124.75	124.95	125.09	125.16	125.19
12.5	123.68	124.25	124.79	125.26	125.64	126.01	126.35	126.58	126.75	126.86
15.0	124.08	124.79	125.46	126.08	126.69	127.20	127.58	127.89	128.12	128.24
17.5	124.32	125.18	125.95	126.75	127.45	128.04	128.52	128.90	129.14	129.37
20.0	124.32	125.30	126.25	127.12	127.89	128.60	129.19	129.61	129.85	130.13
22.5	124.12	125.17	126.22	127.19	128.07	128.84	129.47	129.91	130.23	130.43
25.0	123.63	124.82	125.96	127.03	127.95	128.72	129.48	130.03	130.33	130.48
27.5	122.89	124.27	125.53	126.64	127.63	128.51	129.26	129.88	130.24	130.43
30.0	121.92	123.39	124.77	126.01	127.14	128.03	128.87	129.44	129.94	129.90
32.5	120.50	122.26	123.73	125.18	126.46	127.46	127.96	128.30	128.42	128.43
35.0	118.94	120.72	122.50	124.06	125.33	125.97	126.11	125.79	124.38	122.71
37.5	116.91	118.94	120.73	122.29	123.24	123.27	121.78	116.80	109.93	104.20
40.0	112.90	116.27	118.60	119.66	119.35	115.78	106.79	94.41	83.89	75.55
42.5	96.85	109.62	115.12	114.85	108.33	95.75	79.96	66.68	57.54	51.31
45.0	70.12	89.27	103.91	103.35	86.70	68.40	54.44	44.86	39.10	35.70
47.5	43.75	59.70	77.09	76.89	60.59	46.07	36.42	30.94	29.18	29.00
50.0	24.83	35.49	46.88	48.23	38.18	31.17	27.79	27.03	26.58	25.77
52.5	17.08	20.10	26.89	28.38	25.62	24.73	24.46	23.44	22.32	21.17
55.0	13.70	14.45	16.90	18.72	20.16	21.35	20.29	18.54	17.30	16.31
57.5	11.96	12.69	13.68	14.86	16.22	16.79	15.69	14.42	13.57	12.86
60.0	10.30	10.66	11.44	12.26	13.01	12.80	12.00	11.18	10.51	9.98
62.5	8.82	8.87	9.24	9.84	10.00	9.69	9.11	8.68	8.22	7.82
65.0	7.39	7.34	7.49	7.69	7.69	7.38	7.12	6.75	6.38	6.09
67.5	6.12	6.01	5.99	6.02	5.98	5.73	5.48	5.20	4.91	4.76
70.0	4.98	4.86	4.78	4.74	4.59	4.35	4.18	3.99	3.80	3.72
72.5	4.02	3.84	3.71	3.63	3.48	3.34	3.22	3.07	2.97	2.92
75.0	3.18	3.02	2.88	2.76	2.62	2.55	2.48	2.42	2.37	2.34
77.5	2.54	2.38	2.27	2.16	2.08	2.08	2.06	2.07	2.09	2.15
80.0	2.08	2.06	2.03	1.98	1.99	2.04	2.09	2.14	2.20	2.33
82.5	1.84	1.96	2.05	2.11	2.18	2.23	2.28	2.32	2.39	2.57
85.0	1.80	1.93	2.07	2.17	2.29	2.38	2.46	2.51	2.58	2.75
87.5	1.62	1.73	1.84	1.95	2.04	2.13	2.23	2.34	2.48	2.73
90.0	1.50	1.58	1.70	1.79	1.91	2.00	2.16	2.33	2.57	2.91
92.5	2.21	2.49	2.89	3.04	3.06	3.05	3.06	3.06	3.12	3.34
95.0	4.72	5.16	5.11	5.24	5.37	5.47	5.51	5.40	5.19	5.13
97.5	3.51	3.26	2.59	2.39	3.04	3.71	4.27	4.70	4.97	5.25

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CANDELA TABULATION - (Cont.)

100.0	2.04	1.90	1.87	1.81	1.83	1.87	2.04	2.32	2.70	3.09
102.5	2.55	2.43	2.35	2.29	2.21	2.17	2.14	2.09	2.09	2.12
105.0	3.35	3.23	3.11	3.05	2.95	2.88	2.79	2.68	2.61	2.54
107.5	4.30	4.18	4.15	4.05	3.98	3.84	3.71	3.55	3.40	3.32
110.0	5.38	5.37	5.39	5.37	5.28	5.11	4.90	4.69	4.45	4.34
112.5	6.64	6.68	6.84	6.92	6.94	6.78	6.50	6.16	5.84	5.65
115.0	8.08	8.33	8.69	9.06	8.98	8.65	8.53	8.12	7.69	7.34
117.5	9.74	10.18	10.99	11.85	12.10	11.72	11.02	10.44	9.91	9.46
120.0	11.52	12.32	13.71	14.97	15.82	15.65	14.72	13.78	13.02	12.27
122.5	13.43	14.57	15.98	17.58	19.75	20.82	19.67	18.15	17.07	16.13
125.0	15.32	16.53	20.80	22.72	24.03	26.12	25.71	23.93	22.37	20.86
127.5	18.79	26.53	36.10	38.63	32.95	29.79	30.13	30.16	29.08	27.82
130.0	33.17	48.98	64.24	62.68	50.19	40.88	35.10	32.67	32.99	32.78
132.5	59.52	72.00	93.99	94.31	78.07	59.56	49.33	41.43	37.87	36.23
135.0	88.16	101.64	110.14	112.55	103.81	88.65	71.66	60.46	52.77	47.80
137.5	106.82	113.03	117.05	119.16	118.72	113.17	101.43	87.92	76.34	69.26
140.0	114.74	118.12	120.95	123.29	124.79	125.10	122.04	114.41	105.24	97.84
142.5	119.14	121.43	123.84	126.11	127.89	129.01	129.31	127.95	124.88	122.68
145.0	121.93	124.05	126.16	128.08	129.83	131.13	131.79	132.15	132.12	132.09
147.5	124.37	126.22	128.06	129.78	131.15	132.22	133.19	133.82	134.38	134.77
150.0	126.36	127.93	129.47	130.92	132.08	133.05	133.92	134.69	135.34	135.92
152.5	127.84	129.18	130.39	131.60	132.64	133.67	134.47	135.19	135.81	136.36
155.0	128.84	129.96	131.02	132.01	132.99	133.91	134.78	135.50	136.07	136.66
157.5	129.34	130.39	131.43	132.35	133.13	133.96	134.76	135.44	136.10	136.74
160.0	129.64	130.57	131.51	132.43	133.18	133.91	134.54	135.15	135.72	136.31
162.5	129.65	130.52	131.30	132.05	132.83	133.51	134.12	134.72	135.19	135.63
165.0	129.36	130.18	130.90	131.58	132.20	132.79	133.39	133.86	134.31	134.65
167.5	128.94	129.67	130.36	130.88	131.44	131.93	132.35	132.73	133.05	133.29
170.0	128.25	128.90	129.44	129.92	130.38	130.76	131.05	131.34	131.57	131.73
172.5	127.22	127.74	128.17	128.56	128.92	129.24	129.48	129.68	129.83	129.94
175.0	125.73	126.10	126.44	126.74	127.01	127.25	127.42	127.56	127.69	127.79
177.5	123.98	124.17	124.36	124.53	124.78	124.82	124.94	125.04	125.15	125.25
180.0	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00	122.00

Vert. Angles	Horizontal Angles		
	<u>350</u>	<u>355</u>	<u>360</u>
0.0	116.74	116.74	116.74
2.5	119.46	119.43	119.38
5.0	121.63	121.60	121.54
7.5	123.50	123.45	123.36
10.0	125.19	125.14	124.98
12.5	126.82	126.78	126.70
15.0	128.32	128.30	128.22
17.5	129.50	129.58	129.56
20.0	130.29	130.40	130.31
22.5	130.64	130.61	130.51
25.0	130.62	130.57	130.44
27.5	130.53	130.47	130.35
30.0	129.91	129.82	129.71
32.5	128.43	127.81	127.52
35.0	120.29	118.08	117.44
37.5	98.14	94.81	93.83
40.0	69.98	66.55	65.54
42.5	47.25	45.31	44.99
45.0	33.32	33.04	32.87

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CANDELA TABULATION - (Cont.)

47.5	28.46	28.49	28.59
50.0	25.25	25.12	25.18
52.5	20.42	20.18	20.18
55.0	15.87	15.69	15.74
57.5	12.44	12.32	12.39
60.0	9.70	9.59	9.64
62.5	7.69	7.67	7.83
65.0	6.03	6.05	6.23
67.5	4.78	4.81	4.99
70.0	3.81	3.83	4.00
72.5	3.04	3.09	3.30
75.0	2.54	2.63	2.82
77.5	2.37	2.67	2.86
80.0	2.73	3.10	3.24
82.5	3.06	3.52	3.57
85.0	3.30	3.84	3.71
87.5	3.20	3.70	3.45
90.0	3.51	4.19	4.18
92.5	3.83	4.31	3.90
95.0	5.49	5.78	5.46
97.5	5.77	6.22	6.16
100.0	3.69	4.18	4.31
102.5	2.34	2.59	2.58
105.0	2.67	2.68	2.71
107.5	3.35	3.37	3.39
110.0	4.37	4.32	4.35
112.5	5.61	5.58	5.63
115.0	7.20	7.18	7.25
117.5	9.23	9.25	9.32
120.0	11.85	11.65	11.62
122.5	15.56	15.36	15.32
125.0	20.27	19.93	19.83
127.5	26.75	26.39	26.22
130.0	32.36	32.36	32.42
132.5	35.37	35.59	35.48
135.0	44.38	43.37	42.89
137.5	63.73	61.00	60.40
140.0	92.02	88.70	87.73
142.5	118.27	116.19	115.79
145.0	131.58	131.09	131.09
147.5	135.30	135.52	135.64
150.0	136.45	136.80	137.05
152.5	136.86	137.20	137.44
155.0	137.18	137.50	137.73
157.5	137.34	137.66	137.90
160.0	136.84	137.24	137.44
162.5	136.02	136.25	136.46
165.0	134.91	135.06	135.24
167.5	133.43	133.57	133.74
170.0	131.83	131.96	132.11
172.5	130.04	130.16	130.28
175.0	127.89	128.00	128.08
177.5	125.32	125.38	125.41
180.0	122.00	122.00	122.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	42.98	N.A.	10.10
0-30	87.09	N.A.	20.40
0-40	136.83	N.A.	32.10
0-60	182.16	N.A.	42.70
0-80	199.63	N.A.	46.80
0-90	205.55	N.A.	48.20
10-90	194.25	N.A.	45.50
20-40	93.84	N.A.	22.00
20-50	124.40	N.A.	29.20
40-70	55.72	N.A.	13.10
60-80	17.47	N.A.	4.10
70-80	7.09	N.A.	1.70
80-90	5.92	N.A.	1.40
90-110	14.01	N.A.	3.30
90-120	25.16	N.A.	5.90
90-130	41.82	N.A.	9.80
90-150	130.19	N.A.	30.50
90-180	221.12	N.A.	51.80
110-180	207.11	N.A.	48.50
0-180	426.68	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	11.31
10-20	31.68
20-30	44.10
30-40	49.74
40-50	30.55
50-60	14.78
60-70	10.38
70-80	7.09
80-90	5.92
90-100	6.65
100-110	7.35
110-120	11.16
120-130	16.66
130-140	35.59
140-150	52.77
150-160	45.97
160-170	33.10
170-180	11.86

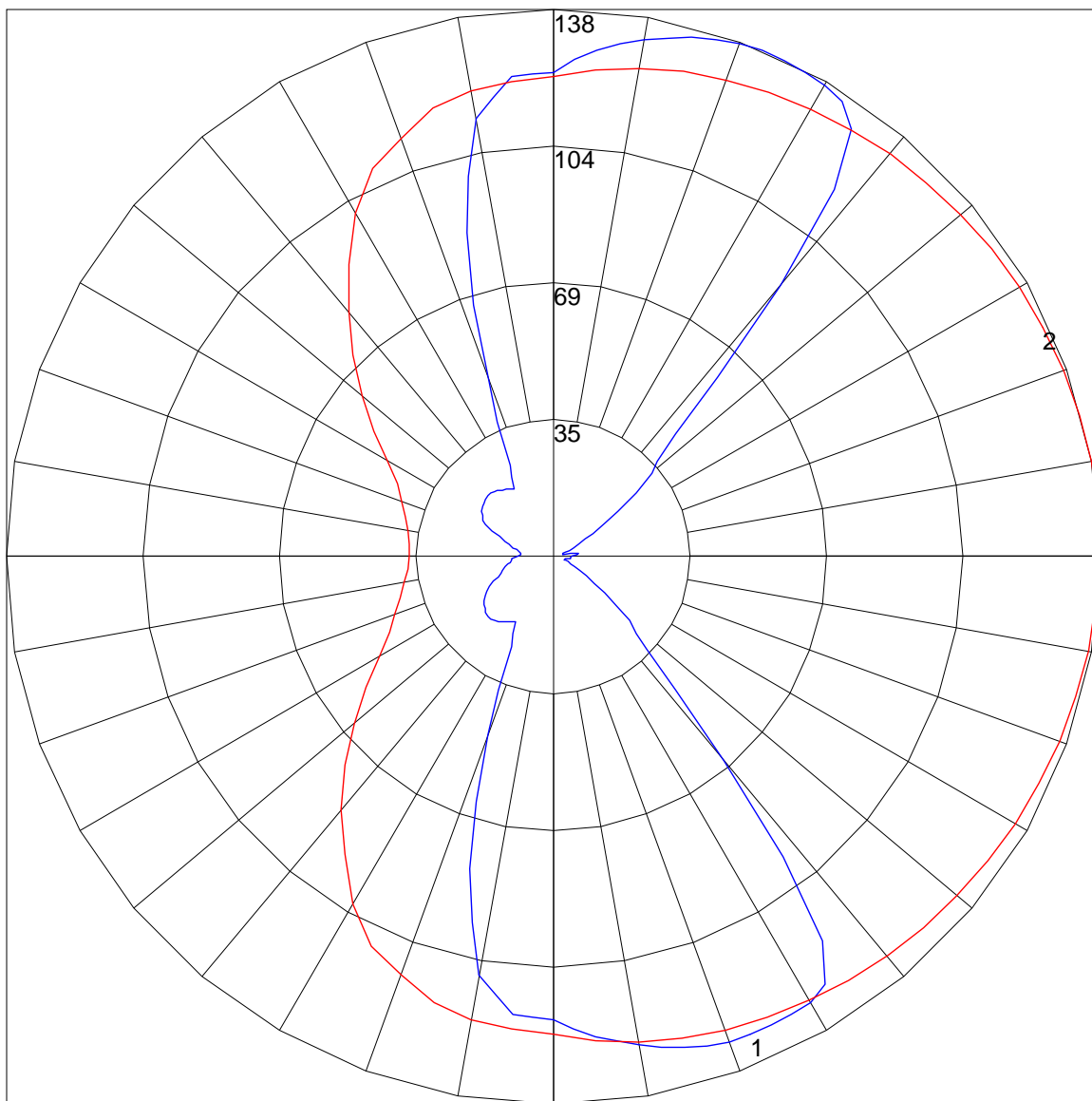
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	107	107	107	107	98	98	98	98	82	82	82	68	68	68	54	54	54	48
1	98	94	90	87	90	87	84	81	73	71	69	61	59	58	49	48	47	42
2	90	83	78	73	83	77	72	68	65	62	59	55	52	50	45	43	41	37
3	83	74	68	62	76	69	63	58	59	54	51	49	46	44	41	38	37	33
4	77	67	59	54	70	62	55	51	53	48	44	45	41	38	37	35	33	29
5	71	60	52	47	65	56	49	44	48	43	39	41	37	34	34	31	29	26
6	66	54	47	41	61	51	44	39	44	39	35	37	34	31	31	29	27	24
7	61	49	42	37	56	46	40	35	40	35	31	34	31	28	29	26	24	22
8	57	45	38	33	53	42	36	31	37	32	28	32	28	25	27	24	22	20
9	53	42	34	30	49	39	33	28	34	29	26	29	26	23	25	22	20	18
10	50	38	31	27	46	36	30	26	32	27	23	27	24	21	23	21	19	17

POLAR GRAPH



Maximum Candela = 138.08 Located At Horizontal Angle = 5, Vertical Angle = 157.5
1 - Vertical Plane Through Horizontal Angles (5 - 185) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (157.5) (Through Max. Cd.)