



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

Test #: L06131609

Date: 6/21/2013



NVLAP LAB CODE 200927-0

Test Report: L06131609

Model Number: LBD1 2.5 WATT

Report Prepared For: AURORA LIGHT INC
2742 LOKER AVE WEST CARLSBAD, CA 92010

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

Description of Sample: Client submitted the sample. Fixture catalog number is LBD1 2.5 WATT .
Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no modifications.

Sample Arrival Date: 5/24/13

Date of Tests: 6/18/13 - 6/20/13

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

Manufacturer:	AURORA LIGHT INC
Model Number:	LBD1 2.5 WATT
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	37.20
Input Voltage (VAC/60Hz):	15.00
Input Current (Amp):	0.40
Input Power (W):	3.27
Input Power Factor:	0.5422
Total Harmonic Distortion @ 15V(%):	147.5%
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	11.36
Color Rendering Index (CRI):	81.70
Correlated Color Temperature (K):	2828
Chromaticity Coordinate x:	0.4484
Chromaticity Coordinate y:	0.4056
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:40
Off State Power(W):	0.00

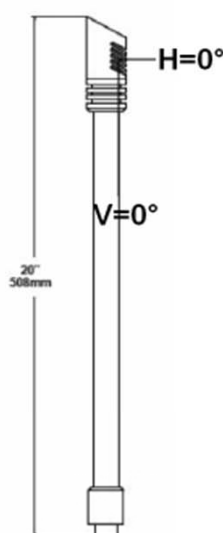
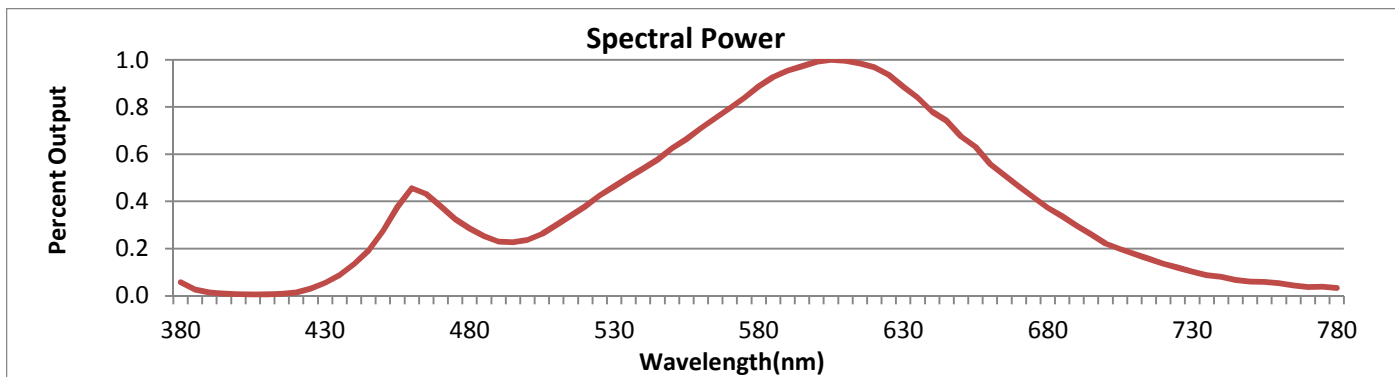


FIG1. LUMINAIRE



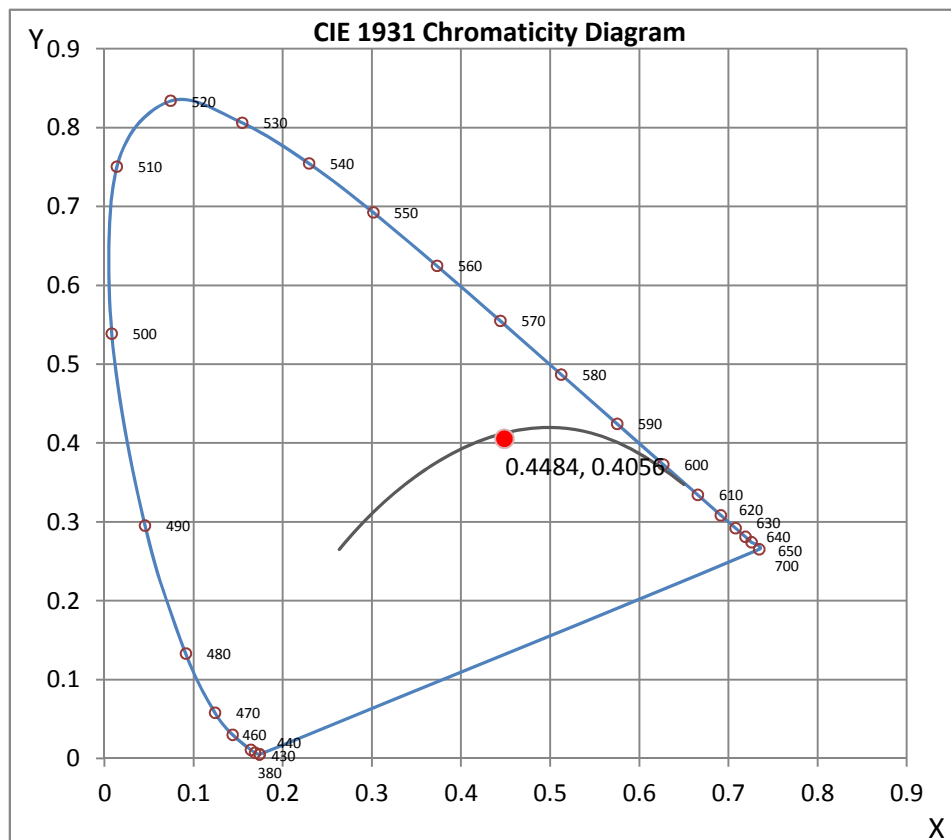
Wavelength	W/m ² nm	440	0.0005	510	0.0012	580	0.0035	650	0.0027	720	0.0005
380	0.0002	450	0.0011	520	0.0015	590	0.0038	660	0.0022	730	0.0004
390	0.0001	460	0.0018	530	0.0018	600	0.0039	670	0.0018	740	0.0003
400	0.0000	470	0.0015	540	0.0021	610	0.0039	680	0.0015	750	0.0002
410	0.0000	480	0.0011	550	0.0025	620	0.0038	690	0.0012	760	0.0002
420	0.0001	490	0.0009	560	0.0028	630	0.0035	700	0.0009	770	0.0002
430	0.0002	500	0.0009	570	0.0031	640	0.0031	710	0.0007	780	0.0001

CRI & CCT

x	0.4484
y	0.4056
u'	0.2573
v'	0.5237
CRI	81.70
CCT	2828
Duv	-0.00080

R Values

R1	80.22
R2	92.09
R3	95.51
R4	75.62
R5	78.96
R6	88.94
R7	82.01
R8	59.86
R9	14.02
R10	79.98
R11	71.00
R12	69.93
R13	83.35
R14	98.41





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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.

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: 13*

*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 ROAD REPORT

PHOTOMETRIC FILENAME : L06131609.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L06131609
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 6/20/2013
[MANUFAC] AURORA LIGHT
[LUMCAT] LBDH-300 12 WATTS
[LUMINAIRE] 1-5/8"L. X 1-3/8"W. X 20"H. LED PATHLIGHT
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[_INPUT] 15VAC, 3.27W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type IV
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	37
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	11
Total Luminaire Watts	3.27
Ballast Factor	1.00
Upward Waste Light Ratio	0.33
Maximum Candela	21.96
Maximum Candela Angle	0H 70V
Maximum Candela (<90 Degrees Vertical)	21.96
Maximum Candela Angle (<90 Degrees Vertical)	0H 70V
Maximum Candela At 90 Degrees Vertical	15.12 (40.9% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	14.29 (38.6% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L06131609.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	0.9	N.A.	2.4
FM - Front-Medium (30-60)	6.9	N.A.	18.6
FH - Front-High (60-80)	10.9	N.A.	29.4
FVH - Front-Very High (80-90)	4.8	N.A.	12.9
BL - Back-Low (0-30)	0.1	N.A.	0.3
BM - Back-Medium (30-60)	0.5	N.A.	1.5
BH - Back-High (60-80)	0.5	N.A.	1.4
BVH - Back-Very High (80-90)	0.3	N.A.	0.7
UL - Uplight-Low (90-100)	4.8	N.A.	13.0
UH - Uplight-High (100-180)	7.4	N.A.	19.9
Total	37.1	N.A.	100.0
BUG Rating	B0-U1-G0		

IES ROAD REPORT
PHOTOMETRIC FILENAME : L06131609.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	0	5	10	15	20	25	30	35	40	45
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.68	0.69	0.69	0.68	0.67	0.65	0.63	0.61	0.59	0.56
10	1.43	1.44	1.42	1.40	1.37	1.32	1.27	1.22	1.16	1.09
15	2.35	2.35	2.31	2.26	2.19	2.13	2.04	1.94	1.82	1.69
20	3.21	3.20	3.14	3.07	2.99	2.90	2.79	2.68	2.58	2.43
25	3.65	3.63	3.60	3.54	3.48	3.40	3.31	3.21	3.07	2.94
30	3.89	3.88	3.87	3.84	3.80	3.73	3.61	3.46	3.34	3.21
35	4.78	4.77	4.74	4.66	4.55	4.36	4.08	3.94	3.70	3.48
40	6.75	6.72	6.62	6.44	6.14	5.69	5.34	4.95	4.50	4.14
45	9.75	9.61	9.41	9.06	8.51	7.84	7.21	6.44	5.83	5.14
50	12.72	12.55	12.20	11.67	11.01	10.20	9.26	8.35	7.39	6.55
55	14.43	14.30	14.00	13.58	12.88	11.90	10.88	9.78	8.78	7.87
60	16.44	16.28	15.93	15.29	14.37	13.31	12.07	10.75	9.71	8.73
65	19.41	19.26	18.77	17.88	16.77	15.12	13.63	12.07	10.58	9.42
70	21.96	21.50	20.77	20.60	19.15	17.70	15.82	13.86	12.04	10.47
75	18.83	18.58	18.65	18.70	18.67	17.60	16.22	14.74	13.00	11.52
80	13.78	14.09	14.14	14.27	14.29	14.13	13.60	12.78	11.84	10.96
85	12.82	12.94	12.59	12.29	11.89	11.38	10.74	10.12	9.37	8.85
90	15.12	15.04	14.79	14.22	13.23	11.89	10.59	9.28	8.19	7.30
95	16.20	15.75	15.90	15.54	14.75	13.46	11.94	10.16	8.65	7.41
100	12.52	12.53	12.43	12.50	12.34	11.84	10.96	9.74	8.64	7.53
105	8.15	8.41	8.48	8.35	8.34	8.33	7.98	7.52	6.95	6.42
110	6.41	6.41	6.43	6.30	6.24	6.03	5.73	5.40	5.01	4.72
115	5.56	5.49	5.41	5.39	5.22	4.98	4.64	4.26	3.88	3.57
120	3.99	4.03	4.01	3.97	3.96	3.84	3.63	3.36	3.08	2.84
125	2.39	2.42	2.53	2.56	2.44	2.49	2.31	2.29	2.17	2.02
130	2.01	1.98	1.94	1.89	1.83	1.75	1.68	1.58	1.51	1.40
135	1.60	1.59	1.58	1.55	1.49	1.43	1.35	1.27	1.20	1.11
140	1.26	1.25	1.24	1.21	1.16	1.11	1.06	1.01	0.95	0.89
145	0.92	0.93	0.92	0.90	0.87	0.84	0.80	0.76	0.72	0.68
150	0.68	0.68	0.67	0.66	0.64	0.63	0.60	0.57	0.54	0.52
155	0.51	0.51	0.50	0.50	0.49	0.48	0.46	0.43	0.42	0.40
160	0.41	0.40	0.39	0.38	0.38	0.37	0.36	0.35	0.34	0.33
165	0.34	0.34	0.33	0.32	0.32	0.31	0.30	0.30	0.29	0.28
170	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.25	0.24
175	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.20
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	Horizontal Angles									
	50	55	60	65	70	75	80	85	90	95
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.52	0.49	0.45	0.41	0.37	0.33	0.28	0.24	0.19	0.18
10	1.01	0.92	0.83	0.76	0.69	0.61	0.52	0.43	0.34	0.31
15	1.58	1.46	1.34	1.20	1.05	0.93	0.81	0.68	0.55	0.47
20	2.26	2.08	1.90	1.72	1.53	1.32	1.15	0.96	0.77	0.66
25	2.82	2.65	2.45	2.26	2.04	1.81	1.57	1.33	1.08	0.90
30	3.08	2.95	2.80	2.60	2.42	2.19	1.97	1.69	1.40	1.16
35	3.30	3.09	2.93	2.73	2.54	2.35	2.17	1.94	1.69	1.42
40	3.74	3.42	3.10	2.82	2.57	2.33	2.15	1.96	1.77	1.55
45	4.61	4.05	3.52	3.10	2.71	2.38	2.11	1.87	1.69	1.52
50	5.72	4.97	4.26	3.59	3.04	2.58	2.18	1.87	1.60	1.41
55	6.96	6.09	5.16	4.25	3.52	2.89	2.38	1.97	1.62	1.38

IES ROAD REPORT
PHOTOMETRIC FILENAME : L06131609.IES

CANDELA TABULATION - (Cont.)

60	7.81	6.96	6.00	4.97	4.05	3.25	2.59	2.09	1.69	1.38
65	8.39	7.44	6.45	5.41	4.41	3.54	2.80	2.22	1.74	1.42
70	9.08	7.91	6.80	5.65	4.59	3.69	2.91	2.27	1.76	1.42
75	10.11	8.72	7.36	6.00	4.75	3.78	2.92	2.27	1.76	1.41
80	10.11	9.18	8.02	6.58	5.09	3.88	2.96	2.30	1.76	1.42
85	8.46	8.16	7.65	6.64	5.33	4.05	3.02	2.30	1.77	1.43
90	6.79	6.38	6.12	5.64	4.74	3.84	2.97	2.27	1.74	1.38
95	6.46	5.67	5.00	4.44	3.87	3.22	2.64	2.10	1.64	1.33
100	6.63	5.69	4.80	4.00	3.27	2.71	2.25	1.86	1.48	1.22
105	5.96	5.35	4.61	3.83	3.06	2.46	2.00	1.63	1.35	1.12
110	4.46	4.18	3.80	3.33	2.78	2.26	1.82	1.50	1.21	1.02
115	3.29	3.05	2.83	2.56	2.26	1.93	1.59	1.32	1.09	0.91
120	2.56	2.34	2.14	1.92	1.72	1.50	1.28	1.10	0.90	0.77
125	1.90	1.76	1.60	1.43	1.30	1.15	1.00	0.85	0.72	0.62
130	1.33	1.20	1.11	1.04	0.95	0.85	0.76	0.66	0.56	0.50
135	1.04	0.95	0.87	0.79	0.70	0.63	0.56	0.50	0.44	0.39
140	0.83	0.77	0.70	0.63	0.57	0.51	0.46	0.42	0.38	0.33
145	0.64	0.59	0.55	0.50	0.46	0.42	0.38	0.35	0.31	0.29
150	0.49	0.45	0.42	0.40	0.37	0.35	0.32	0.30	0.27	0.26
155	0.38	0.36	0.34	0.32	0.30	0.28	0.27	0.25	0.24	0.23
160	0.31	0.30	0.29	0.28	0.27	0.26	0.24	0.22	0.21	0.20
165	0.27	0.26	0.25	0.25	0.24	0.23	0.22	0.21	0.21	0.20
170	0.24	0.23	0.22	0.22	0.21	0.21	0.20	0.19	0.19	0.19
175	0.20	0.20	0.20	0.19	0.19	0.18	0.18	0.18	0.17	0.17
180	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>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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.17	0.16	0.16	0.15	0.14	0.13	0.13	0.12	0.12	0.11
10	0.27	0.23	0.19	0.16	0.13	0.12	0.12	0.11	0.11	0.11
15	0.40	0.32	0.25	0.21	0.18	0.16	0.14	0.12	0.12	0.12
20	0.55	0.44	0.36	0.29	0.22	0.18	0.15	0.14	0.13	0.12
25	0.72	0.58	0.47	0.36	0.29	0.21	0.16	0.15	0.13	0.12
30	0.90	0.74	0.57	0.46	0.36	0.27	0.21	0.16	0.13	0.12
35	1.15	0.91	0.70	0.55	0.44	0.34	0.25	0.19	0.15	0.13
40	1.31	1.05	0.82	0.63	0.50	0.39	0.28	0.21	0.16	0.14
45	1.33	1.12	0.90	0.71	0.55	0.43	0.32	0.24	0.19	0.15
50	1.25	1.09	0.91	0.74	0.58	0.46	0.34	0.25	0.20	0.16
55	1.19	1.04	0.89	0.74	0.59	0.46	0.35	0.27	0.22	0.17
60	1.16	0.99	0.85	0.72	0.60	0.48	0.36	0.28	0.22	0.17
65	1.16	0.97	0.82	0.70	0.58	0.47	0.36	0.30	0.22	0.18
70	1.16	0.96	0.80	0.68	0.56	0.45	0.36	0.29	0.22	0.18
75	1.16	0.97	0.81	0.67	0.56	0.45	0.36	0.28	0.23	0.20
80	1.15	0.96	0.81	0.66	0.56	0.46	0.36	0.29	0.22	0.19
85	1.16	0.97	0.80	0.67	0.55	0.45	0.36	0.29	0.20	0.17
90	1.16	0.96	0.79	0.65	0.53	0.44	0.34	0.27	0.22	0.21
95	1.09	0.90	0.75	0.63	0.51	0.41	0.32	0.27	0.22	0.19
100	1.01	0.84	0.71	0.58	0.47	0.37	0.31	0.25	0.21	0.21
105	0.93	0.79	0.64	0.53	0.43	0.34	0.28	0.23	0.21	0.21
110	0.85	0.71	0.59	0.48	0.39	0.32	0.27	0.22	0.19	0.20
115	0.76	0.63	0.53	0.44	0.36	0.30	0.26	0.22	0.21	0.21
120	0.65	0.54	0.46	0.39	0.34	0.28	0.25	0.23	0.21	0.21
125	0.52	0.45	0.39	0.33	0.29	0.26	0.24	0.22	0.21	0.21
130	0.43	0.36	0.32	0.29	0.25	0.22	0.22	0.22	0.21	0.22

IES ROAD REPORT
PHOTOMETRIC FILENAME : L06131609.IES

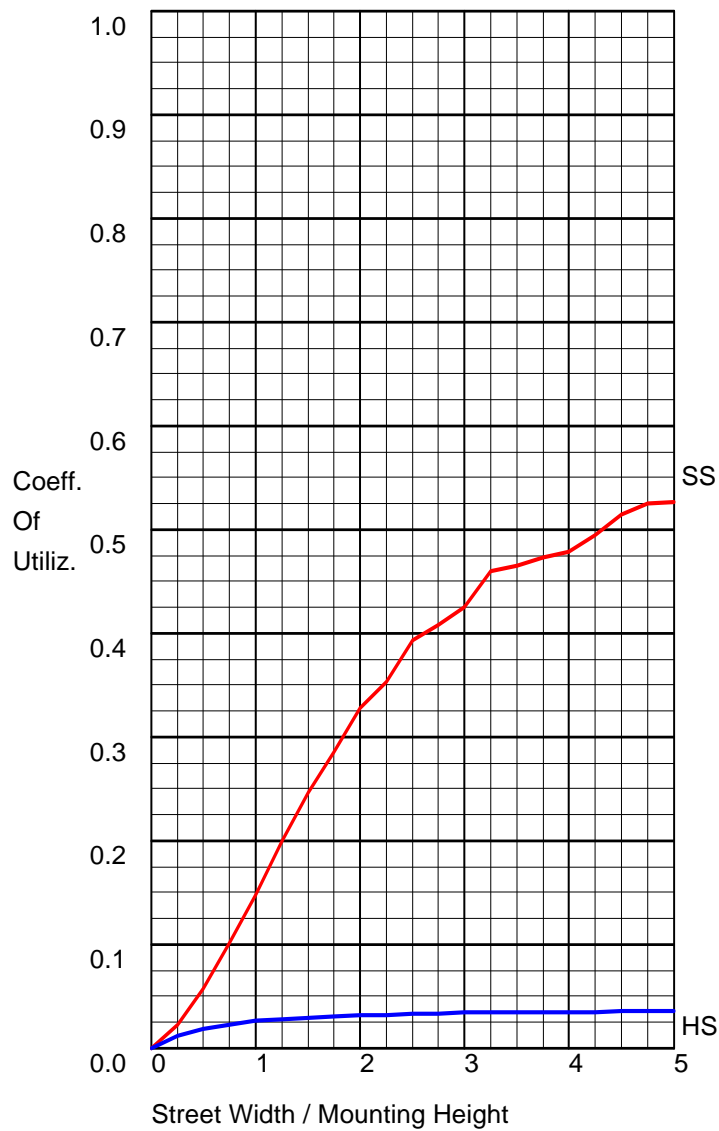
CANDELA TABULATION - (Cont.)

135	0.34	0.30	0.28	0.25	0.23	0.21	0.21	0.21	0.21	0.21
140	0.30	0.27	0.25	0.23	0.21	0.20	0.20	0.20	0.20	0.21
145	0.27	0.25	0.23	0.22	0.20	0.19	0.19	0.19	0.19	0.20
150	0.24	0.23	0.22	0.21	0.20	0.19	0.19	0.19	0.19	0.19
155	0.21	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.17
160	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.17	0.17	0.17
165	0.20	0.19	0.19	0.19	0.19	0.18	0.18	0.17	0.17	0.17
170	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.17	0.17
175	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
180	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>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.11	0.11	0.10	0.10	0.10	0.10	0.00
10	0.10	0.10	0.10	0.10	0.10	0.10	0.00
15	0.11	0.11	0.10	0.10	0.10	0.10	0.00
20	0.12	0.12	0.11	0.10	0.10	0.10	0.00
25	0.12	0.12	0.12	0.12	0.12	0.11	0.00
30	0.12	0.12	0.12	0.12	0.11	0.10	0.00
35	0.12	0.12	0.12	0.12	0.11	0.10	0.00
40	0.12	0.12	0.12	0.13	0.13	0.12	0.00
45	0.13	0.12	0.13	0.13	0.14	0.14	0.00
50	0.13	0.12	0.13	0.14	0.14	0.14	0.00
55	0.14	0.12	0.12	0.14	0.14	0.14	0.00
60	0.15	0.14	0.12	0.14	0.14	0.14	0.00
65	0.16	0.15	0.14	0.14	0.14	0.14	0.00
70	0.16	0.14	0.15	0.15	0.15	0.15	0.00
75	0.16	0.15	0.14	0.15	0.15	0.15	0.00
80	0.16	0.15	0.16	0.16	0.15	0.15	0.00
85	0.17	0.17	0.17	0.17	0.17	0.16	0.00
90	0.19	0.17	0.17	0.17	0.19	0.17	0.00
95	0.19	0.19	0.19	0.19	0.21	0.22	0.00
100	0.21	0.21	0.21	0.21	0.24	0.26	0.00
105	0.22	0.22	0.22	0.24	0.24	0.27	0.00
110	0.21	0.22	0.23	0.24	0.26	0.27	0.00
115	0.21	0.22	0.24	0.26	0.26	0.27	0.00
120	0.23	0.24	0.24	0.27	0.27	0.27	0.00
125	0.22	0.23	0.24	0.26	0.27	0.27	0.00
130	0.22	0.22	0.23	0.24	0.24	0.27	0.00
135	0.22	0.22	0.22	0.23	0.24	0.24	0.00
140	0.21	0.21	0.21	0.22	0.22	0.22	0.00
145	0.20	0.20	0.20	0.21	0.21	0.21	0.00
150	0.19	0.19	0.19	0.20	0.20	0.20	0.00
155	0.17	0.17	0.17	0.17	0.17	0.17	0.00
160	0.17	0.17	0.17	0.17	0.17	0.17	0.00
165	0.17	0.17	0.17	0.17	0.17	0.17	0.00
170	0.17	0.17	0.17	0.17	0.17	0.17	0.00
175	0.17	0.17	0.17	0.17	0.17	0.17	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00

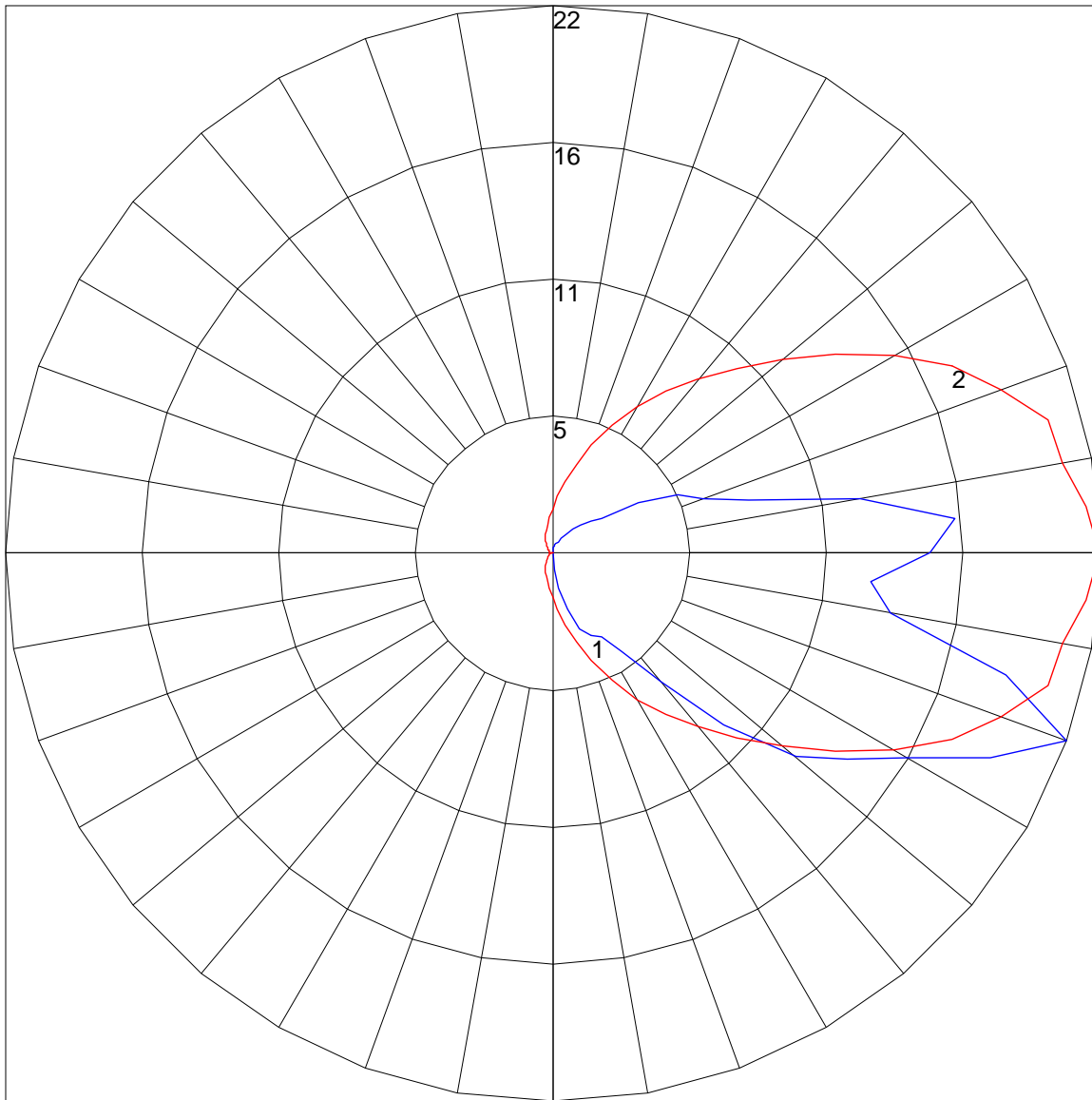
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	23.5	63.3
Downward House Side	1.4	3.8
Downward Total	24.9	67.0
Upward Street Side	11.2	30.0
Upward House Side	1.1	2.8
Upward Total	12.3	33.1
Total Flux	37.2	100.2

POLAR GRAPH

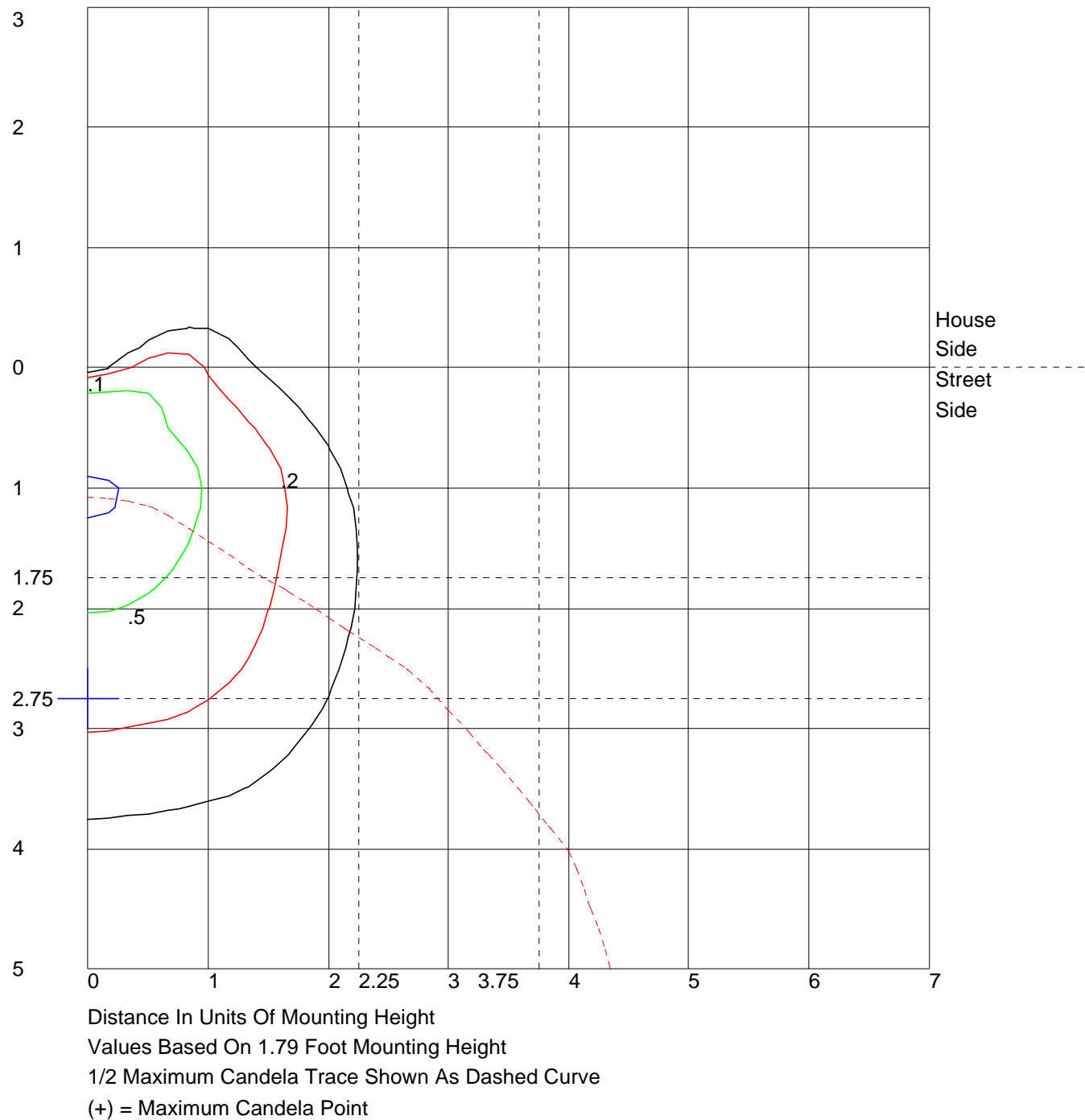


Maximum Candela = 21.96 Located At Horizontal Angle = 0, Vertical Angle = 70

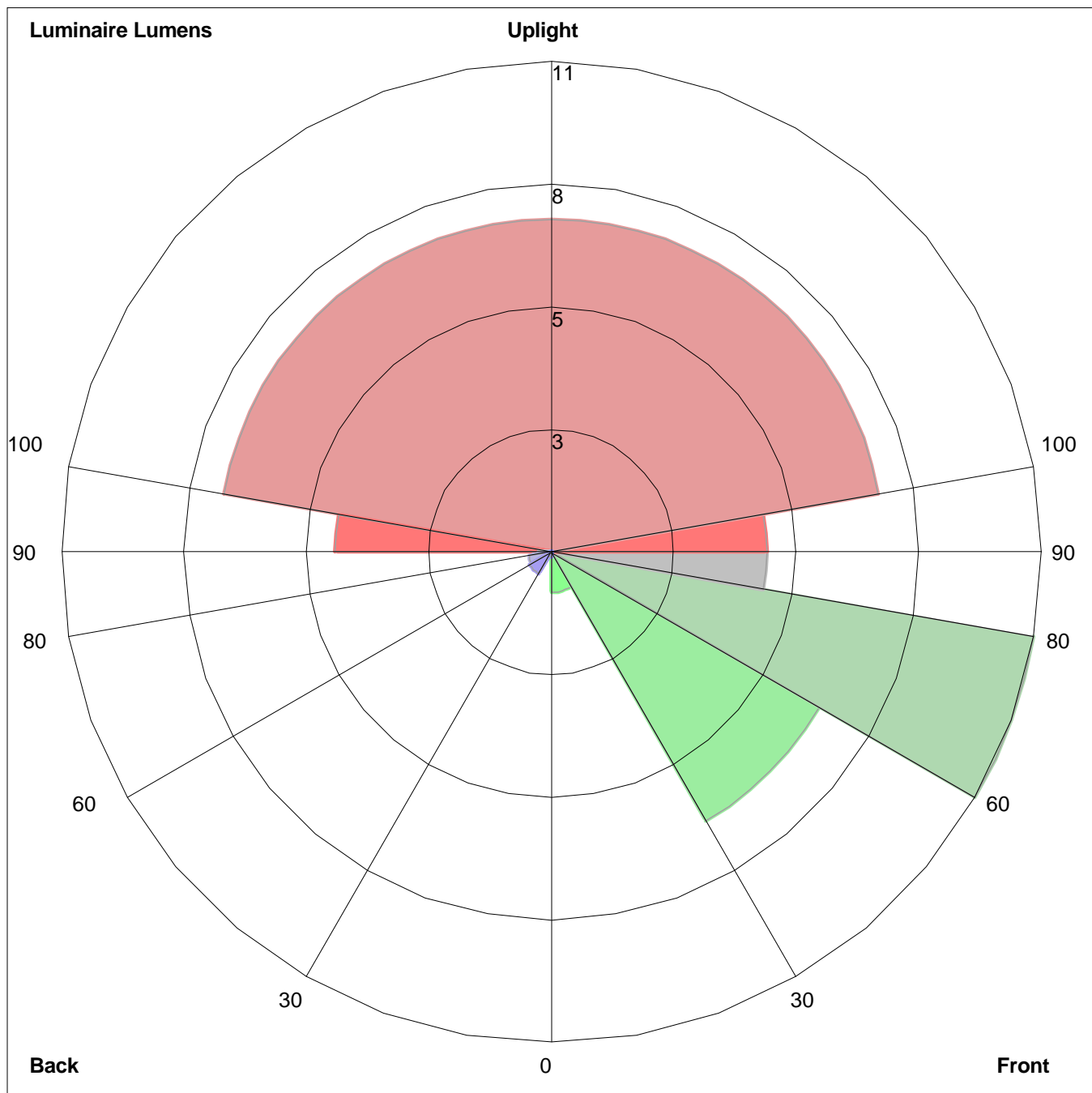
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)

2 - Horizontal Cone Through Vertical Angle (70) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=0.9, Medium=6.9, High=10.9, Very High=4.8
Back: Low=0.1, Medium=0.5, High=0.5, Very High=0.3
Uplight: Low=4.8, High=7.4

BUG Rating : B0-U1-G0