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Report No: L061507814

Date: 7/24/2015



NVLAP LAB CODE 200927-0

**Report No:** L061507814

**Report Prepared For:** Beachside Lighting  
 905 Kalaniana'ole Hwy # 29A Kailua, HI. 96734

**Model Number:** MB6-28-120V-5W-A

**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 MB6-28-120V-5W-A . Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** DAUER LED LED-GU10-5XPE-A-25° lamp was used for testing.

**Sample Arrival Date:** 7/14/15

**Date of Tests:** 7/23/15 - 7/24/15

**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.

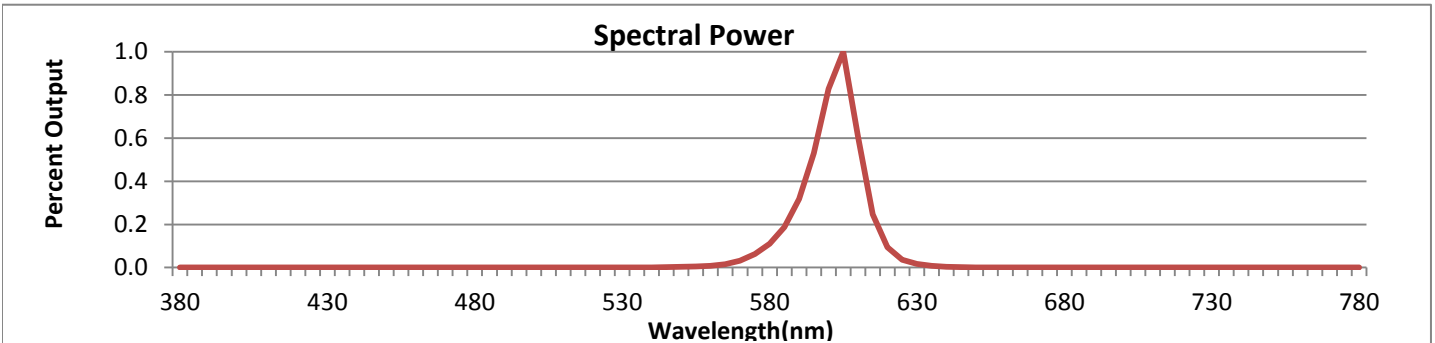
**Test Summary**

<b>Manufacturer:</b>	Beachside Lighting
<b>Model Number:</b>	MB6-28-120V-5W-A
<b>Driver Model Number:</b>	N/A
<b>Total Lumens:</b>	15.40
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.03
<b>Input Power (W):</b>	3.49
<b>Input Power Factor:</b>	0.96
<b>Current ATHD @ 120V(%):</b>	45%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	4
<b>Color Rendering Index (CRI):</b>	-9
<b>Correlated Color Temperature (K):</b>	1267
<b>Chromaticity Coordinate x:</b>	0.6207
<b>Chromaticity Coordinate y:</b>	0.3787
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	2:20
<b>Total Operating Time (Hours):</b>	3:40
<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.



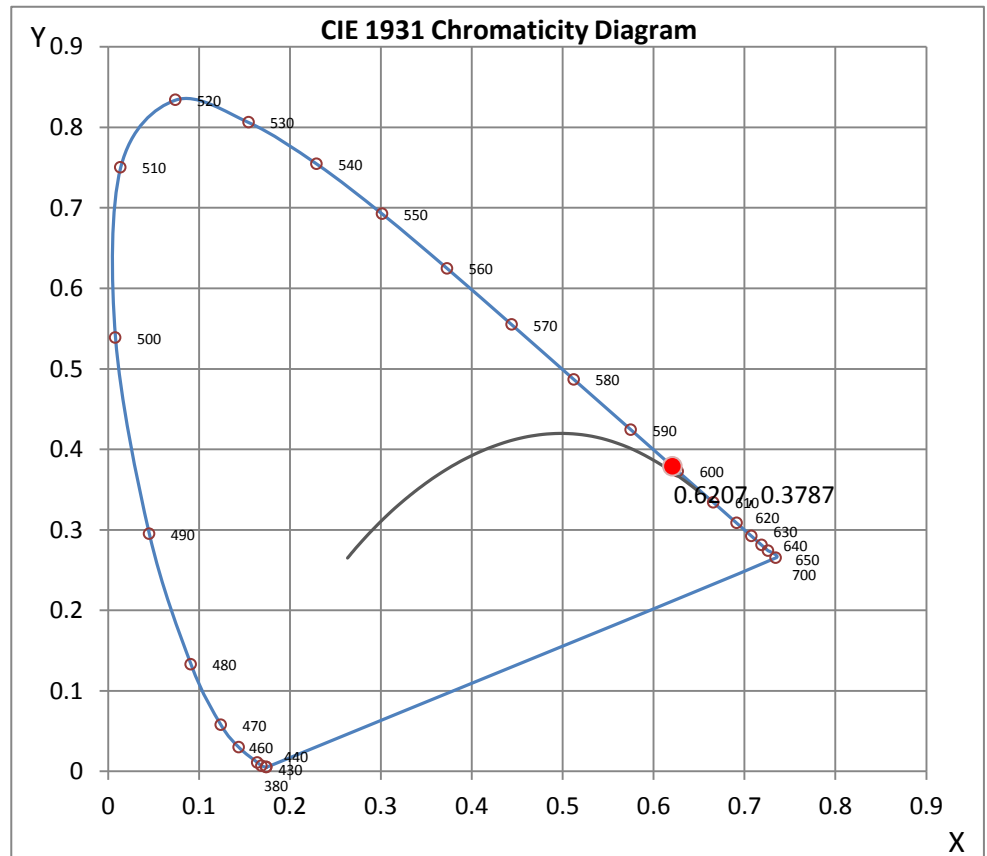
Wavelength	W/m <sup>2</sup> nm	440	0.0000	510	0.0001	580	0.1100	650	0.0012	720	0.0001
380	0.0000	450	0.0000	520	0.0002	590	0.3179	660	0.0006	730	0.0001
390	0.0001	460	0.0000	530	0.0003	600	0.8290	670	0.0003	740	0.0002
400	0.0000	470	0.0000	540	0.0010	610	0.6073	680	0.0001	750	0.0001
410	0.0000	480	0.0001	550	0.0029	620	0.0936	690	0.0002	760	0.0000
420	0.0001	490	0.0001	560	0.0083	630	0.0165	700	0.0001	770	0.0000
430	0.0001	500	0.0001	570	0.0310	640	0.0037	710	0.0001	780	0.0001

**CRI & CCT**

x	0.6207
y	0.3787
u'	0.3939
v'	0.5407
CRI	-8.60
CCT	1267
Duv	0.02170

**R Values**

R1	-14.78
R2	64.63
R3	16.58
R4	-52.65
R5	-24.31
R6	67.05
R7	-6.32
R8	-118.94
R9	-322.79
R10	50.27
R11	-66.43
R12	35.35
R13	4.70
R14	48.41



\*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: 12*



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# Photometric Test Report

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L061507814.IES**

**DESCRIPTIVE INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L061507814  
 [TESTLAB] LIGHT LABORATORY, INC.  
 [ISSUEDATE] 7/24/2015  
 [MANUFAC] BEACHSIDE LIGHTING  
 [LUMCAT] MB6-28-120V-5W-A  
 [LUMINAIRE] 6"DIA. X 36"H. BOLLARD WITH CAST BRASS SHADE  
 [MORE] CLEAR LENS  
 [BALLASTCAT] N.A.  
 [LAMPPOSITION] 0,0  
 [LAMPCAT] DAUER LED LED-GU10-5XPE-A-25°  
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
 [INPUT] 120VAC, 3.49W  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

IES Classification	Type VS
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	15
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	4
Total Luminaire Watts	3.49
Ballast Factor	1.00
Upward Waste Light Ratio	0.10
Maximum Candela	4.96
Maximum Candela Angle	0H 57.5V
Maximum Candela (<90 Degrees Vertical)	4.96
Maximum Candela Angle (<90 Degrees Vertical)	0H 57.5V
Maximum Candela At 90 Degrees Vertical	.2 (1.3% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	.87 (5.8% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L061507814.IES**

**LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	0.3	N.A.	1.7
FM - Front-Medium (30-60)	3.6	N.A.	23.7
FH - Front-High (60-80)	2.8	N.A.	18.1
FVH - Front-Very High (80-90)	0.2	N.A.	1.2
BL - Back-Low (0-30)	0.3	N.A.	1.7
BM - Back-Medium (30-60)	3.6	N.A.	23.7
BH - Back-High (60-80)	2.8	N.A.	18.1
BVH - Back-Very High (80-90)	0.2	N.A.	1.2
UL - Uplight-Low (90-100)	0.3	N.A.	1.7
UH - Uplight-High (100-180)	1.3	N.A.	8.6
<b>Total</b>	<b>15.4</b>	<b>N.A.</b>	<b>100.0</b>
<b>BUG Rating</b>	<b>B0-U1-G0</b>		

**ZONAL LUMEN SUMMARY**

Zone	%
0-20	0.8
0-30	3.4
0-40	10.6
0-60	50.9
0-80	87.2
0-90	89.6
10-90	89.6
20-40	9.8
20-50	25.4
40-70	64.6
60-80	36.3
70-80	12
80-90	2.4
90-110	4
90-120	5.9
90-130	7.1
90-150	10.2
90-180	10.3
110-180	6.4
0-180	100

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L061507814.IES**

**CANDELA TABULATION**

Vert. Angles	Horizontal Angles									
	<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>
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.07	0.07	0.07	0.07	0.07	0.06	0.05	0.07	0.05	0.04
10.0	0.27	0.26	0.26	0.26	0.24	0.24	0.22	0.20	0.20	0.17
15.0	0.43	0.43	0.43	0.44	0.43	0.41	0.40	0.39	0.37	0.37
20.0	0.61	0.60	0.60	0.59	0.59	0.59	0.58	0.56	0.55	0.57
25.0	0.90	0.90	0.90	0.89	0.88	0.86	0.86	0.86	0.83	0.82
30.0	1.34	1.36	1.35	1.34	1.33	1.30	1.27	1.24	1.20	1.16
35.0	1.80	1.81	1.79	1.74	1.70	1.66	1.61	1.61	1.59	1.60
37.5	2.11	2.10	2.06	2.00	1.96	1.90	1.86	1.83	1.84	1.83
40.0	2.48	2.46	2.43	2.36	2.30	2.23	2.17	2.12	2.11	2.12
42.5	2.92	2.91	2.84	2.76	2.68	2.60	2.51	2.45	2.44	2.43
45.0	3.38	3.36	3.31	3.20	3.10	3.00	2.89	2.81	2.78	2.76
47.5	3.86	3.82	3.74	3.63	3.52	3.38	3.24	3.17	3.11	3.10
50.0	4.26	4.26	4.17	4.04	3.89	3.75	3.62	3.48	3.41	3.40
52.5	4.62	4.59	4.53	4.37	4.23	4.11	3.92	3.78	3.68	3.64
55.0	4.86	4.83	4.73	4.59	4.44	4.31	4.14	3.97	3.86	3.81
57.5	4.96	4.91	4.82	4.67	4.53	4.38	4.20	4.03	3.94	3.90
60.0	4.89	4.87	4.76	4.63	4.48	4.33	4.14	4.01	3.91	3.86
62.5	4.69	4.65	4.55	4.43	4.29	4.16	4.00	3.85	3.74	3.70
65.0	4.33	4.29	4.22	4.10	4.00	3.86	3.70	3.58	3.47	3.41
67.5	3.82	3.80	3.73	3.63	3.52	3.41	3.29	3.16	3.07	3.01
70.0	3.21	3.18	3.11	3.03	2.96	2.88	2.78	2.68	2.60	2.54
72.5	2.60	2.56	2.52	2.47	2.40	2.32	2.24	2.17	2.11	2.08
75.0	1.99	1.96	1.92	1.87	1.83	1.78	1.72	1.67	1.61	1.57
77.5	1.39	1.36	1.33	1.31	1.28	1.25	1.21	1.16	1.13	1.10
80.0	0.87	0.86	0.85	0.83	0.82	0.81	0.77	0.75	0.71	0.70
85.0	0.27	0.26	0.26	0.28	0.27	0.26	0.26	0.23	0.21	0.21
90.0	0.19	0.19	0.20	0.20	0.20	0.20	0.19	0.17	0.15	0.14
95.0	0.26	0.26	0.26	0.26	0.26	0.26	0.24	0.23	0.20	0.20
100.0	0.32	0.32	0.32	0.32	0.32	0.31	0.31	0.29	0.26	0.24
105.0	0.41	0.39	0.40	0.39	0.40	0.39	0.37	0.35	0.31	0.29
110.0	0.46	0.46	0.45	0.45	0.46	0.44	0.42	0.38	0.34	0.31
115.0	0.44	0.44	0.44	0.43	0.43	0.43	0.40	0.37	0.31	0.27
120.0	0.43	0.43	0.43	0.42	0.41	0.40	0.37	0.35	0.31	0.25
125.0	0.34	0.33	0.34	0.34	0.33	0.33	0.31	0.28	0.25	0.21
130.0	0.24	0.22	0.24	0.23	0.23	0.22	0.21	0.20	0.19	0.16
135.0	0.27	0.27	0.28	0.28	0.27	0.28	0.26	0.25	0.21	0.17
140.0	0.71	0.67	0.65	0.64	0.64	0.64	0.57	0.51	0.42	0.24
145.0	1.56	1.51	1.44	1.42	1.45	1.45	1.28	0.99	0.77	0.75
150.0	0.26	0.24	0.24	0.23	0.23	0.23	0.20	0.17	0.15	0.30
155.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.0	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>
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
10.0	0.17	0.17	0.15	0.14	0.14	0.14	0.13	0.12	0.14

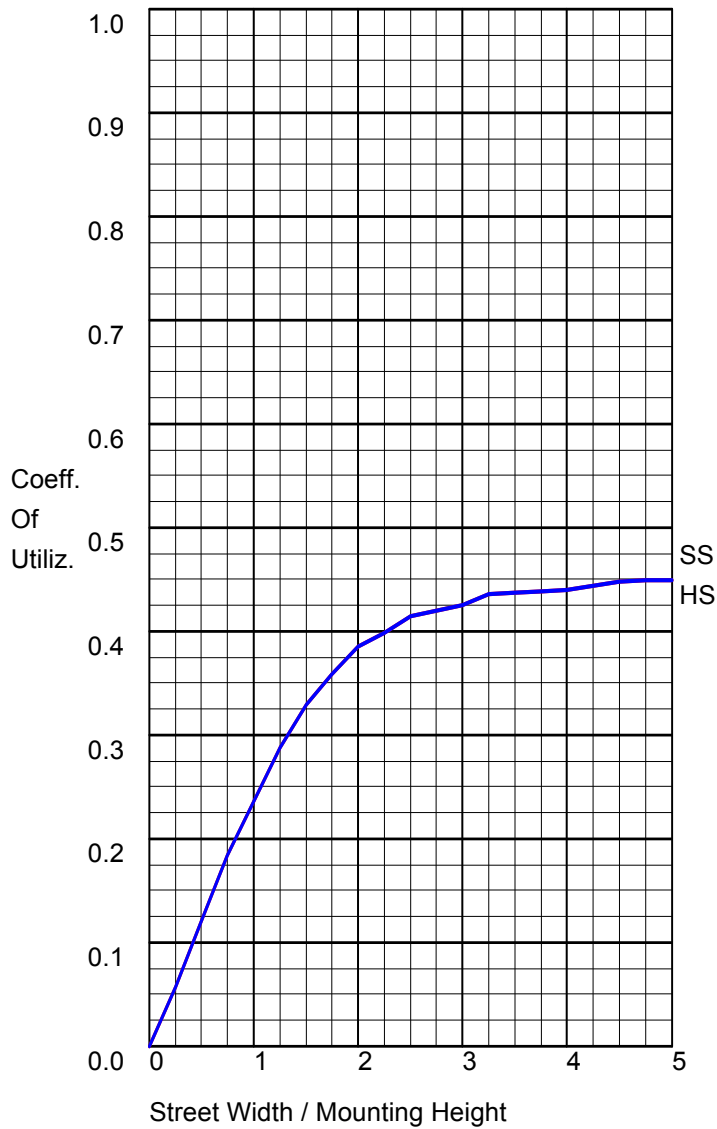
**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L061507814.IES**

**CANDELA TABULATION - (Cont.)**

15.0	0.37	0.36	0.36	0.36	0.32	0.32	0.31	0.31	0.31
20.0	0.56	0.56	0.55	0.55	0.53	0.52	0.52	0.51	0.51
25.0	0.83	0.85	0.84	0.84	0.81	0.80	0.82	0.82	0.82
30.0	1.16	1.19	1.19	1.19	1.20	1.20	1.22	1.24	1.26
35.0	1.60	1.61	1.63	1.66	1.70	1.75	1.78	1.83	1.82
37.5	1.86	1.87	1.89	1.95	2.00	2.06	2.11	2.16	2.17
40.0	2.13	2.17	2.22	2.28	2.34	2.39	2.46	2.52	2.55
42.5	2.45	2.50	2.56	2.64	2.73	2.81	2.89	2.94	2.97
45.0	2.79	2.85	2.94	3.01	3.13	3.22	3.32	3.39	3.41
47.5	3.13	3.19	3.28	3.40	3.50	3.63	3.72	3.80	3.84
50.0	3.41	3.50	3.59	3.73	3.86	3.98	4.10	4.18	4.21
52.5	3.67	3.77	3.90	4.03	4.17	4.31	4.42	4.52	4.53
55.0	3.86	3.93	4.09	4.24	4.38	4.53	4.65	4.75	4.79
57.5	3.92	4.02	4.15	4.31	4.48	4.62	4.74	4.84	4.89
60.0	3.89	3.97	4.12	4.29	4.42	4.57	4.69	4.78	4.81
62.5	3.73	3.82	3.96	4.11	4.25	4.37	4.48	4.57	4.60
65.0	3.43	3.52	3.66	3.80	3.92	4.03	4.13	4.20	4.23
67.5	3.03	3.12	3.23	3.34	3.46	3.54	3.62	3.68	3.69
70.0	2.56	2.62	2.71	2.78	2.87	2.92	3.00	3.03	3.07
72.5	2.06	2.10	2.16	2.23	2.28	2.33	2.38	2.41	2.43
75.0	1.57	1.59	1.62	1.66	1.70	1.74	1.76	1.79	1.80
77.5	1.08	1.10	1.10	1.13	1.14	1.16	1.18	1.19	1.21
80.0	0.68	0.67	0.67	0.67	0.68	0.68	0.69	0.70	0.70
85.0	0.21	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.17
90.0	0.14	0.16	0.17	0.18	0.19	0.19	0.18	0.18	0.19
95.0	0.20	0.22	0.25	0.26	0.26	0.26	0.25	0.26	0.26
100.0	0.26	0.28	0.30	0.31	0.31	0.30	0.30	0.30	0.31
105.0	0.30	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.32
110.0	0.30	0.28	0.27	0.27	0.28	0.26	0.26	0.25	0.26
115.0	0.23	0.20	0.18	0.17	0.14	0.14	0.14	0.14	0.14
120.0	0.21	0.16	0.14	0.11	0.10	0.10	0.09	0.08	0.09
125.0	0.18	0.13	0.11	0.10	0.09	0.08	0.07	0.07	0.07
130.0	0.14	0.12	0.10	0.09	0.08	0.07	0.07	0.07	0.05
135.0	0.14	0.12	0.10	0.09	0.08	0.07	0.06	0.06	0.07
140.0	0.22	0.22	0.14	0.09	0.08	0.07	0.06	0.05	0.05
145.0	0.49	0.49	0.23	0.13	0.07	0.07	0.05	0.05	0.03
150.0	0.11	0.09	0.09	0.06	0.05	0.05	0.04	0.03	0.03
155.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



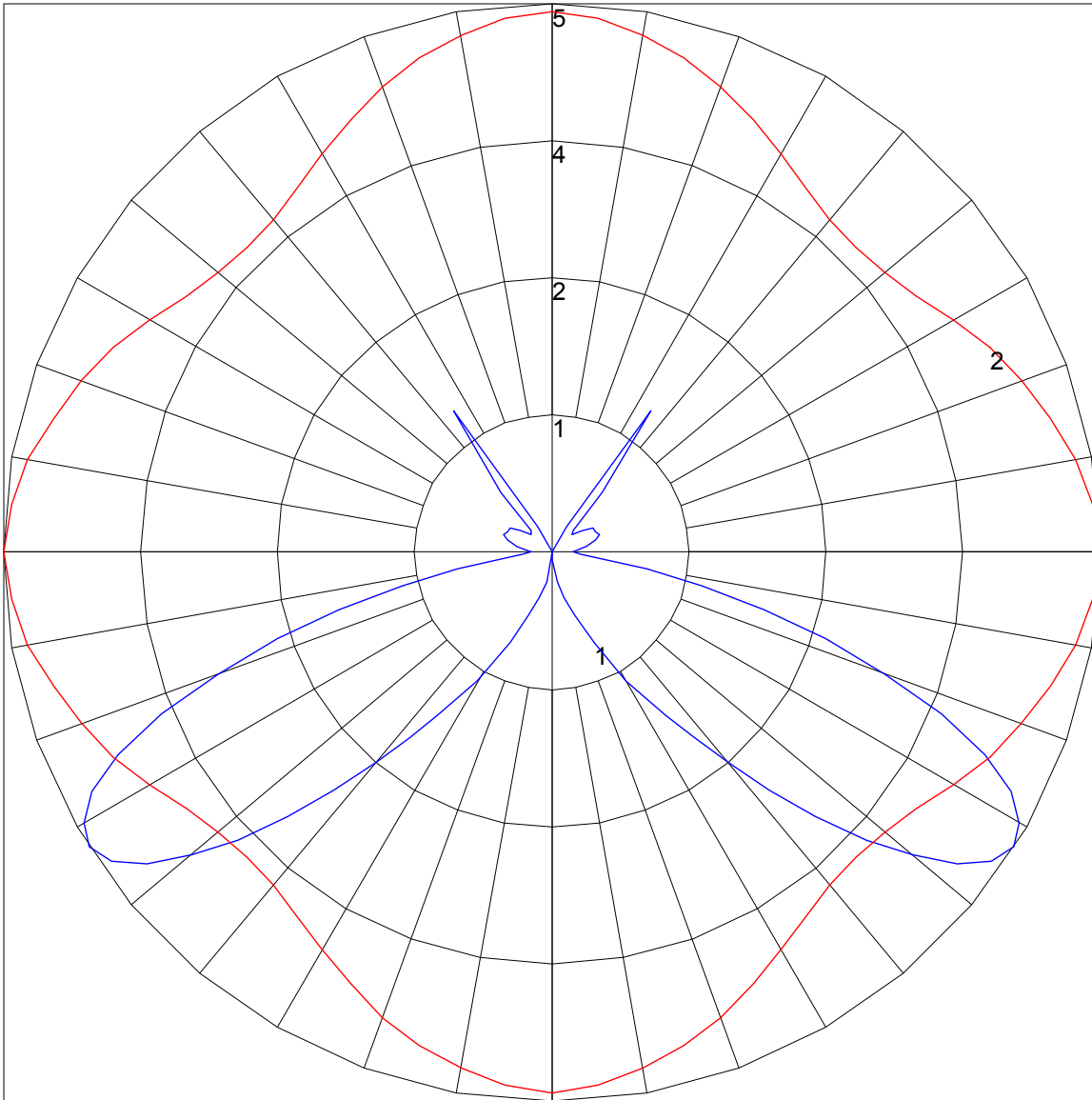
**COEFFICIENTS OF UTILIZATION**



**FLUX DISTRIBUTION**

	Lumens	Percent Of Luminaire
Downward Street Side	6.9	44.8
Downward House Side	6.9	44.8
Downward Total	13.8	89.8
Upward Street Side	0.8	5.2
Upward House Side	0.8	5.2
Upward Total	1.6	10.4
<b>Total Flux</b>	<b>15.4</b>	<b>100.2</b>

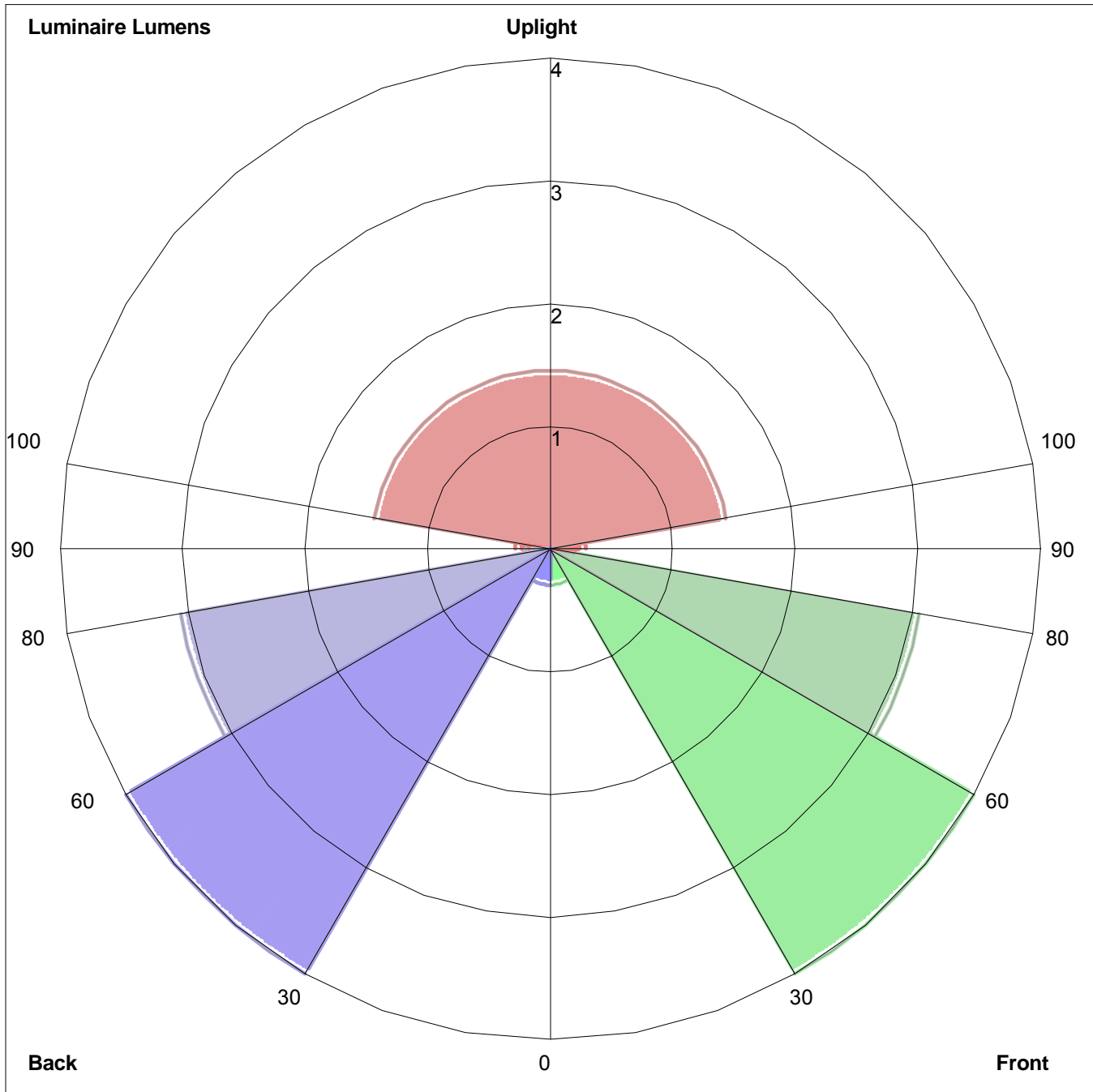
POLAR GRAPH



Maximum Candela = 4.96 Located At Horizontal Angle = 0, Vertical Angle = 57.5  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (57.5) (Through Max. Cd.)



LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:  
Front: Low=0.3, Medium=3.6, High=2.8, Very High=0.2  
Back: Low=0.3, Medium=3.6, High=2.8, Very High=0.2  
Uplight: Low=0.3, High=1.3

BUG Rating : B0-U1-G0