



8165 E Kaiser Blvd. Anaheim, CA 92808  
www.lightlaboratory.com

Report No: L031710301



**Report No:** L031710301

**Issue Date:** 4/3/2017

**Prepared For:** HK Lighting Group  
3529 Old Conejo Road Ste. 118, Newbury Park CA, 91320

**Model Number:** MB16-SOi BK LASO-B-3/7.5/10 Cord

**Test:** Photometric/Electrical Test

**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. Received in working and undamaged condition. No modifications were necessary.

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

**Sample Arrival Date:** 4/1/17

**Date of Tests:** 4/1/17 - 4/3/17

**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	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
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>	HK Lighting Group
<b>Model Number:</b>	MB16-SOi BK LASO-B-3/7.5/10 Cord
<b>Driver Model Number:</b>	N/A
<b>Total Lumens:</b>	78.00
<b>Input Voltage (VAC/60Hz):</b>	12.00
<b>Input Current (Amp):</b>	0.73
<b>Input Power (W):</b>	8.08
<b>Input Power Factor:</b>	0.93
<b>Current ATHD @ 12V(%):</b>	35%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	10
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:50
<b>Total Operating Time (Hours):</b>	2:00



FIG.1 LUMINAIRE



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## Test Methods

### Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

### Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

### Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : 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*

*\*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 : L031710301.IES

### DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L031710301  
[TESTLAB] LIGHT LABORATORY, INC.  
[ISSUEDATE] 4/3/2017  
[MANUFAC] HK Lighting Group  
[LUMCAT] MB16-SOi BK LASO-B-3/7.5/10 Cord  
[LUMINAIRE] MB16 mini-bollard with SORAA heat sink pins, black.  
[MORE] SORAA LED, Brilliant, 3000K 7.5W/10 degrees.  
[BALLASTCAT] N/A  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 12VAC, 8.08W  
[TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

IES Classification	Type V
Longitudinal Classification	Very Long
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	78
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	10
Total Luminaire Watts	8.08
Ballast Factor	1.00
Upward Waste Light Ratio	0.54
Maximum Candela	12.209
Maximum Candela Angle	0H 95V
Maximum Candela (<90 Degrees Vertical)	10.927
Maximum Candela Angle (<90 Degrees Vertical)	0H 85V
Maximum Candela At 90 Degrees Vertical	11.959 (15.3% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	10.927 (14.0% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L031710301.IES**

**LUMINAIRE CLASSIFICATION SYSTEM (LCS)**

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	0.6	N.A.	0.8
FM - Front-Medium (30-60)	4.2	N.A.	5.3
FH - Front-High (60-80)	7.2	N.A.	9.2
FVH - Front-Very High (80-90)	5.9	N.A.	7.6
BL - Back-Low (0-30)	0.6	N.A.	0.8
BM - Back-Medium (30-60)	4.2	N.A.	5.3
BH - Back-High (60-80)	7.2	N.A.	9.2
BVH - Back-Very High (80-90)	5.9	N.A.	7.6
UL - Uplight-Low (90-100)	13.1	N.A.	16.8
UH - Uplight-High (100-180)	29.1	N.A.	37.2
Total	78.0	N.A.	100.0
BUG Rating	B0-U2-G0		

**ZONAL LUMEN SUMMARY**

Zone	%
0-20	0.5
0-30	1.6
0-40	3.8
0-60	12.3
0-80	30.8
0-90	45.9
10-90	45.9
20-40	3.3
20-50	6.8
40-70	15.9
60-80	18.5
70-80	11
80-90	15.2
90-110	31.2
90-120	41.3
90-130	47.4
90-150	52.3
90-180	54.1
110-180	22.9
0-180	100

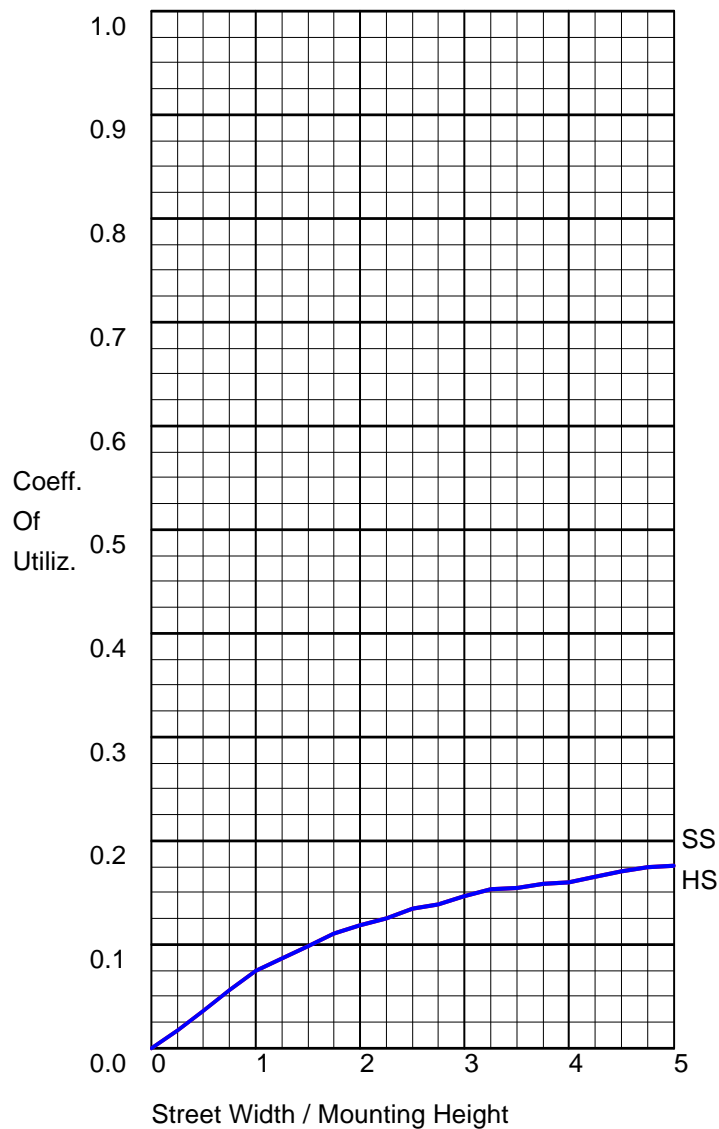
**IES ROAD REPORT**  
**PHOTOMETRIC FILENAME : L031710301.IES**

**CANDELA TABULATION**

**Vert. Horizontal Angles**  
**Angles**

	<u>0</u>
<b>0</b>	0.000
<b>5</b>	0.343
<b>10</b>	0.705
<b>15</b>	1.122
<b>20</b>	1.531
<b>25</b>	1.934
<b>30</b>	2.307
<b>35</b>	2.702
<b>40</b>	3.094
<b>45</b>	3.480
<b>50</b>	3.866
<b>55</b>	4.325
<b>60</b>	4.918
<b>65</b>	5.770
<b>70</b>	6.853
<b>75</b>	8.066
<b>80</b>	9.521
<b>85</b>	10.927
<b>90</b>	11.959
<b>95</b>	12.209
<b>100</b>	11.704
<b>105</b>	10.645
<b>110</b>	9.299
<b>115</b>	7.874
<b>120</b>	6.603
<b>125</b>	5.356
<b>130</b>	4.123
<b>135</b>	2.875
<b>140</b>	2.216
<b>145</b>	2.255
<b>150</b>	2.237
<b>155</b>	2.129
<b>160</b>	1.805
<b>165</b>	1.407
<b>170</b>	0.828
<b>175</b>	0.170
<b>180</b>	0.000

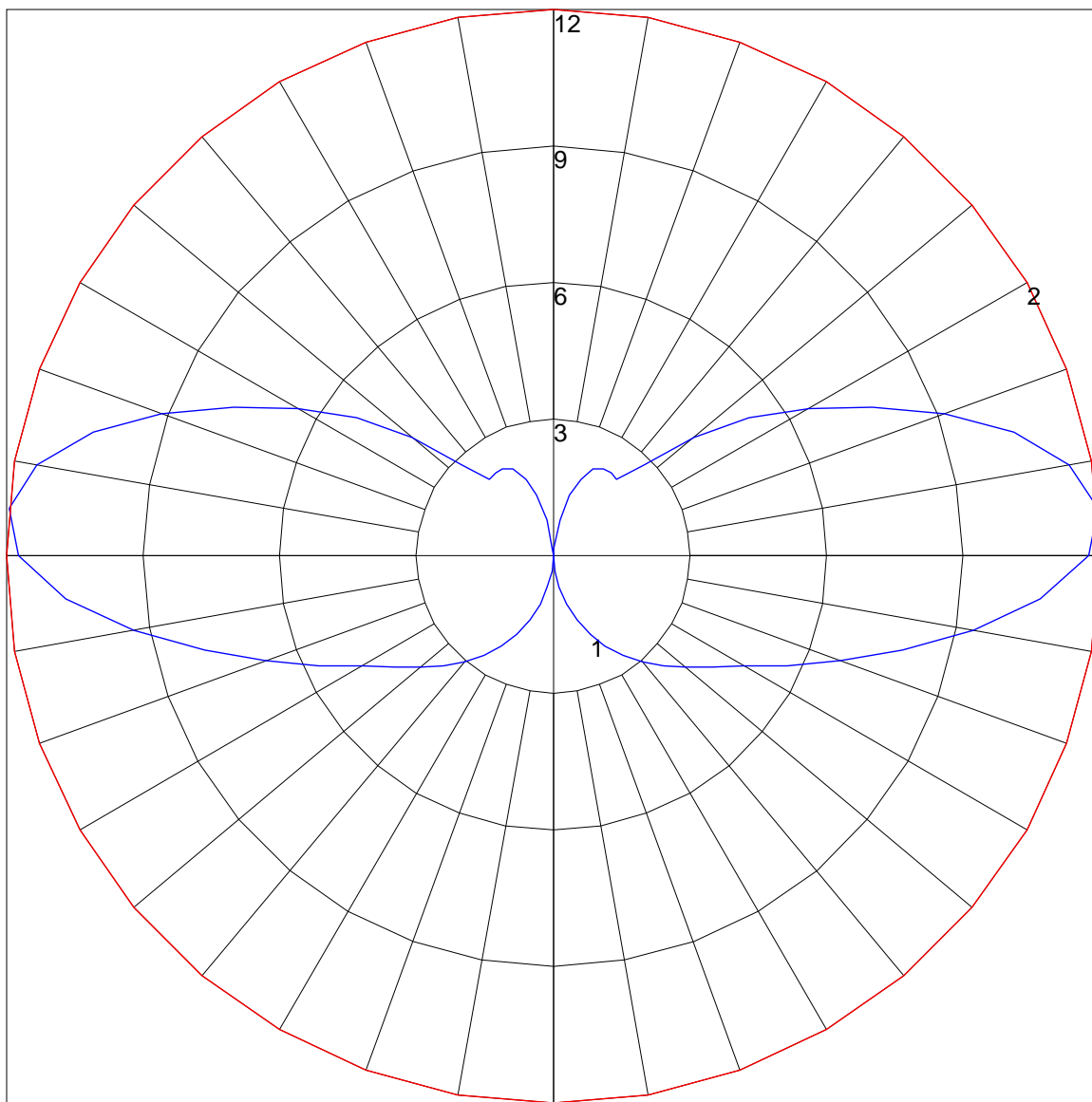
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	17.9	23.0
Downward House Side	17.9	23.0
Downward Total	35.8	45.9
Upward Street Side	21.1	27.0
Upward House Side	21.1	27.0
Upward Total	42.2	54.1
Total Flux	78.0	100.0

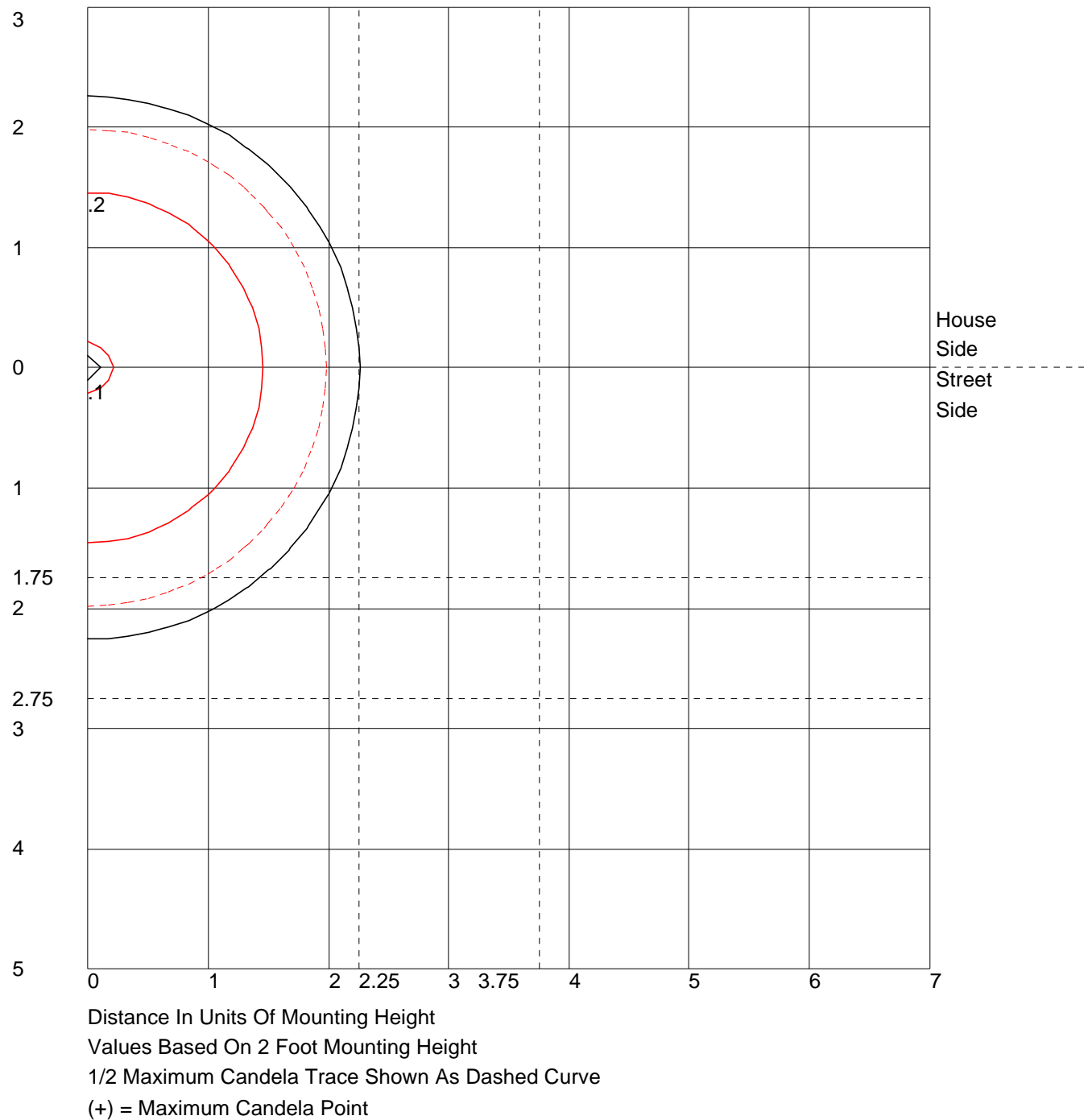
POLAR GRAPH



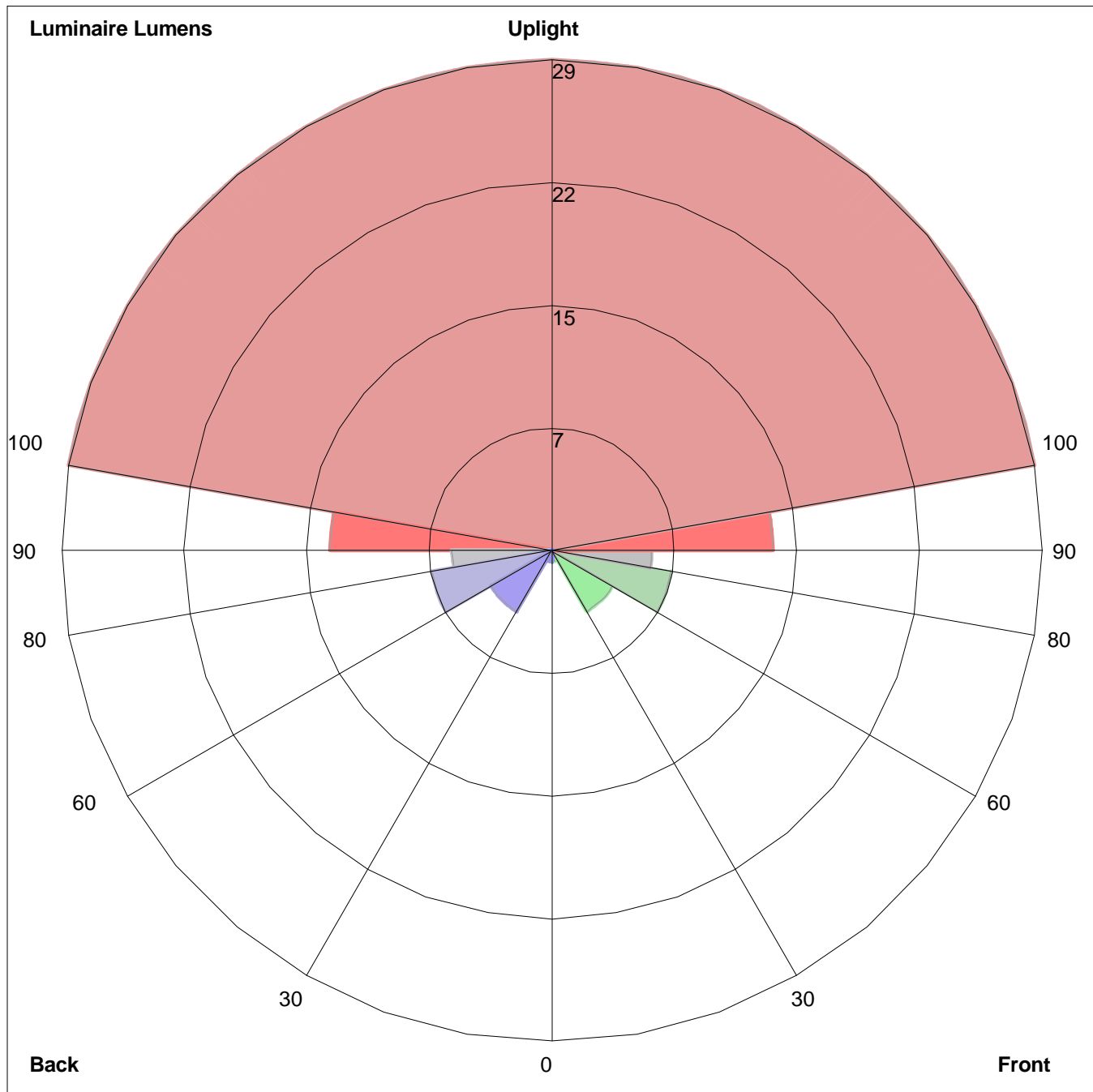
Maximum Candela = 12.209 Located At Horizontal Angle = 0, Vertical Angle = 95  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (95) (Through Max. Cd.)



## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:  
Front: Low=0.6, Medium=4.2, High=7.2, Very High=5.9  
Back: Low=0.6, Medium=4.2, High=7.2, Very High=5.9  
Uplight: Low=13.1, High=29.1

BUG Rating : B0-U2-G0