



8165 E Kaiser Blvd. Anaheim, CA 92808
p. 714.282.2270
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Report No: L051602710

Date: 5/24/2016



NVLAP LAB CODE 200927-0

Report No: L051602710

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

Model Number: MBL08-RD1.25

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. Catalog number is MBL08-RD1.25. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 5/11/16

Date of Tests: 5/20/16 - 5/24/16

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:	HK Lighting Group
Model Number:	MBL08-RD1.25
Driver Model Number:	HATCH RS12-60M-LED
Total Lumens:	46.00
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.04
Input Power (W):	3.23
Input Power Factor:	0.68
Current ATHD @ 120V(%):	65%
Current ATHD @ 277V(%):	N/A
Efficacy:	14
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:50
Total Operating Time (Hours):	1:55
Off State Power(W):	0.00

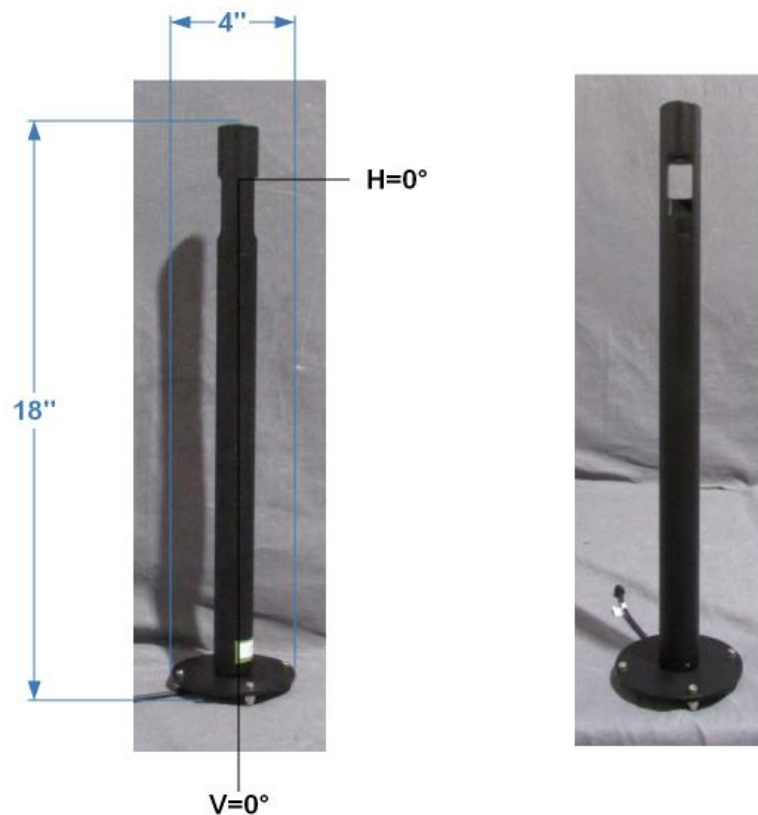


FIG.1 LUMINAIRE



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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: 11*

**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 : L051602710.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L051602710
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 5/24/2016
[MANUFAC] HK LIGHTING GROUP
[LUMCAT] MBL08-RD1.25
[LUMINAIRE] LED Mini Bollard anodized black finish
[BALLASTCAT] HATCH RS12-60M-LED
[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, 3.23W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type II
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	46
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	14
Total Luminaire Watts	3.23
Ballast Factor	1.00
Upward Waste Light Ratio	0.01
Maximum Candela	42.79
Maximum Candela Angle	15H 20V
Maximum Candela (<90 Degrees Vertical)	42.79
Maximum Candela Angle (<90 Degrees Vertical)	15H 20V
Maximum Candela At 90 Degrees Vertical	.4 (0.9% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	3.31 (7.2% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L051602710.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	4.6	N.A.	10.1
FM - Front-Medium (30-60)	15.1	N.A.	32.8
FH - Front-High (60-80)	2.7	N.A.	5.9
FVH - Front-Very High (80-90)	0.4	N.A.	0.8
BL - Back-Low (0-30)	4.6	N.A.	10.1
BM - Back-Medium (30-60)	15.1	N.A.	32.8
BH - Back-High (60-80)	2.7	N.A.	5.9
BVH - Back-Very High (80-90)	0.4	N.A.	0.8
UL - Uplight-Low (90-100)	0.2	N.A.	0.4
UH - Uplight-High (100-180)	0.2	N.A.	0.5
Total	46.0	N.A.	100.0
BUG Rating	B0-U1-G0		

ZONAL LUMEN SUMMARY

Zone	%
0-20	3
0-30	20.2
0-40	42.1
0-60	85.7
0-80	97.5
0-90	99.1
10-90	99.1
20-40	39.2
20-50	62.1
40-70	51.9
60-80	11.8
70-80	3.4
80-90	1.6
90-110	0.7
90-120	0.9
90-130	0.9
90-150	0.9
90-180	0.9
110-180	0.2
0-180	100

IES ROAD REPORT
PHOTOMETRIC FILENAME : L051602710.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	0.04	0.04	0.04	0.04	0.04	0.07	0.06	0.07	0.07	0.10
10.0	0.07	0.07	0.07	0.07	0.07	0.08	0.10	0.10	0.10	0.10
15.0	0.49	0.49	0.44	0.39	0.35	0.31	0.27	0.24	0.20	0.17
20.0	42.26	42.37	42.58	42.79	42.24	39.70	30.59	16.79	5.31	1.04
25.0	40.84	40.88	41.06	41.37	41.60	40.67	35.88	26.48	16.69	7.21
30.0	38.98	39.04	39.26	39.51	39.71	38.92	34.11	26.01	16.42	7.59
35.0	36.44	36.45	36.61	36.83	37.00	36.15	31.44	23.52	14.82	7.19
37.5	35.13	35.13	35.29	35.49	35.65	34.67	30.52	22.73	14.51	6.56
40.0	33.76	33.80	33.93	34.11	34.29	33.42	28.95	22.14	13.74	6.01
42.5	32.44	32.45	32.57	32.73	32.86	32.12	27.95	20.81	12.98	6.04
45.0	31.12	31.10	31.19	31.28	31.40	30.58	26.88	19.95	12.65	5.50
47.5	29.78	29.75	29.79	29.83	29.92	29.22	25.34	19.15	11.78	4.87
50.0	28.45	28.41	28.41	28.39	28.41	27.79	24.17	17.88	11.26	4.94
52.5	27.13	27.07	27.00	26.92	26.89	26.18	22.99	16.98	10.77	4.53
55.0	25.60	25.50	25.36	25.18	25.06	24.38	21.05	15.83	9.77	4.00
57.5	23.43	23.31	23.05	22.71	22.45	21.74	18.98	13.79	8.83	3.83
60.0	19.22	19.07	18.75	18.38	18.10	17.51	15.72	11.62	7.62	3.24
62.5	12.49	12.39	12.17	11.95	11.88	11.71	10.71	8.33	5.56	2.73
65.0	7.58	7.43	7.11	6.81	6.68	6.58	6.01	4.73	3.37	1.78
67.5	5.20	5.02	4.65	4.31	4.13	4.03	3.60	2.85	2.08	1.14
70.0	4.38	4.23	3.85	3.45	3.24	3.11	2.75	2.16	1.59	0.97
72.5	4.33	4.09	3.74	3.35	3.13	2.96	2.64	2.07	1.52	0.85
75.0	4.09	3.90	3.54	3.19	2.97	2.81	2.45	1.93	1.42	0.81
77.5	3.77	3.58	3.29	2.95	2.74	2.60	2.27	1.76	1.31	0.72
80.0	3.31	3.11	2.83	2.57	2.38	2.25	1.91	1.51	1.09	0.60
85.0	1.76	1.68	1.51	1.36	1.28	1.14	0.91	0.67	0.49	0.30
90.0	0.40	0.37	0.32	0.25	0.20	0.18	0.17	0.17	0.17	0.17
95.0	0.21	0.18	0.17	0.16	0.14	0.13	0.13	0.13	0.15	0.15
100.0	0.14	0.13	0.11	0.12	0.11	0.11	0.11	0.13	0.14	0.15
105.0	0.09	0.10	0.10	0.11	0.10	0.11	0.11	0.11	0.14	0.14
110.0	0.09	0.07	0.08	0.08	0.09	0.10	0.11	0.11	0.12	0.13
115.0	0.07	0.08	0.08	0.08	0.09	0.10	0.11	0.12	0.12	0.14
120.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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

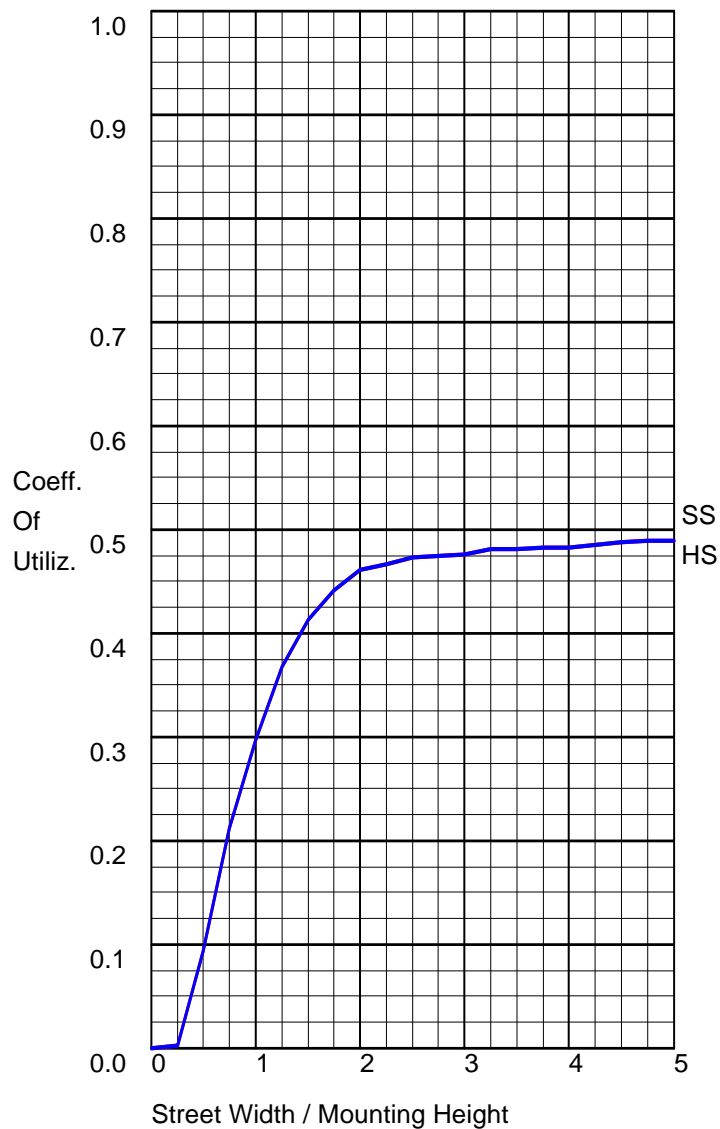
Vert. Angles	Horizontal Angles									
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5.0	0.10	0.10	0.10	0.10	0.10	0.13	0.13	0.14	0.14	
10.0	0.10	0.11	0.11	0.11	0.12	0.14	0.14	0.13	0.14	

IES ROAD REPORT
PHOTOMETRIC FILENAME : L051602710.IES

CANDELA TABULATION - (Cont.)

15.0	0.15	0.12	0.12	0.12	0.12	0.14	0.14	0.14	0.14
20.0	0.34	0.20	0.17	0.14	0.14	0.14	0.14	0.14	0.14
25.0	2.65	1.26	0.47	0.22	0.16	0.14	0.14	0.15	0.14
30.0	3.67	2.77	1.74	0.70	0.26	0.17	0.14	0.14	0.14
35.0	3.41	3.04	2.42	1.63	0.72	0.25	0.17	0.15	0.17
37.5	3.18	2.91	2.42	1.72	0.91	0.35	0.18	0.17	0.17
40.0	3.02	2.73	2.31	1.69	1.02	0.40	0.20	0.17	0.17
42.5	2.76	2.51	2.17	1.60	0.98	0.43	0.22	0.17	0.17
45.0	2.49	2.28	1.95	1.49	0.93	0.44	0.22	0.17	0.17
47.5	2.31	2.07	1.76	1.33	0.86	0.42	0.23	0.18	0.17
50.0	2.08	1.86	1.59	1.18	0.76	0.40	0.23	0.17	0.17
52.5	1.86	1.66	1.39	1.06	0.70	0.37	0.23	0.18	0.17
55.0	1.68	1.44	1.22	0.91	0.61	0.34	0.21	0.18	0.17
57.5	1.45	1.23	1.06	0.79	0.54	0.32	0.21	0.17	0.17
60.0	1.22	1.05	0.89	0.69	0.48	0.30	0.20	0.17	0.17
62.5	1.05	0.88	0.74	0.57	0.41	0.28	0.19	0.17	0.17
65.0	0.85	0.74	0.62	0.49	0.36	0.25	0.19	0.17	0.17
67.5	0.73	0.62	0.50	0.41	0.32	0.24	0.19	0.17	0.17
70.0	0.63	0.52	0.44	0.36	0.28	0.21	0.18	0.17	0.17
72.5	0.54	0.45	0.38	0.30	0.24	0.20	0.18	0.17	0.17
75.0	0.48	0.38	0.32	0.27	0.24	0.19	0.17	0.17	0.17
77.5	0.42	0.34	0.29	0.24	0.20	0.18	0.17	0.17	0.17
80.0	0.37	0.29	0.24	0.23	0.19	0.17	0.17	0.17	0.17
85.0	0.24	0.22	0.20	0.18	0.17	0.17	0.17	0.17	0.17
90.0	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
95.0	0.16	0.16	0.16	0.17	0.16	0.17	0.17	0.17	0.17
100.0	0.15	0.14	0.14	0.15	0.17	0.17	0.17	0.17	0.17
105.0	0.14	0.14	0.15	0.16	0.17	0.17	0.17	0.17	0.17
110.0	0.14	0.14	0.14	0.16	0.16	0.17	0.17	0.17	0.17
115.0	0.15	0.15	0.15	0.15	0.17	0.17	0.17	0.17	0.17
120.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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

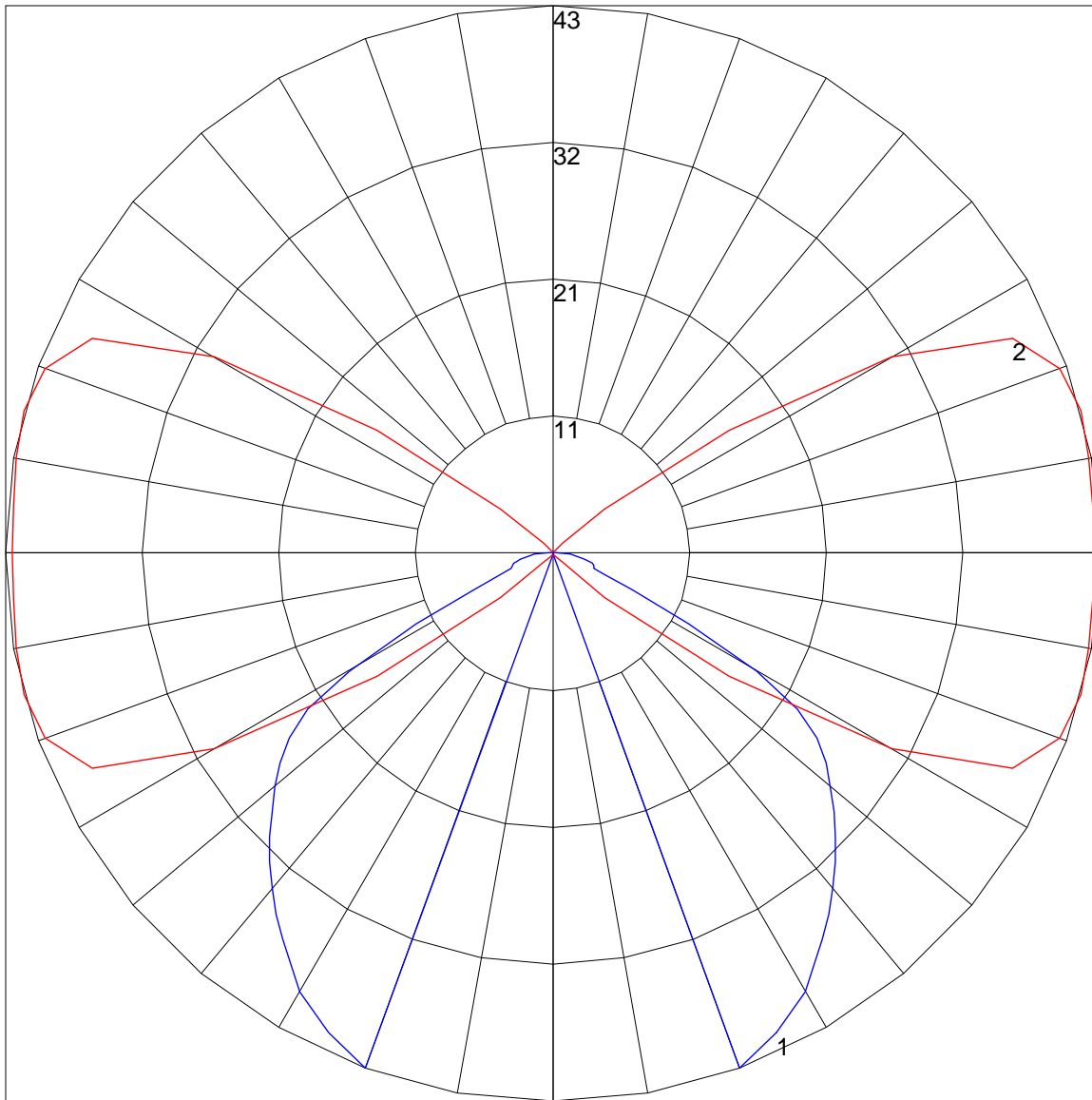
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

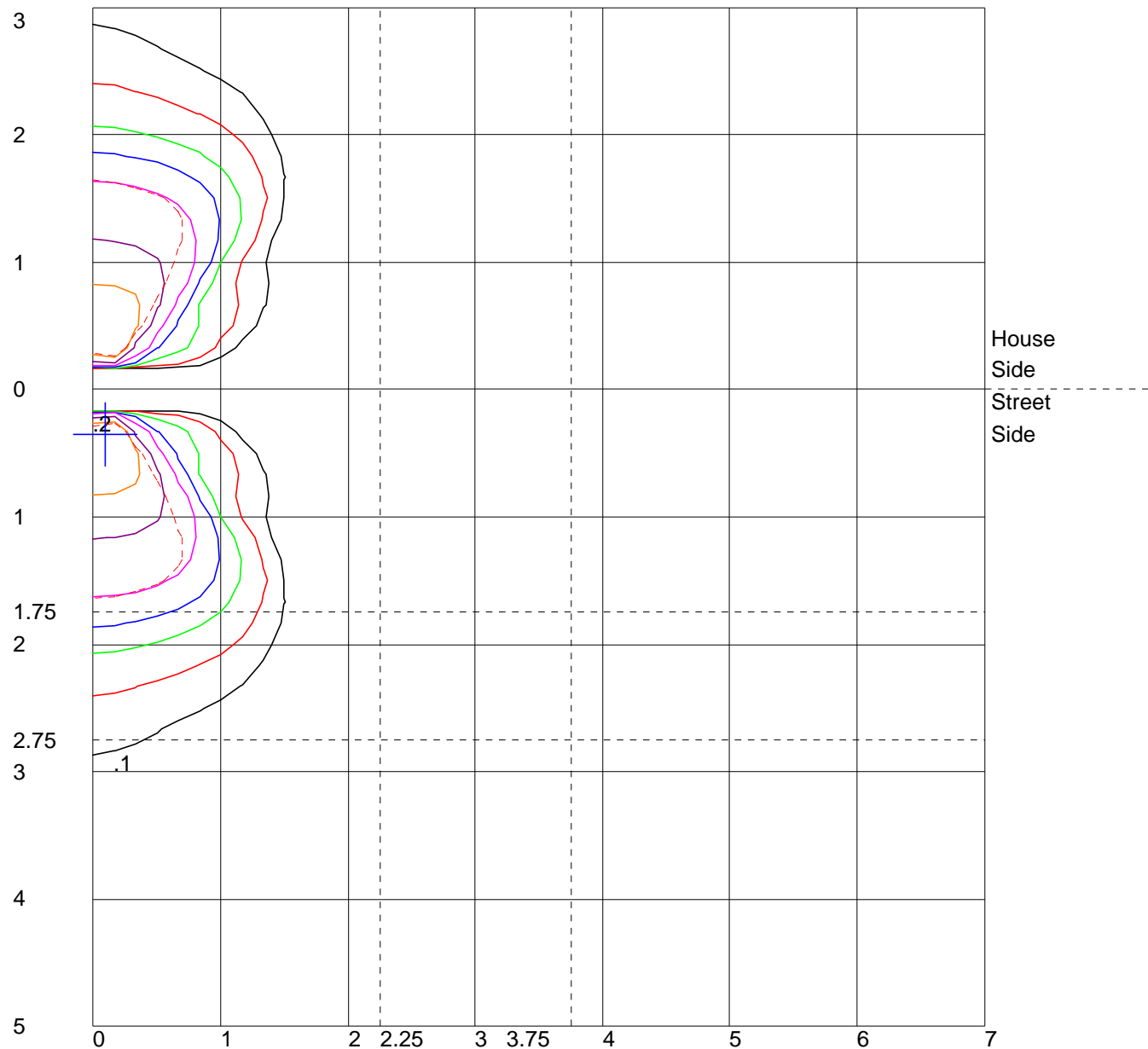
	Lumens	Percent Of Luminaire
Downward Street Side	22.8	49.5
Downward House Side	22.8	49.5
Downward Total	45.6	99.1
Upward Street Side	0.2	0.5
Upward House Side	0.2	0.5
Upward Total	0.4	0.9
Total Flux	46.0	100.0

POLAR GRAPH



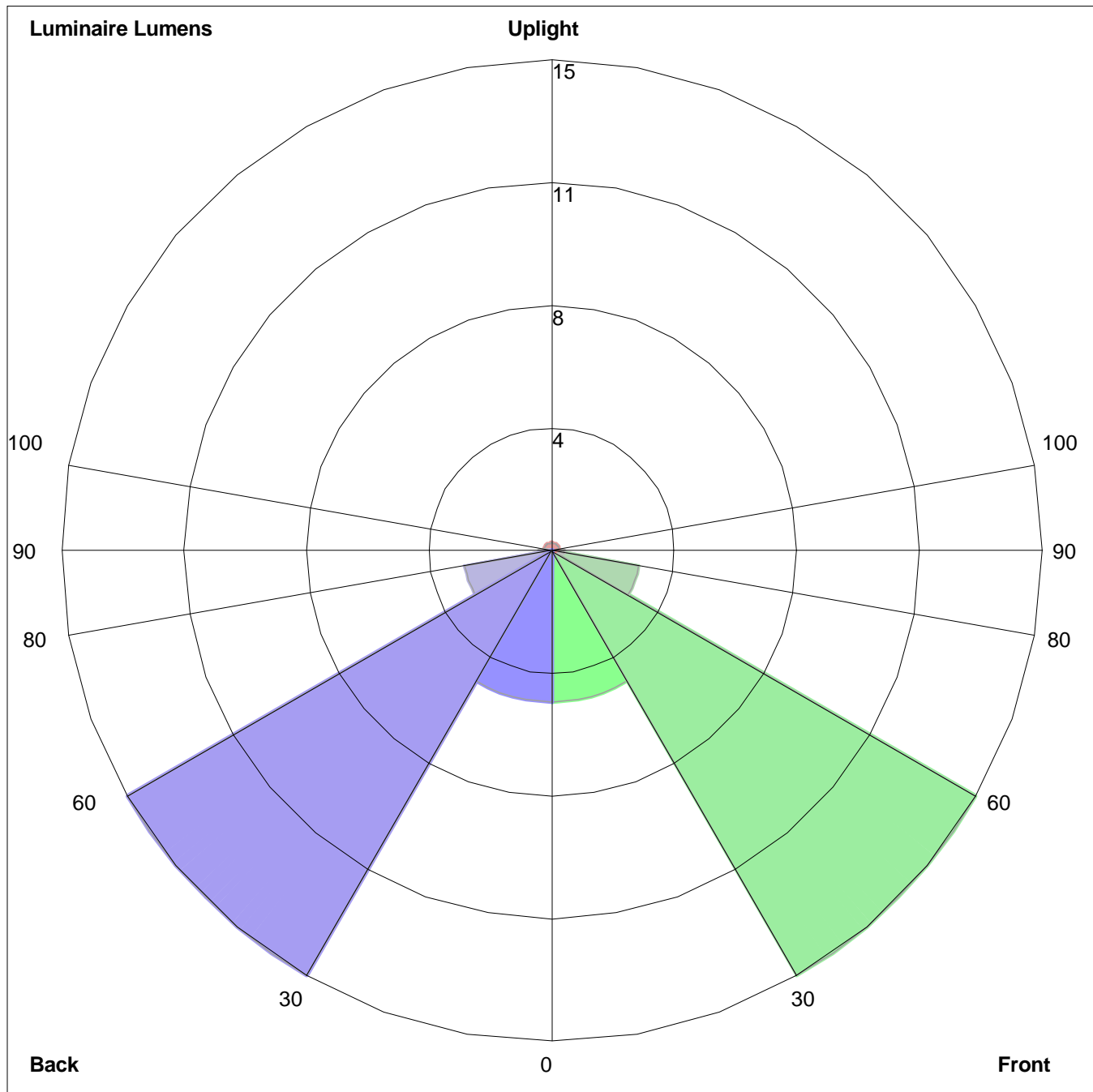
Maximum Candela = 42.79 Located At Horizontal Angle = 15, Vertical Angle = 20
1 - Vertical Plane Through Horizontal Angles (15 - 195) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (20) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
Values Based On 1.25 Foot Mounting Height
1/2 Maximum Candela Trace Shown As Dashed Curve
(+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=4.6, Medium=15.1, High=2.7, Very High=0.4
Back: Low=4.6, Medium=15.1, High=2.7, Very High=0.4
Uplight: Low=0.2, High=0.2

BUG Rating : B0-U1-G0