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Report No: L061507301R01

Date: 7/24/2015



NVLAP LAB CODE 200927-0

Report No: L061507301R01

Report Prepared For: Cole Lighting
 2560 N. Rosemead Boulevard, South El Monte CA 91733

Model Number: LR5/LR6-GPI-LED-CLR-3000K-90-48

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 LR5/LR6-GPI-LED-CLR-3000K-90-48. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 6/25/15

Date of Tests: 6/29/15 - 7/1/15

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

Manufacturer:	Cole Lighting
Model Number:	LR5/LR6-GPI-LED-CLR-3000K-90-48
Driver Model Number:	N/A
Total Lumens:	637.20
Input Voltage (VDC):	24.00
Input Current (Amp):	0.39
Input Power (W):	9.27
Input Power Factor:	1.00
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	69
Color Rendering Index (CRI):	85
Correlated Color Temperature (K):	3126
Chromaticity Coordinate x:	0.4259
Chromaticity Coordinate y:	0.3957
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:25
Off State Power(W):	0.00

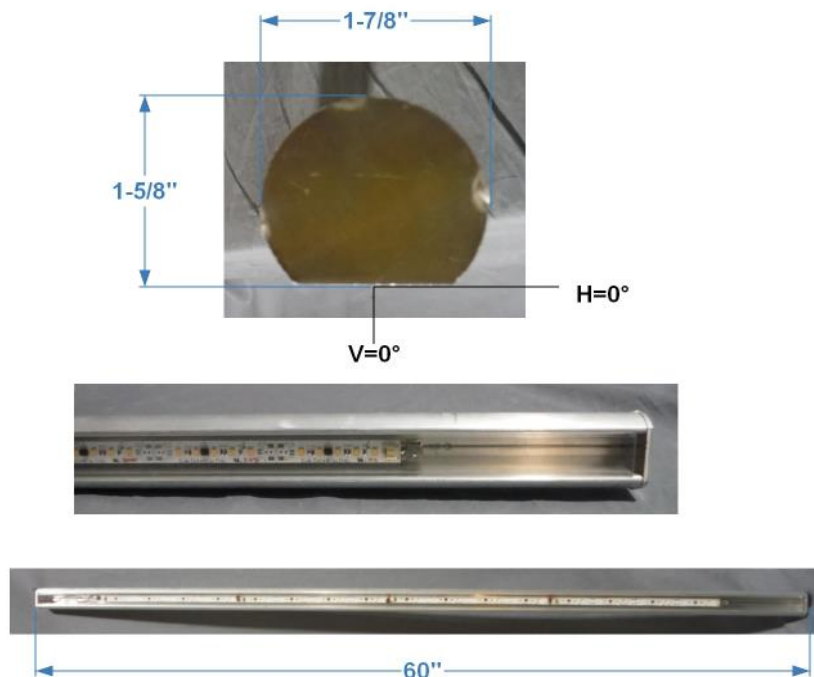
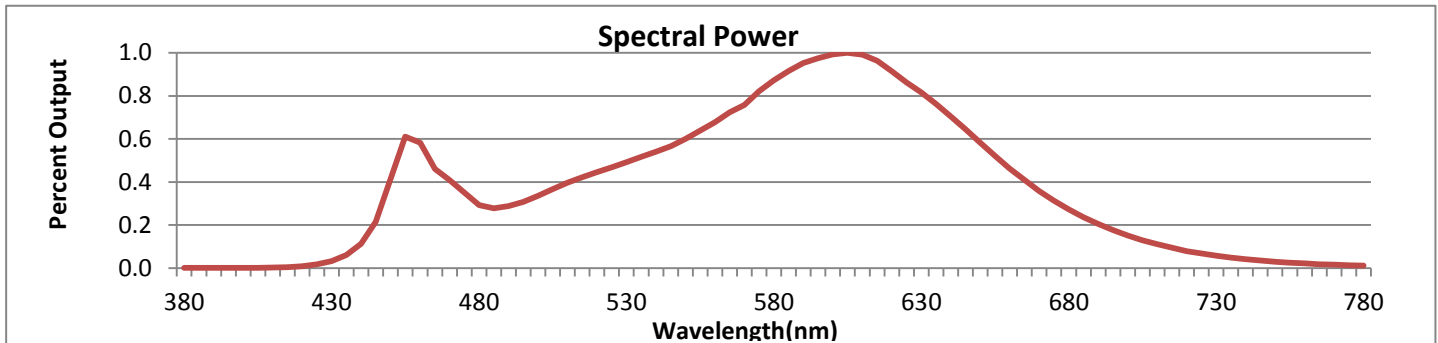


FIG. 1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



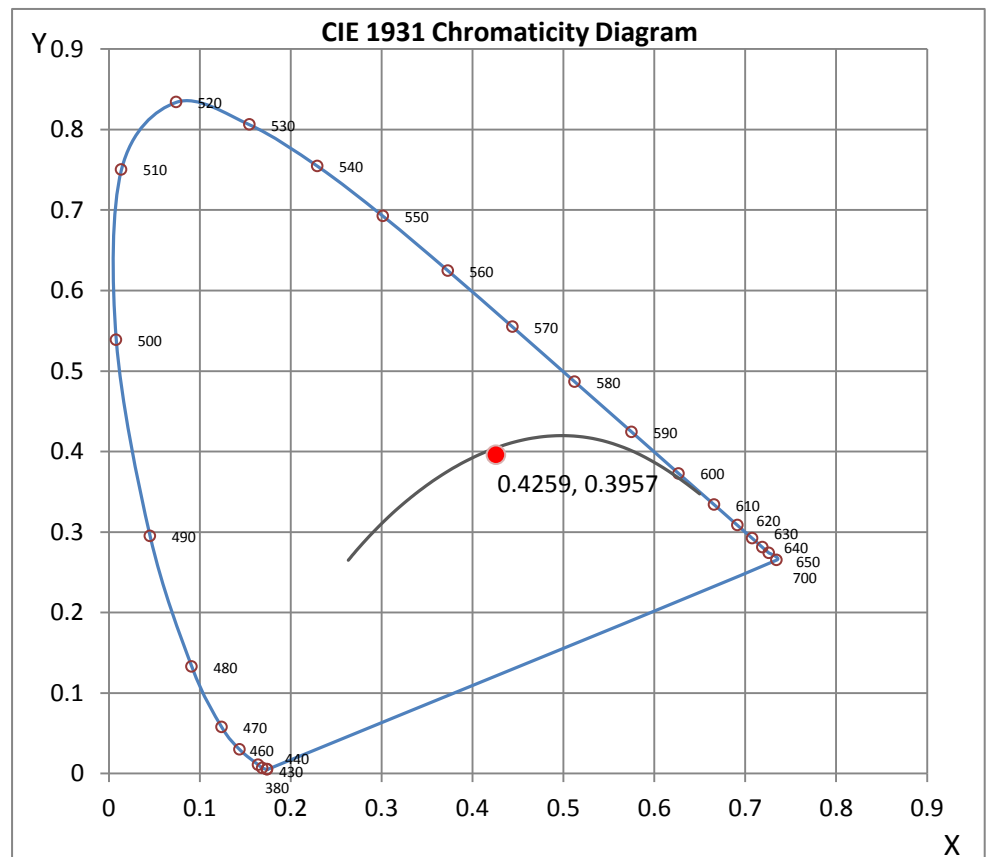
Wavelength	W/m ² nm	440	0.1121	510	0.3971	580	0.8718	650	0.5819	720	0.0788
380	0.0007	450	0.4128	520	0.4453	590	0.9520	660	0.4625	730	0.0574
390	0.0007	460	0.5824	530	0.4914	600	0.9926	670	0.3577	740	0.0412
400	0.0010	470	0.4090	540	0.5410	610	0.9920	680	0.2728	750	0.0298
410	0.0025	480	0.2920	550	0.6004	620	0.9142	690	0.2048	760	0.0213
420	0.0090	490	0.2882	560	0.6775	630	0.8164	700	0.1513	770	0.0156
430	0.0326	500	0.3353	570	0.7585	640	0.7039	710	0.1112	780	0.0115

CRI & CCT

x	0.4259
y	0.3957
u'	0.2470
v'	0.5164
CRI	84.50
CCT	3126
Duv	-0.00178

R Values

R1	84.91
R2	95.87
R3	92.49
R4	80.86
R5	84.92
R6	93.99
R7	81.40
R8	61.72
R9	17.45
R10	89.78
R11	80.49
R12	73.55
R13	88.18
R14	96.69



*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: 11*



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Photometric Test Report

IES ROAD REPORT

PHOTOMETRIC FILENAME : L061507301R01.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L061507301R01
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 7/24/2015
 [MANUFAC] COLE LIGHTING
 [LUMCAT] LR5/LR6-GPI-LED-CLR-3000K-90-48
 [LUMINAIRE] 1-7/8"L. X 60"W. X 1-5/8"H. LED FIXTURE
 [MORE] SYMMETRIC 90 DEG CUTOFF, 48" LONG, GPI/205lm, CLEAR LENS
 [LAMPPOSITION] 0,0
 [LAMPCAT] N/A
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [POWER SUPPLY] 24VDC CONSTANT VOLTAGE SOURCE
 [INPUT] 24VDC, 9.27W
 [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	637
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	69
Total Luminaire Watts	9.27
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	263.83
Maximum Candela Angle	0H 0V
Maximum Candela (<90 Degrees Vertical)	263.83
Maximum Candela Angle (<90 Degrees Vertical)	0H 0V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	14.05 (2.2% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507301R01.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

ZONAL LUMEN SUMMARY

	Lumens	% Lamp	% Luminaire	Zone	%
FL - Front-Low (0-30)	105.8	N.A.	16.6		
FM - Front-Medium (30-60)	173.4	N.A.	27.2	0-20	15.4
FH - Front-High (60-80)	37.0	N.A.	5.8	0-30	33.2
FVH - Front-Very High (80-90)	2.3	N.A.	0.4	0-40	54.7
BL - Back-Low (0-30)	105.8	N.A.	16.6	0-60	87.7
BM - Back-Medium (30-60)	173.4	N.A.	27.2	0-80	99.3
BH - Back-High (60-80)	37.0	N.A.	5.8	0-90	100
BVH - Back-Very High (80-90)	2.3	N.A.	0.4	10-90	96.1
UL - Uplight-Low (90-100)	0.0	N.A.	0.0	20-40	39.3
UH - Uplight-High (100-180)	0.0	N.A.	0.0	20-50	58.7
				40-70	41.1
Total	637.0	N.A.	100.0	60-80	11.6
				70-80	3.5
BUG Rating	B0-U0-G0			80-90	0.7
				90-110	0
				90-120	0
				90-130	0
				90-150	0
				90-180	0
				110-180	0
				0-180	100

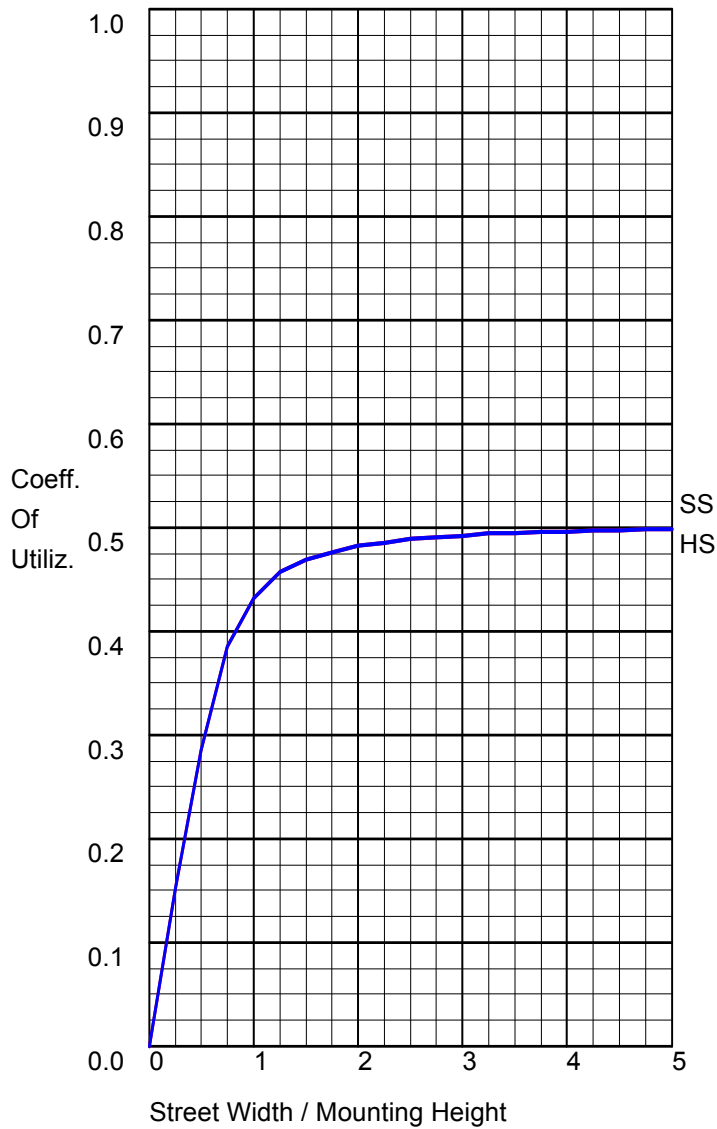
IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507301R01.IES

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	263.83	263.83	263.83	263.83	263.83	263.83	263.83	263.83	263.83	263.83
5	263.32	263.28	263.28	263.20	263.11	262.90	262.77	262.72	262.77	262.85
10	262.12	262.12	262.08	262.04	261.87	261.65	261.44	260.97	260.62	260.45
15	261.44	261.52	261.70	261.78	261.87	261.74	261.10	259.90	258.95	258.52
20	253.47	253.47	253.43	253.60	253.64	254.15	254.33	255.14	255.44	255.83
25	249.36	249.31	249.40	250.00	250.43	250.68	250.81	249.61	247.26	245.89
30	246.87	247.00	247.34	246.74	245.46	244.39	243.06	240.96	240.06	239.59
35	211.40	212.42	215.59	220.14	225.11	229.90	233.68	235.00	232.65	228.58
40	162.90	163.54	165.38	168.08	172.06	179.09	187.62	199.57	211.48	216.67
45	119.19	119.67	121.68	125.28	130.38	136.76	143.02	149.91	158.10	172.32
50	73.09	73.78	75.84	79.82	86.08	93.19	101.07	108.31	118.29	128.41
55	52.19	52.36	52.91	53.73	54.88	56.51	59.51	66.24	78.32	88.86
60	45.84	45.80	45.50	44.90	44.34	43.57	44.60	45.03	46.10	51.24
65	39.67	39.76	39.80	39.67	38.69	37.96	37.49	36.33	36.46	35.86
70	27.94	28.11	28.45	28.96	29.61	29.99	29.05	28.49	28.11	28.06
75	16.97	16.97	17.14	17.14	17.40	17.65	18.55	18.72	17.91	17.87
80	9.34	9.43	9.25	9.13	9.13	9.00	8.91	9.30	9.51	9.17
85	4.11	4.20	4.16	4.20	4.24	3.99	3.86	3.64	3.77	3.60
90	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	263.83	263.83	263.83	263.83	263.83	263.83	263.83	263.83	263.83
5	262.98	263.07	263.11	263.07	262.90	263.02	263.11	263.15	263.07
10	260.62	261.35	261.65	261.22	261.22	261.22	261.10	261.27	261.18
15	258.65	257.97	257.03	256.51	257.50	257.33	256.90	256.81	256.55
20	254.41	252.66	252.57	251.33	249.31	249.61	249.70	249.10	249.01
25	245.63	245.29	243.57	242.33	242.29	239.80	240.32	240.10	239.76
30	236.16	234.15	233.12	231.75	229.43	229.60	227.81	227.21	226.91
35	225.58	224.55	219.88	218.21	216.11	214.35	213.45	213.15	212.00
40	215.47	210.75	207.88	202.57	200.08	197.39	197.26	197.26	195.54
45	191.30	197.39	193.57	188.77	181.79	181.62	179.65	178.58	177.46
50	138.26	158.10	176.01	173.78	166.84	160.75	159.64	159.73	158.27
55	100.81	111.78	127.81	151.80	148.63	139.50	137.32	135.95	134.70
60	62.21	74.89	87.57	99.61	121.42	118.85	112.12	109.73	107.88
65	37.19	40.92	50.56	63.50	73.18	94.34	86.72	83.42	81.32
70	27.04	26.91	27.94	32.05	40.36	51.46	63.67	57.16	55.10
75	18.34	18.12	17.18	17.78	19.32	22.32	31.36	32.91	30.51
80	9.08	9.21	9.25	9.04	9.21	9.85	10.28	14.05	12.51
85	3.51	3.43	3.30	3.21	3.09	3.13	3.21	3.43	3.43
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

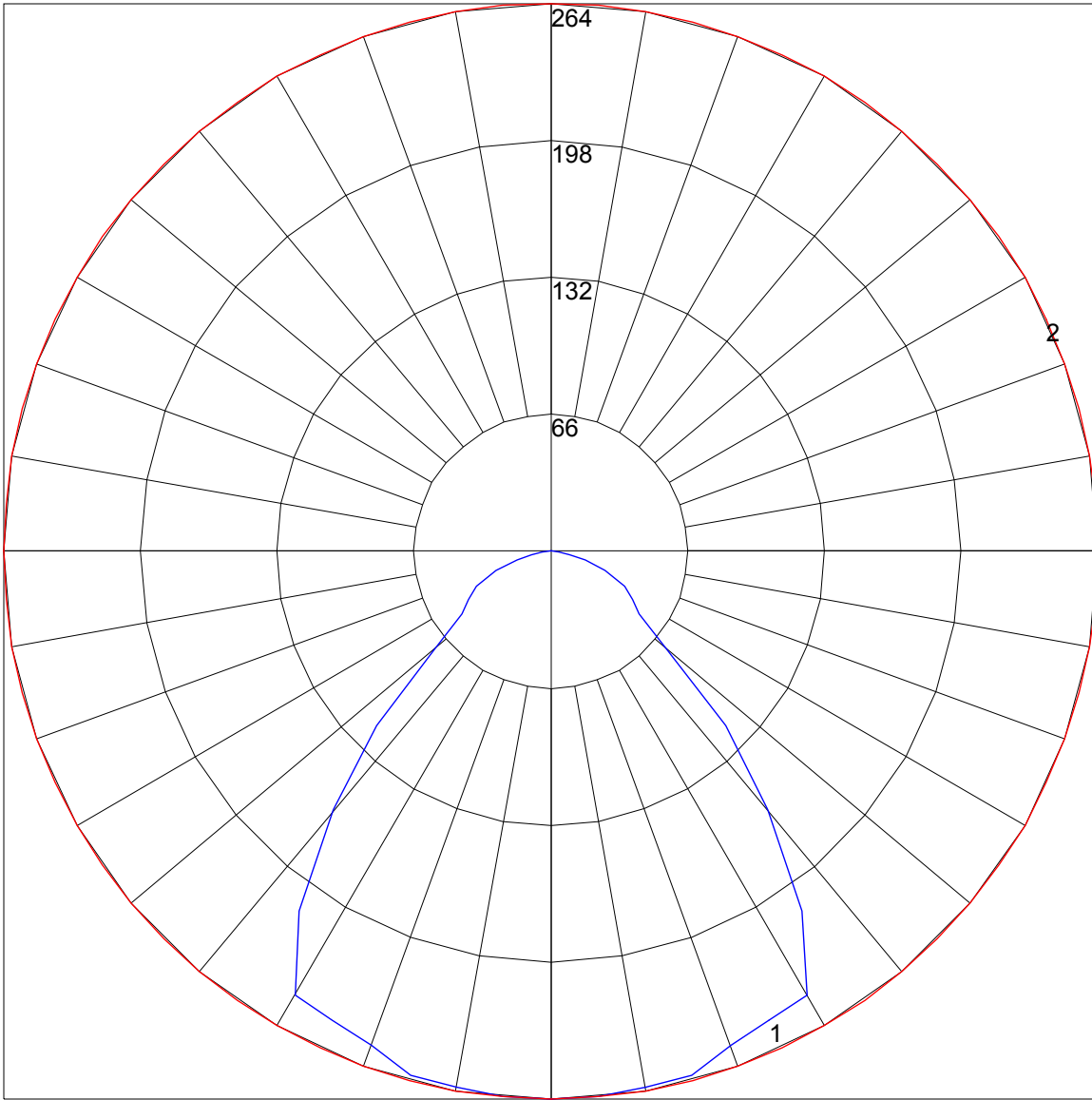
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

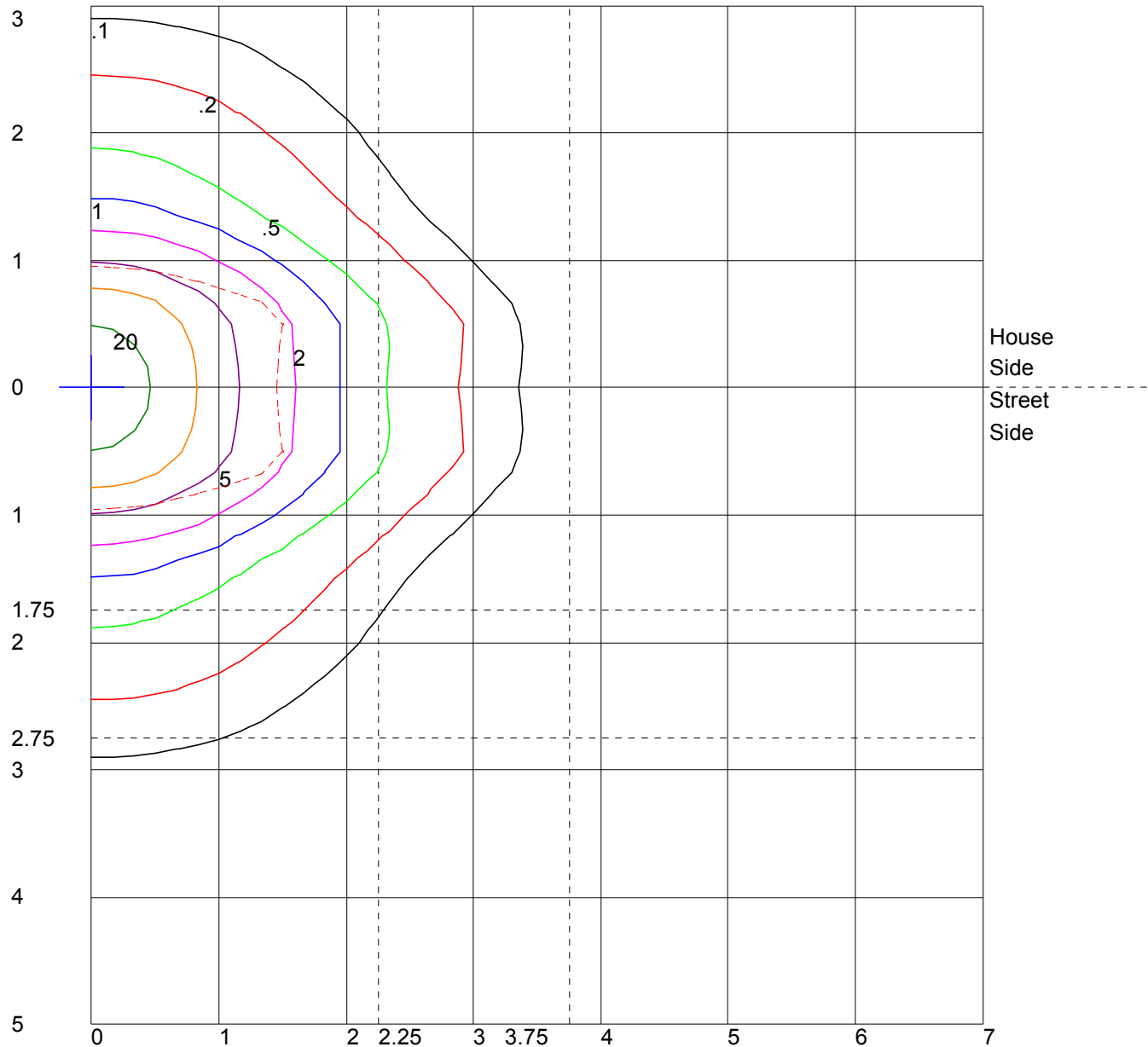
	Lumens	Percent Of Luminaire
Downward Street Side	318.6	50.0
Downward House Side	318.6	50.0
Downward Total	637.2	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	637.2	100.0

POLAR GRAPH



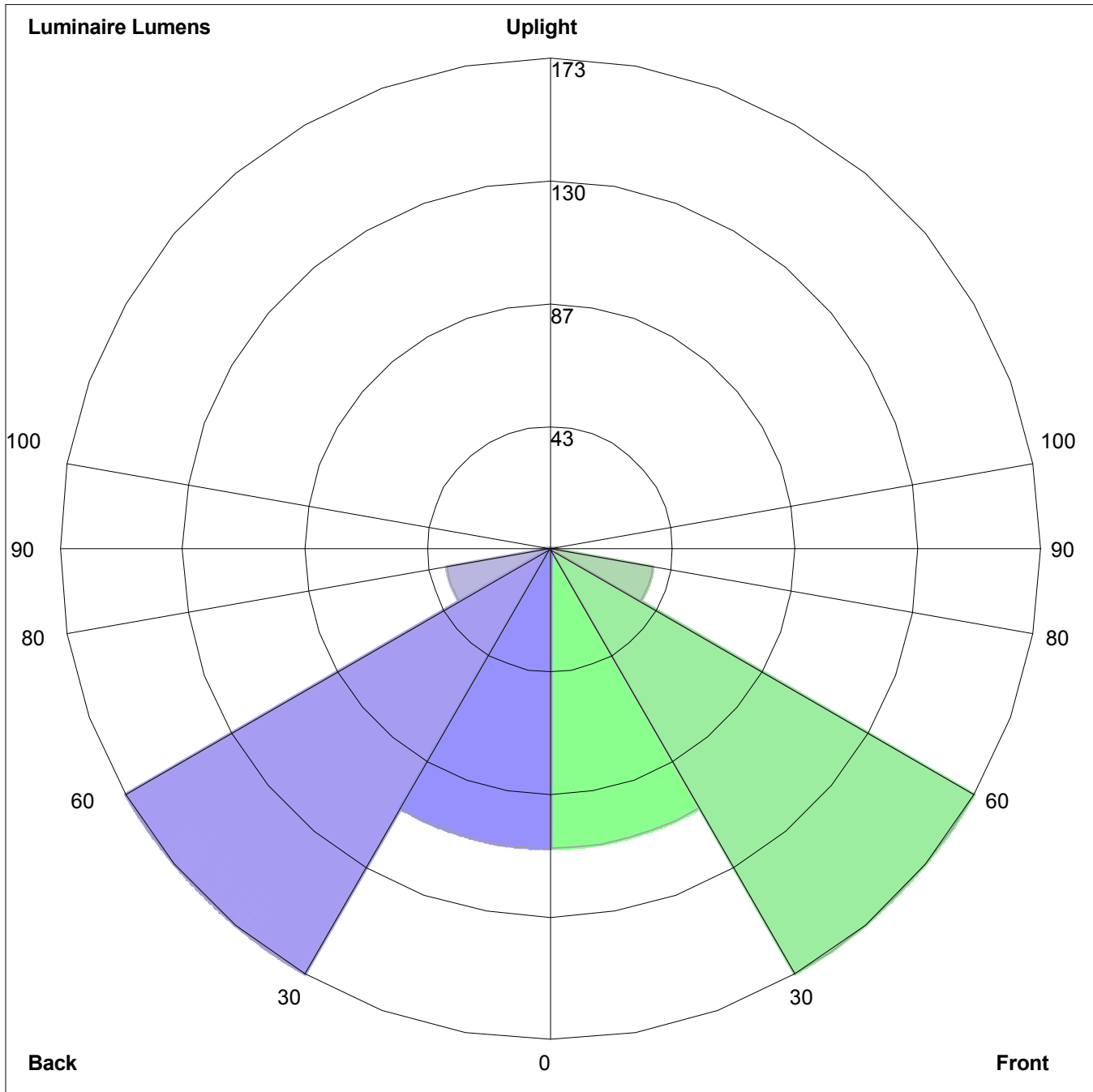
Maximum Candela = 263.83 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 3 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=105.8, Medium=173.4, High=37.0, Very High=2.3
Back: Low=105.8, Medium=173.4, High=37.0, Very High=2.3
Uplight: Low=0.0, High=0.0

BUG Rating : B0-U0-G0