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

NVLAP LAB CODE 200927-0

Report No: **L061507401R01**

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

Model Number: **LR5/LR6-GPI-LED-CLR-3000K-30-48**

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-30-48. 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: 7/15/15 - 7/16/15

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.

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Test Summary	
Manufacturer:	Cole Lighting
Model Number:	LR5/LR6-GPI-LED-CLR-3000K-30-48
Driver Model Number:	N/A
Total Lumens:	320.90
Input Voltage (VDC):	24.00
Input Current (Amp):	0.39
Input Power (W):	9.28
Input Power Factor:	1.00
Current ATHD @ 120V(%):	N/A
Current ATHD @ 277V(%):	N/A
Efficacy:	35
Color Rendering Index (CRI):	85
Correlated Color Temperature (K):	3137
Chromaticity Coordinate x:	0.4249
Chromaticity Coordinate y:	0.3949
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:35
Total Operating Time (Hours):	2:45
Off State Power(W):	0.00

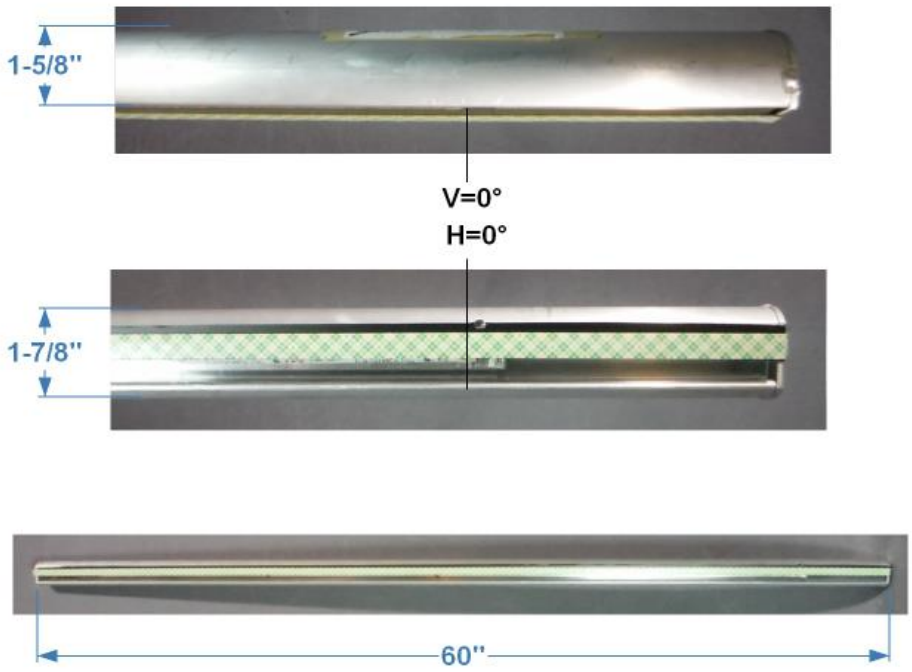

FIG. 1 LUMINAIRE

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

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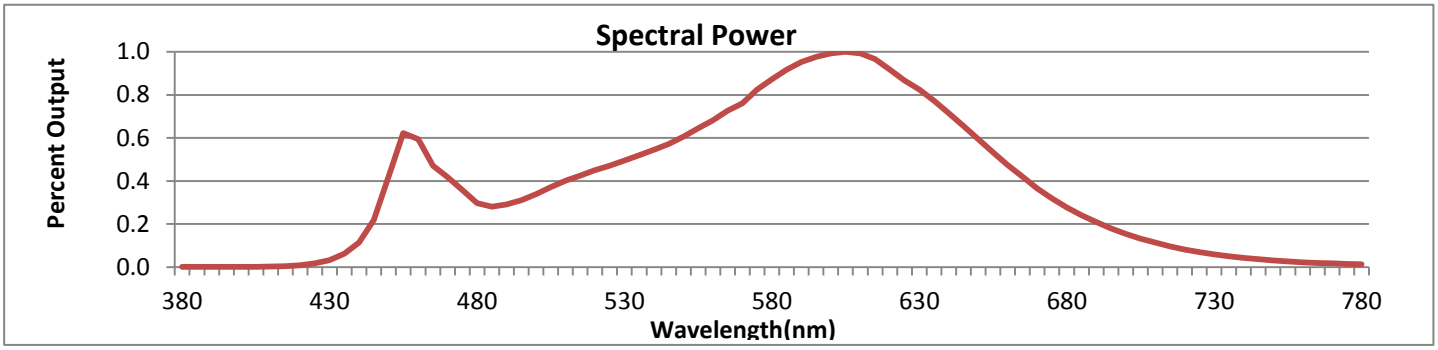
Report No: L061507401R01
Date: 7/24/2015

NVLAP LAB CODE 200927-0



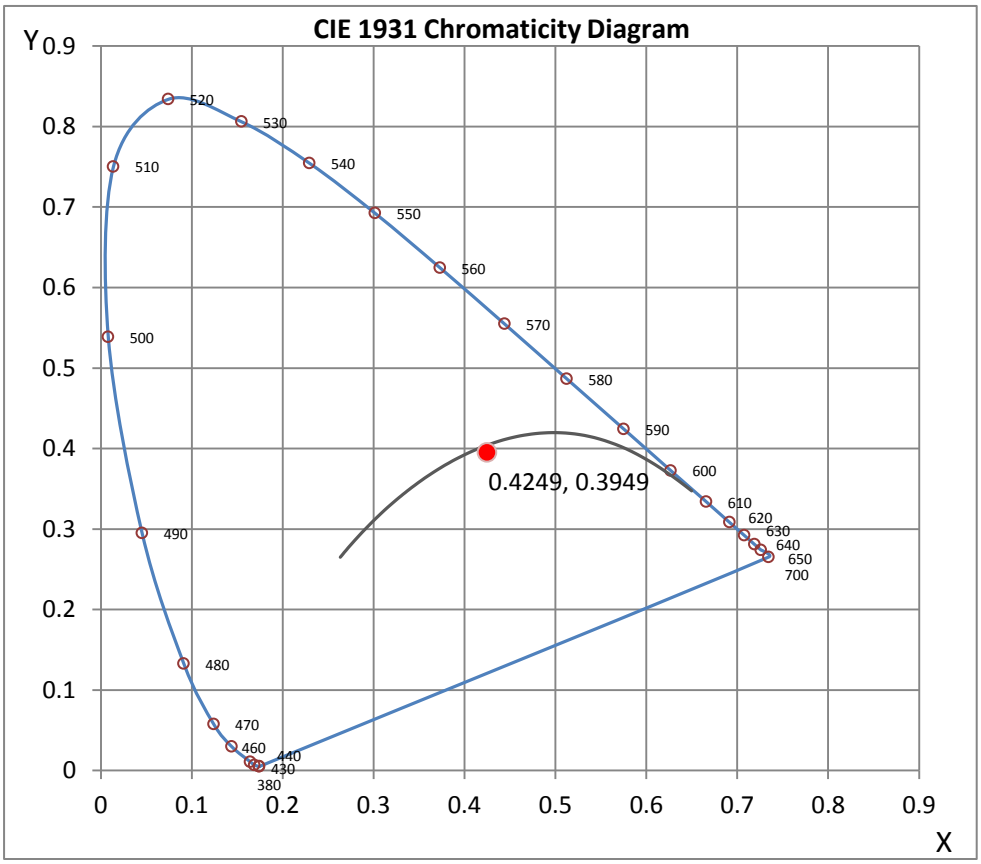
Wavelength	W/m²nm	440	0.1140	510	0.4009	580	0.8729	650	0.5938	720	0.0812
380	0.0007	450	0.4194	520	0.4496	590	0.9531	660	0.4738	730	0.0593
390	0.0007	460	0.5949	530	0.4947	600	0.9925	670	0.3655	740	0.0433
400	0.0011	470	0.4169	540	0.5453	610	0.9922	680	0.2782	750	0.0316
410	0.0025	480	0.2968	550	0.6068	620	0.9174	690	0.2087	760	0.0227
420	0.0091	490	0.2912	560	0.6816	630	0.8241	700	0.1547	770	0.0168
430	0.0330	500	0.3383	570	0.7604	640	0.7148	710	0.1139	780	0.0124

CRI & CCT

x	0.4249
y	0.3949
u'	0.2467
v'	0.5159
CRI	84.90
CCT	3137
Duv	-0.00195

R Values

R1	85.36
R2	96.11
R3	92.59
R4	81.24
R5	85.34
R6	94.09
R7	81.72
R8	62.67
R9	19.70
R10	90.23
R11	80.88
R12	73.69
R13	88.60
R14	96.77



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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: 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 : L061507401R01.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L061507401R01
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 7/24/2015
[MANUFAC] COLE LIGHTING
[LUMCAT] LR5/LR6-GPI-LED-CLR-3000K-30-48
[LUMINAIRE] 1-7/8"L. X 60"W. X 1-5/8"H. LED FIXTURE
[MORE] LR5 AYSMMETRIC 30 DEG LED, 48" LONG, 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, 9.28W
[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	321
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	35
Total Luminaire Watts	9.28
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	263.41
Maximum Candela Angle	0H 32.5V
Maximum Candela (<90 Degrees Vertical)	263.41
Maximum Candela Angle (<90 Degrees Vertical)	0H 32.5V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	12.08 (3.8% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507401R01.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	75.4	N.A.	23.5
FM - Front-Medium (30-60)	176.1	N.A.	54.9
FH - Front-High (60-80)	28.1	N.A.	8.7
FVH - Front-Very High (80-90)	1.3	N.A.	0.4
BL - Back-Low (0-30)	6.5	N.A.	2.0
BM - Back-Medium (30-60)	18.8	N.A.	5.9
BH - Back-High (60-80)	13.9	N.A.	4.3
BVH - Back-Very High (80-90)	0.9	N.A.	0.3
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	321.0	N.A.	100.0
BUG Rating	B0-U0-G0		

ZONAL LUMEN SUMMARY

Zone	%
0-20	9.8
0-30	25.5
0-40	47.6
0-60	86.3
0-80	99.3
0-90	100
10-90	98.3
20-40	37.8
20-50	60.9
40-70	47.9
60-80	13.1
70-80	3.9
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 : L061507401R01.IES

CANDELA TABULATION

Vert. Angles	Horizontal Angles									
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
0.0	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11
2.5	56.21	56.21	55.96	55.53	54.93	54.16	53.13	51.93	50.73	49.19
5.0	101.63	101.29	100.09	98.37	95.97	92.72	89.03	85.00	80.63	75.92
7.5	152.87	152.53	151.07	148.93	145.67	141.47	136.25	129.56	121.34	112.17
10.0	183.20	182.69	181.49	179.78	177.29	173.86	169.49	163.41	155.87	146.96
12.5	211.14	210.71	209.34	207.11	203.77	199.06	193.40	186.55	179.18	171.38
15.0	235.13	234.53	233.42	231.28	227.76	222.79	216.88	209.25	200.51	190.40
17.5	244.39	244.21	243.62	242.84	241.30	238.99	235.22	229.22	220.65	209.17
20.0	251.07	250.90	250.47	249.27	247.47	245.16	242.50	238.13	233.33	225.11
22.5	255.18	255.10	254.93	254.33	252.96	250.64	247.21	242.84	238.05	232.73
25.0	255.87	255.95	256.21	256.30	255.27	253.30	250.56	246.87	241.39	235.99
27.5	257.93	257.67	257.41	256.38	254.75	252.53	251.16	248.59	244.30	239.07
30.0	259.81	259.81	259.64	258.70	256.64	253.73	250.47	246.96	245.07	240.62
32.5	263.41	263.41	262.98	261.70	258.95	254.58	251.50	247.30	242.76	239.50
35.0	262.21	262.38	262.21	261.35	260.07	257.33	253.56	247.81	242.84	236.42
37.5	259.98	260.32	260.32	258.35	256.81	255.10	252.96	249.78	242.16	235.82
40.0	246.61	247.73	249.78	250.90	251.16	251.07	249.01	245.93	242.67	233.76
42.5	210.28	212.00	216.88	224.08	232.22	239.42	241.47	239.67	235.99	232.48
45.0	157.67	160.07	166.67	177.12	189.20	204.88	219.96	227.85	227.93	224.85
50.0	68.72	69.92	73.35	78.66	86.89	101.03	122.36	145.84	174.12	196.57
55.0	37.70	37.88	38.65	39.50	41.73	44.22	49.36	60.58	78.23	105.14
60.0	32.56	32.82	32.56	30.85	27.85	27.59	29.31	30.25	32.65	40.62
65.0	20.39	20.65	21.25	22.37	23.99	24.42	21.08	19.62	20.91	21.94
70.0	12.00	12.25	13.11	13.88	14.14	15.00	17.48	16.97	14.57	14.65
75.0	7.37	7.63	8.14	7.71	7.97	9.17	9.00	10.37	10.63	9.85
80.0	4.11	4.11	4.28	4.46	4.88	4.80	5.31	5.14	5.66	5.31
85.0	1.37	1.37	1.54	1.63	1.71	1.97	2.06	2.14	2.14	2.06
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	Horizontal Angles									
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**
0.0	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11
2.5	47.64	45.93	44.13	42.42	40.70	38.90	37.19	35.56	33.85	32.39
5.0	70.69	65.38	60.15	54.93	50.04	45.33	41.13	37.36	34.02	30.93
7.5	101.80	91.35	81.06	71.12	61.95	53.56	45.59	39.25	34.02	29.48
10.0	135.56	122.45	106.08	90.32	75.75	62.64	51.07	41.47	33.93	27.85
12.5	160.84	147.64	132.13	113.45	92.72	72.49	56.73	43.79	33.85	26.65
15.0	179.18	167.52	152.01	132.73	109.85	84.15	62.73	46.19	33.59	25.28
17.5	196.66	182.35	167.87	148.84	125.79	97.09	68.98	48.07	33.85	23.91
20.0	212.85	197.26	180.46	162.30	139.16	110.11	76.35	50.39	33.68	22.37
22.5	224.08	211.82	192.97	172.92	150.90	121.25	84.92	53.98	33.16	21.25
25.0	229.65	219.88	205.05	183.72	161.35	129.56	91.60	56.64	32.65	20.57
27.5	231.79	223.99	212.25	192.89	167.87	138.13	98.29	59.04	31.96	19.54
30.0	233.85	224.59	215.77	198.97	175.15	145.07	103.17	60.15	32.82	18.51
32.5	233.59	225.36	214.40	202.66	179.52	151.50	110.20	61.87	32.13	17.31
35.0	231.88	224.68	214.14	201.97	183.29	153.13	115.25	65.47	31.19	17.05
37.5	227.68	221.25	212.94	199.31	184.15	155.36	117.99	66.15	30.42	16.54
40.0	224.85	217.65	209.68	197.77	182.35	158.18	120.14	68.04	29.05	15.85
42.5	223.31	213.37	204.88	195.11	178.92	157.67	122.28	71.55	27.85	14.82
45.0	220.05	209.43	200.17	190.32	175.83	155.10	122.28	72.49	26.91	13.80
50.0	201.28	198.03	189.37	178.06	167.18	147.30	118.59	73.26	24.68	11.83
55.0	142.59	169.75	173.01	166.32	153.30	136.16	111.83	70.95	22.62	10.28

IES ROAD REPORT
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CANDELA TABULATION - (Cont.)

60.0	55.61	87.06	126.31	141.22	134.62	120.31	97.17	63.75	19.02	9.00
65.0	22.79	29.05	45.33	81.23	106.60	99.49	81.66	54.41	15.77	7.20
70.0	14.91	14.40	16.02	23.91	45.67	70.95	64.27	41.90	12.34	5.48
75.0	10.11	9.94	9.00	9.00	12.25	21.25	38.39	26.31	8.14	3.86
80.0	5.14	5.83	5.23	4.71	5.06	5.74	8.74	12.08	4.28	2.40
85.0	1.80	1.97	1.97	1.89	1.80	1.89	2.06	2.31	1.46	1.03
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	**Horizontal Angles**									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0.0	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11	33.11
2.5	30.93	29.48	28.19	26.91	25.62	24.59	23.65	22.71	22.02	21.42
5.0	28.11	25.45	23.22	21.59	20.14	19.11	18.25	17.57	17.05	16.71
7.5	25.45	22.19	20.05	18.34	17.31	16.45	16.02	15.60	15.34	15.08
10.0	23.14	19.97	17.74	16.45	15.77	15.25	14.91	14.74	14.65	14.48
12.5	21.17	18.00	16.37	15.42	14.91	14.65	14.48	14.31	14.22	14.31
15.0	19.88	16.71	15.34	14.74	14.48	14.22	14.05	14.14	14.22	14.31
17.5	18.42	15.77	14.65	14.31	14.05	13.88	13.97	13.97	14.22	14.05
20.0	17.14	15.00	14.22	13.97	13.71	13.71	13.71	14.05	13.54	13.37
22.5	16.11	14.40	13.80	13.63	13.54	13.37	13.80	13.28	13.20	13.20
25.0	15.34	13.88	13.45	13.20	13.03	13.37	12.94	13.03	12.94	13.20
27.5	14.74	13.45	13.20	12.94	12.94	12.94	12.77	12.77	13.03	13.11
30.0	14.05	13.03	12.77	12.43	12.43	12.51	12.51	12.68	12.85	13.11
32.5	13.37	12.60	12.43	12.25	12.08	12.25	12.43	12.51	12.85	13.37
35.0	12.85	12.25	12.00	11.91	11.91	12.17	12.17	12.51	13.11	14.14
37.5	12.34	11.83	11.57	11.40	11.57	12.00	12.00	12.77	13.80	14.82
40.0	11.83	11.31	11.40	10.97	11.48	11.65	12.08	13.28	14.40	15.68
42.5	11.48	10.80	11.05	10.71	11.23	11.48	12.43	13.80	15.17	16.88
45.0	11.40	10.37	10.54	10.45	10.97	11.57	13.03	14.48	16.20	17.74
50.0	10.54	9.51	9.68	10.03	10.97	12.43	13.97	15.94	17.74	19.79
55.0	8.74	8.57	8.91	9.77	11.48	12.94	14.91	17.31	19.02	19.62
60.0	7.54	7.71	8.31	9.77	11.65	13.45	15.94	18.08	19.37	22.28
65.0	6.26	6.60	7.88	9.68	11.83	14.14	16.88	18.60	22.45	24.85
70.0	4.97	5.83	7.63	9.68	12.17	15.34	19.11	22.37	23.22	22.45
75.0	3.94	4.97	6.94	10.03	14.14	16.37	14.91	13.80	12.08	10.97
80.0	2.74	3.94	7.11	8.06	6.94	5.91	5.23	4.88	4.37	4.03
85.0	1.29	1.71	1.71	1.54	1.29	1.20	1.11	1.03	0.86	0.86
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0.0	33.11	33.11	33.11	33.11	33.11	33.11	33.11
2.5	20.91	20.57	20.22	20.05	19.79	19.79	19.71
5.0	16.37	16.28	16.11	15.94	15.94	15.85	15.77
7.5	15.00	14.91	14.91	14.82	14.82	14.74	14.74
10.0	14.40	14.40	14.31	14.31	14.31	14.31	14.22
12.5	14.31	14.40	14.57	14.48	14.48	14.40	14.40
15.0	14.22	14.40	14.31	14.14	14.05	13.88	13.88
17.5	13.71	13.63	13.45	13.45	13.45	13.54	13.54
20.0	13.37	13.45	13.28	13.37	13.37	13.37	13.37
22.5	13.20	13.45	13.45	13.45	13.37	13.45	13.54
25.0	13.28	13.28	13.45	13.54	13.54	13.71	13.71
27.5	13.28	13.45	13.71	13.97	14.22	14.40	14.40
30.0	13.45	13.97	14.48	14.91	15.17	15.25	15.25

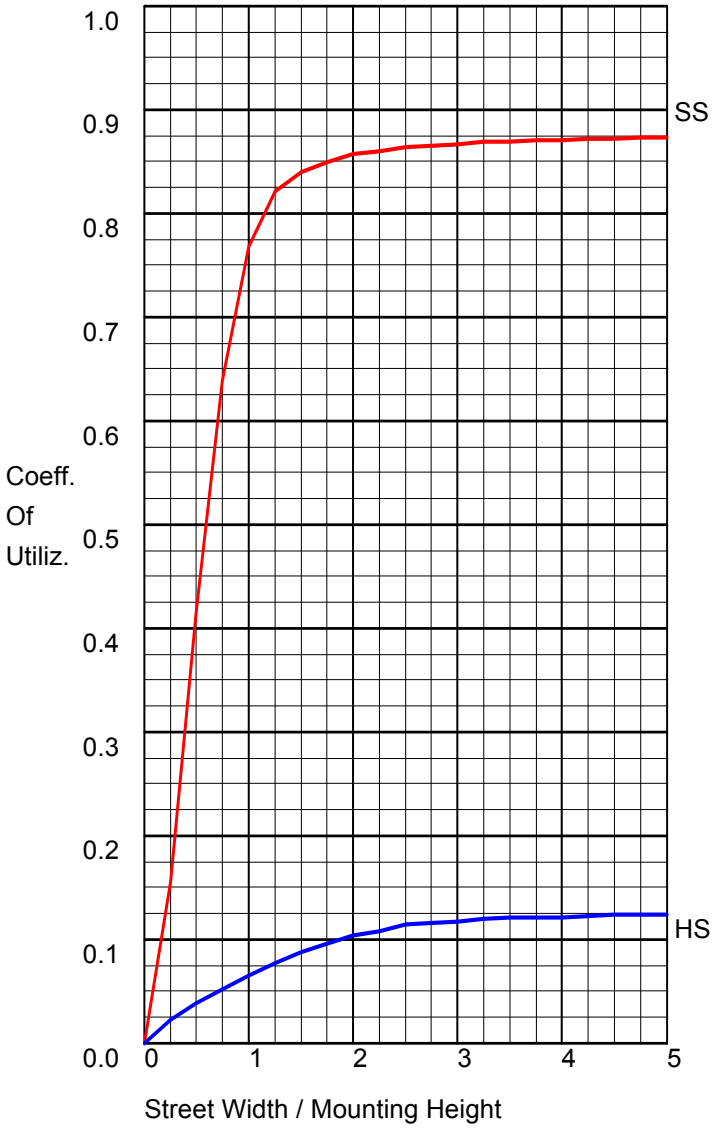
IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507401R01.IES

CANDELA TABULATION - (Cont.)

32.5	14.14	14.91	15.34	15.77	16.11	16.37	16.45
35.0	15.00	15.68	16.45	17.14	17.65	18.00	18.00
37.5	15.85	16.97	17.91	18.51	18.94	19.19	19.19
40.0	17.14	18.17	19.02	19.97	20.82	21.25	21.42
42.5	18.08	19.45	21.17	21.77	21.85	22.02	22.11
45.0	19.62	21.17	21.59	21.59	21.42	21.51	21.59
50.0	20.39	20.99	23.14	24.68	25.28	25.71	25.71
55.0	22.54	24.59	25.28	25.36	25.36	25.28	25.19
60.0	24.08	25.19	26.39	26.91	27.25	27.51	27.42
65.0	26.48	27.42	27.59	27.68	27.59	27.42	27.25
70.0	21.25	20.22	19.45	18.51	17.91	17.74	17.48
75.0	10.11	9.43	8.91	8.57	8.40	8.23	8.23
80.0	3.69	3.34	3.26	3.09	3.09	2.91	2.91
85.0	0.77	0.69	0.69	0.51	0.51	0.51	0.51
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507401R01.IES

COEFFICIENTS OF UTILIZATION

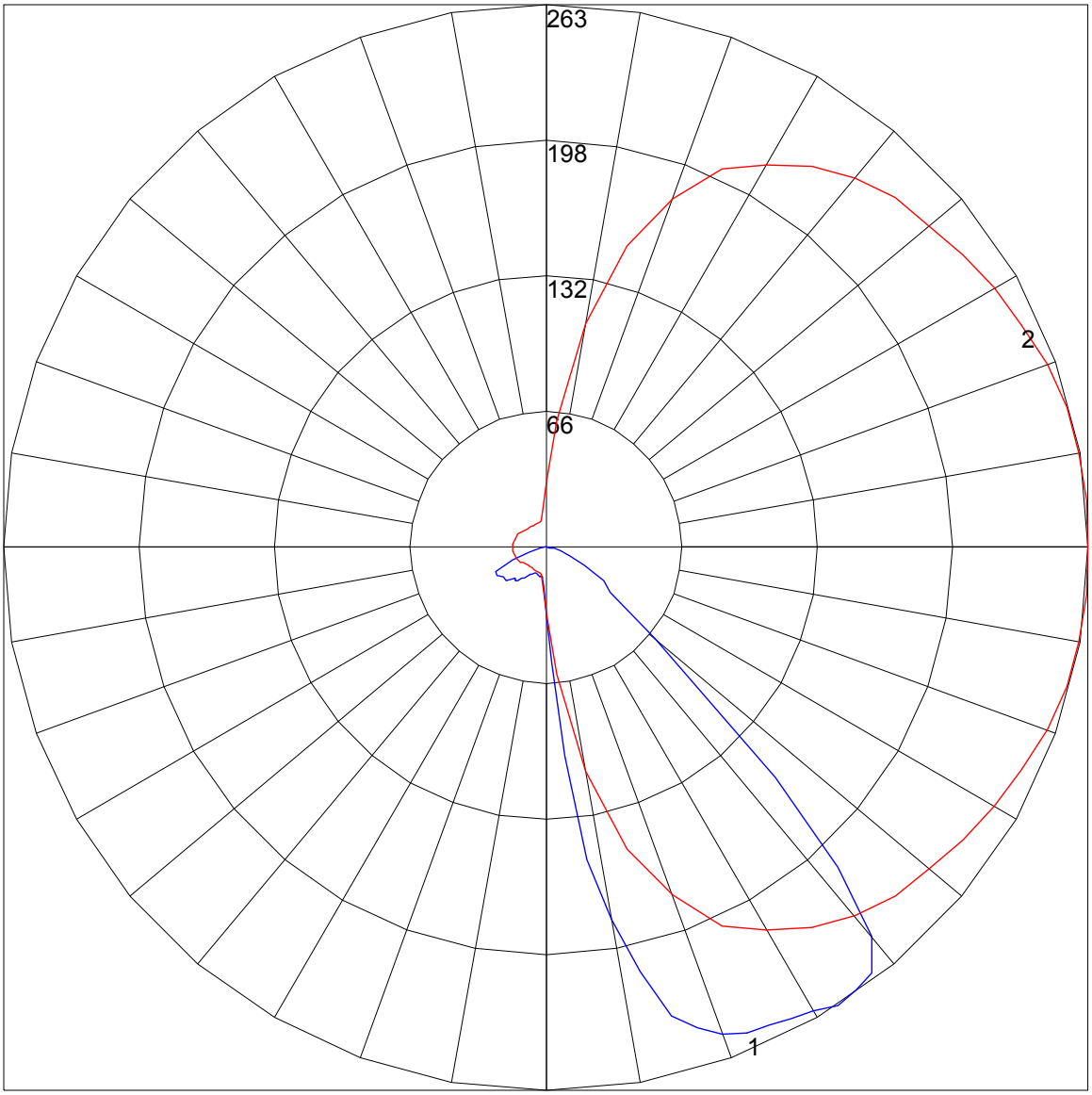


FLUX DISTRIBUTION

	Lumens	Percent Of Luminaire
Downward Street Side	280.8	87.5
Downward House Side	40.1	12.5
Downward Total	320.9	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	320.9	100.0

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507401R01.IES

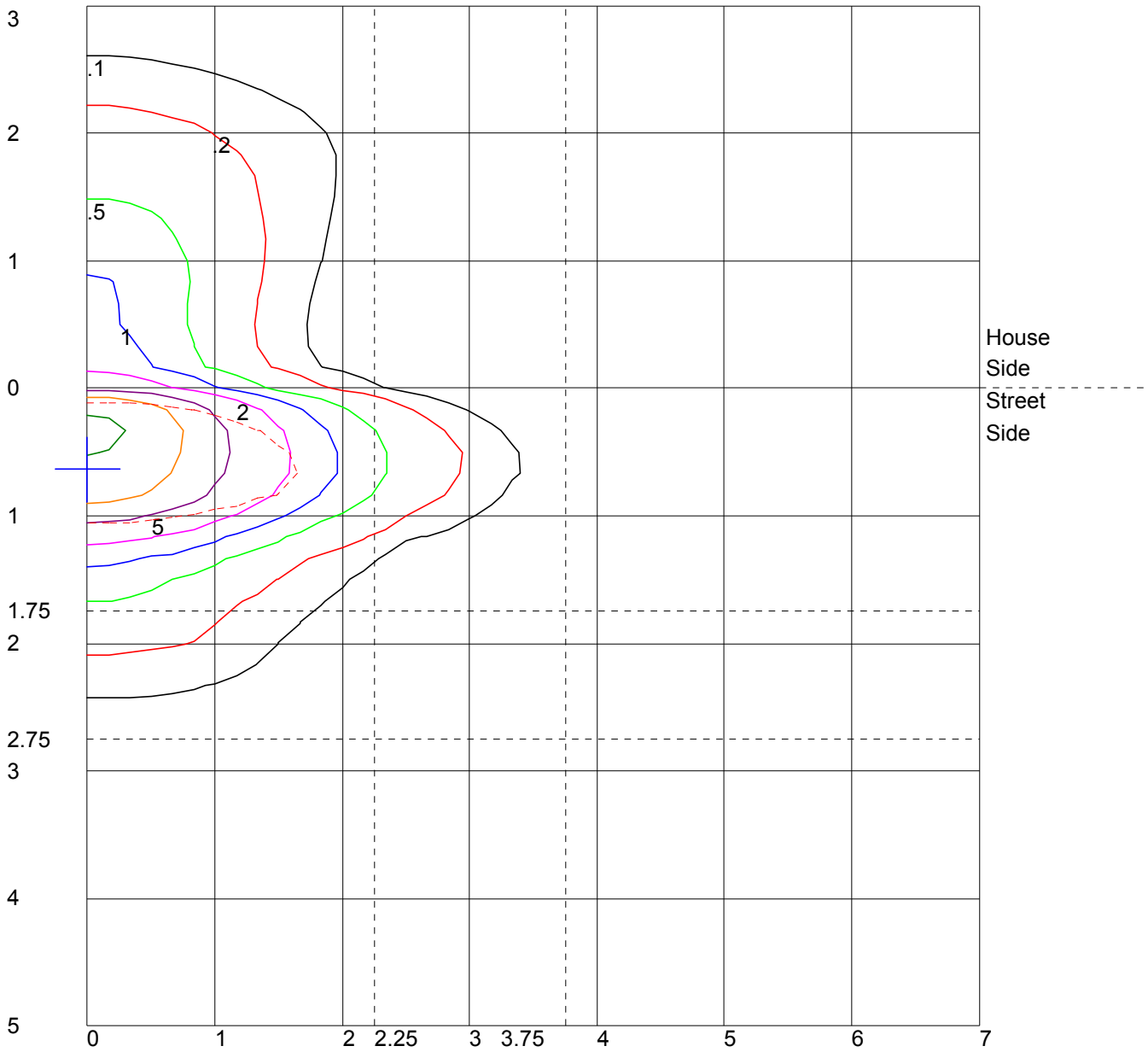
POLAR GRAPH



Maximum Candela = 263.41 Located At Horizontal Angle = 0, Vertical Angle = 32.5
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (32.5) (Through Max. Cd.)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507401R01.IES

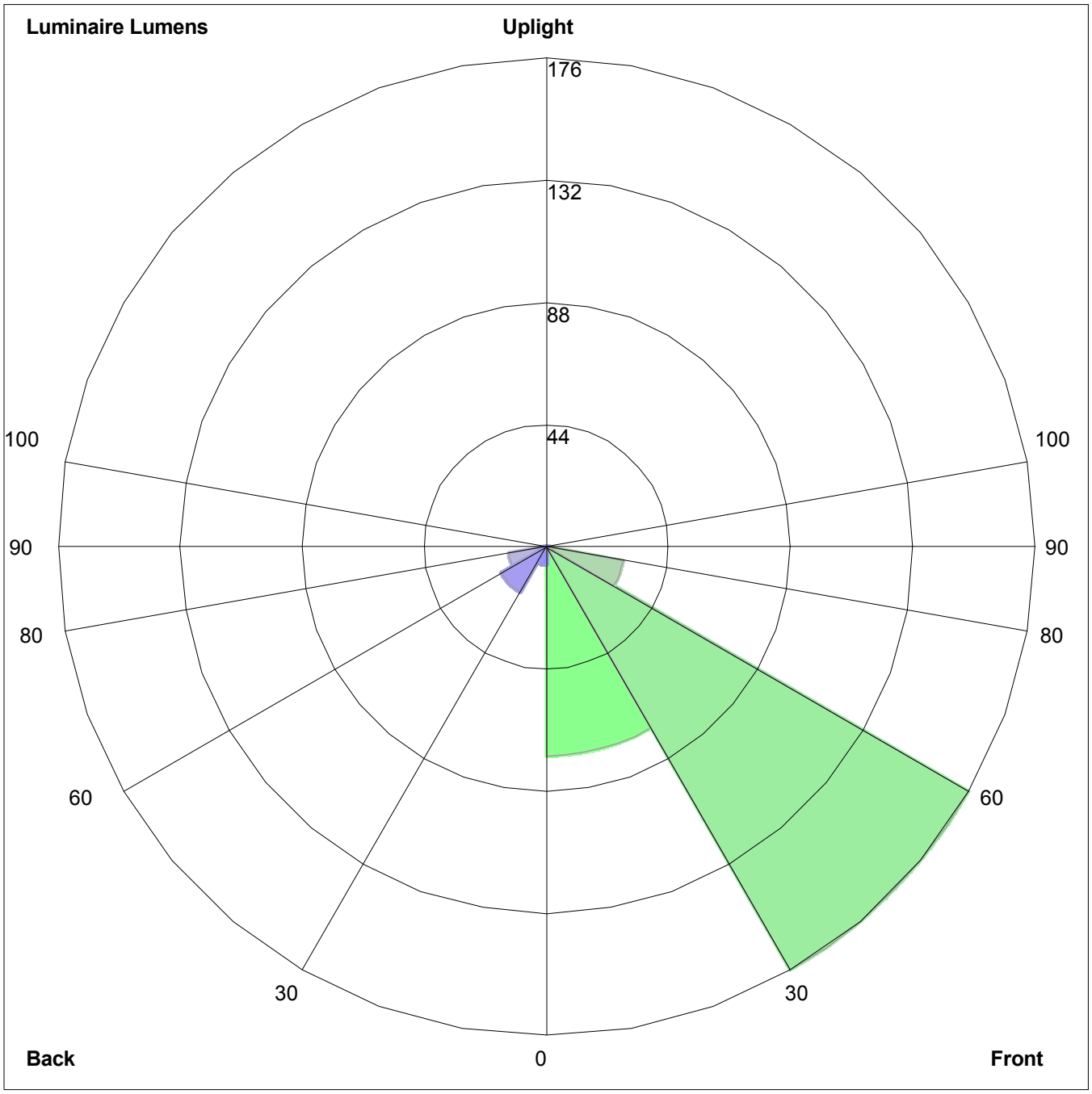
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



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

IES ROAD REPORT
PHOTOMETRIC FILENAME : L061507401R01.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=75.4, Medium=176.1, High=28.1, Very High=1.3
Back: Low=6.5, Medium=18.8, High=13.9, Very High=0.9
Uplight: Low=0.0, High=0.0

BUG Rating : B0-U0-G0