



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

Report No: L091706909



Report No: L091706909

Issue Date: 10/9/2017

Report Prepared For: USTE, dba Vista Professional Outdoor Lighting
1625 Surveyor Ave., Simi Valley CA 93063

Model Number: 1470/1471-2Q180-B

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

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 10/3/17

Date of Tests: 10/4/17 - 10/9/17

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.

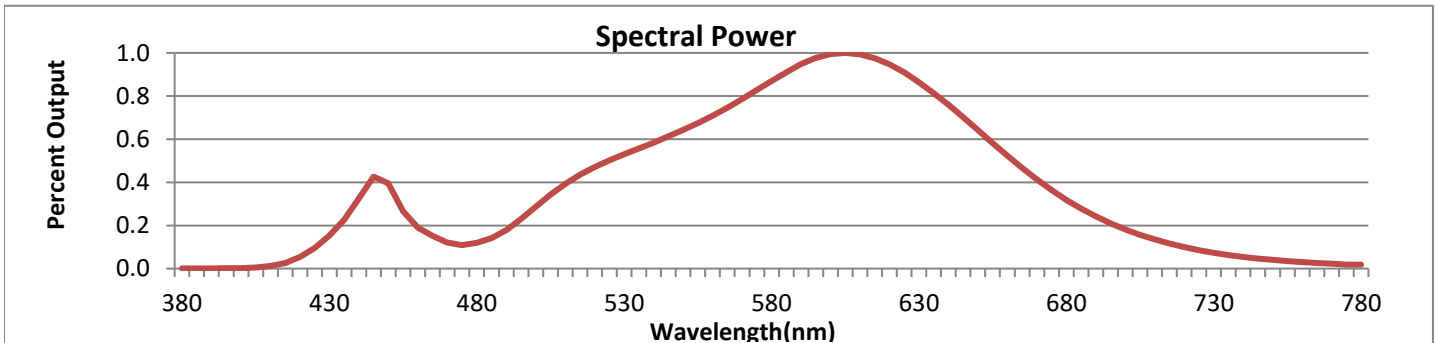
Test Summary

Manufacturer:	USTE, dba Vista Professional Outdoor Lighting
Model Number:	1470/1471-2Q180-B
Driver Model Number:	ERP ESS020W-0500-34
Total Lumens:	984.40
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.15
Input Power (W):	17.77
Input Power Factor:	0.99
Current ATHD @ 120V(%):	14%
Current ATHD @ 277V(%):	N/A
Efficacy:	55
Color Rendering Index (CRI):	81
Correlated Color Temperature (K):	2919
Chromaticity Coordinate x:	0.4476
Chromaticity Coordinate y:	0.4155
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:35



FIG. 1 LUMINAIRE

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



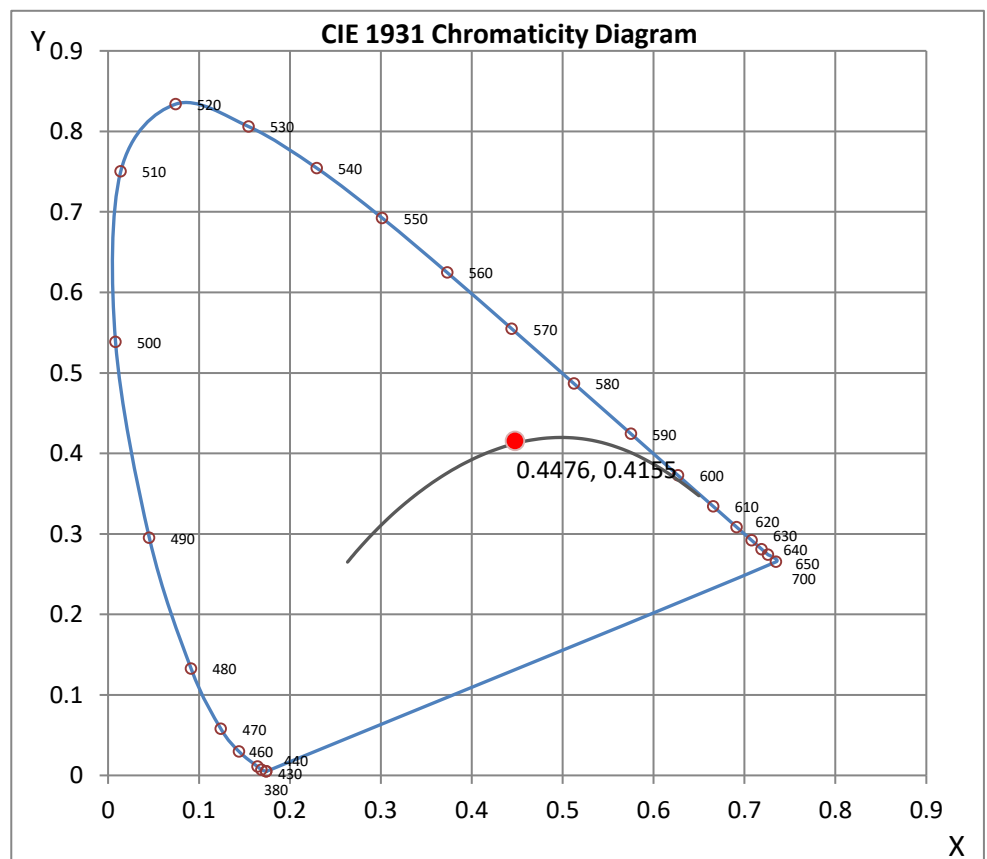
Wavelength	W/m ² nm	440	0.3251	510	0.3929	580	0.8700	650	0.6427	720	0.0995
380	0.0008	450	0.3958	520	0.4711	590	0.9482	660	0.5246	730	0.0737
390	0.0011	460	0.1906	530	0.5298	600	0.9950	670	0.4127	740	0.0543
400	0.0027	470	0.1205	540	0.5838	610	0.9932	680	0.3188	750	0.0401
410	0.0118	480	0.1191	550	0.6432	620	0.9466	690	0.2418	760	0.0297
420	0.0538	490	0.1790	560	0.7086	630	0.8636	700	0.1813	770	0.0221
430	0.1531	500	0.2871	570	0.7851	640	0.7597	710	0.1353	780	0.0190

CRI & CCT

x	0.4476
y	0.4155
u'	0.2525
v'	0.5274
CRI	81.30
CCT	2919
Duv	0.00308

R Values

R1	79.36
R2	86.95
R3	94.57
R4	81.44
R5	78.61
R6	83.10
R7	85.39
R8	61.28
R9	8.81
R10	70.14
R11	80.36
R12	65.17
R13	80.55
R14	96.47



*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 : Joseph Shin

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 : L091706909.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L091706909
 [TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
 [ISSUEDATE] 10/9/2017
 [MANUFAC] USTE, DBA VISTA PROFESSIONAL OUTDOOR LIGHTING
 [LUMCAT] 1470/1471-2Q180-B
 [LUMINAIRE] Bollard, Bollard, 2 quadrant distribution, 180° apart, 500mA
 [BALLASTCAT] ERP ESS020W-0500-34
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
 [INPUT] 120VAC, 17.77W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

IES Classification	Type IV
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	984
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	55
Total Luminaire Watts	17.77
Ballast Factor	1.00
Upward Waste Light Ratio	0.05
Maximum Candela	302.7
Maximum Candela Angle	5H 62.5V
Maximum Candela (<90 Degrees Vertical)	302.7
Maximum Candela Angle (<90 Degrees Vertical)	5H 62.5V
Maximum Candela At 90 Degrees Vertical	29.7 (3.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	108.7 (11.0% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L091706909.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	89.7	N.A.	9.1
FM - Front-Medium (30-60)	200.9	N.A.	20.4
FH - Front-High (60-80)	151.8	N.A.	15.4
FVH - Front-Very High (80-90)	26.7	N.A.	2.7
BL - Back-Low (0-30)	89.7	N.A.	9.1
BM - Back-Medium (30-60)	200.9	N.A.	20.4
BH - Back-High (60-80)	151.8	N.A.	15.4
BVH - Back-Very High (80-90)	26.7	N.A.	2.7
UL - Uplight-Low (90-100)	21.3	N.A.	2.2
UH - Uplight-High (100-180)	24.8	N.A.	2.5
Total	984.3	N.A.	100.0
BUG Rating	B1-U2-G1		

ZONAL LUMEN SUMMARY

Zone	%
0-20	8.2
0-30	18.2
0-40	30.7
0-60	59
0-80	89.9
0-90	95.3
10-90	93.7
20-40	22.6
20-50	35.6
40-70	47.3
60-80	30.9
70-80	11.8
80-90	5.4
90-110	3.3
90-120	3.9
90-130	4.3
90-150	4.6
90-180	4.7
110-180	1.4
0-180	100

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	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1
5.0	228.4	227.5	225.4	220.6	212.5	205.2	196.4	184.7	172.3	162.3
10.0	261.5	261.1	262.1	262.4	259.5	258.8	258.5	250.1	237.0	228.2
15.0	256.9	256.2	256.9	257.7	255.2	253.6	254.5	252.1	246.3	243.0
20.0	236.0	235.0	235.4	236.0	235.3	235.0	237.6	237.0	233.2	235.2
25.0	211.0	210.8	211.6	213.5	213.7	214.7	217.3	218.0	216.0	219.2
30.0	204.2	205.3	206.4	206.4	207.2	208.0	208.5	207.7	205.5	206.5
35.0	201.0	204.5	205.8	202.5	201.8	203.3	202.3	200.4	197.3	197.0
37.5	196.7	200.5	202.1	197.7	197.3	198.5	196.5	193.6	191.5	190.7
40.0	191.1	194.3	195.9	192.0	191.8	192.2	189.0	186.6	185.2	184.4
42.5	183.9	187.1	188.3	184.7	184.7	184.2	180.6	179.8	178.7	176.7
45.0	174.8	176.9	176.9	175.1	175.1	173.2	170.5	171.4	169.2	167.4
47.5	161.7	162.4	162.5	162.4	162.9	160.4	158.6	160.7	158.9	157.3
50.0	154.5	154.1	153.7	154.6	155.4	152.9	152.2	152.5	150.3	149.1
52.5	171.7	171.1	170.9	170.5	169.5	164.6	162.3	157.7	152.2	148.9
55.0	217.9	217.0	216.4	212.7	207.5	199.2	191.5	179.3	170.3	160.6
57.5	267.6	267.1	263.5	258.3	248.2	236.8	224.1	205.8	194.4	176.3
60.0	292.9	293.8	287.2	283.4	270.2	256.2	243.1	221.4	209.1	187.8
62.5	301.7	302.7	295.6	294.9	280.4	266.7	255.7	231.8	218.3	196.5
65.0	300.1	299.8	292.9	291.3	278.8	265.8	255.7	233.3	219.5	201.4
67.5	275.3	276.5	268.3	265.4	254.9	243.5	234.3	218.0	206.0	190.2
70.0	232.7	233.4	227.0	222.7	215.2	205.8	197.1	185.4	175.4	163.4
72.5	185.0	185.6	180.6	177.2	171.5	164.3	156.5	147.1	138.8	130.6
75.0	148.7	148.4	146.1	143.5	138.7	133.5	126.3	118.2	110.9	103.9
77.5	127.0	126.5	124.9	123.7	119.7	114.2	107.9	100.1	92.8	86.0
80.0	108.7	107.3	105.9	103.9	101.0	96.2	91.2	84.8	78.4	72.0
85.0	61.2	60.8	59.8	58.4	57.2	55.7	54.4	52.6	50.1	47.6
90.0	29.3	29.4	29.7	29.6	29.7	29.7	29.6	29.5	29.3	29.1
95.0	17.2	17.2	17.5	18.0	18.4	18.8	19.0	19.0	19.0	19.1
100.0	12.9	13.0	13.1	13.0	13.2	13.3	13.5	13.6	13.6	13.5
105.0	10.8	11.0	10.9	10.8	10.8	10.6	10.5	10.3	10.1	10.0
110.0	9.4	9.4	9.4	9.3	9.2	9.0	8.8	8.6	8.3	8.0
115.0	8.1	8.0	8.0	7.9	7.8	7.6	7.5	7.2	7.0	6.6
120.0	7.0	7.0	6.9	6.8	6.7	6.5	6.2	6.0	5.8	5.5
125.0	5.9	5.9	5.8	5.7	5.5	5.3	5.1	4.9	4.7	4.4
130.0	4.6	4.6	4.6	4.6	4.4	4.3	4.1	4.0	3.8	3.5
135.0	3.5	3.6	3.5	3.3	3.3	3.2	3.1	2.9	2.8	2.6
140.0	2.6	2.6	2.5	2.5	2.4	2.4	2.2	2.2	2.0	2.0
145.0	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.4	1.4
150.0	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2
155.0	1.1	1.1	1.2	1.1	1.2	1.1	1.1	1.0	1.1	1.1
160.0	1.0	1.0	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.9
165.0	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.8
170.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6
175.0	0.7	0.6	0.6	0.5	0.6	0.6	0.7	0.5	0.6	0.6
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

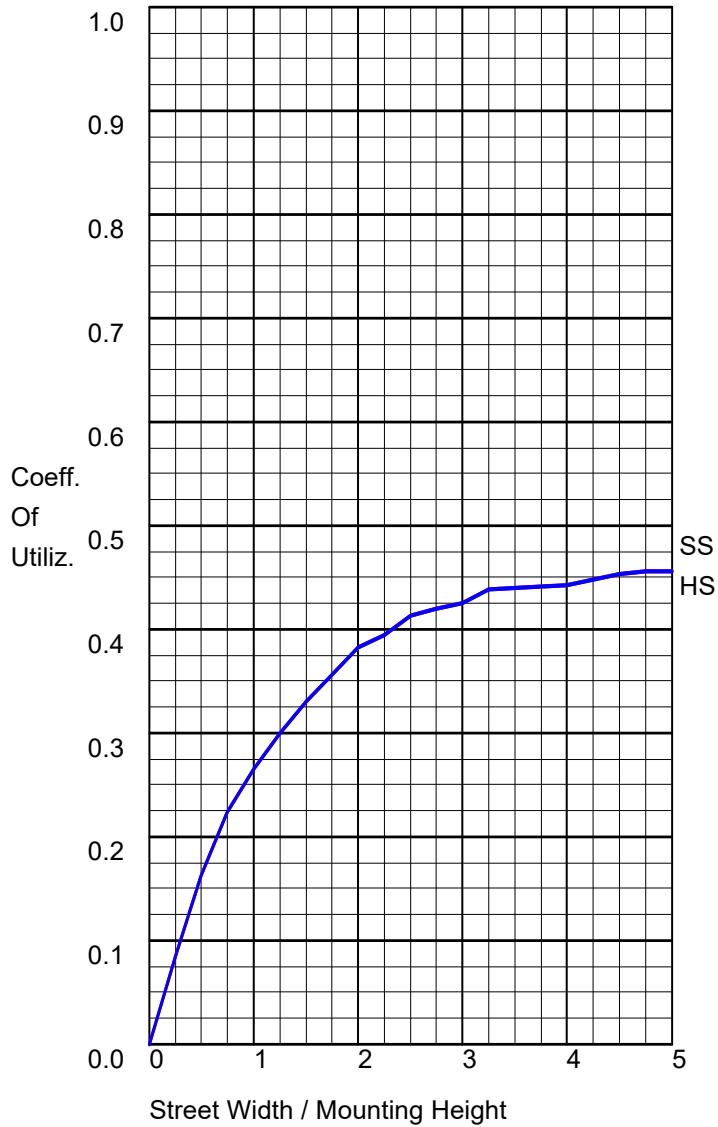
Vert. Angles	Horizontal Angles								
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
0.0	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1
5.0	150.5	137.5	125.5	115.6	104.6	96.2	91.8	87.7	85.4
10.0	216.5	201.3	191.8	187.0	178.4	173.4	176.1	174.5	172.0

IES ROAD REPORT
PHOTOMETRIC FILENAME : L091706909.IES

CANDELA TABULATION - (Cont.)

15.0	232.8	223.2	212.9	208.3	205.0	198.8	197.8	196.7	197.9
20.0	234.7	221.7	215.4	216.7	209.4	204.4	205.8	203.3	198.7
25.0	219.7	215.6	213.0	213.1	209.6	204.7	207.4	202.5	203.3
30.0	207.9	209.0	206.8	206.9	203.3	201.3	200.7	200.3	199.8
35.0	197.5	197.7	196.6	194.5	192.8	190.6	188.3	189.2	188.3
37.5	191.4	190.8	190.2	187.5	185.7	183.5	180.8	182.4	182.2
40.0	185.2	183.8	182.6	180.1	177.7	174.8	172.8	175.1	176.2
42.5	177.6	176.2	174.0	171.6	169.0	165.5	164.9	166.3	167.1
45.0	169.3	167.6	164.7	163.0	159.2	156.2	156.7	157.8	156.6
47.5	159.2	157.4	155.1	153.5	149.1	145.9	148.2	147.9	147.0
50.0	149.4	146.7	145.8	143.0	138.7	136.9	138.3	137.8	137.5
52.5	144.8	139.6	137.9	133.9	128.9	128.1	128.4	127.4	128.8
55.0	151.0	140.6	134.9	126.6	121.4	120.4	118.7	118.6	120.0
57.5	161.2	147.1	135.4	123.9	116.5	113.1	110.7	110.4	111.8
60.0	168.9	153.6	137.4	124.9	114.4	108.7	104.7	103.2	103.3
62.5	175.9	159.9	141.4	126.9	113.8	105.8	100.6	97.3	95.6
65.0	178.8	163.5	144.4	128.0	114.5	103.2	96.2	91.0	89.5
67.5	169.9	156.8	139.5	123.1	110.4	98.6	90.5	84.8	83.4
70.0	148.7	138.2	124.9	112.7	101.0	90.6	83.8	78.9	77.3
72.5	121.5	114.2	105.5	97.4	89.0	81.3	75.6	71.8	70.5
75.0	97.4	92.4	87.1	80.9	75.1	70.5	66.3	62.9	61.9
77.5	79.4	74.6	70.2	66.0	61.9	58.8	56.1	54.2	53.5
80.0	66.2	61.6	57.4	54.1	50.9	48.1	46.5	45.3	44.7
85.0	45.2	42.9	40.3	37.7	35.1	33.2	31.7	30.1	29.5
90.0	28.6	28.2	27.8	27.0	25.7	24.4	22.7	21.6	21.1
95.0	19.0	18.9	18.8	19.0	19.1	19.1	18.8	18.5	18.2
100.0	13.4	13.3	13.1	13.0	13.1	13.4	13.7	13.8	13.9
105.0	9.8	9.5	9.3	9.1	9.1	9.3	9.4	9.5	9.6
110.0	7.7	7.2	6.9	6.6	6.6	6.5	6.5	6.4	6.5
115.0	6.2	5.9	5.5	5.2	4.9	4.6	4.5	4.5	4.4
120.0	5.1	4.8	4.4	4.0	3.7	3.5	3.2	3.1	3.2
125.0	4.0	3.8	3.4	3.1	2.8	2.6	2.3	2.2	2.2
130.0	3.3	2.9	2.7	2.4	2.2	2.0	1.7	1.6	1.6
135.0	2.3	2.2	2.0	1.8	1.7	1.5	1.3	1.1	1.1
140.0	1.7	1.6	1.5	1.4	1.2	1.1	1.1	1.0	1.0
145.0	1.4	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.0
150.0	1.1	1.0	1.1	1.1	1.1	1.0	1.1	1.1	1.1
155.0	1.1	0.9	1.0	1.0	1.0	1.1	1.0	0.9	0.9
160.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9
165.0	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
170.0	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.5
175.0	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

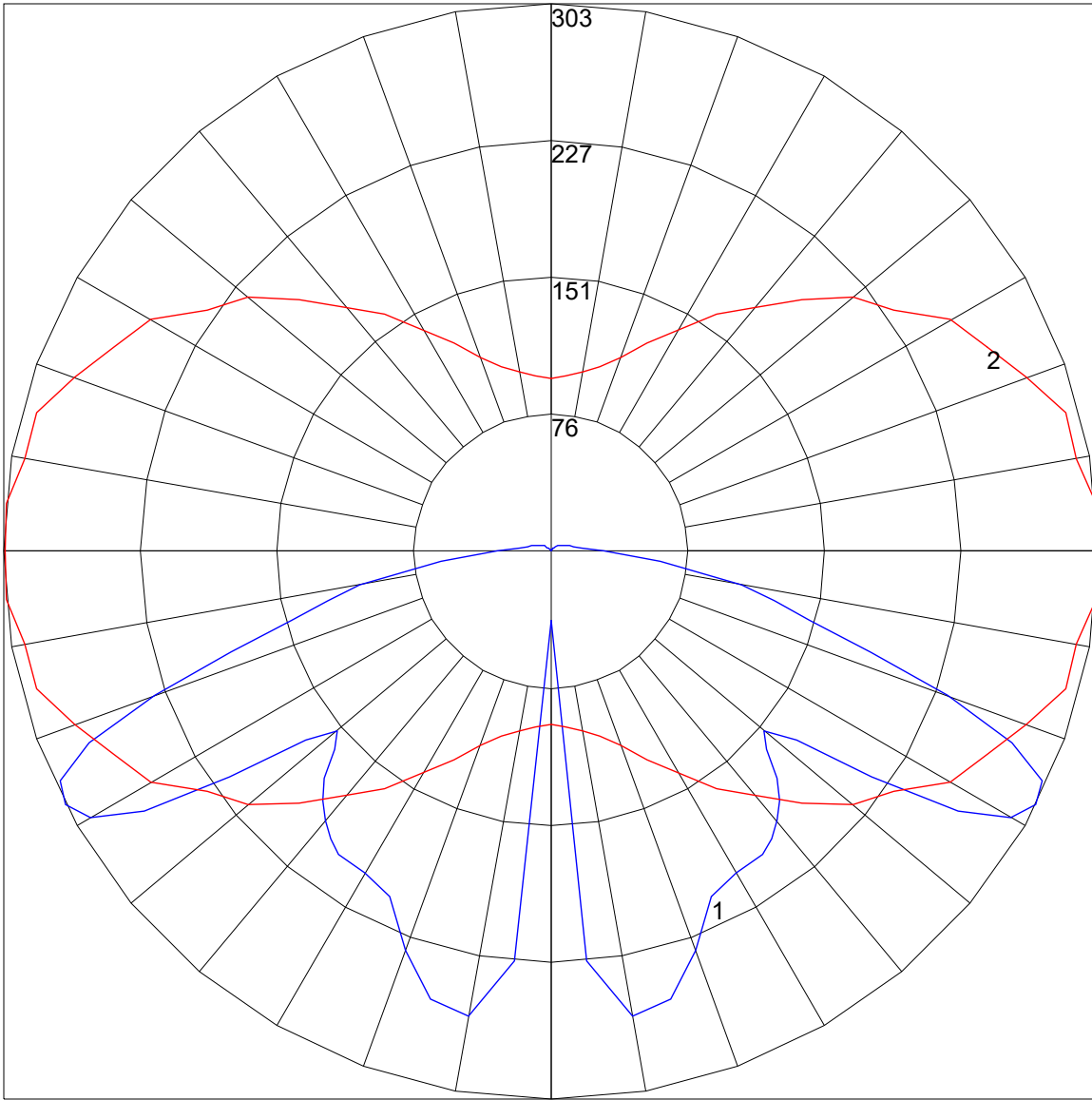
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

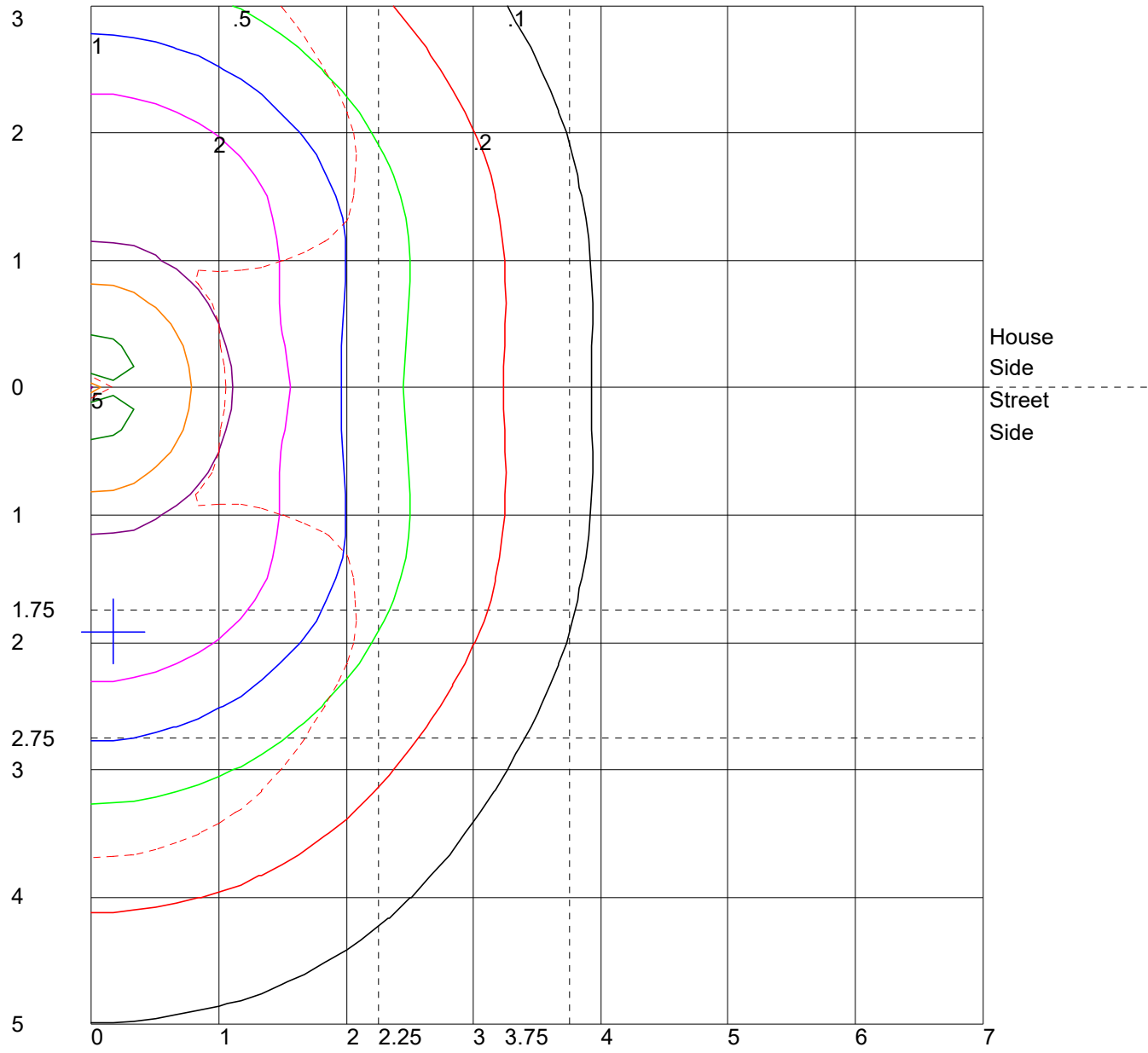
	Lumens	Percent Of Luminaire
Downward Street Side	469.1	47.7
Downward House Side	469.1	47.7
Downward Total	938.2	95.3
Upward Street Side	23.1	2.3
Upward House Side	23.1	2.3
Upward Total	46.2	4.7
Total Flux	984.4	100.0

POLAR GRAPH



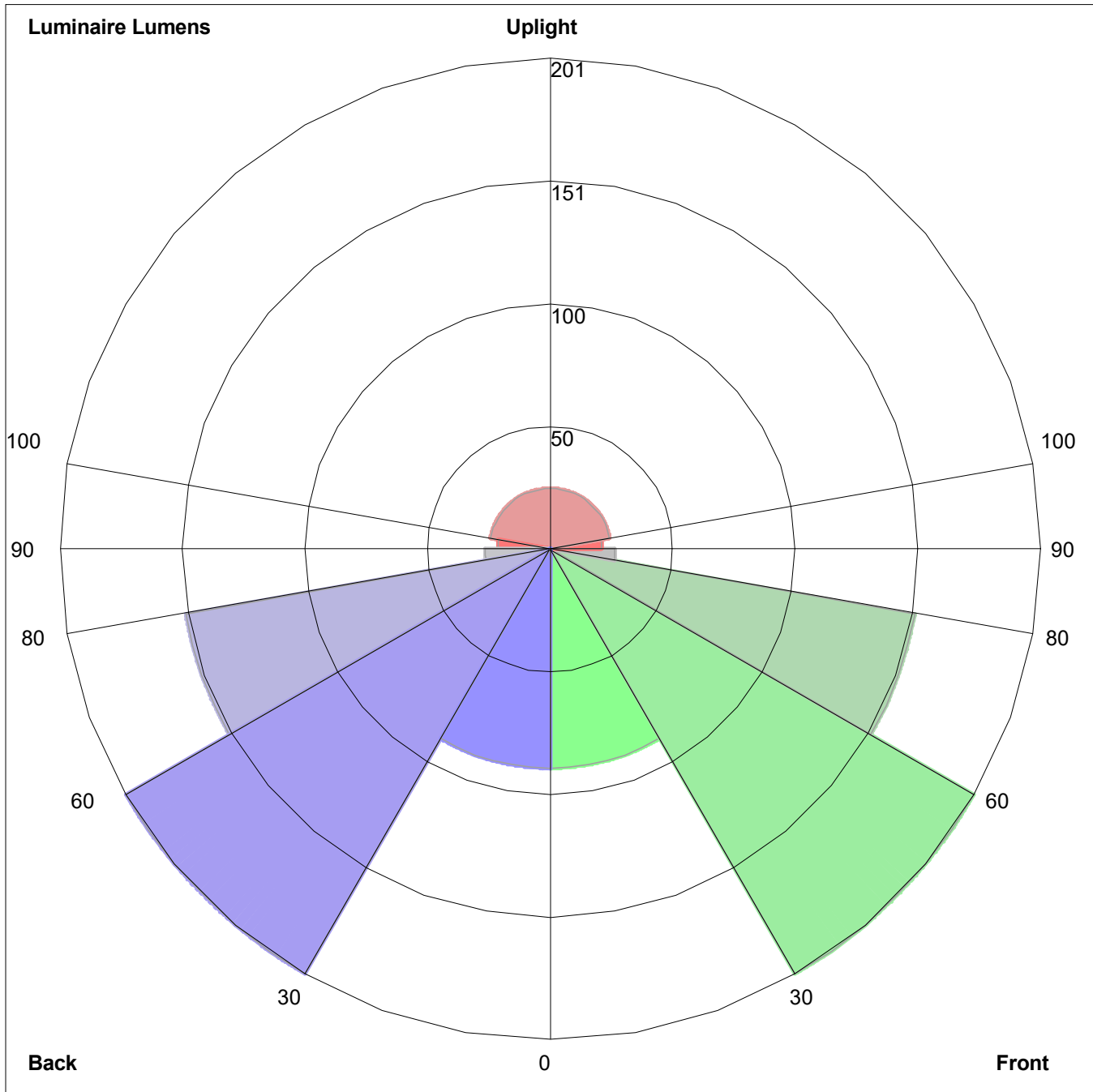
Maximum Candela = 302.7 Located At Horizontal Angle = 5, Vertical Angle = 62.5
1 - Vertical Plane Through Horizontal Angles (5 - 185) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (62.5) (Through Max. Cd.)

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=89.7, Medium=200.9, High=151.8, Very High=26.7
Back: Low=89.7, Medium=200.9, High=151.8, Very High=26.7
Uplight: Low=21.3, High=24.8

BUG Rating : B1-U2-G1