



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

Report No: L091706904



Report No: L091706904

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-A

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.

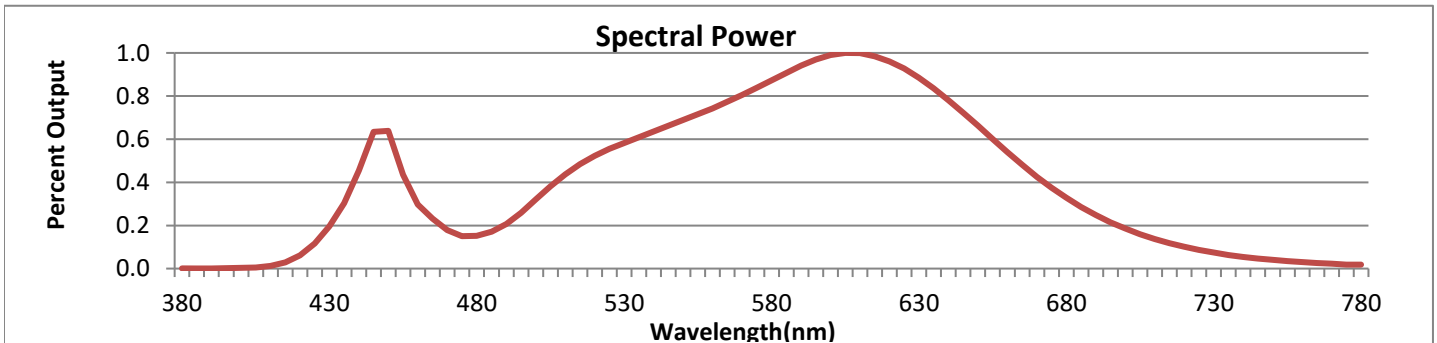
Test Summary

Manufacturer:	USTE, dba Vista Professional Outdoor Lighting
Model Number:	1470/1471-2Q180-A
Driver Model Number:	ERP ESS015W-0350-32
Total Lumens:	712.40
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.1
Input Power (W):	11.93
Input Power Factor:	0.98
Current ATHD @ 120V(%):	14%
Current ATHD @ 277V(%):	N/A
Efficacy:	60
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	3143
Chromaticity Coordinate x:	0.4251
Chromaticity Coordinate y:	0.3960
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	2:30
Total Operating Time (Hours):	3:15



FIG. 1 LUMINAIRE

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



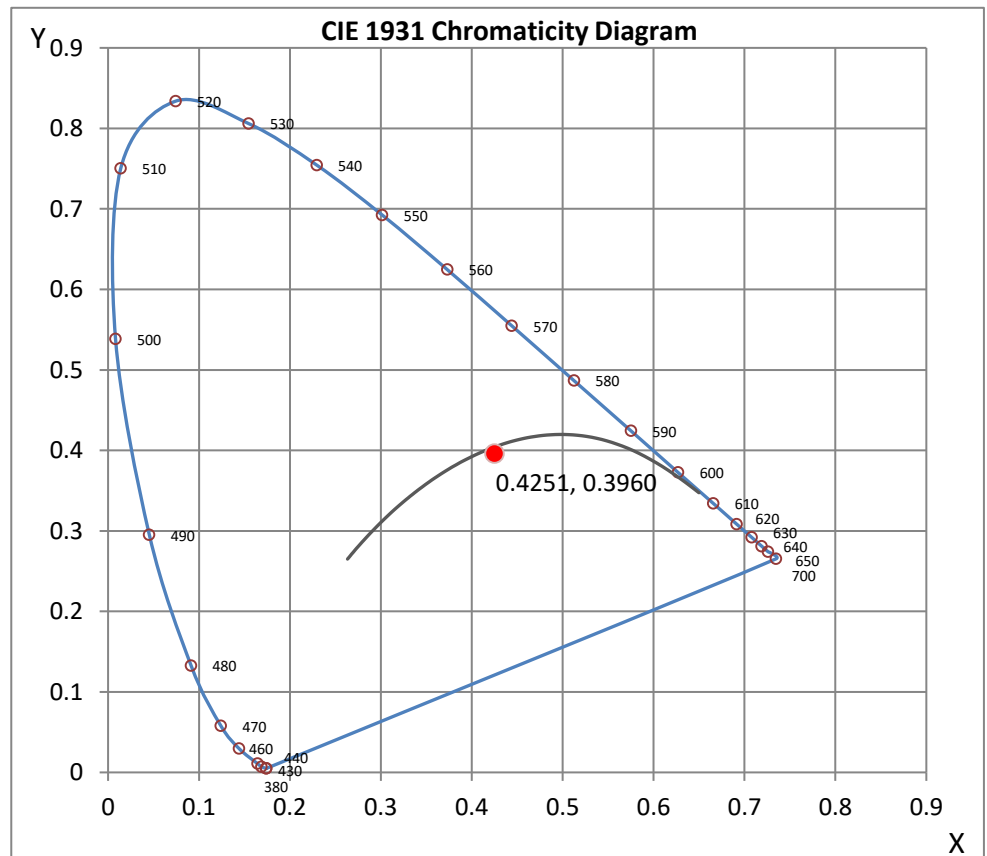
Wavelength	W/m ² nm	440	0.4543	510	0.4374	580	0.8732	650	0.6633	720	0.1012
380	0.0009	450	0.6383	520	0.5227	590	0.9409	660	0.5406	730	0.0742
390	0.0012	460	0.2968	530	0.5829	600	0.9905	670	0.4252	740	0.0546
400	0.0028	470	0.1781	540	0.6362	610	0.9987	680	0.3278	750	0.0402
410	0.0125	480	0.1524	550	0.6890	620	0.9613	690	0.2476	760	0.0298
420	0.0615	490	0.2062	560	0.7431	630	0.8843	700	0.1854	770	0.0221
430	0.1967	500	0.3209	570	0.8053	640	0.7814	710	0.1376	780	0.0189

CRI & CCT

x	0.4251
y	0.3960
u'	0.2464
v'	0.5164
CRI	84.00
CCT	3143
Duv	-0.00153

R Values

R1	83.47
R2	89.00
R3	93.17
R4	84.12
R5	82.71
R6	85.27
R7	86.32
R8	67.66
R9	23.05
R10	73.75
R11	83.60
R12	69.08
R13	84.41
R14	95.57



*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 : L091706904.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L091706904
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/9/2017
[MANUFAC] USTE, DBA VISTA PROFESSIONAL OUTDOOR LIGHTING
[LUMCAT] 1470/1471-2Q180-A
[LUMINAIRE] Bollard, Bollard, 2 quadrant distribution, 180° apart, 350mA
[BALLASTCAT] ERP ESS015W-0350-32
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 11.93W
[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	712
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	60
Total Luminaire Watts	11.93
Ballast Factor	1.00
Upward Waste Light Ratio	0.04
Maximum Candela	240.8
Maximum Candela Angle	5H 60V
Maximum Candela (<90 Degrees Vertical)	240.8
Maximum Candela Angle (<90 Degrees Vertical)	5H 60V
Maximum Candela At 90 Degrees Vertical	20.9 (2.9% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	74 (10.4% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L091706904.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	61.1	N.A.	8.6
FM - Front-Medium (30-60)	149.4	N.A.	21.0
FH - Front-High (60-80)	111.0	N.A.	15.6
FVH - Front-Very High (80-90)	18.8	N.A.	2.6
BL - Back-Low (0-30)	61.1	N.A.	8.6
BM - Back-Medium (30-60)	149.4	N.A.	21.0
BH - Back-High (60-80)	111.0	N.A.	15.6
BVH - Back-Very High (80-90)	18.8	N.A.	2.6
UL - Uplight-Low (90-100)	14.6	N.A.	2.1
UH - Uplight-High (100-180)	17.0	N.A.	2.4
Total	712.2	N.A.	100.0
BUG Rating	B1-U2-G1		

ZONAL LUMEN SUMMARY

Zone	%
0-20	7.5
0-30	17.2
0-40	29.6
0-60	59.1
0-80	90.3
0-90	95.6
10-90	94.1
20-40	22
20-50	35.2
40-70	49.5
60-80	31.2
70-80	11.2
80-90	5.3
90-110	3.1
90-120	3.8
90-130	4.1
90-150	4.4
90-180	4.4
110-180	1.3
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	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
5.0	154.3	153.5	151.3	148.5	143.1	137.7	131.1	123.4	114.5	105.5
10.0	174.7	174.2	174.0	174.6	172.9	171.8	171.5	168.1	160.2	152.3
15.0	173.7	173.0	172.4	172.5	171.2	169.8	169.5	168.4	165.8	163.7
20.0	160.8	160.6	160.9	161.9	161.1	160.7	161.1	160.7	159.5	159.6
25.0	148.8	148.6	148.6	149.8	150.4	150.7	151.3	151.5	150.9	150.8
30.0	149.4	150.0	150.5	150.1	150.0	150.1	150.3	149.6	147.9	146.4
35.0	149.0	149.2	149.0	147.9	146.9	147.4	147.5	145.7	143.6	142.5
37.5	146.5	146.4	146.3	144.7	143.4	144.3	143.5	141.2	139.9	139.1
40.0	142.3	142.4	142.7	141.2	138.9	139.7	138.9	136.2	135.6	135.3
42.5	138.1	136.5	137.6	136.8	133.7	134.0	134.0	130.8	130.6	129.9
45.0	129.9	128.1	129.8	130.1	126.2	126.5	126.6	123.5	124.4	123.4
47.5	118.8	117.4	118.7	118.7	116.0	116.7	116.9	114.7	115.9	115.1
50.0	111.1	110.9	111.1	112.0	111.4	111.3	110.7	109.5	109.3	108.6
52.5	128.9	129.5	130.0	129.5	127.8	125.6	123.0	118.1	113.9	109.5
55.0	180.1	178.6	177.0	173.5	168.7	162.1	154.8	143.4	134.1	121.6
57.5	226.6	226.9	222.4	216.4	207.6	197.4	187.0	170.4	158.5	139.0
60.0	236.6	240.8	233.4	228.8	219.2	209.0	199.4	180.8	169.5	150.2
62.5	230.5	237.4	230.5	227.6	219.7	209.1	201.3	183.4	173.1	156.0
65.0	218.5	226.8	220.3	216.6	214.1	201.5	196.2	181.7	169.4	155.9
67.5	192.2	198.4	193.0	188.1	186.1	175.9	172.3	163.3	151.6	143.2
70.0	155.6	157.8	152.8	147.7	147.1	139.5	135.2	130.9	123.1	117.9
72.5	115.5	117.6	114.7	110.9	109.3	105.0	102.0	98.1	93.2	90.2
75.0	89.7	91.7	91.7	90.2	87.6	82.7	80.1	76.9	72.1	69.0
77.5	80.3	81.2	81.2	80.4	79.5	74.8	70.1	66.7	61.9	56.9
80.0	74.0	73.8	73.5	72.2	70.8	68.2	64.0	59.6	54.9	51.1
85.0	42.5	41.6	41.1	39.9	38.9	38.2	38.1	38.2	36.4	34.8
90.0	16.3	16.6	17.5	18.6	19.1	19.3	19.5	19.8	19.9	20.4
95.0	9.6	9.8	10.1	10.5	11.2	12.1	12.8	13.1	13.0	13.2
100.0	8.1	8.2	8.2	8.3	8.3	8.5	8.7	9.0	9.4	9.6
105.0	7.4	7.4	7.4	7.4	7.4	7.3	7.2	7.0	7.0	6.9
110.0	6.5	6.5	6.5	6.4	6.4	6.3	6.2	6.0	5.8	5.6
115.0	5.5	5.5	5.5	5.5	5.4	5.3	5.2	5.0	4.8	4.5
120.0	4.6	4.7	4.6	4.5	4.5	4.4	4.3	4.1	3.9	3.7
125.0	3.8	3.8	3.8	3.7	3.7	3.6	3.4	3.3	3.2	3.0
130.0	3.0	3.0	3.0	3.0	2.9	2.8	2.7	2.5	2.4	2.2
135.0	2.1	2.2	2.1	2.0	2.0	2.0	2.0	1.9	1.7	1.5
140.0	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.2	1.2
145.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
150.0	0.8	0.8	0.9	0.8	0.8	0.8	0.9	0.8	0.8	0.7
155.0	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.8	0.8
160.0	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.6
165.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
170.0	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
175.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

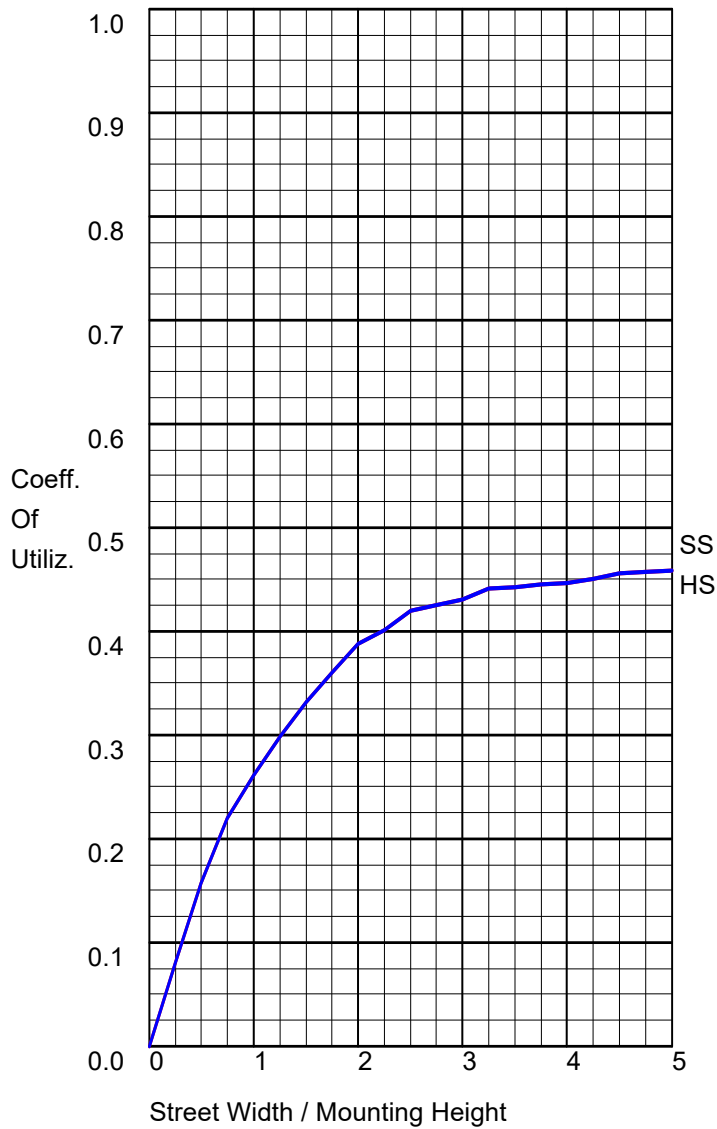
Vert. Angles	Horizontal Angles								
	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>
0.0	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
5.0	97.2	87.4	78.4	70.0	62.3	56.2	52.4	49.7	48.2
10.0	144.7	136.5	128.1	122.7	119.2	115.7	114.0	113.2	112.9

IES ROAD REPORT
PHOTOMETRIC FILENAME : L091706904.IES

CANDELA TABULATION - (Cont.)

15.0	156.2	147.8	143.6	140.9	135.4	132.0	134.1	131.1	130.3
20.0	158.7	152.4	143.6	142.0	143.1	138.6	132.9	134.7	135.6
25.0	151.3	149.8	145.2	143.6	143.2	140.5	138.2	137.0	140.5
30.0	145.8	146.0	145.1	143.5	141.0	140.0	139.6	138.7	137.5
35.0	142.0	140.0	141.0	139.1	134.7	134.4	134.6	133.3	129.9
37.5	137.6	136.0	137.6	135.6	129.9	129.5	131.0	129.0	125.2
40.0	132.9	131.9	133.9	131.0	125.2	124.9	126.4	123.6	120.6
42.5	127.5	127.7	129.2	125.1	119.2	119.4	120.4	118.2	115.3
45.0	121.4	123.1	123.8	118.4	113.1	113.3	115.0	112.8	110.5
47.5	114.8	116.6	116.2	111.3	107.1	107.3	108.8	106.8	105.5
50.0	108.1	109.4	108.4	103.7	100.2	100.1	100.7	100.2	100.4
52.5	106.9	105.2	101.6	97.3	94.3	93.3	93.4	94.0	95.0
55.0	114.9	108.1	99.6	92.9	88.7	87.4	86.9	88.0	89.2
57.5	126.5	115.5	102.0	92.6	85.2	82.3	82.0	82.2	83.2
60.0	136.1	123.9	107.2	94.9	85.6	80.4	78.1	77.4	77.2
62.5	141.0	130.1	111.9	98.7	87.4	80.4	75.8	73.1	72.8
65.0	139.9	130.2	114.0	100.1	89.1	80.0	73.9	69.5	68.6
67.5	129.9	120.5	107.5	96.1	87.2	77.5	69.7	65.3	63.8
70.0	109.7	102.8	93.7	85.6	78.2	70.9	63.8	60.1	58.7
72.5	85.9	82.4	77.1	72.6	67.4	61.8	56.9	54.6	53.6
75.0	66.3	64.1	61.3	58.6	55.7	52.5	49.7	47.8	47.1
77.5	53.8	51.7	49.1	46.8	44.7	43.2	42.0	40.7	40.4
80.0	46.7	43.7	41.1	38.8	36.6	35.0	34.2	33.9	34.0
85.0	33.4	32.2	30.3	28.4	26.0	23.3	21.9	21.7	22.0
90.0	20.9	20.9	20.7	20.5	19.3	17.5	16.1	15.4	15.3
95.0	13.4	13.5	13.9	14.4	14.6	14.4	14.1	14.1	14.2
100.0	9.6	9.5	9.5	9.5	9.8	10.1	10.5	10.9	11.2
105.0	6.9	6.8	6.7	6.6	6.7	7.0	7.2	7.5	7.7
110.0	5.2	5.1	4.9	4.7	4.6	4.5	4.6	4.7	4.7
115.0	4.3	4.1	3.8	3.6	3.4	3.2	3.2	3.1	3.0
120.0	3.5	3.3	3.0	2.8	2.6	2.4	2.1	2.1	2.2
125.0	2.7	2.6	2.3	2.1	1.9	1.7	1.5	1.5	1.5
130.0	2.1	1.9	1.7	1.5	1.4	1.2	1.1	1.0	1.1
135.0	1.5	1.4	1.2	1.1	1.0	0.9	0.8	0.8	0.7
140.0	1.1	1.1	1.0	0.9	0.8	0.8	0.6	0.6	0.6
145.0	0.9	0.8	0.8	0.7	0.7	0.6	0.7	0.6	0.7
150.0	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
155.0	0.7	0.7	0.8	0.8	0.7	0.7	0.6	0.6	0.6
160.0	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5	0.5
165.0	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4
170.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
175.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

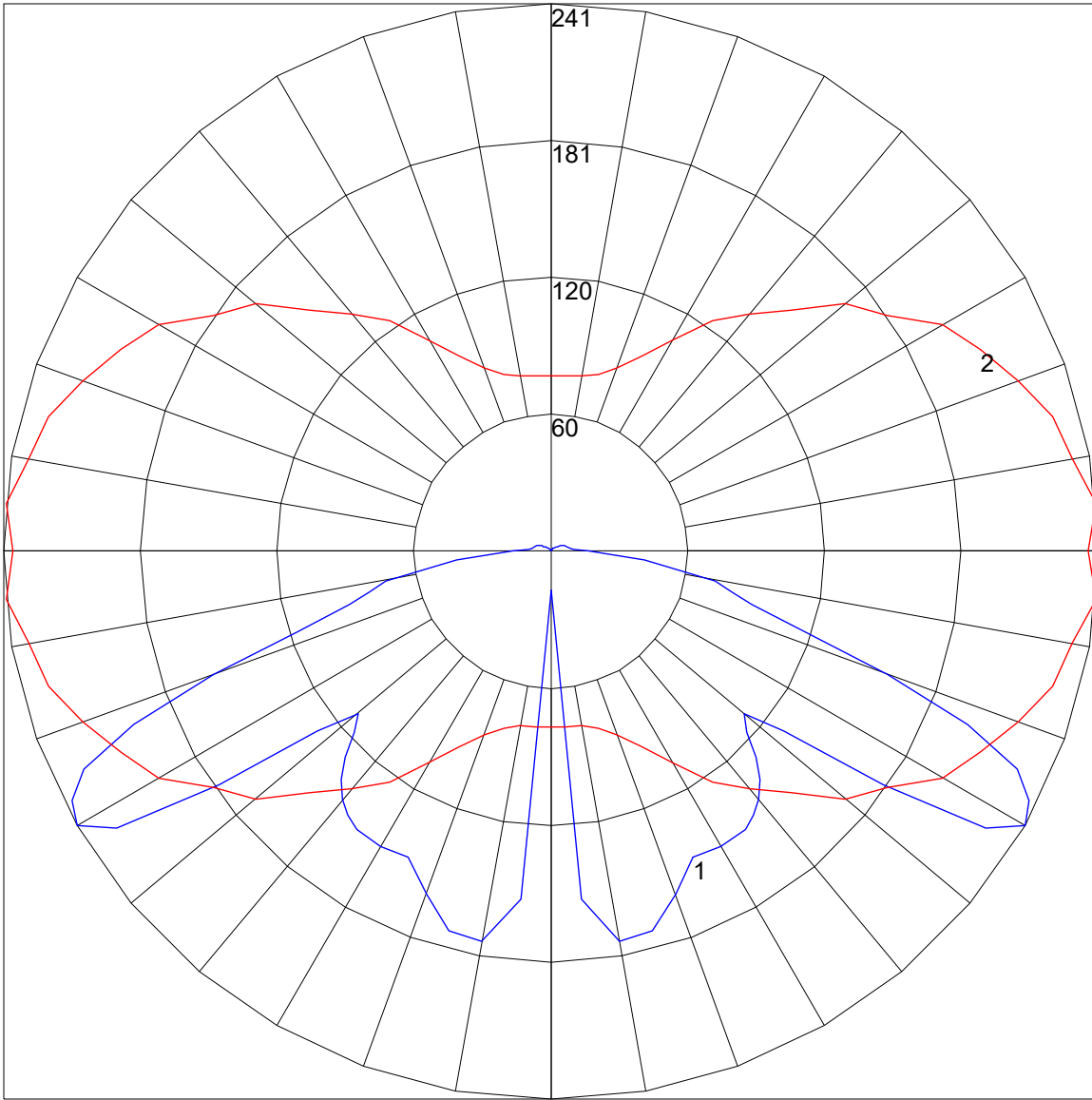
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

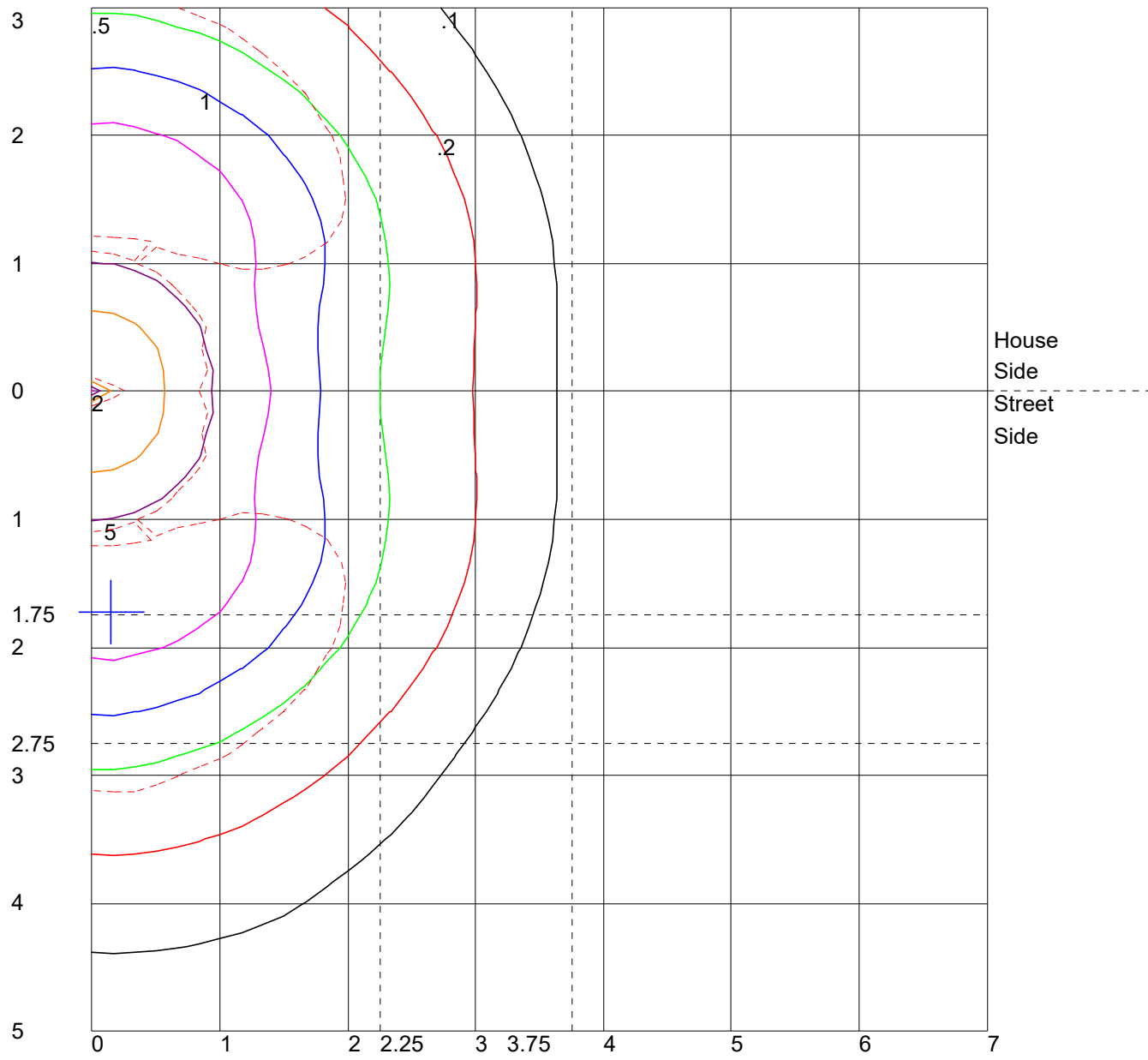
	Lumens	Percent Of Luminaire
Downward Street Side	340.4	47.8
Downward House Side	340.4	47.8
Downward Total	680.8	95.6
Upward Street Side	15.8	2.2
Upward House Side	15.8	2.2
Upward Total	31.6	4.4
Total Flux	712.4	100.0

POLAR GRAPH



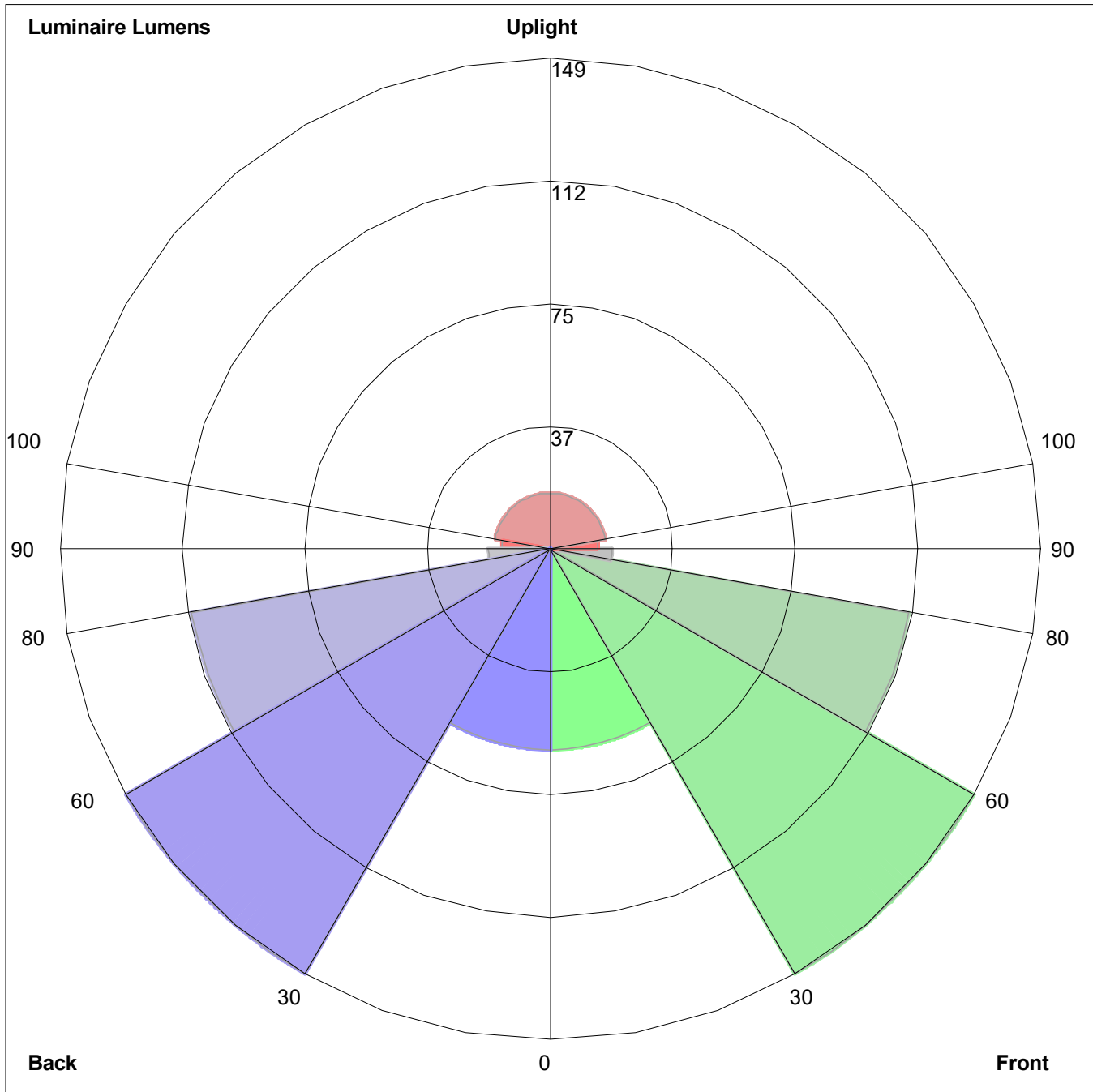
Maximum Candela = 240.8 Located At Horizontal Angle = 5, Vertical Angle = 60
1 - Vertical Plane Through Horizontal Angles (5 - 185) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (60) (Through Max. Cd.)

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=61.1, Medium=149.4, High=111.0, Very High=18.8
Back: Low=61.1, Medium=149.4, High=111.0, Very High=18.8
Uplight: Low=14.6, High=17.0

BUG Rating : B1-U2-G1