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Report No: L081607102

Date: 8/30/2016



NVLAP LAB CODE 200927-0

Report No: L081607102

Report Prepared For: REVOLUTION LIGHTING TECHNOLOGIES(RVLT)
 4139 Guardian St. Simi valley, CA 93063

Model Number: 281400-005-M0X

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 281400-005-M0X. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 8/25/16

Date of Tests: 8/26/16 - 8/30/16

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:	REVOLUTION LIGHTING TECHNOLO [®]
Model Number:	281400-005-M0X
Driver Model Number:	CUSTOM DRIVER
Total Lumens:	1759.70
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.13
Input Power (W):	15.54
Input Power Factor:	0.98
Current ATHD @ 120V(%):	12%
Current ATHD @ 277V(%):	N/A
Efficacy:	113
Color Rendering Index (CRI):	82
Correlated Color Temperature (K):	4803
Chromaticity Coordinate x:	0.3524
Chromaticity Coordinate y:	0.3682
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:25
Off State Power(W):	0.00

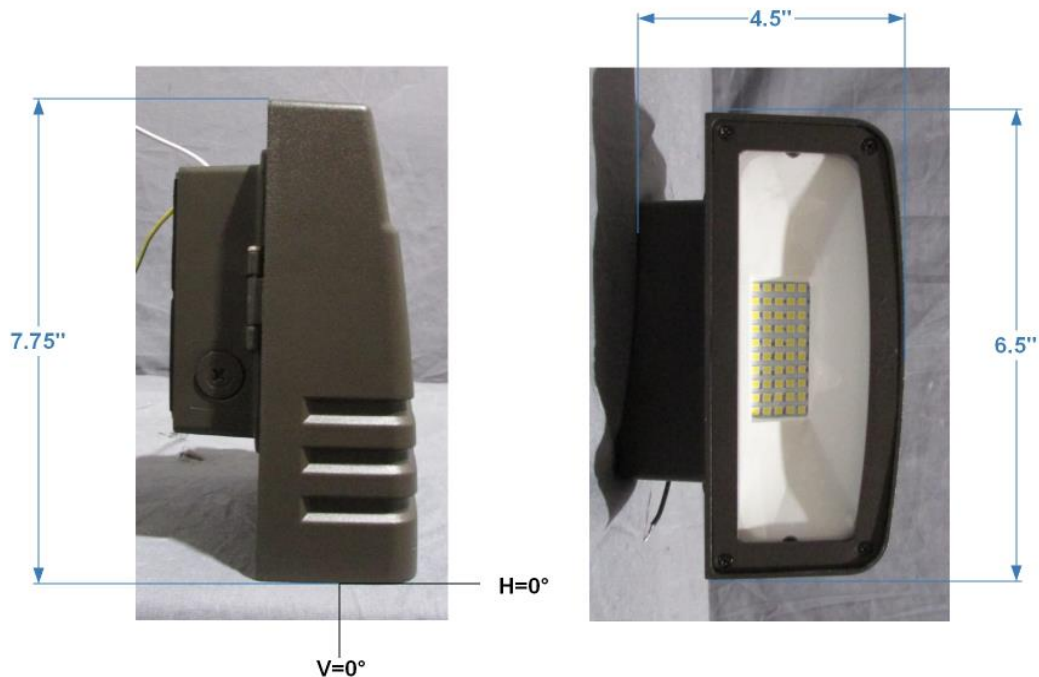
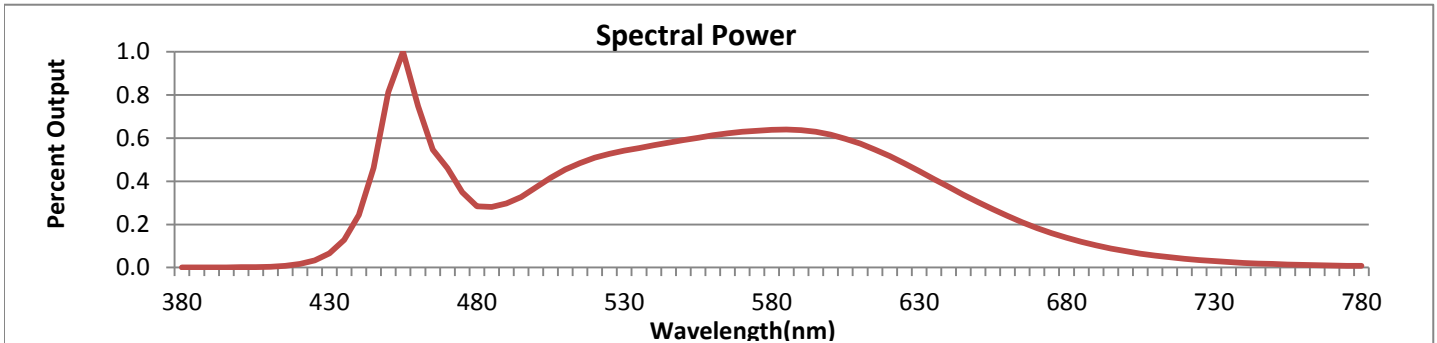


FIG. 1 LUMINAIRE

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



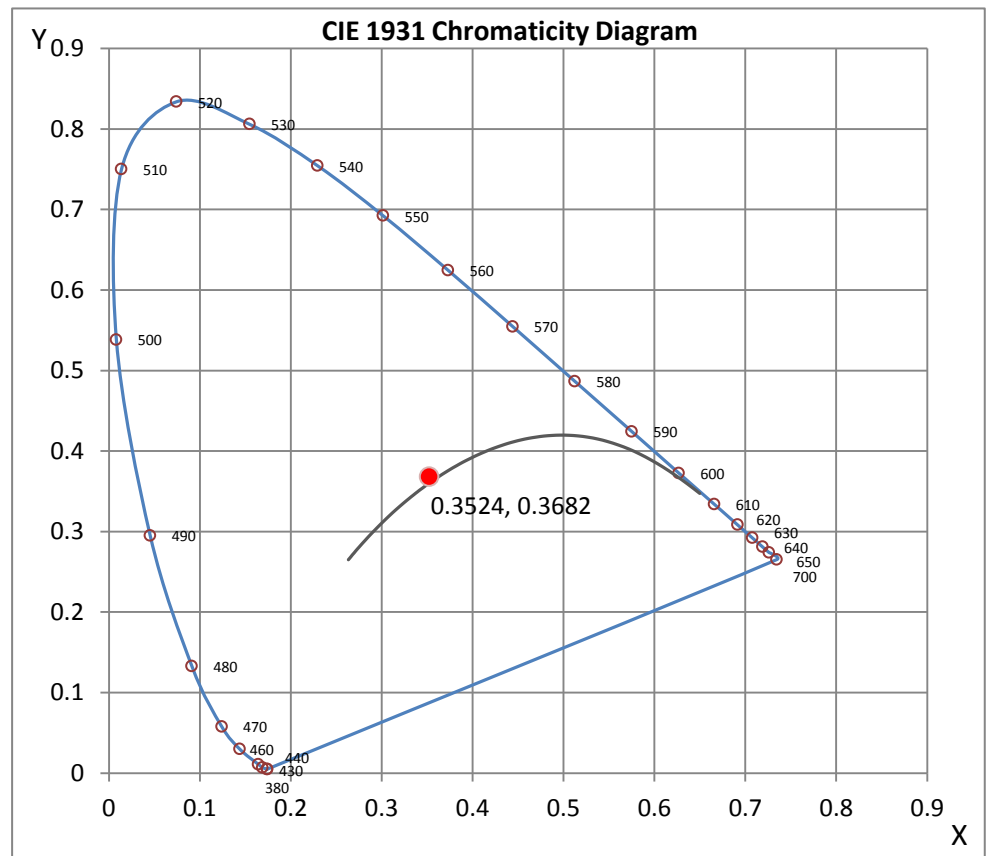
Wavelength	W/m ² nm	440	0.2438	510	0.4540	580	0.6383	650	0.3030	720	0.0406
380	0.0008	450	0.8130	520	0.5093	590	0.6367	660	0.2391	730	0.0299
390	0.0008	460	0.7491	530	0.5419	600	0.6169	670	0.1828	740	0.0219
400	0.0013	470	0.4605	540	0.5670	610	0.5749	680	0.1380	750	0.0162
410	0.0037	480	0.2836	550	0.5906	620	0.5167	690	0.1027	760	0.0119
420	0.0162	490	0.2980	560	0.6127	630	0.4469	700	0.0757	770	0.0088
430	0.0653	500	0.3711	570	0.6295	640	0.3739	710	0.0555	780	0.0078

CRI & CCT

x	0.3524
y	0.3682
u'	0.2100
v'	0.4936
CRI	82.40
CCT	4803
Duv	0.00532

R Values

R1	80.16
R2	89.66
R3	95.25
R4	78.53
R5	79.26
R6	84.44
R7	86.69
R8	65.18
R9	5.72
R10	74.72
R11	77.05
R12	52.84
R13	82.96
R14	97.31



*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: 13*



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Photometric Test Report

IES ROAD REPORT
PHOTOMETRIC FILENAME : L081607102.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L081607102
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 8/30/2016
 [MANUFAC] REVOLUTION LIGHTING TECHNOLOGIES(RVLT)
 [LUMCAT] 281400-005-M0X
 [LUMINAIRE] 15W 5000K ARCHITECTURAL WALL PACK
 [BALLASTCAT] CUSTOM DRIVER
 [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, 15.54W
 [_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	1760
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	113
Total Luminaire Watts	15.54
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	774.66
Maximum Candela Angle	0H 5V
Maximum Candela (<90 Degrees Vertical)	774.66
Maximum Candela Angle (<90 Degrees Vertical)	0H 5V
Maximum Candela At 90 Degrees Vertical	0 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	34.75 (2.0% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

IES ROAD REPORT
PHOTOMETRIC FILENAME : L081607102.IES

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	306.6	N.A.	17.4
FM - Front-Medium (30-60)	609.4	N.A.	34.6
FH - Front-High (60-80)	157.5	N.A.	8.9
FVH - Front-Very High (80-90)	4.2	N.A.	0.2
BL - Back-Low (0-30)	264.7	N.A.	15.0
BM - Back-Medium (30-60)	357.1	N.A.	20.3
BH - Back-High (60-80)	57.4	N.A.	3.3
BVH - Back-Very High (80-90)	2.9	N.A.	0.2
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	1759.8	N.A.	100.0
BUG Rating	B1-U0-G0		

ZONAL LUMEN SUMMARY

Zone	%
0-20	15.5
0-30	32.5
0-40	52.5
0-60	87.4
0-80	99.6
0-90	100
10-90	95.9
20-40	37
20-50	56.5
40-70	44
60-80	12.2
70-80	3.1
80-90	0.4
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 : L081607102.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	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12
5.0	774.66	774.49	774.66	773.97	773.79	773.79	772.58	771.36	771.18	769.79
10.0	772.92	773.44	773.10	772.58	772.05	771.36	770.14	769.10	767.18	765.62
15.0	763.53	763.36	763.18	763.53	762.66	761.27	760.05	758.31	756.57	754.66
20.0	749.62	750.31	750.14	749.27	747.70	745.62	743.18	741.09	739.53	736.57
25.0	733.62	733.79	733.79	732.05	729.27	726.31	723.35	720.75	717.61	714.48
30.0	716.22	715.70	715.35	713.27	709.09	705.44	701.79	697.61	692.92	687.35
35.0	692.22	692.05	691.87	689.09	685.79	681.44	676.92	671.70	664.57	657.61
37.5	676.22	676.57	675.87	672.92	670.13	666.65	662.31	656.92	650.31	641.78
40.0	658.48	658.13	656.74	653.26	651.52	649.09	645.09	640.22	633.44	624.91
42.5	633.09	632.74	631.87	630.30	630.48	628.22	623.87	620.39	613.61	604.74
45.0	602.82	603.35	603.52	604.04	604.74	602.30	600.04	596.56	590.65	583.34
47.5	568.00	568.58	569.73	569.99	569.19	568.46	569.00	565.01	561.31	553.64
50.0	530.96	530.91	530.28	529.41	531.43	535.55	537.31	534.68	532.04	525.86
52.5	476.97	480.16	485.70	490.33	494.68	495.72	496.97	500.19	498.77	493.51
55.0	411.23	410.97	409.42	410.22	421.73	442.59	454.55	457.04	457.51	456.81
57.5	379.92	381.19	383.00	382.64	380.79	377.19	383.66	402.62	413.21	413.19
60.0	284.89	286.18	292.32	304.94	325.27	342.15	345.22	340.35	351.73	367.10
62.5	256.96	256.40	255.46	254.16	252.31	257.76	278.65	300.00	301.13	305.46
65.0	181.37	183.27	190.36	202.66	217.62	224.57	221.09	221.65	242.56	258.91
67.5	149.30	149.12	148.65	147.84	146.55	149.98	166.53	183.23	184.01	192.80
70.0	88.63	89.35	91.82	98.74	110.23	120.58	121.57	120.63	134.08	150.60
72.5	65.33	66.37	69.69	73.14	73.78	72.54	74.46	85.94	95.95	101.16
75.0	34.06	34.28	34.89	35.62	36.06	39.76	47.99	55.10	57.67	66.04
77.5	19.62	19.74	20.02	20.49	21.29	22.52	24.54	26.78	29.59	36.89
80.0	10.58	10.68	10.89	11.22	11.72	12.40	13.18	14.09	15.34	17.20
85.0	4.66	4.68	4.70	4.71	4.73	4.78	4.82	4.89	4.96	5.08
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									
	<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>	<u>95</u>
0.0	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12
5.0	768.57	767.53	765.62	764.23	763.18	761.10	759.70	758.31	756.57	755.01
10.0	763.70	761.27	759.18	756.75	754.14	751.18	747.88	745.27	741.96	738.66
15.0	751.88	749.10	746.49	743.18	739.88	736.92	732.92	728.05	723.53	717.96
20.0	733.79	731.53	728.05	724.57	720.92	716.40	711.70	705.96	699.00	691.70
25.0	710.31	706.66	703.01	699.53	695.18	689.44	683.87	676.74	668.57	658.48
30.0	682.48	677.26	672.39	667.87	662.13	656.22	648.91	640.74	630.65	619.70
35.0	649.44	642.13	635.00	627.70	621.26	614.65	607.35	597.08	585.61	571.52
37.5	631.87	623.35	614.65	606.82	599.17	592.04	584.04	574.47	561.26	545.95
40.0	613.61	603.52	592.91	583.52	575.34	568.56	560.21	548.91	536.21	519.69
42.5	595.00	582.13	569.78	558.65	549.60	541.25	532.91	522.30	507.51	490.64
45.0	572.56	558.82	545.43	532.21	522.12	512.73	504.56	493.43	478.29	461.77
47.5	543.53	531.27	515.81	500.45	488.56	479.41	470.54	459.93	445.44	430.10
50.0	516.51	504.12	489.72	472.50	459.61	450.24	440.80	430.06	415.11	398.65
52.5	486.23	476.28	461.42	444.34	430.12	419.16	409.52	399.02	386.44	368.60
55.0	450.67	443.27	430.64	414.46	399.26	386.88	377.57	367.35	353.83	335.38
57.5	413.28	407.68	398.53	385.71	369.10	354.79	344.86	335.10	320.79	302.28
60.0	369.83	371.09	365.26	356.46	341.12	324.74	312.75	301.99	286.63	269.53
62.5	322.11	328.81	330.67	324.27	311.81	295.33	280.35	267.64	253.64	235.32
65.0	263.22	279.74	289.38	288.49	280.02	262.94	246.05	233.60	217.60	198.76
67.5	215.48	226.35	239.90	247.70	243.18	227.88	210.99	197.67	182.27	164.12

IES ROAD REPORT
PHOTOMETRIC FILENAME : L081607102.IES

CANDELA TABULATION - (Cont.)

70.0	158.93	176.50	189.74	200.34	202.47	193.28	175.20	162.22	148.38	130.72
72.5	116.27	127.73	139.09	151.05	159.00	155.79	141.07	127.57	115.54	100.01
75.0	75.83	83.85	94.06	103.96	112.95	114.56	105.09	94.18	78.89	71.10
77.5	42.32	48.23	54.96	63.24	68.11	69.59	66.70	58.25	51.36	43.08
80.0	19.39	24.12	28.73	31.39	34.35	34.75	32.56	28.28	24.47	20.19
85.0	5.27	5.58	5.91	6.14	6.19	5.83	5.43	5.10	4.85	4.73
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Horizontal Angles
Angles

	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0.0	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12	765.12
5.0	752.75	751.53	749.62	748.57	747.18	745.10	744.40	743.01	741.44	740.92
10.0	734.83	730.66	727.01	724.22	720.75	718.31	715.88	712.40	709.61	706.83
15.0	711.53	705.44	700.22	695.00	689.61	683.35	677.26	671.70	665.79	660.74
20.0	683.53	676.05	667.70	659.00	650.13	640.57	631.87	623.00	615.00	607.69
25.0	648.57	639.17	627.35	615.52	602.82	591.69	579.87	568.91	559.52	552.56
30.0	607.69	593.61	579.34	564.21	549.78	536.04	524.21	515.69	509.95	506.47
35.0	557.60	541.60	522.99	506.99	490.64	478.82	470.64	467.16	464.90	461.60
37.5	530.82	513.77	494.12	476.21	460.90	452.03	447.16	443.68	438.12	421.94
40.0	502.82	483.34	463.68	445.60	432.90	425.94	421.94	414.99	393.59	365.76
42.5	472.90	452.73	430.99	413.77	404.20	399.51	393.07	369.94	339.85	328.54
45.0	442.64	420.20	399.68	383.85	375.68	370.46	348.55	316.72	307.50	302.63
47.5	409.79	386.37	365.71	353.56	346.79	330.63	297.69	283.52	274.30	242.21
50.0	377.57	353.78	335.01	325.05	315.48	282.33	261.17	248.45	215.41	202.17
52.5	346.77	322.86	306.49	298.39	276.70	245.27	231.69	198.90	184.36	163.68
55.0	313.99	292.12	277.88	266.89	234.17	216.99	183.93	168.08	139.42	122.29
57.5	280.49	259.41	248.52	226.16	201.14	174.74	152.69	125.37	106.37	80.65
60.0	247.17	228.62	217.23	188.34	165.25	139.00	113.61	91.57	69.95	67.57
62.5	213.22	197.72	179.39	155.28	129.21	104.29	80.89	63.15	58.32	48.79
65.0	179.13	166.86	144.08	120.88	96.04	72.35	56.09	49.69	40.59	38.37
67.5	145.65	133.70	112.29	88.16	65.26	49.20	41.55	34.47	33.29	32.45
70.0	116.46	101.52	80.91	61.34	43.48	35.22	29.64	28.58	27.72	27.03
72.5	88.95	73.47	54.13	38.92	30.39	24.92	24.02	23.24	22.63	22.11
75.0	61.40	46.89	32.85	24.77	20.00	19.31	18.71	18.16	17.81	16.98
77.5	35.01	24.94	18.04	16.66	14.56	14.19	13.84	13.48	13.15	12.85
80.0	16.40	11.88	10.58	10.52	10.42	10.24	10.07	9.86	9.65	9.46
85.0	4.80	4.87	4.94	5.04	5.11	5.17	5.20	5.22	5.22	5.18
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Vert. Horizontal Angles
Angles

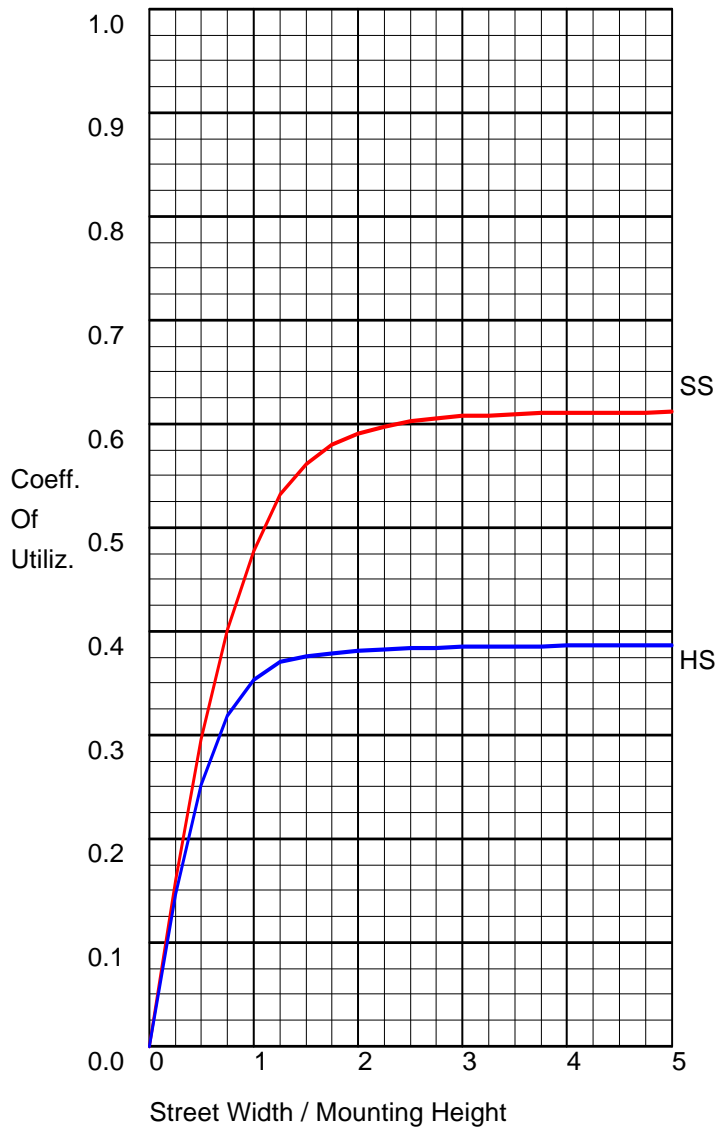
	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0.0	765.12	765.12	765.12	765.12	765.12	765.12	765.12
5.0	740.23	739.18	738.31	737.96	737.44	737.09	737.44
10.0	704.22	701.96	700.05	699.18	697.27	697.27	696.74
15.0	656.39	652.91	649.61	647.35	645.61	644.91	644.57
20.0	601.43	596.74	592.56	589.43	588.04	586.82	586.82
25.0	547.17	542.65	540.21	539.86	539.17	539.52	539.17
30.0	504.04	501.77	500.21	499.17	498.64	498.64	499.17
35.0	453.08	435.16	415.86	401.42	393.94	390.29	389.24
37.5	396.55	375.50	365.94	363.16	362.81	363.33	363.85
40.0	350.63	346.46	344.55	342.98	339.68	336.20	334.63
42.5	326.28	320.20	301.06	281.58	268.02	262.45	261.58
45.0	279.67	251.50	240.36	238.10	237.58	237.58	237.93
47.5	223.29	220.31	215.55	198.99	181.53	170.05	167.53

IES ROAD REPORT
PHOTOMETRIC FILENAME : L081607102.IES

CANDELA TABULATION - (Cont.)

50.0	194.71	167.65	148.15	145.75	145.19	144.25	143.25
52.5	138.13	134.06	119.00	97.76	88.62	88.11	88.22
55.0	105.16	83.14	82.30	82.04	80.27	78.53	77.95
57.5	75.78	72.94	67.07	62.23	58.54	56.25	55.62
60.0	60.04	52.51	48.54	47.59	47.19	46.96	46.89
62.5	43.78	42.77	42.13	41.69	41.41	41.20	41.15
65.0	37.55	36.86	36.30	35.93	35.67	35.55	35.52
67.5	31.72	31.17	30.75	30.40	30.19	30.07	30.02
70.0	26.44	26.02	25.67	25.38	25.20	25.10	25.05
72.5	21.64	21.27	20.96	20.77	20.61	20.51	20.49
75.0	16.65	16.30	16.11	15.95	15.79	15.72	15.72
77.5	12.59	12.38	12.21	12.09	11.97	11.91	11.90
80.0	9.31	9.15	9.01	8.92	8.87	8.82	8.80
85.0	5.13	5.08	5.06	5.03	5.03	5.01	5.01
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

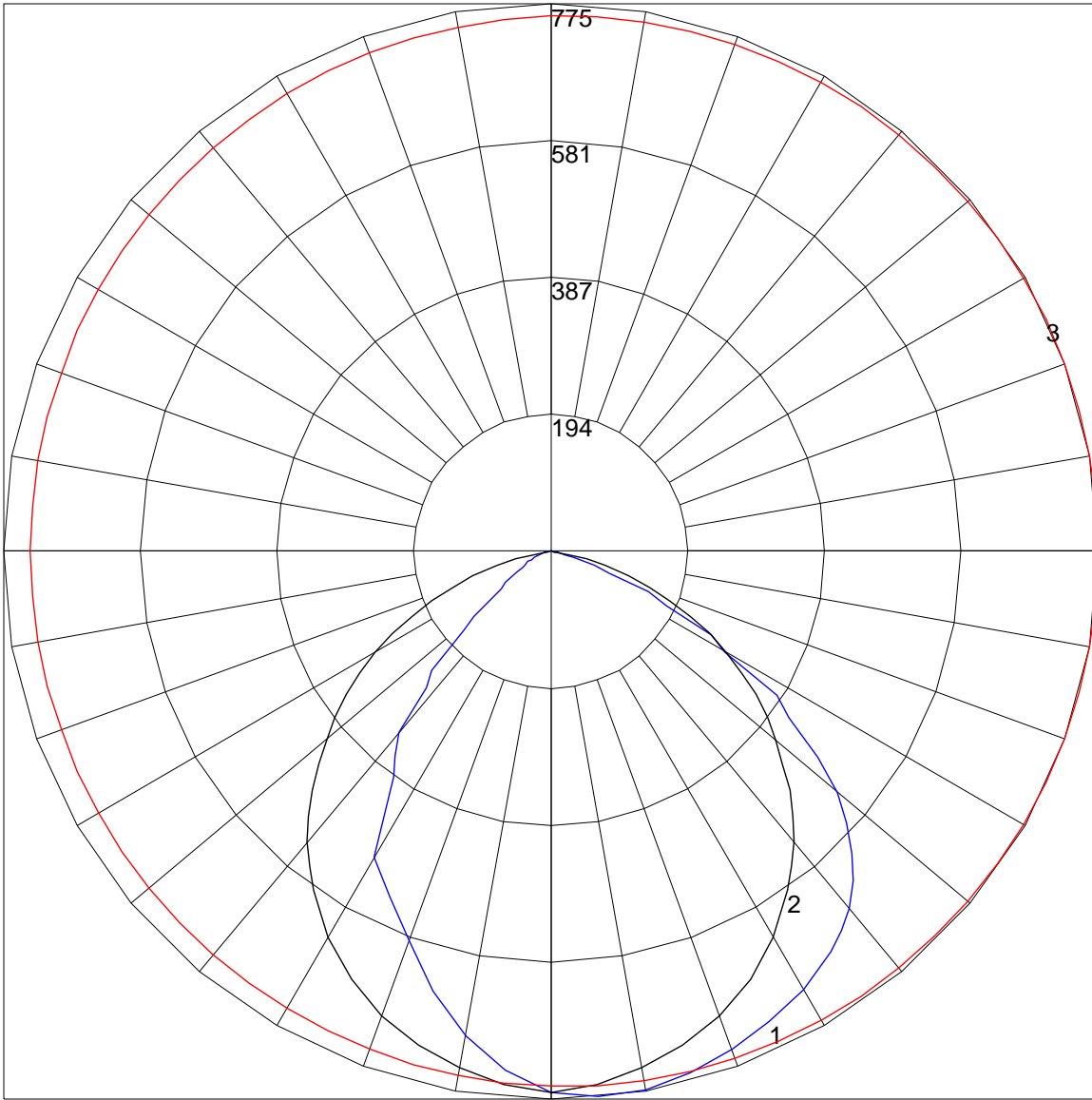
COEFFICIENTS OF UTILIZATION



FLUX DISTRIBUTION

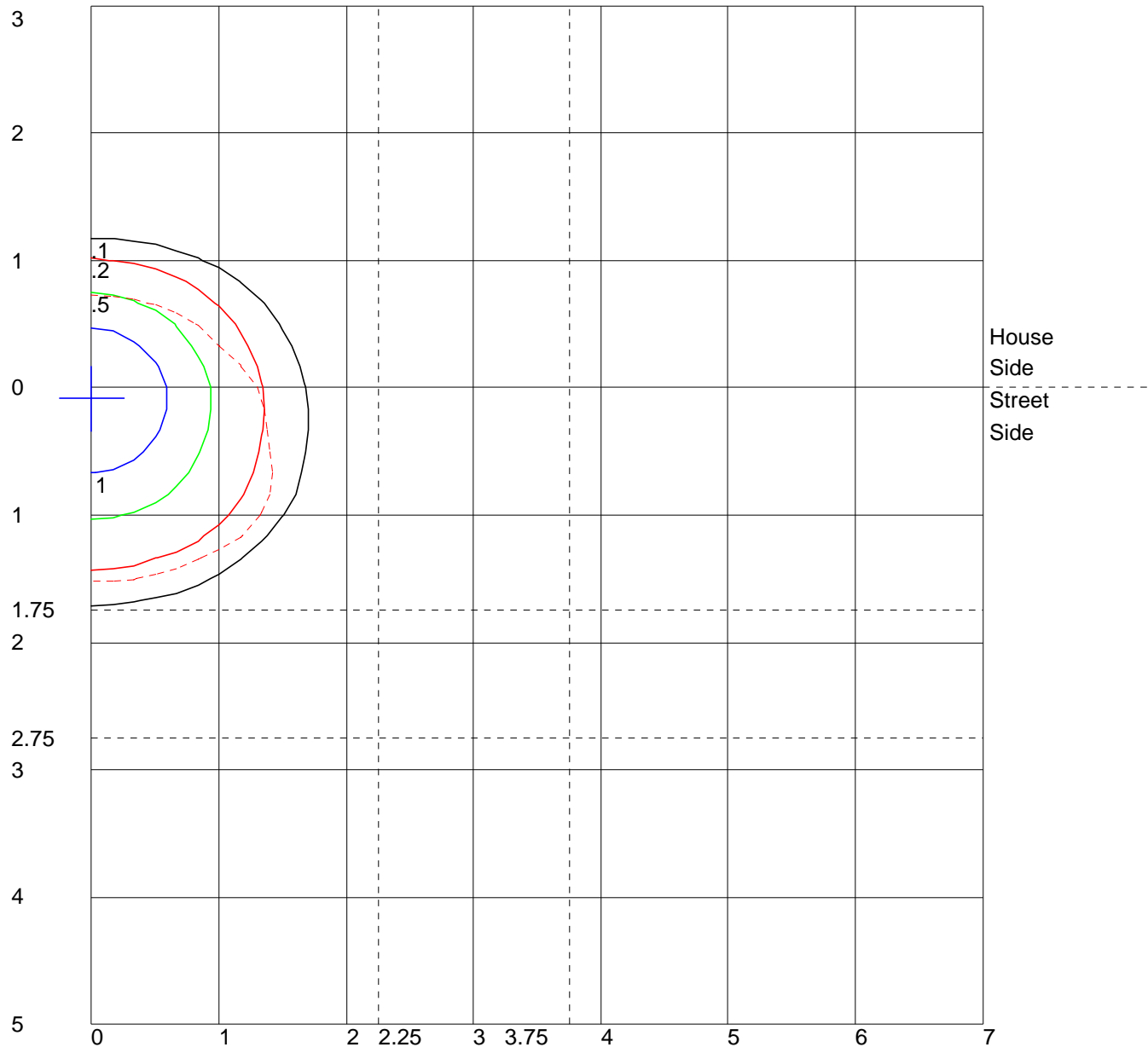
	Lumens	Percent Of Luminaire
Downward Street Side	1077.7	61.2
Downward House Side	682.0	38.8
Downward Total	1759.7	100.0
Upward Street Side	0.0	0.0
Upward House Side	0.0	0.0
Upward Total	0.0	0.0
Total Flux	1759.7	100.0

POLAR GRAPH



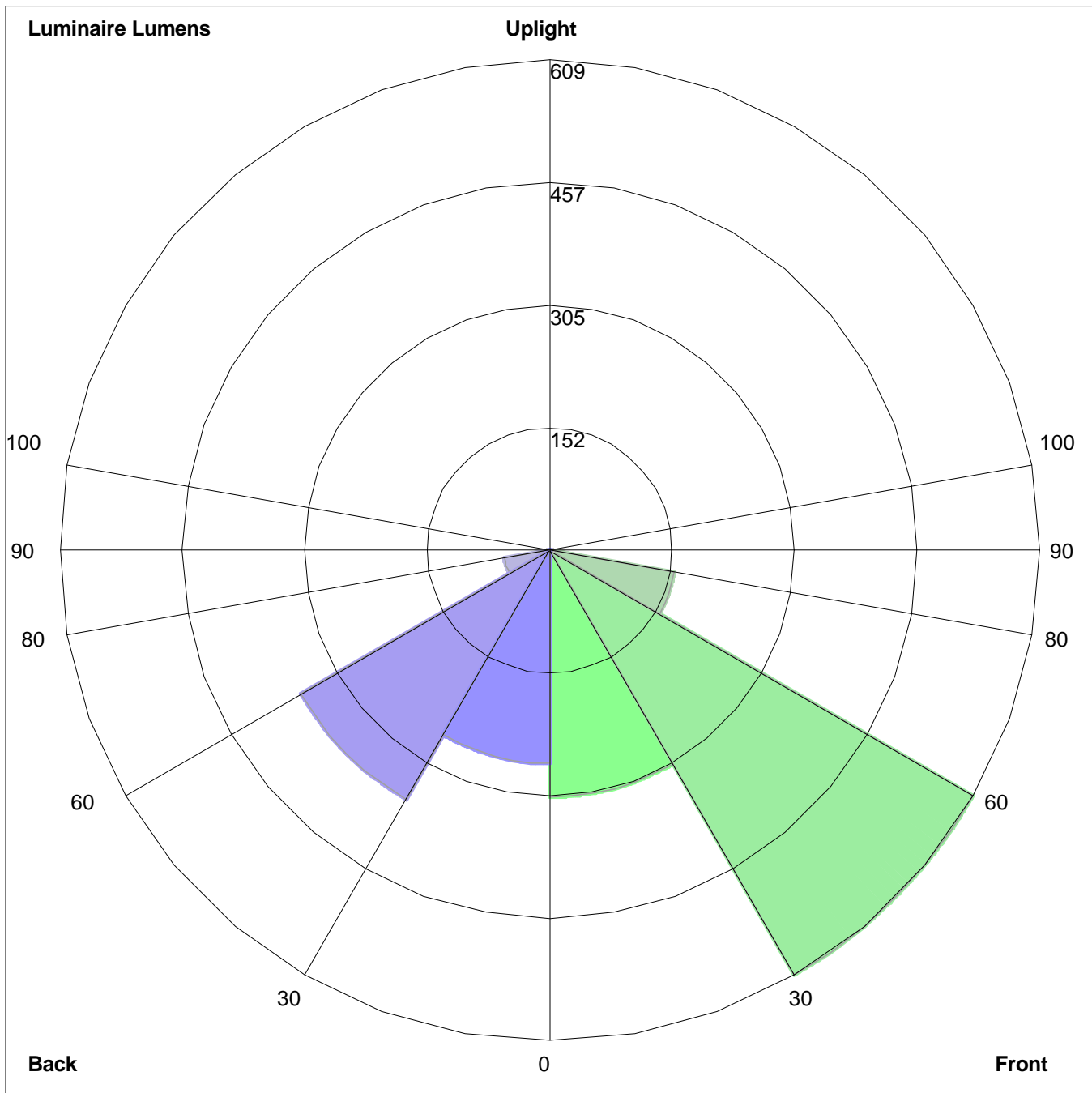
Maximum Candela = 774.66 Located At Horizontal Angle = 0, Vertical Angle = 5
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (90 - 270)
3 - Horizontal Cone Through Vertical Angle (5) (Through Max. Cd.)

ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINANCE



Distance In Units Of Mounting Height
 Values Based On 20 Foot Mounting Height
 1/2 Maximum Candela Trace Shown As Dashed Curve
 (+) = Maximum Candela Point

LUMINAIRE CLASSIFICATION SYSTEM (LCS) GRAPH



Luminaire Lumens:
Front: Low=306.6, Medium=609.4, High=157.5, Very High=4.2
Back: Low=264.7, Medium=357.1, High=57.4, Very High=2.9
Uplight: Low=0.0, High=0.0

BUG Rating : B1-U0-G0