IES File

Performance Summary

The performance data in black text is confirmed through third party testing (see the following Light Labratories report for details). The performance data in grey text is calculated by Vode. For reference only.

WingRail LED - Button board™ with 19° x 48° Oval, High Output

WingRail LED, 48", 3500K, Button board with 19° x 48° oval optic, high output
107-WG-01-4-48-X-X-X-X-X-X-B-HO-35-19-X-X-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	50	52	55	57
Total Lumens, 4' rail length (1219mm)	2544	2650	2760	2871
Lumens per foot (305mm)	636	662	690	717
Input Power (W), 4' rail length (1219mm)	50.3	50.3	50.3	50.3
Watts per foot (305mm)	12.6	12.6	12.6	12.6
Center Beam Candela	-	-	5688 @ 0°	-
CRI (>80min., 85 avg.)	-	-	82	-

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

Report No: L031509511
Date: 4/1/2015

NVLAP LAB CODE 200927-0

Report No: **L031509511**

Report Prepared For: Vode Lighting
1206 E MacArthur Street Suit 3, Sonoma, CA 95476

Model Number: **107-WG-48-B-HO-19-AL**

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 107-WG-48-B-HO-19-AL. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Driver was set to 1756mA.

Sample Arrival Date: 3/23/15

Date of Tests: 3/30/15 - 4/1/15

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.

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Report No: L031509511
Date: 4/1/2015

NVLAP LAB CODE 200927-0

Test Summary	
Manufacturer:	Vode Lighting
Model Number:	107-WG-48-B-HO-19-AL
Driver Model Number:	OSRAM OPTOTRONIC OT48W/PRG2000C/UNV/DIM-1/L
Total Lumens:	2760.67
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.42
Input Power (W):	50.28
Input Power Factor:	1.00
Current ATHD @ 120V(%):	8%
Current ATHD @ 277V(%):	N/A
Efficacy:	55
Color Rendering Index (CRI):	82
Correlated Color Temperature (K):	3478
Chromaticity Coordinate x:	0.4065
Chromaticity Coordinate y:	0.3911
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:45
Off State Power(W):	0.00

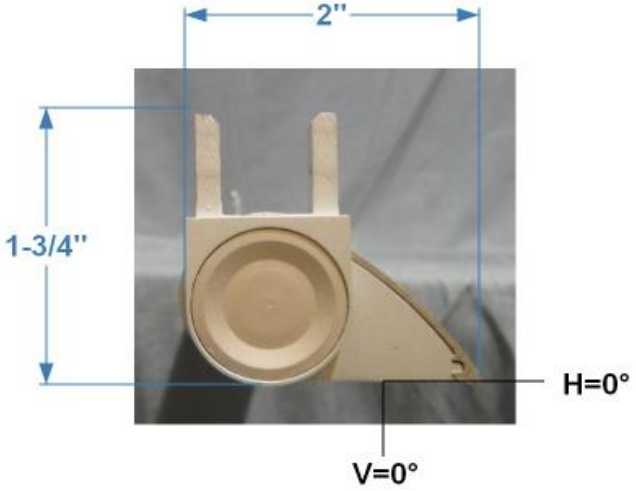

FIG. 1 LUMINAIRE

*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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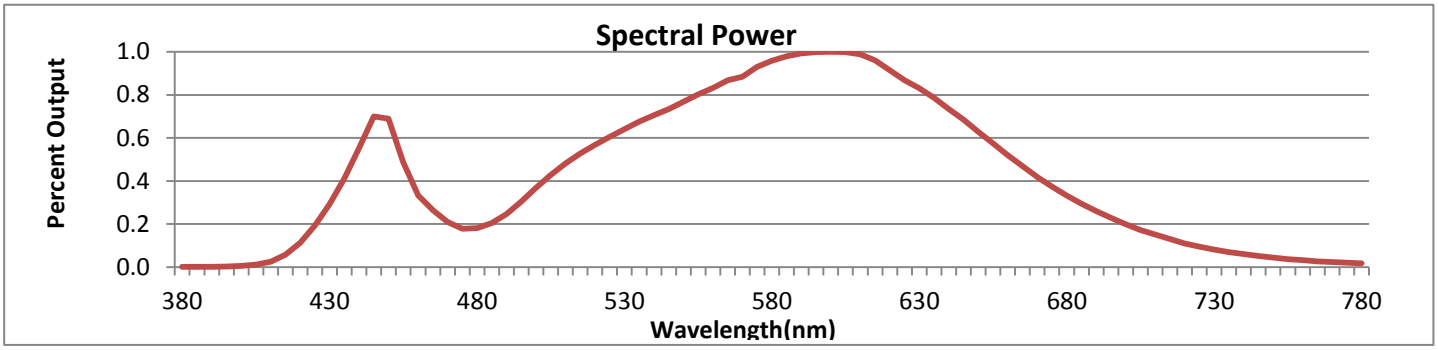
NVLAP LAB CODE 200927-0



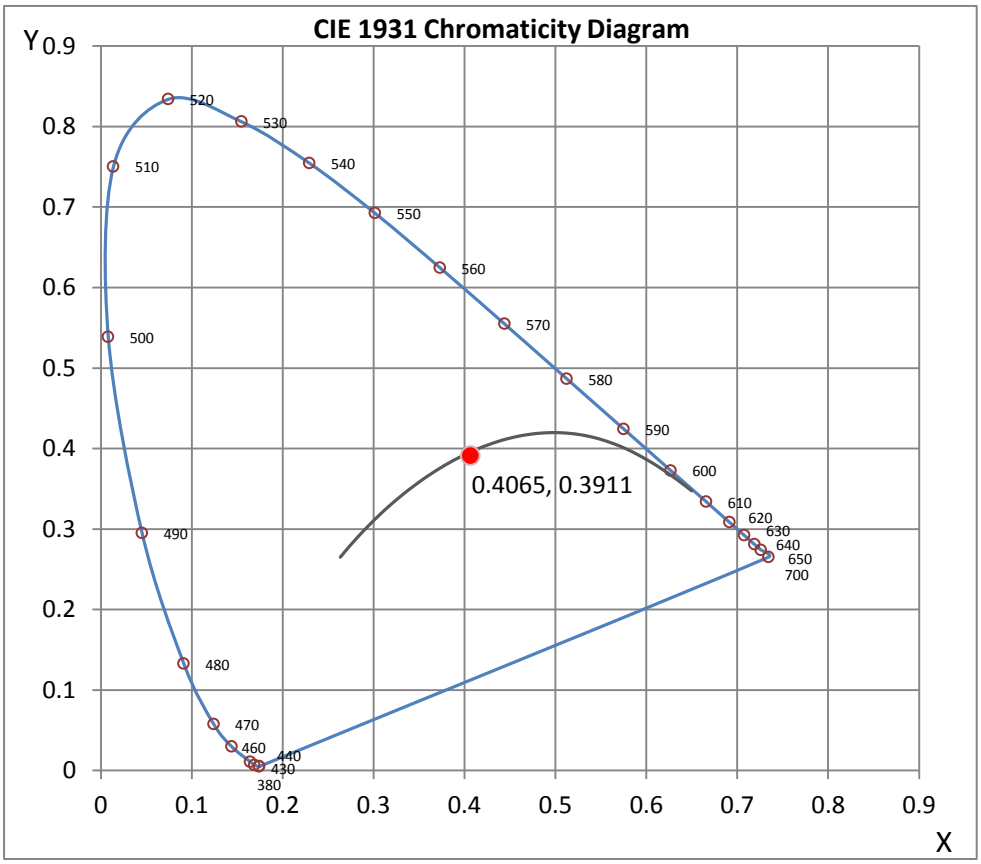
Wavelength	W/m²nm	440	0.5521	510	0.4820	580	0.9583	650	0.6291	720	0.1100
380	0.0013	450	0.6900	520	0.5676	590	0.9934	660	0.5198	730	0.0814
390	0.0017	460	0.3333	530	0.6405	600	1.0000	670	0.4191	740	0.0599
400	0.0050	470	0.2086	540	0.7058	610	0.9877	680	0.3324	750	0.0440
410	0.0254	480	0.1814	550	0.7680	620	0.9140	690	0.2596	760	0.0318
420	0.1129	490	0.2462	560	0.8328	630	0.8309	700	0.1992	770	0.0235
430	0.2929	500	0.3678	570	0.8844	640	0.7349	710	0.1511	780	0.0174

CRI & CCT

x	0.4065
y	0.3911
u'	0.2363
v'	0.5116
CRI	82.00
CCT	3478
Duv	-0.00010

R Values

R1	80.79
R2	86.67
R3	91.44
R4	82.29
R5	80.25
R6	81.67
R7	86.32
R8	66.92
R9	16.90
R10	68.53
R11	80.93
R12	65.10
R13	81.57
R14	94.72



*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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NVLAP LAB CODE 200927-0

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: 12*

*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 INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109511.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031509511
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 4/1/2015
[MANUFAC] VODE LIGHTING
[LUMCAT] 107-WG-48-B-HO-19-AL
[LUMINAIRE] 2"L. X 48"W. X 1-3/4"H. LED LUMINAIRE
[MORE] CLEAR LENS
[BALLASTCAT] OSRAM OPTOTRONIC OT48W/PRG2000C/UNV/DIM-1/L
[BALLAST] INPUT: 120-277VAC, 0.52-0.23A, 50/60HZ OUTPUT: 48W, 10-55VDC, 700-2000mA
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[TEST CONDITION] DRIVER WAS SET TO 1756mA.
[INPUT] 120VAC, 50.28W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2761
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	55
Total Luminaire Watts	50.28
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	3.74
Spacing Criterion (90-270)	1.10
Spacing Criterion (Diagonal)	2.20
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.13 ft
Luminous Width (90-270)	3.83 ft
Luminous Height	0.00 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109511.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	155105	47369	2984
55	84346	34952	2194
65	47856	17517	1936
75	27445	9146	2438
85	1742	1380	3184

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109511.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0.0	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84
5.0	400.00	399.23	396.91	393.40	388.60	382.35	375.41	367.26	358.35	349.53
15.0	989.71	982.86	964.09	933.16	892.71	846.10	793.91	736.50	677.63	620.65
25.0	2337.43	2308.73	2224.24	2095.10	1925.18	1739.32	1540.61	1350.98	1171.12	1005.14
35.0	5179.06	5123.36	4937.42	4622.94	4179.06	3528.68	3031.34	2427.41	1897.16	1441.04
37.5	5571.52	5513.25	5337.58	5011.96	4517.54	3912.57	3292.35	2650.63	2048.23	1544.04
40.0	5688.05	5639.21	5454.98	5109.65	4602.37	3957.99	3332.80	2722.78	2145.15	1625.44
42.5	5516.67	5473.83	5316.16	4993.97	4490.12	3886.01	3278.47	2668.88	2100.07	1608.64
45.0	5077.95	5046.24	4918.56	4647.79	4197.06	3535.45	3076.42	2521.83	2006.67	1550.80
47.5	4395.86	4376.15	4299.03	4125.08	3791.75	3328.60	2827.57	2309.75	1832.64	1418.93
50.0	3590.38	3575.81	3515.83	3408.29	3205.98	2883.44	2473.42	2048.15	1644.03	1278.74
52.5	2847.11	2836.74	2787.21	2695.44	2558.25	2343.94	2070.77	1747.29	1407.02	1098.97
55.0	2239.92	2228.44	2178.31	2099.64	1994.25	1844.20	1638.29	1411.05	1172.49	928.19
57.5	1791.59	1777.02	1726.81	1646.09	1552.00	1437.18	1289.80	1113.88	927.50	743.70
60.0	1450.03	1434.01	1388.34	1317.47	1224.50	1120.22	1005.74	868.55	726.82	583.89
62.5	1172.06	1158.86	1118.76	1056.46	978.06	887.14	785.34	680.03	567.26	451.50
65.0	936.41	925.79	892.71	843.10	780.97	704.19	621.50	535.56	441.04	342.76
67.5	740.87	731.19	705.74	667.35	616.71	556.30	490.23	421.93	341.81	263.84
70.0	579.60	570.69	549.95	519.96	479.60	434.02	383.29	329.22	263.07	200.26
72.5	446.44	438.90	423.05	400.34	369.92	334.02	295.29	249.53	200.00	151.33
75.0	328.88	324.76	315.17	300.68	280.12	253.04	222.88	186.97	147.81	109.60
77.5	198.29	196.74	194.86	191.34	186.46	177.55	159.98	135.05	106.51	77.98
80.0	43.02	44.30	49.01	56.98	71.12	82.78	86.55	80.21	68.72	51.67
85.0	7.03	7.03	8.06	7.88	7.20	6.86	6.60	6.17	5.74	5.57
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	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84
5.0	338.99	330.33	320.22	310.28	300.51	290.14	280.89	272.15	263.67	255.27
15.0	565.04	510.37	459.12	411.74	370.35	332.73	300.94	272.66	248.59	229.56
25.0	849.01	711.31	592.37	492.20	411.82	346.19	294.09	251.67	216.19	190.06
35.0	1089.28	856.38	644.30	501.45	390.23	304.97	240.02	195.29	162.12	138.47
37.5	1135.04	855.86	635.90	487.32	371.55	284.32	220.48	177.29	146.10	124.85
40.0	1175.66	859.46	617.48	455.78	338.64	257.41	198.11	158.01	129.82	110.88
42.5	1168.03	848.41	587.14	425.45	312.25	231.45	175.75	139.07	113.45	97.09
45.0	1139.75	838.13	549.61	359.64	273.52	199.14	150.90	118.17	97.69	86.20
47.5	1047.55	770.00	506.00	340.02	239.16	170.27	126.48	99.91	85.95	76.44
50.0	947.90	671.98	452.01	295.29	199.31	140.36	102.91	85.18	74.04	68.89
52.5	816.36	575.40	365.89	253.21	165.38	113.02	85.69	71.64	65.47	62.13
55.0	692.54	486.72	323.31	203.26	129.91	88.77	70.09	62.13	58.27	56.21
57.5	555.52	366.41	256.90	158.53	100.51	72.07	59.98	54.50	51.84	50.73
60.0	441.47	303.17	196.31	120.74	82.18	59.13	51.50	48.07	46.44	45.67
62.5	340.02	232.73	145.16	87.40	60.84	49.53	44.47	42.67	41.90	41.22
65.0	253.38	172.06	104.54	64.70	48.84	41.82	38.82	38.22	37.88	37.19
67.5	188.60	123.39	80.29	49.87	39.76	35.30	34.10	35.13	34.53	33.76
70.0	141.30	89.89	55.18	38.90	32.05	29.99	30.25	32.31	31.88	30.51
72.5	101.71	64.01	41.56	31.28	26.14	25.02	26.31	29.91	29.39	27.08
75.0	72.84	46.02	32.13	25.11	21.85	20.39	21.94	23.82	29.22	24.34
77.5	50.81	33.08	24.76	20.14	17.91	16.80	16.02	18.17	27.85	22.11
80.0	34.28	23.91	17.91	15.34	14.74	13.97	12.08	16.28	19.45	20.31
85.0	5.40	5.40	5.83	5.83	6.34	6.51	7.03	7.97	12.85	10.63
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109511.IES

CANDELA TABULATION - (Cont.)

Vert. Angles	Horizontal Angles									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0.0	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84	264.84
5.0	248.07	241.22	234.79	229.05	223.56	219.02	214.99	211.31	208.23	205.48
15.0	213.88	199.91	188.00	178.23	170.27	164.18	159.38	155.10	151.84	149.27
25.0	170.69	155.27	144.73	137.02	131.11	127.16	124.16	121.85	120.31	119.37
35.0	123.14	112.08	105.40	101.03	98.11	96.49	95.29	94.94	94.86	95.20
37.5	110.71	101.71	96.32	92.97	90.92	89.63	89.03	88.86	88.95	88.95
40.0	99.40	92.29	88.35	86.55	85.18	84.40	84.23	84.15	84.15	84.06
42.5	88.60	84.23	81.66	80.38	79.69	79.43	79.35	79.18	79.01	78.41
45.0	80.21	77.12	75.58	75.06	74.81	74.55	74.38	74.12	73.26	72.07
47.5	72.75	71.12	70.44	70.09	69.84	69.67	69.41	68.64	67.35	65.47
50.0	66.58	65.81	65.30	65.12	64.87	64.61	63.92	62.64	60.84	58.44
52.5	60.93	60.67	60.33	60.07	59.81	59.21	58.18	56.30	53.81	51.24
55.0	55.70	55.61	55.44	55.10	54.50	53.64	52.01	49.44	46.70	43.79
57.5	50.73	50.81	50.56	49.96	49.27	47.73	45.42	42.59	39.33	36.08
60.0	45.93	46.10	45.67	44.82	43.53	41.30	38.65	35.30	31.96	28.96
62.5	41.47	41.56	40.70	39.67	37.70	35.05	31.79	28.11	25.11	22.97
65.0	37.36	36.93	35.99	34.36	31.71	28.54	24.59	21.51	19.37	18.08
67.5	33.42	32.48	31.19	28.79	25.54	21.34	18.25	16.20	15.08	14.31
70.0	29.65	28.36	26.31	23.31	18.34	15.17	13.28	12.25	11.65	11.23
72.5	26.31	24.25	21.42	16.54	12.34	10.54	9.77	9.25	8.83	8.66
75.0	23.65	21.17	16.11	9.85	8.23	7.54	7.03	6.77	6.60	6.43
77.5	21.34	17.82	7.71	6.00	5.48	5.23	4.88	4.80	4.71	4.71
80.0	19.45	6.43	4.20	3.69	3.51	3.34	3.34	3.26	3.26	3.34
85.0	1.46	1.29	1.29	1.29	1.29	1.29	1.20	1.03	0.86	0.77
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	264.84	264.84	264.84	264.84	264.84	264.84	264.84
5.0	203.08	201.20	199.74	198.46	197.69	197.26	197.09
15.0	147.04	145.42	144.04	143.10	142.42	142.07	142.07
25.0	119.11	119.37	120.39	121.68	123.05	124.08	124.42
35.0	95.89	97.09	99.06	101.80	104.46	106.60	107.28
37.5	89.37	89.89	91.17	92.89	94.86	96.49	97.00
40.0	83.72	83.46	83.46	83.98	84.92	85.86	86.03
42.5	77.29	76.09	75.06	74.46	74.38	74.64	74.72
45.0	70.35	68.55	66.67	65.30	64.35	63.92	63.75
47.5	63.24	60.93	58.70	56.64	55.10	54.33	53.98
50.0	55.78	53.30	50.81	48.41	46.53	45.33	44.90
52.5	48.41	45.50	42.85	40.70	38.99	37.96	37.53
55.0	40.70	37.96	35.73	34.02	32.65	31.79	31.36
57.5	33.25	31.11	29.48	28.11	27.08	26.39	26.05
60.0	26.82	25.19	23.99	23.05	22.37	21.77	21.77
62.5	21.34	20.31	19.62	19.02	18.60	18.25	18.17
65.0	17.22	16.54	16.02	15.68	15.42	15.25	15.08
67.5	13.80	13.37	13.03	12.85	12.68	12.60	12.51
70.0	10.88	10.63	10.45	10.45	10.28	10.37	10.28
72.5	8.48	8.31	8.31	8.31	8.31	8.31	8.40
75.0	6.43	6.43	6.34	6.34	6.34	6.51	6.51
77.5	4.71	4.80	4.80	4.80	4.80	4.80	4.97
80.0	3.34	3.34	3.43	3.43	3.43	3.43	3.43
85.0	0.60	0.51	0.51	0.51	0.43	0.43	0.34

CANDELA TABULATION - (Cont.)

90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109511.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	71.01	N.A.	2.60
0-30	265.25	N.A.	9.60
0-40	1134.67	N.A.	41.10
0-60	2448.46	N.A.	88.70
0-80	2751.72	N.A.	99.70
0-90	2760.67	N.A.	100.00
10-90	2754.14	N.A.	99.80
20-40	1063.66	N.A.	38.50
20-50	1880.07	N.A.	68.10
40-70	1535.26	N.A.	55.60
60-80	303.26	N.A.	11.00
70-80	81.79	N.A.	3.00
80-90	8.94	N.A.	0.30
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	2760.67	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	6.52
10-20	64.49
20-30	194.24
30-40	869.42
40-50	816.41
50-60	497.38
60-70	221.47
70-80	81.79
80-90	8.94
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

IES INDOOR REPORT
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	105	101	98	107	103	100	96	99	96	93	95	93	90	91	90	88	86
2	100	92	85	80	97	90	84	79	87	81	77	83	79	75	80	77	74	72
3	91	80	72	66	88	79	71	65	76	69	64	73	67	63	70	66	62	60
4	82	70	61	54	80	69	60	54	66	59	53	64	58	53	62	56	52	50
5	75	62	52	45	73	60	52	45	58	51	45	56	50	44	54	48	44	42
6	68	54	45	38	66	53	45	38	51	44	38	50	43	37	48	42	37	35
7	62	48	39	32	60	47	39	32	46	38	32	44	37	32	43	36	32	29
8	57	43	34	28	55	42	34	28	41	33	27	39	32	27	38	32	27	25
9	53	38	30	24	51	38	29	24	37	29	24	35	28	23	34	28	23	21
10	49	35	26	21	47	34	26	20	33	25	20	32	25	20	31	25	20	18

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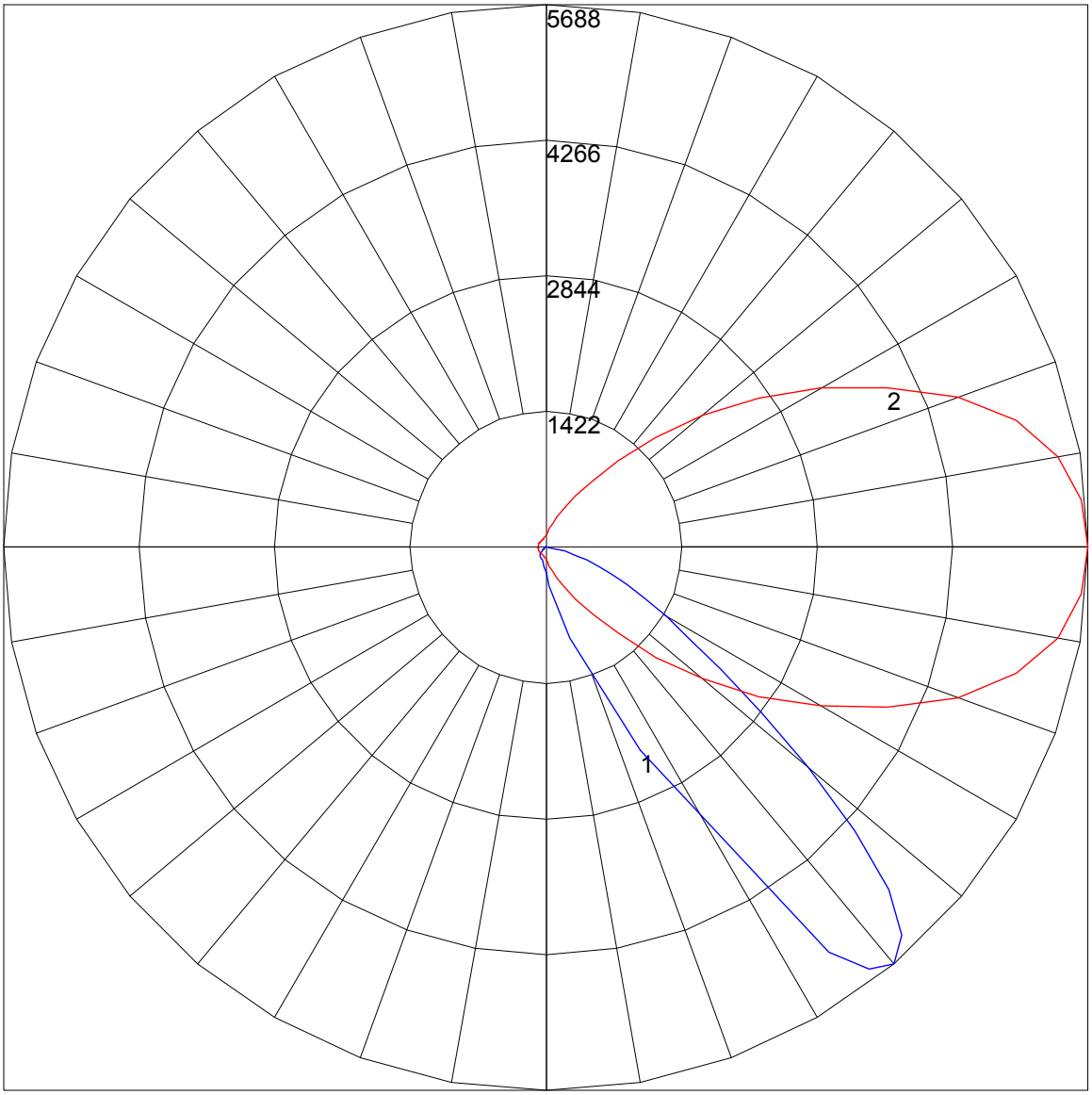
POLAR GRAPH



Maximum Candela = 5688.05 Located At Horizontal Angle = 0, Vertical Angle = 40
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (40) (Through Max. Cd.)