



IES File

Performance Summary

The performance data in black text is confirmed through third party testing (see the following Light Laboratories 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, Standard Output

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

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	57	59	62	64
Total Lumens, 4' rail length (1219mm)	1683	1753	1826	1899
Lumens per foot (305mm)	420	438	456	474
Input Power (W), 4' rail length (1219mm)	29.4	29.4	29.4	29.4
Watts per foot (305mm)	7.3	7.3	7.3	7.3
Center Beam Candela	-	-	3748 @ 0°	-
CRI (>80min., 85 avg.)	-	-	82	-



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Report No: L031509510

Date: 4/1/2015



NVLAP LAB CODE 200927-0

Report No: L031509510

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

Model Number: 107-WG-48-B-SO-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-SO-19-AL . Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Driver was set to 1066mA.

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.

Test Summary

Manufacturer:	Vode Lighting
Model Number:	107-WG-48-B-SO-19-AL
Driver Model Number:	OSRAM OPTOTRONIC OT48W/PRG2000C/UNV/DIM-1/L
Total Lumens:	1826.48
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.25
Input Power (W):	29.39
Input Power Factor:	0.99
Current ATHD @ 120V(%):	8%
Current ATHD @ 277V(%):	N/A
Efficacy:	62
Color Rendering Index (CRI):	82
Correlated Color Temperature (K):	3447
Chromaticity Coordinate x:	0.4087
Chromaticity Coordinate y:	0.3932
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:45
Off State Power(W):	0.00

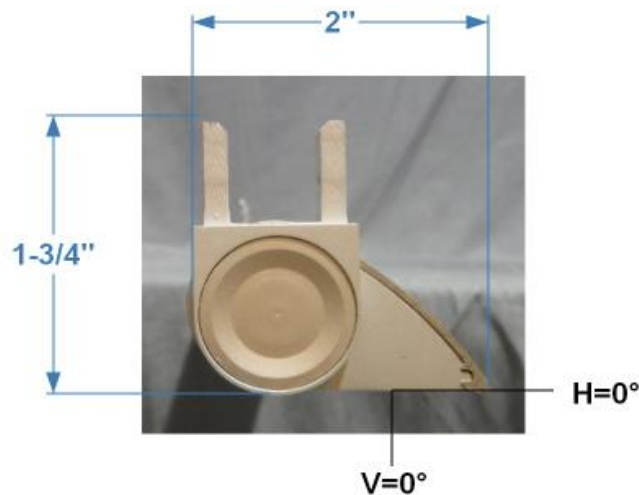
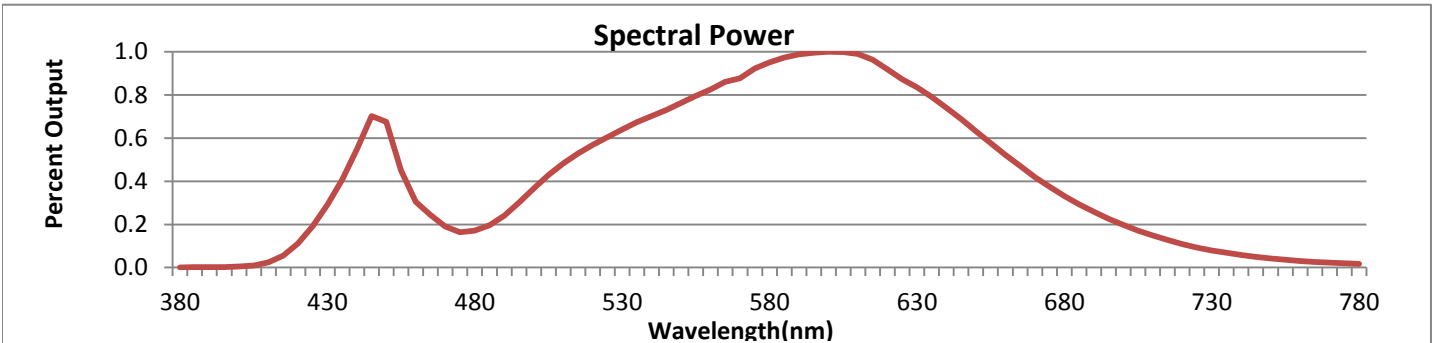


FIG. 1 LUMINAIRE

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



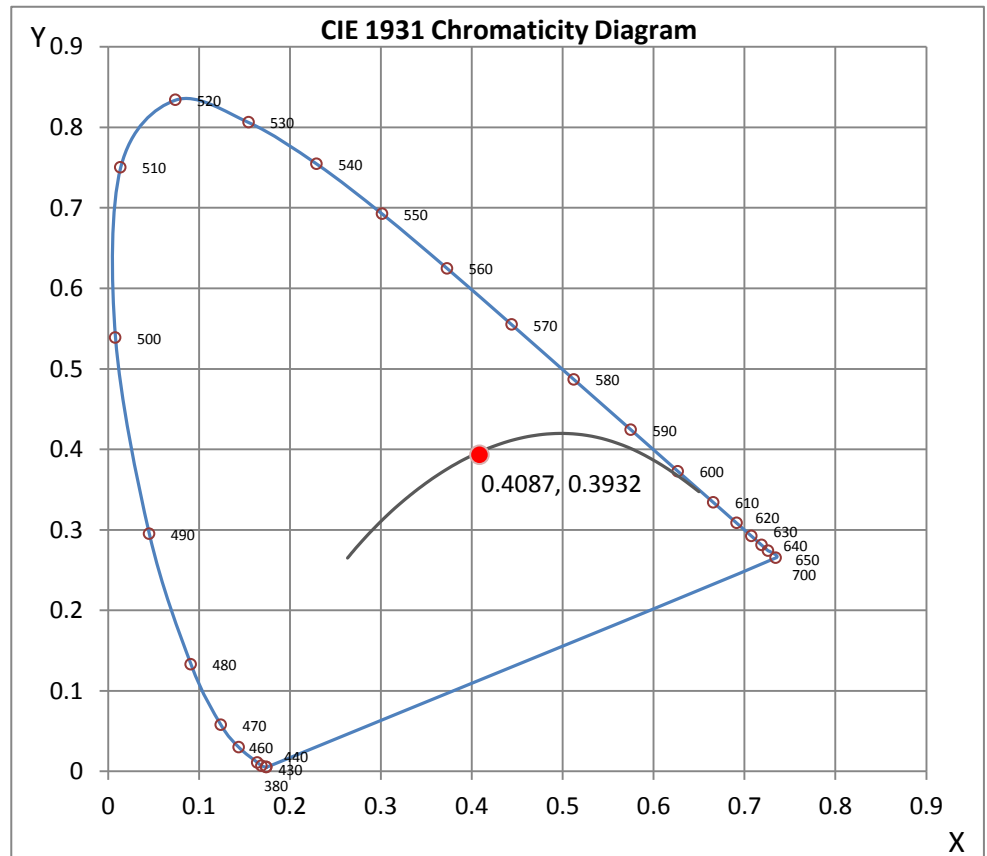
Wavelength	W/m ² nm	440	0.5484	510	0.4831	580	0.9519	650	0.6321	720	0.1082
380	0.0011	450	0.6753	520	0.5686	590	0.9892	660	0.5221	730	0.0798
390	0.0016	460	0.3054	530	0.6397	600	1.0000	670	0.4192	740	0.0584
400	0.0046	470	0.1901	540	0.7025	610	0.9896	680	0.3319	750	0.0425
410	0.0238	480	0.1710	550	0.7631	620	0.9187	690	0.2584	760	0.0307
420	0.1111	490	0.2405	560	0.8262	630	0.8363	700	0.1976	770	0.0227
430	0.2912	500	0.3669	570	0.8770	640	0.7404	710	0.1492	780	0.0166

CRI & CCT

x	0.4087
y	0.3932
u'	0.2369
v'	0.5128
CRI	82.10
CCT	3447
Duv	0.00035

R Values

R1	80.92
R2	86.54
R3	91.28
R4	82.60
R5	80.35
R6	81.64
R7	86.38
R8	67.07
R9	17.26
R10	68.38
R11	81.51
R12	65.09
R13	81.61
R14	94.62



*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:

Test Report Reviewed by:

Jeff Ahn
 Engineering Manager

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 : L0315109510.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031509510
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 4/1/2015
[MANUFAC] VODE LIGHTING
[LUMCAT] 107-WG-48-B-SO-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 1066mA.
[INPUT] 120VAC, 29.39W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1826
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	62
Total Luminaire Watts	29.39
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	3.70
Spacing Criterion (90-270)	1.10
Spacing Criterion (Diagonal)	2.18
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 : L0315109510.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	101763	31657	1992
55	54686	22942	1458
65	31040	11618	1287
75	17748	6007	1616
85	1105	870	2166

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109510.IES

CANDELA TABULATION

	<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	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72
5.0	269.06	268.55	267.09	264.69	261.44	257.33	252.70	247.13	241.39	235.05
15.0	659.64	655.52	642.67	622.02	596.14	564.18	529.30	491.26	451.93	413.88
25.0	1564.69	1544.46	1490.14	1404.45	1290.57	1161.43	1032.04	900.25	776.52	665.89
35.0	3439.57	3401.69	3282.24	3076.24	2783.02	2413.52	2012.67	1625.53	1272.23	974.54
37.5	3686.35	3649.51	3534.68	3323.29	2999.47	2601.18	2191.76	1769.06	1370.51	1034.01
40.0	3748.05	3717.20	3599.81	3377.78	3048.31	2640.00	2215.24	1812.59	1432.04	1085.85
42.5	3626.37	3596.38	3498.69	3293.04	2967.16	2573.25	2174.96	1774.62	1399.82	1073.43
45.0	3331.60	3309.92	3230.31	3059.62	2782.33	2423.21	2041.63	1678.22	1338.90	1036.41
47.5	2869.73	2857.91	2808.29	2699.98	2492.70	2195.87	1871.11	1533.84	1219.87	946.35
50.0	2338.12	2328.86	2292.36	2220.64	2091.25	1894.08	1641.64	1357.75	1083.71	844.90
52.5	1847.29	1840.43	1806.93	1749.00	1665.54	1531.61	1352.52	1150.89	937.27	735.21
55.0	1452.26	1445.41	1414.04	1363.92	1298.79	1203.25	1076.69	926.47	767.78	609.25
57.5	1162.63	1152.26	1120.39	1068.20	1005.91	935.98	843.10	730.33	610.11	491.17
60.0	940.70	930.07	899.48	853.38	795.88	726.65	653.98	568.63	480.46	387.92
62.5	760.24	751.84	726.65	687.14	637.27	577.29	514.31	445.16	363.75	298.11
65.0	607.37	599.65	579.60	547.98	505.91	458.27	405.14	340.70	290.14	227.33
67.5	480.89	474.12	456.81	431.87	399.31	361.95	320.56	276.26	227.08	175.32
70.0	376.18	370.52	357.07	337.96	313.11	282.86	250.47	213.45	172.24	131.62
72.5	291.00	286.12	276.09	261.35	241.22	217.31	192.54	162.90	129.99	98.46
75.0	212.68	209.77	203.77	194.52	180.98	164.35	144.99	121.85	96.83	71.98
77.5	126.31	125.45	124.25	122.19	119.28	114.05	103.51	87.92	69.58	51.16
80.0	25.02	25.62	28.28	32.91	41.30	50.39	54.41	51.50	44.64	34.10
85.0	4.46	4.46	4.97	4.88	4.46	4.28	4.11	3.94	3.60	3.51
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	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72
5.0	228.62	221.76	214.91	207.97	201.46	194.77	188.69	182.60	176.78	171.29
15.0	376.00	339.84	307.71	276.09	248.50	223.91	201.80	182.78	167.27	153.81
25.0	565.38	471.21	394.77	331.02	277.12	231.53	197.77	169.49	145.67	127.16
35.0	737.87	559.98	429.99	325.56	261.01	203.94	159.47	129.99	108.40	93.14
37.5	794.34	568.63	424.68	332.79	248.50	190.06	147.56	118.68	97.69	85.43
40.0	844.73	566.15	412.68	305.14	227.76	173.01	132.13	105.31	87.06	74.12
42.5	839.33	557.07	392.80	285.17	208.23	154.41	117.39	92.63	75.66	64.78
45.0	764.01	538.30	344.99	256.21	182.78	133.16	100.00	80.81	65.21	57.16
47.5	700.94	495.28	336.07	230.25	158.35	113.80	86.55	66.75	56.30	50.90
50.0	633.42	449.10	304.03	197.94	133.50	92.89	69.24	55.96	49.19	45.84
52.5	542.93	359.21	264.44	167.35	109.34	78.23	56.04	47.56	43.53	41.39
55.0	454.58	325.02	215.51	137.87	89.03	59.90	46.96	41.39	38.73	37.36
57.5	351.16	261.61	171.12	105.83	67.10	47.73	39.85	36.25	34.53	33.68
60.0	293.14	203.60	130.85	84.23	51.50	39.42	34.19	31.88	30.93	30.33
62.5	222.45	154.41	97.94	59.04	40.53	33.16	29.65	28.36	27.94	27.42
65.0	169.07	112.42	69.41	43.62	32.48	27.68	25.79	25.36	25.19	24.68
67.5	125.96	86.38	50.04	32.82	26.22	23.48	22.62	23.31	22.97	22.45
70.0	91.95	59.38	36.68	25.88	21.25	19.88	19.97	21.34	21.34	20.22
72.5	67.18	41.73	27.59	20.99	17.40	16.62	17.57	19.71	19.88	18.17
75.0	48.76	30.42	21.25	16.62	14.57	13.71	14.82	15.94	19.37	16.28
77.5	33.93	22.11	16.37	13.28	12.08	11.31	10.80	12.17	18.25	14.91
80.0	22.54	15.77	11.83	10.20	9.77	9.25	8.14	10.88	13.45	13.71
85.0	3.43	3.43	3.69	3.77	4.20	4.28	4.63	5.48	8.74	7.20
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 : L0315109510.IES

CANDELA TABULATION - (Cont.)

Vert. Angles	Horizontal 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	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72	177.72
5.0	166.32	161.70	157.33	153.47	149.79	146.70	143.87	141.39	139.25	137.45
15.0	143.36	134.10	126.31	119.54	114.31	110.11	106.77	103.94	101.71	99.91
25.0	113.97	104.11	96.74	91.43	87.66	85.09	83.03	81.49	80.46	79.86
35.0	83.72	75.15	70.52	67.61	65.72	64.52	63.84	63.50	63.50	63.58
37.5	74.21	68.21	64.44	62.30	60.93	59.98	59.64	59.47	59.47	59.64
40.0	66.24	61.53	58.87	57.50	56.64	56.21	55.96	55.96	55.96	55.87
42.5	59.13	56.04	54.24	53.38	52.96	52.79	52.70	52.70	52.53	52.19
45.0	53.30	51.24	50.30	49.87	49.70	49.61	49.53	49.27	48.93	48.07
47.5	48.41	47.39	46.79	46.62	46.44	46.36	46.19	45.67	44.82	43.62
50.0	44.22	43.70	43.44	43.27	43.19	43.02	42.50	41.65	40.53	38.99
52.5	40.45	40.27	40.10	39.93	39.76	39.42	38.73	37.53	35.90	34.19
55.0	37.02	36.93	36.76	36.59	36.25	35.73	34.62	33.08	31.28	29.31
57.5	33.68	33.68	33.59	33.25	32.82	31.79	30.25	28.45	26.31	24.16
60.0	30.51	30.59	30.33	29.82	29.05	27.59	25.79	23.65	21.42	19.45
62.5	27.59	27.68	27.08	26.39	25.19	23.48	21.34	18.85	16.97	15.42
65.0	24.85	24.59	23.91	22.88	21.08	19.02	16.45	14.40	12.94	12.08
67.5	22.19	21.59	20.74	19.19	17.14	14.31	12.25	10.88	10.11	9.60
70.0	19.62	18.85	17.57	15.51	12.43	10.28	8.91	8.31	7.80	7.46
72.5	17.57	16.45	14.40	11.14	8.23	7.11	6.60	6.26	5.91	5.74
75.0	15.94	14.14	10.88	6.68	5.48	5.06	4.71	4.54	4.46	4.37
77.5	14.40	12.08	5.23	4.03	3.69	3.51	3.34	3.26	3.17	3.17
80.0	13.03	4.37	2.83	2.49	2.40	2.31	2.23	2.23	2.23	2.23
85.0	0.94	0.86	0.86	0.86	0.86	0.86	0.86	0.69	0.69	0.51
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>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0.0	177.72	177.72	177.72	177.72	177.72	177.72	177.72
5.0	135.82	134.62	133.50	132.65	132.22	131.79	131.79
15.0	98.37	97.26	96.40	95.63	95.29	94.94	95.12
25.0	79.61	79.69	80.29	81.15	82.01	82.69	83.12
35.0	64.10	64.95	66.41	68.12	70.01	71.47	72.15
37.5	59.81	60.33	61.10	62.30	63.75	64.87	65.47
40.0	55.70	55.53	55.70	56.13	56.81	57.58	57.93
42.5	51.50	50.73	50.21	49.79	49.87	50.04	50.21
45.0	46.96	45.76	44.56	43.70	43.10	42.93	43.02
47.5	42.25	40.70	39.16	37.88	37.02	36.50	36.33
50.0	37.36	35.56	34.02	32.56	31.36	30.42	30.33
52.5	32.39	30.51	28.71	27.34	26.22	25.54	25.36
55.0	27.25	25.45	23.91	22.79	21.94	21.34	21.08
57.5	22.37	20.91	19.79	18.85	18.17	17.65	17.65
60.0	17.91	16.88	16.02	15.51	15.00	14.74	14.57
62.5	14.31	13.63	13.11	12.77	12.43	12.25	12.17
65.0	11.57	11.05	10.71	10.54	10.37	10.20	10.11
67.5	9.17	9.00	8.74	8.57	8.48	8.48	8.40
70.0	7.28	7.11	7.11	6.94	6.94	6.94	6.86
72.5	5.74	5.57	5.57	5.57	5.57	5.57	5.48
75.0	4.28	4.28	4.28	4.28	4.28	4.28	4.28
77.5	3.26	3.26	3.26	3.26	3.26	3.26	3.26
80.0	2.23	2.23	2.23	2.23	2.31	2.40	2.40
85.0	0.51	0.34	0.34	0.34	0.34	0.34	0.34

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109510.IES

CANDELA TABULATION - (Cont.)

90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109510.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	47.54	N.A.	2.60
0-30	177.35	N.A.	9.70
0-40	757.33	N.A.	41.50
0-60	1622.9	N.A.	88.90
0-80	1820.8	N.A.	99.70
0-90	1826.48	N.A.	100.00
10-90	1822.1	N.A.	99.80
20-40	709.79	N.A.	38.90
20-50	1249.75	N.A.	68.40
40-70	1010.19	N.A.	55.30
60-80	197.90	N.A.	10.80
70-80	53.27	N.A.	2.90
80-90	5.68	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	1826.48	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	4.38
10-20	43.17
20-30	129.81
30-40	579.98
40-50	539.96
50-60	325.61
60-70	144.62
70-80	53.27
80-90	5.68
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

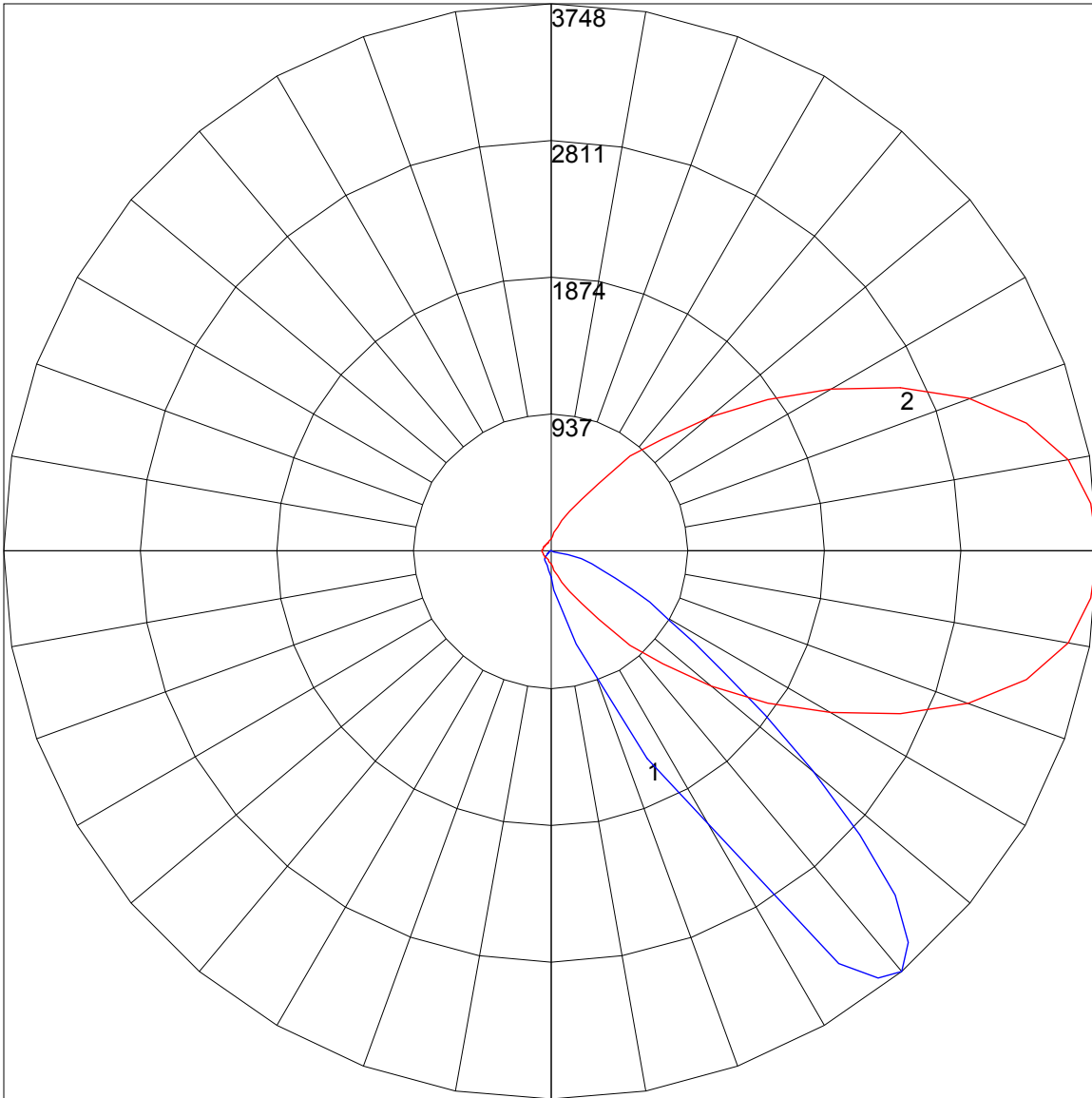
IES INDOOR REPORT
PHOTOMETRIC FILENAME : L0315109510.IES

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	86	80	97	90	84	79	87	82	77	83	79	75	80	77	74	72
3	91	80	72	66	88	79	71	65	76	69	64	73	68	63	70	66	62	60
4	82	70	61	55	80	69	61	54	66	59	53	64	58	53	62	56	52	50
5	75	62	52	46	73	61	52	45	58	51	45	56	50	44	55	49	44	42
6	68	54	45	38	66	53	45	38	52	44	38	50	43	38	48	42	37	35
7	62	48	39	33	61	47	39	32	46	38	32	44	37	32	43	37	32	30
8	57	43	34	28	56	42	34	28	41	33	28	40	33	27	38	32	27	25
9	53	38	30	24	51	38	30	24	37	29	24	36	29	24	34	28	23	21
10	49	35	26	21	47	34	26	21	33	26	20	32	25	20	31	25	20	18

POLAR GRAPH



Maximum Candela = 3748.05 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.)