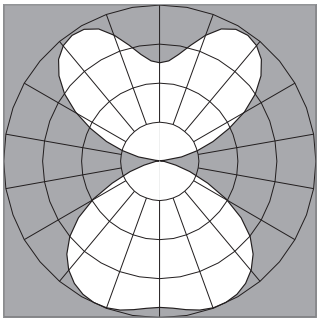
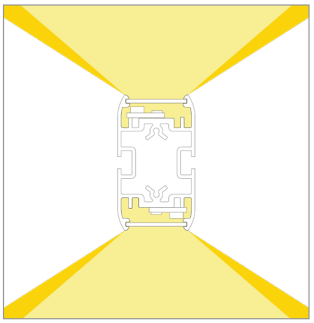




IES Report

DoubleRace™ | 107 | 120° Batwing, Flat, up | 120° FlyWing™, Flat, down | 90 CRI | SO

107-DR-XX-4-48-XX-XX-XX-XX-X-X-Z-SO-359-G1G2-X-XX-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	93	96	98	100
Total Lumens, 4’ rail length (1219mm)	4464	4605	4699	4793
Lumens per foot (305mm)	1116	1151	1175	1198
Lumens per foot UP (305mm)	556	573	585	597
Lumens per foot DOWN (305mm)	561	578	590	602
Input Power (W), 4’ rail length (1219mm)	48.2	48.2	48.2	48.2
Watts per foot (305mm)	12.1	12.1	12.1	12.1
CRI	96	96	96	96

Due to the large number of options in Vode’s product offering, most Vode IES reports are factored reports prepared from source reports. Source reports are the IES test reports prepared for Vode by an NVLAP accredited photometric test laboratory. Factored reports are based on data from the Vode source reports.

If the data above is in black, it is directly from a Vode source report. If it is in grey, it is factored from Vode source reports. Reference details on Vode source reports can be found on the IES File Finder page on vode.com.

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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L011800111 **Issue Date: 1/9/2018**

Report Prepared For: Vode Lighting
21684 8th Street East, Suite 700, Sonoma, CA 95476

Model Number: 107-DR-48-Z-SO-359-G1G2

Test: Photometric/Colorimetric/Electrical Test

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: 1/2/18

Date of Tests: 1/8/18 - 1/9/18

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-S4	1/9/19
BK PRECISION	1747	PS-DC04	1/10/19
Fluke Digital Thermometer	52K/J	MT-TP05	1/10/19
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.

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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Test Summary	
Manufacturer:	Vode Lighting
Model Number:	107-DR-48-Z-SO-359-G1G2
Driver Model Number:	MEAN WELL HLG-40H-36A (2 DRIVERS)
Total Lumens:	4698.72
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.4
Input Power (W):	48.17
Input Power Factor:	0.99
Current ATHD @ 120V(%):	10%
Current ATHD @ 277V(%):	N/A
Efficacy:	98
Color Rendering Index (CRI):	96
Correlated Color Temperature (K):	3327
Chromaticity Coordinate x:	0.4145
Chromaticity Coordinate y:	0.3934
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:40
Total Operating Time (Hours):	2:15

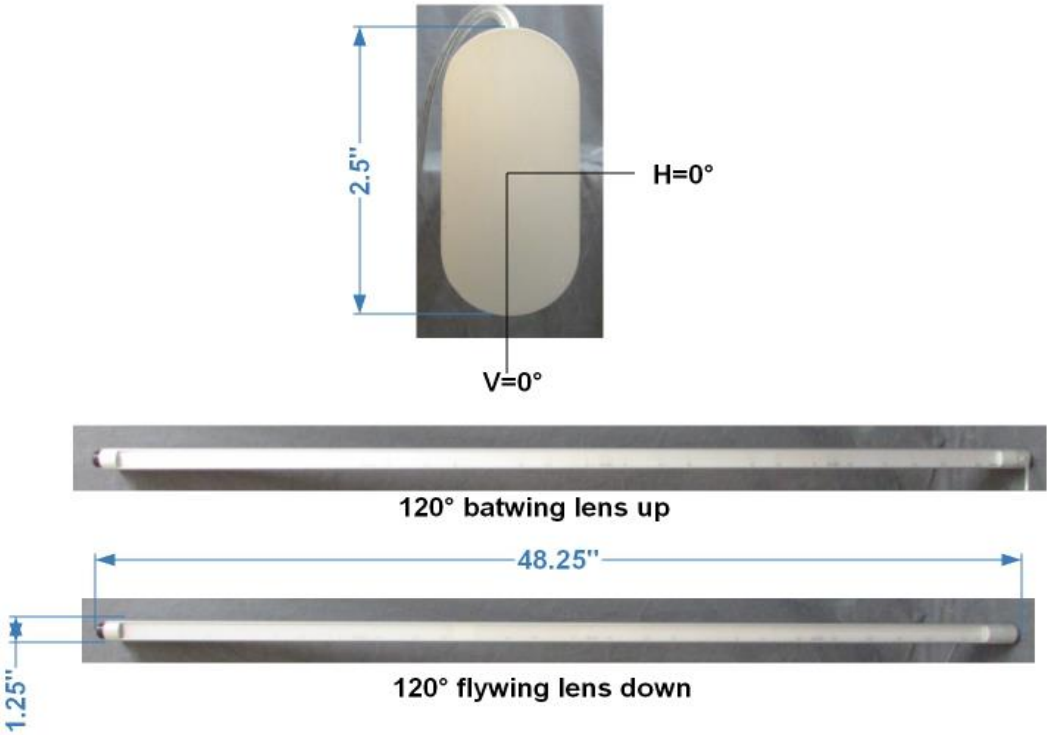


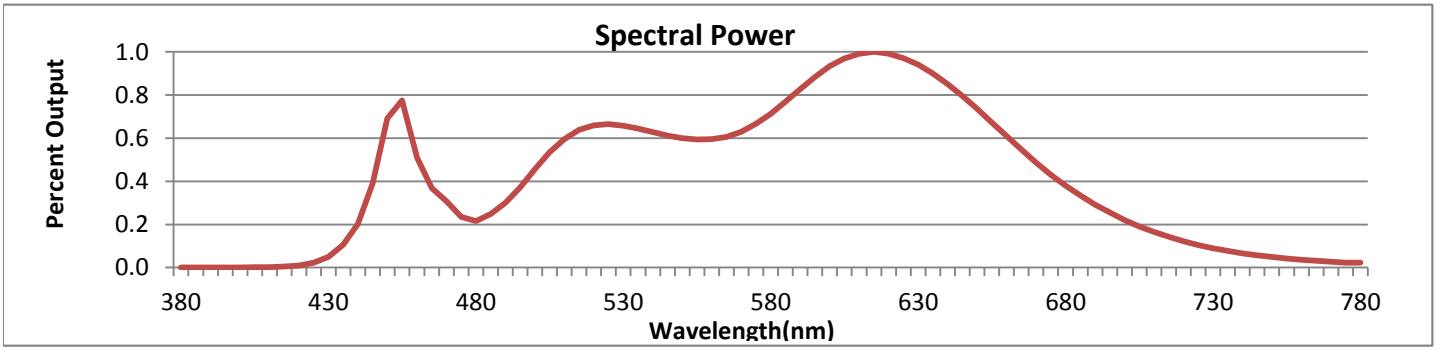
FIG. 1 LUMINAIRE

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

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

Report No: L011800111

NVLAP TESTING
NVLAP LAB CODE 200927-0



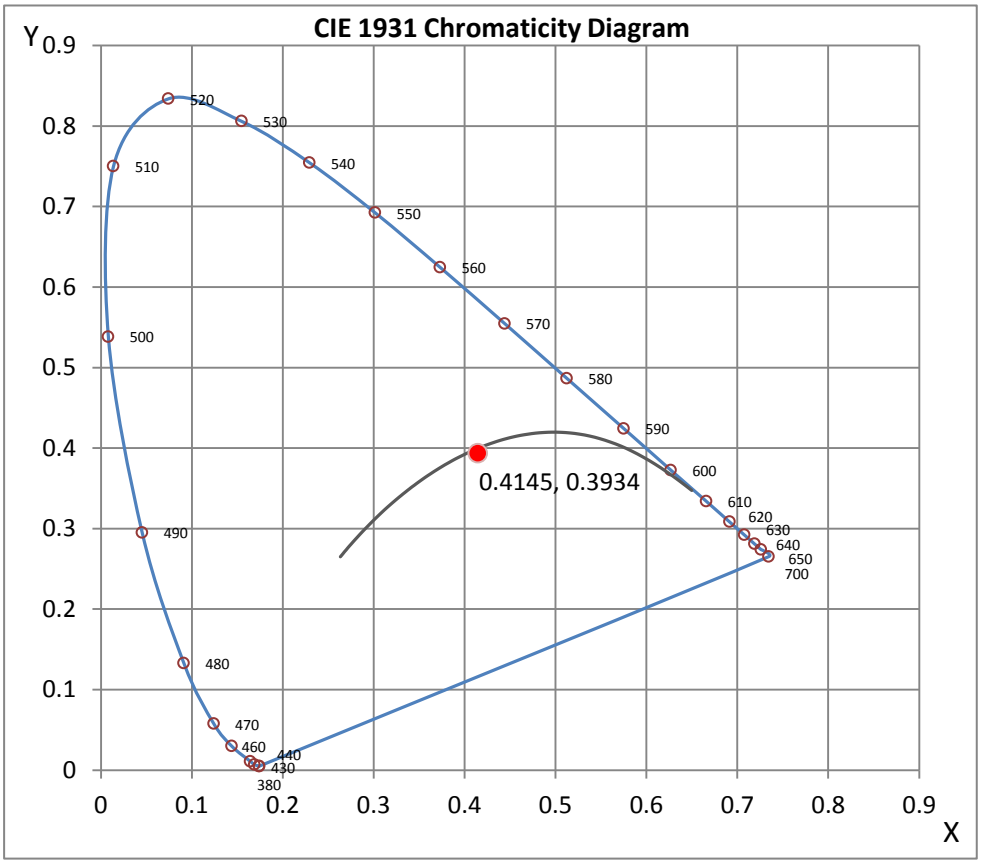
Wavelength	W/m²nm	440	0.2027	510	0.5963	580	0.7134	650	0.7364	720	0.1224
380	0.0007	450	0.6924	520	0.6592	590	0.8272	660	0.6111	730	0.0900
390	0.0008	460	0.5095	530	0.6578	600	0.9337	670	0.4869	740	0.0664
400	0.0011	470	0.3077	540	0.6278	610	0.9917	680	0.3810	750	0.0489
410	0.0021	480	0.2150	550	0.6001	620	0.9923	690	0.2921	760	0.0362
420	0.0097	490	0.3005	560	0.5950	630	0.9408	700	0.2207	770	0.0266
430	0.0500	500	0.4557	570	0.6295	640	0.8503	710	0.1653	780	0.0229

CRI & CCT

x	0.4145
y	0.3934
u'	0.2406
v'	0.5137
CRI	95.70
CCT	3327
Duv	-0.00074

R Values

R1	97.47
R2	98.86
R3	98.99
R4	95.40
R5	97.54
R6	94.30
R7	94.41
R8	88.78
R9	73.22
R10	98.18
R11	88.28
R12	83.08
R13	97.10
R14	98.46



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

NVLAP TESTING
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: 10*

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

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

Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011800111.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L011800111
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 1/9/2018
[MANUFAC] Vode Lighting
[LUMCAT] 107-DR-48-Z-SO-359-G1G2
[LUMINAIRE] DoubleRace LED, 48", 3500K, 90 CRI, zipper board,
[MORE] 120° batwing lens up/120° flywing lens down, standard output
[BALLASTCAT] MEAN WELL HLG-40H-36A (2 DRIVERS)
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 48.17W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4699
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	98
Total Luminaire Watts	48.17
Ballast Factor	1.00
CIE Type	General Diffuse
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.06 ft
Luminous Width (90-270)	3.77 ft
Luminous Height	0.17 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	12687	14138	26971
55	8955	10360	24863
65	4593	5950	23005
75	1431	2307	17768
85	75	204	6159

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011800111.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0	804.13	804.13	804.13	804.13	804.13	804.13	804.13	804.13	804.13	804.13
5	811.19	810.57	809.95	809.15	808.38	807.58	806.75	805.89	805.01	804.12
10	828.79	827.56	825.93	824.12	822.07	819.79	817.27	812.54	807.80	803.03
15	847.06	845.39	843.11	840.50	836.94	830.65	823.97	816.94	809.59	800.38
20	857.44	855.48	853.11	849.68	843.16	836.35	828.60	818.06	807.32	794.76
25	857.19	855.16	853.12	847.46	841.15	832.89	823.05	813.20	797.10	780.13
30	845.15	842.94	840.28	835.00	828.16	819.40	809.28	795.50	778.99	759.59
35	820.32	818.40	814.97	810.45	803.00	794.48	784.29	767.89	751.07	729.60
40	780.55	778.80	775.26	770.17	764.08	756.78	744.09	729.63	712.38	688.98
45	723.33	722.17	719.28	714.62	709.21	702.95	690.27	679.21	658.62	638.28
50	645.53	644.15	641.68	638.36	635.35	629.73	620.41	608.81	591.21	568.31
55	545.22	543.59	542.16	541.50	540.55	533.27	530.83	517.93	505.98	488.30
60	420.25	419.36	418.72	414.39	410.16	407.82	406.88	405.72	395.48	385.55
65	288.89	289.63	283.19	278.25	279.67	282.13	287.37	285.47	285.82	283.75
70	173.46	171.41	166.91	167.81	173.56	178.38	181.58	183.83	185.21	185.83
75	90.18	84.11	86.22	89.23	91.32	94.80	98.06	101.06	105.72	107.95
80	24.00	26.43	27.12	28.14	29.77	31.77	33.82	38.02	41.13	47.50
85	4.57	5.21	5.26	5.29	5.35	5.55	5.42	5.70	7.16	9.08
90	1.82	1.87	1.83	1.79	1.79	1.83	1.95	1.83	1.83	1.91
95	23.25	30.71	27.12	28.74	31.15	34.21	35.86	42.03	40.75	39.25
100	120.49	112.37	114.63	115.98	115.30	114.83	115.04	113.36	110.42	105.95
105	213.49	200.43	202.23	203.58	201.57	200.70	199.19	195.69	193.09	184.64
110	310.64	305.84	295.71	294.64	297.87	298.33	298.15	290.67	286.67	274.33
115	420.08	419.93	410.91	404.26	401.60	400.12	397.62	391.06	382.79	370.03
120	536.58	535.38	532.72	525.96	520.18	512.78	505.80	498.48	479.84	453.61
125	638.55	636.86	634.17	631.63	627.71	617.01	608.78	587.47	564.34	531.80
130	723.08	721.32	717.32	712.18	706.14	695.59	679.87	657.64	626.56	586.25
135	787.11	785.51	780.13	772.45	762.49	750.68	727.99	704.42	667.23	628.09
140	825.05	822.66	816.41	807.20	795.35	780.23	756.45	727.67	693.59	648.79
145	840.41	837.58	831.15	821.44	806.89	789.22	767.42	734.05	698.72	656.96
150	833.11	829.96	823.61	811.54	795.87	776.30	753.41	723.39	688.39	649.89
155	796.90	793.45	787.40	775.12	759.85	740.55	717.89	693.60	663.66	632.55
160	732.72	730.26	724.29	715.92	702.90	687.95	670.73	650.12	628.38	608.11
165	656.90	655.41	651.58	646.70	639.97	630.13	619.18	607.24	594.41	579.89
170	591.39	590.59	588.77	586.54	583.73	580.36	576.44	570.90	565.06	558.92
175	550.04	549.74	549.45	548.72	548.11	547.41	546.63	545.79	544.88	543.91
180	537.00	537.00	537.00	537.00	537.00	537.00	537.00	537.00	537.00	537.00

Vert. Angles	**Horizontal Angles**								
	50	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**
0	804.13	804.13	804.13	804.13	804.13	804.13	804.13	804.13	804.13
5	803.22	802.32	801.43	800.55	799.70	798.88	798.02	797.33	796.65
10	798.25	793.51	788.90	786.06	783.48	781.16	779.11	777.27	775.90
15	790.93	781.98	773.23	764.78	756.53	752.05	748.24	744.93	742.68
20	780.51	765.37	750.76	737.40	724.63	712.38	705.87	700.18	696.35
25	763.14	743.44	722.63	702.45	684.90	669.15	657.21	650.13	645.61
30	737.74	713.98	688.89	663.18	639.16	619.96	602.74	594.89	590.31
35	704.66	678.93	648.21	618.54	590.24	566.69	547.70	537.30	531.35
40	662.84	632.47	600.19	566.97	537.00	511.08	491.89	479.68	473.31
45	607.85	577.90	544.56	510.99	481.19	455.98	437.36	425.06	419.25
50	542.67	513.09	480.87	450.48	422.97	399.70	382.82	372.54	368.77
55	462.71	436.01	407.69	382.59	360.97	344.57	332.50	323.85	319.28
60	371.58	347.49	327.97	312.94	299.93	288.91	280.28	274.21	272.69

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CANDELA TABULATION - (Cont.)

65	276.43	265.93	255.60	245.67	237.76	231.63	226.46	223.41	224.28
70	184.62	184.21	181.94	178.09	175.53	173.94	171.78	170.40	170.39
75	111.26	114.20	115.68	115.14	114.86	114.67	114.35	113.76	113.01
80	53.12	55.21	57.85	58.76	59.91	67.30	68.98	68.11	68.92
85	10.19	11.93	13.25	14.29	16.47	18.32	17.26	16.98	17.11
90	1.87	1.83	1.79	1.79	1.66	1.62	1.74	1.74	1.58
95	38.18	34.35	31.09	26.79	23.96	22.84	21.88	22.45	22.59
100	99.68	91.03	83.78	72.90	68.78	71.96	70.58	69.74	70.66
105	172.70	157.22	140.47	126.52	116.86	111.24	109.65	107.19	106.12
110	254.96	232.31	207.10	185.22	171.03	161.98	157.36	154.85	154.45
115	343.59	308.55	273.21	243.61	223.20	210.80	203.87	200.87	199.79
120	418.93	373.40	330.86	297.67	273.25	258.10	249.88	245.17	245.12
125	485.15	435.92	386.10	344.58	317.10	300.14	290.11	284.86	284.07
130	539.23	484.91	433.83	389.44	356.14	338.15	327.17	321.46	320.52
135	574.62	521.97	470.67	428.49	395.25	373.41	361.36	354.56	351.91
140	600.52	548.49	500.91	459.30	429.08	406.00	393.11	385.66	382.47
145	610.48	565.66	523.19	486.43	457.91	437.00	422.74	416.04	412.61
150	610.85	572.55	536.43	507.22	480.52	464.28	449.55	444.52	441.09
155	600.99	571.43	544.75	519.01	501.57	486.47	475.59	470.66	467.00
160	587.03	565.22	544.43	530.28	516.71	503.51	498.35	493.75	490.00
165	566.67	556.04	545.42	534.86	524.20	520.01	516.29	512.78	509.76
170	552.53	545.93	539.33	536.60	533.99	531.46	529.03	526.69	524.54
175	542.90	541.85	540.76	539.65	538.53	537.39	536.22	535.11	534.01
180	537.00	537.00	537.00	537.00	537.00	537.00	537.00	537.00	537.00

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011800111.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	302.10	N.A.	6.40
0-30	655.19	N.A.	13.90
0-40	1094.14	N.A.	23.30
0-60	1962.75	N.A.	41.80
0-80	2341.04	N.A.	49.80
0-90	2359.76	N.A.	50.20
10-90	2283.06	N.A.	48.60
20-40	792.04	N.A.	16.90
20-50	1255.4	N.A.	26.70
40-70	1133.06	N.A.	24.10
60-80	378.28	N.A.	8.10
70-80	113.83	N.A.	2.40
80-90	18.73	N.A.	0.40
90-110	221.02	N.A.	4.70
90-120	545.46	N.A.	11.60
90-130	977.02	N.A.	20.80
90-150	1829.41	N.A.	38.90
90-180	2338.96	N.A.	49.80
110-180	2117.94	N.A.	45.10
0-180	4698.72	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	76.71
10-20	225.40
20-30	353.09
30-40	438.96
40-50	463.35
50-60	405.25
60-70	264.46
70-80	113.83
80-90	18.73
90-100	43.59
100-110	177.43
110-120	324.44
120-130	431.56
130-140	453.79
140-150	398.61
150-160	291.30
160-170	165.91
170-180	52.33

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011800111.IES

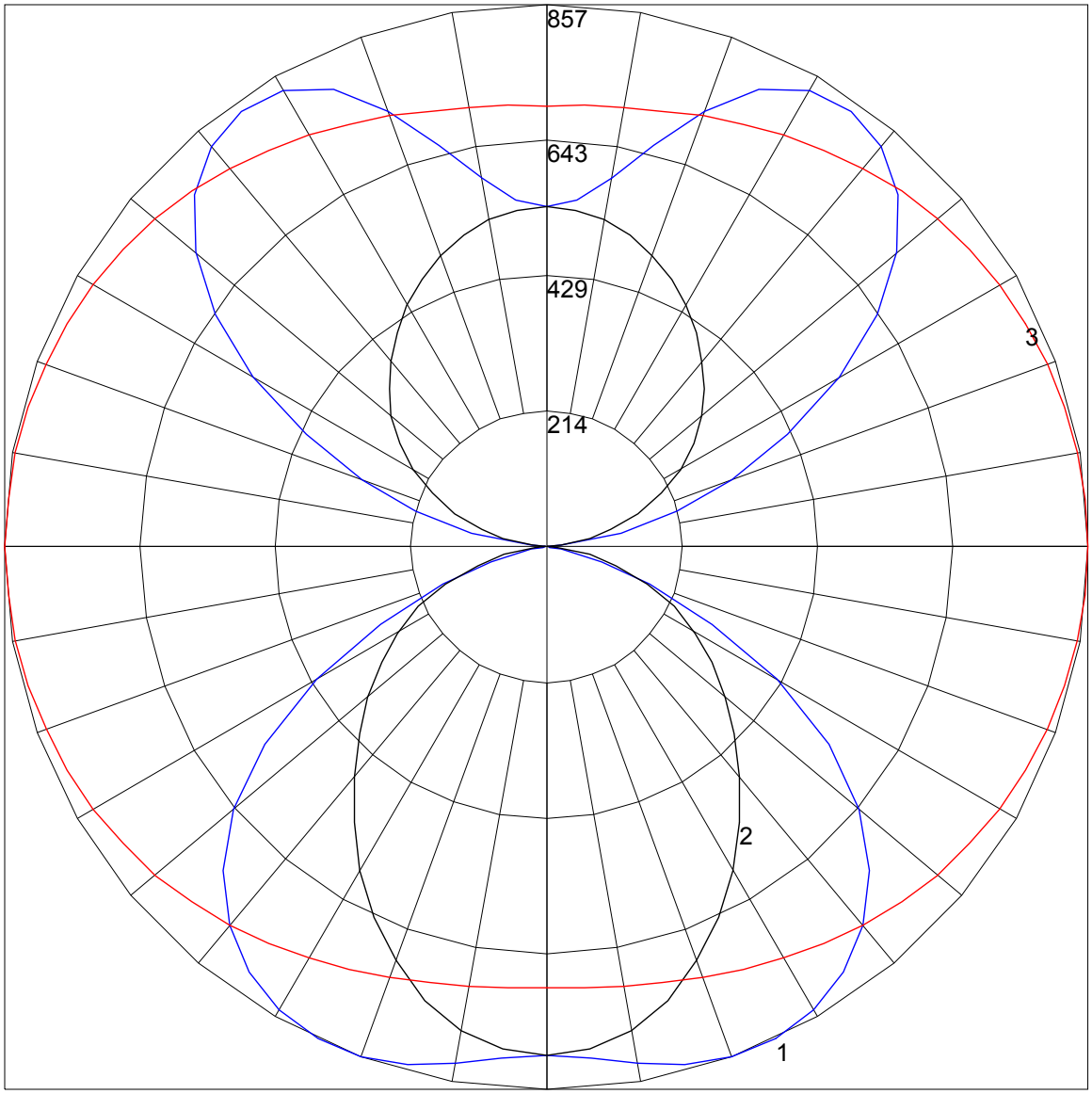
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	98	94	90	87	90	87	84	81	74	71	69	61	60	58	50	49	48	43
2	89	82	76	71	82	76	71	66	65	61	57	54	51	49	44	42	41	36
3	82	72	65	59	75	67	60	55	57	52	48	48	44	41	39	37	35	30
4	75	64	56	50	68	59	52	47	50	45	41	42	38	35	35	32	30	26
5	68	57	49	43	63	53	46	40	45	40	35	38	34	30	31	28	26	23
6	63	51	43	37	58	47	40	35	41	35	31	34	30	27	28	25	23	20
7	58	46	38	32	53	43	35	30	37	31	27	31	27	23	26	23	20	17
8	54	41	34	28	50	39	32	27	33	28	24	28	24	21	24	20	18	15
9	50	38	30	25	46	35	29	24	31	25	21	26	22	19	22	18	16	14
10	47	35	27	23	43	32	26	21	28	23	19	24	20	17	20	17	14	12

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L011800111.IES

POLAR GRAPH



Maximum Candela = 857.44 Located At Horizontal Angle = 0, Vertical Angle = 20
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 (20) (Through Max. Cd.)