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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L121706521 **Issue Date: 1/22/2018**

Report Prepared For: Number Eight Lighting Company
526 Portal Street, Cotati, CA 94931

Model Number: 804/M2-R-WD-15/WH/DIM1-8-1000-WD with FR-P-1-WH trim

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: 1/18/18 - 1/22/18

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.

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Test Summary	
Manufacturer:	Number Eight Lighting Company
Model Number:	804/M2-R-WD-15/WH/DIM1-8-1000-WD with FR-P-1-WH trim
Driver Model Number:	IntuitiveSystems ISD-701-350-15-D
Total Lumens:	569.23
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.13
Input Power (W):	14.75
Input Power Factor:	0.98
Current ATHD @ 120V(%):	7%
Current ATHD @ 277V(%):	N/A
Efficacy:	39
Color Rendering Index (CRI):	98
Correlated Color Temperature (K):	3009
Chromaticity Coordinate x:	0.4348
Chromaticity Coordinate y:	0.4006
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:40
Total Operating Time (Hours):	1:20

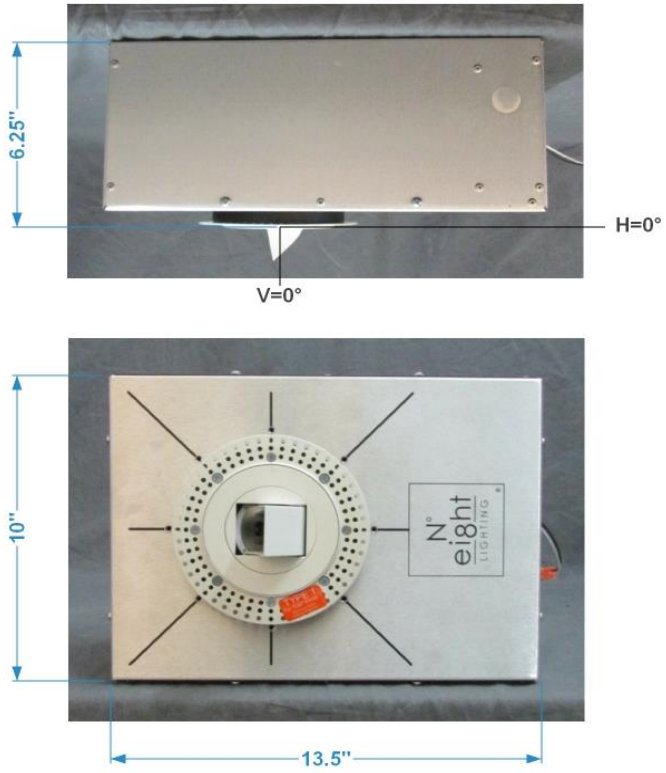

FIG. 1 LUMINAIRE

*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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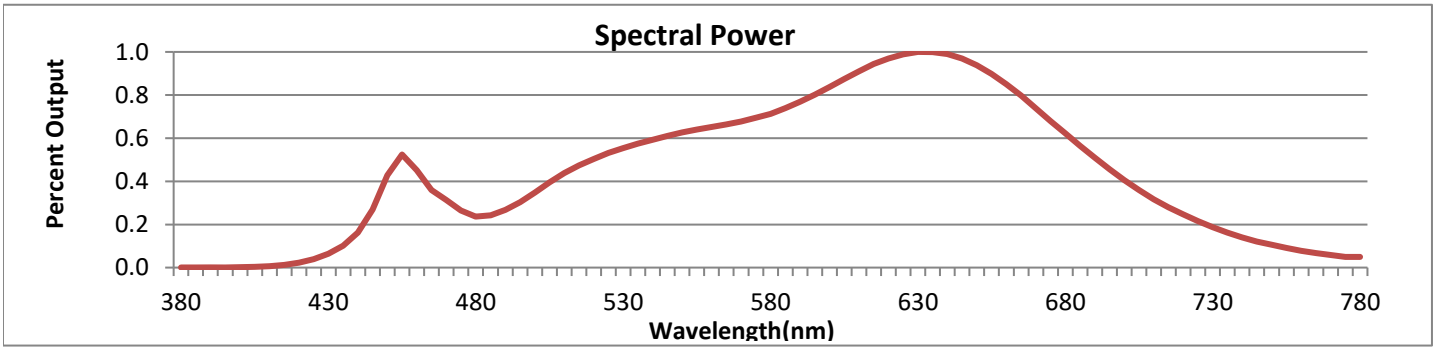


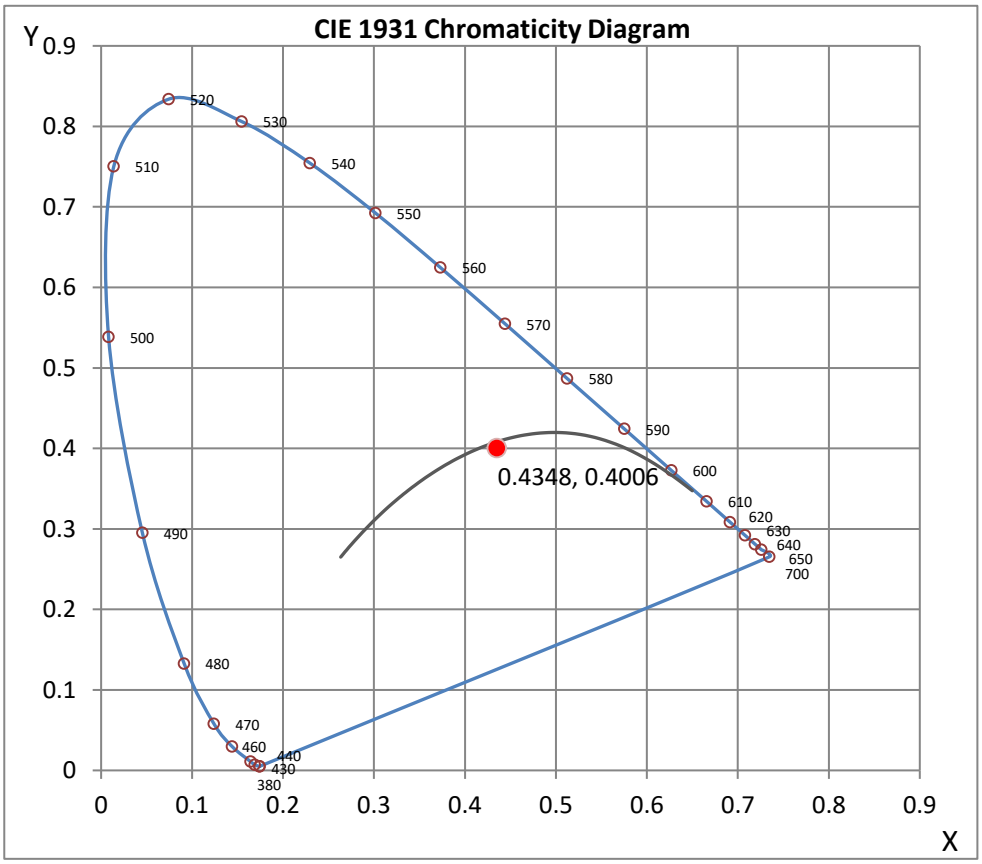
Wavelength	W/m²nm	440	0.1626	510	0.4378	580	0.7134	650	0.9384	720	0.2465
380	0.0009	450	0.4271	520	0.5042	590	0.7688	660	0.8511	730	0.1871
390	0.0008	460	0.4511	530	0.5540	600	0.8379	670	0.7373	740	0.1401
400	0.0015	470	0.3134	540	0.5933	610	0.9108	680	0.6217	750	0.1052
410	0.0062	480	0.2359	550	0.6265	620	0.9702	690	0.5088	760	0.0784
420	0.0233	490	0.2674	560	0.6519	630	1.0000	700	0.4063	770	0.0580
430	0.0640	500	0.3480	570	0.6766	640	0.9903	710	0.3166	780	0.0498

CRI & CCT

x	0.4348
y	0.4006
u'	0.2507
v'	0.5197
CRI	97.50
CCT	3009
Duv	-0.00110

R Values

R1	99.13
R2	98.96
R3	96.14
R4	98.59
R5	98.14
R6	97.24
R7	97.32
R8	94.85
R9	87.84
R10	95.46
R11	97.50
R12	82.53
R13	99.59
R14	96.75



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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: 11*

*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 : L121706521.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L121706521
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 1/22/2018
[MANUFAC] Number Eight Lighting Company
[LUMCAT] 804/M2-R-WD-15/WH/DIM1-8-1000-WD with FR-P-1-WH trim
[LUMINAIRE] LED Recessed Downlight, 15° Beam Spread, 45° Aiming Angle,
[MORE] Mirror Lens Accessory
[BALLASTCAT] IntuitiveSystems ISD-701-350-15-D
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 120VAC, 14.75W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	569
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	39
Total Luminaire Watts	14.75
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.68
Spacing Criterion (90-270)	0.88
Spacing Criterion (Diagonal)	1.44
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.06 ft
Luminous Width (90-270)	0.15 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	0	8449	20278
55	0	8333	18749
65	0	8482	16964
75	0	0	13850
85	0	0	0

IES INDOOR REPORT
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CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0.0	33	33	33	33	33	33	33	33	33	33
5.0	41	41	41	41	41	41	40	40	39	38
10.0	55	55	55	54	54	53	52	50	48	46
15.0	31	32	32	34	36	39	42	45	46	47
20.0	14	14	14	14	15	17	19	22	27	33
22.5	13	13	13	12	12	13	13	15	19	23
25.0	8	8	8	8	9	10	12	12	14	17
27.5	6	6	6	7	7	8	10	10	11	14
30.0	6	5	6	6	6	7	9	9	9	11
32.0	5	5	5	5	6	6	8	8	8	10
34.0	5	5	5	5	5	6	7	7	8	8
36.0	0	0	0	4	5	5	6	6	7	8
38.0	0	0	0	0	3	4	5	6	6	7
40.0	0	0	0	0	0	3	4	5	6	7
41.0	0	0	0	0	0	3	3	4	6	7
42.0	0	0	0	0	0	0	3	4	6	6
43.0	0	0	0	0	0	0	3	4	5	6
44.0	0	0	0	0	0	0	3	3	4	6
45.0	0	0	0	0	0	0	3	3	4	5
46.0	0	0	0	0	0	0	3	3	4	5
47.0	0	0	0	0	0	0	3	3	4	5
48.0	0	0	0	0	0	0	3	3	4	4
49.0	0	0	0	0	0	0	0	3	4	4
50.0	0	0	0	0	0	0	0	3	3	4
52.0	0	0	0	0	0	0	0	3	3	4
54.0	0	0	0	0	0	0	0	3	3	4
56.0	0	0	0	0	0	0	0	0	3	4
58.0	0	0	0	0	0	0	0	0	3	3
60.0	0	0	0	0	0	0	0	0	3	3
62.5	0	0	0	0	0	0	0	0	0	3
65.0	0	0	0	0	0	0	0	0	0	3
67.5	0	0	0	0	0	0	0	0	0	3
70.0	0	0	0	0	0	0	0	0	0	3
75.0	0	0	0	0	0	0	0	0	0	0
80.0	0	0	0	0	0	0	0	0	0	0
85.0	0	0	0	0	0	0	0	0	0	0
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles **Horizontal Angles**

	50	55	60	65	70	75	80	85	90	95
0.0	33	33	33	33	33	33	33	33	33	33
5.0	38	37	36	36	35	35	34	34	33	32
10.0	44	42	40	38	36	35	33	32	31	30
15.0	47	45	42	39	36	34	31	30	28	27
20.0	38	38	37	36	33	30	28	26	24	24
22.5	29	34	34	32	30	28	25	24	22	22
25.0	23	28	30	28	26	24	23	21	21	21
27.5	18	22	25	24	23	21	20	19	19	19
30.0	14	18	20	20	18	18	17	17	17	18
32.0	12	15	17	17	15	15	15	15	16	17
34.0	10	13	14	14	13	13	13	14	15	16
36.0	9	11	12	12	11	11	12	13	14	15
38.0	8	9	10	10	10	10	11	12	13	15

CANDELA TABULATION - (Cont.)

40.0	7	8	8	8	8	9	10	11	13	14
41.0	7	8	8	8	8	8	9	11	12	14
42.0	7	7	8	7	8	8	9	10	12	14
43.0	7	7	7	7	7	8	8	10	12	14
44.0	6	7	7	7	7	7	8	10	12	14
45.0	6	7	7	7	7	7	8	9	12	14
46.0	6	6	7	7	7	7	8	9	11	13
47.0	6	6	6	6	6	7	7	9	11	13
48.0	5	6	6	6	6	6	7	9	11	13
49.0	5	6	6	6	6	6	7	8	11	13
50.0	5	5	6	6	6	6	6	8	10	13
52.0	5	5	5	6	6	6	6	8	10	13
54.0	4	5	5	5	5	5	6	7	9	12
56.0	4	5	5	5	5	5	5	7	9	12
58.0	4	4	5	5	5	5	5	6	9	11
60.0	4	4	5	5	5	5	5	6	8	11
62.5	3	4	4	4	4	4	4	5	7	10
65.0	3	4	4	4	4	4	4	4	6	9
67.5	3	3	4	4	4	3	3	4	5	8
70.0	3	3	3	4	3	3	3	3	5	7
75.0	3	3	3	3	3	2	2	2	3	6
80.0	0	0	0	0	0	0	0	0	0	4
85.0	0	0	0	0	0	0	0	0	0	3
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	**Horizontal Angles**									
	100	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**145**
0.0	33	33	33	33	33	33	33	33	33	33
5.0	32	31	30	30	29	29	28	28	27	27
10.0	29	28	27	26	26	25	26	25	25	25
15.0	26	25	24	24	24	23	24	24	24	24
20.0	23	23	23	22	22	22	22	23	23	24
22.5	22	22	22	22	22	22	22	23	24	25
25.0	21	21	21	22	21	22	22	23	25	30
27.5	20	20	21	22	22	22	23	24	27	36
30.0	19	20	21	22	22	23	24	26	32	49
32.0	18	20	21	22	23	24	25	28	37	57
34.0	18	19	21	22	23	25	27	30	40	66
36.0	17	19	21	23	25	26	28	33	45	78
38.0	17	19	22	24	25	28	30	35	48	80
40.0	17	19	22	24	26	29	32	37	50	88
41.0	17	20	22	25	27	30	33	39	53	86
42.0	17	20	22	25	27	30	34	40	55	88
43.0	17	20	22	25	28	31	35	42	56	87
44.0	16	20	22	25	28	32	36	42	55	87
45.0	17	20	23	25	29	33	37	42	55	87
46.0	16	20	23	26	29	33	37	42	53	88
47.0	16	20	23	26	29	33	38	43	53	82
48.0	17	20	23	26	29	33	38	43	53	79
49.0	16	20	23	26	30	34	38	43	53	79
50.0	16	19	23	26	30	34	38	43	51	72
52.0	16	19	23	26	30	34	38	42	50	68
54.0	16	19	23	26	30	34	38	42	48	63
56.0	15	19	22	26	30	34	37	40	44	54
58.0	15	18	22	25	29	33	36	39	42	49

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CANDELA TABULATION - (Cont.)

60.0	14	18	22	25	28	32	35	38	40	44
62.5	13	17	21	24	28	31	34	37	37	39
65.0	12	16	20	23	26	30	33	35	35	36
67.5	11	15	19	22	25	29	31	33	33	33
70.0	10	14	17	21	24	28	30	31	31	31
75.0	9	12	15	18	21	25	27	28	28	28
80.0	7	10	13	16	19	22	24	25	26	25
85.0	6	8	11	14	16	19	21	22	22	22
90.0	4	6	8	11	13	15	17	18	18	19

Vert. Angles	**Horizontal Angles**						
	150	**155**	**160**	**165**	**170**	**175**	**180**
0.0	33	33	33	33	33	33	33
5.0	27	27	26	26	26	26	26
10.0	25	25	25	25	25	25	25
15.0	25	25	25	25	25	25	25
20.0	25	27	29	32	34	35	35
22.5	29	34	41	48	53	57	58
25.0	39	51	66	85	101	112	116
27.5	53	79	127	192	241	279	293
30.0	76	125	223	366	484	562	588
32.0	93	166	312	548	760	900	951
34.0	120	236	459	743	1060	1285	1368
36.0	151	314	613	1003	1445	1778	1892
38.0	166	371	732	1270	1851	2322	2493
40.0	183	621	888	1429	2129	2688	3030
41.0	188	631	953	1545	2316	2821	3243
42.0	181	608	933	1544	2366	2872	3407
43.0	167	615	937	1633	2520	2916	3523
44.0	166	617	958	1659	2512	3255	3608
45.0	166	612	904	1574	2505	2989	3637
46.0	170	631	954	1654	2544	3247	3618
47.0	153	599	883	1564	2503	3213	3532
48.0	144	581	851	1518	2503	2893	3427
49.0	145	583	851	1506	2388	2779	3301
50.0	139	421	797	1368	2184	2713	3123
52.0	117	288	639	1158	1831	2438	2612
54.0	105	233	516	909	1453	1880	2005
56.0	84	181	381	679	1065	1397	1483
58.0	71	132	248	481	781	1004	1061
60.0	60	97	163	317	540	661	691
62.5	46	67	100	174	291	350	370
65.0	39	49	67	98	137	149	152
67.5	34	38	46	58	68	76	79
70.0	31	32	35	40	45	49	51
75.0	28	28	29	30	30	31	31
80.0	25	25	26	26	27	27	27
85.0	22	23	24	24	24	24	24
90.0	18	18	18	17	17	16	16

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121706521.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	11.93	N.A.	2.10
0-30	30.04	N.A.	5.30
0-40	138.23	N.A.	24.30
0-60	515.11	N.A.	90.50
0-80	559.88	N.A.	98.40
0-90	569.23	N.A.	100.00
10-90	565.98	N.A.	99.40
20-40	126.31	N.A.	22.20
20-50	358.79	N.A.	63.00
40-70	408.73	N.A.	71.80
60-80	44.76	N.A.	7.90
70-80	12.92	N.A.	2.30
80-90	9.36	N.A.	1.60
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	569.23	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	3.25
10-20	8.68
20-30	18.11
30-40	108.19
40-50	232.48
50-60	144.40
60-70	31.85
70-80	12.92
80-90	9.36
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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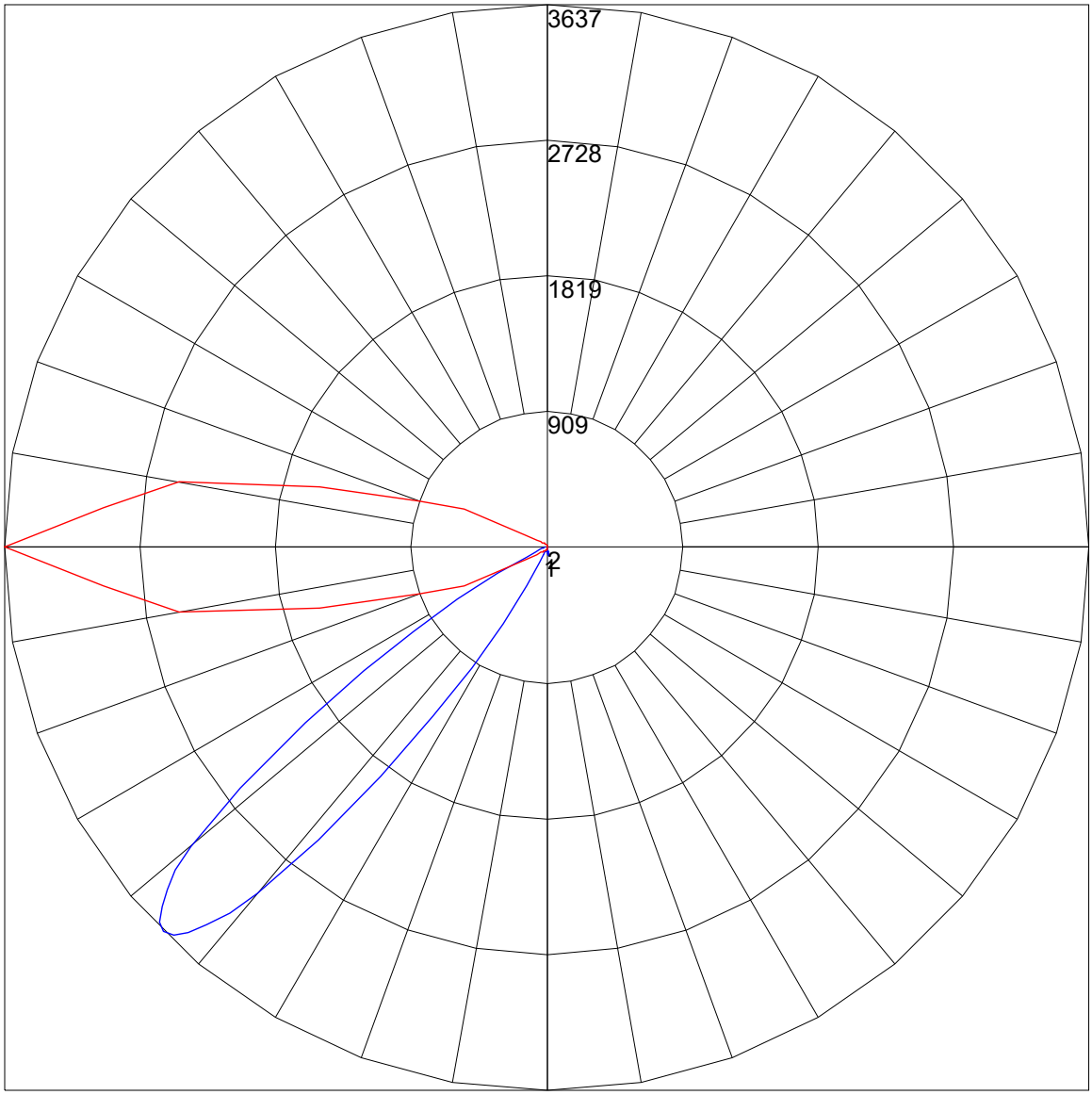
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	109	104	100	96	106	102	98	95	98	95	92	94	91	89	90	88	86	84
2	99	90	84	78	96	89	82	77	85	80	75	82	77	73	79	75	72	70
3	89	78	70	63	87	77	69	62	74	67	61	71	65	60	68	63	59	57
4	80	68	58	51	78	66	58	51	64	56	50	61	55	49	59	53	49	46
5	73	59	49	42	70	58	49	42	55	47	41	53	46	41	51	45	40	38
6	66	51	42	35	64	50	41	34	48	40	34	47	39	34	45	38	33	31
7	60	45	35	29	58	44	35	29	43	34	28	41	34	28	40	33	28	26
8	55	40	30	24	53	39	30	24	38	29	24	36	29	23	35	28	23	21
9	50	35	26	20	49	35	26	20	33	25	20	32	25	20	31	25	20	18
10	46	32	23	17	45	31	23	17	30	22	17	29	22	17	28	21	17	15

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L121706521.IES

POLAR GRAPH



Maximum Candela = 3637 Located At Horizontal Angle = 180, Vertical Angle = 45
1 - Vertical Plane Through Horizontal Angles (180 - 0) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (45) (Through Max. Cd.)