



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

Test #: L041412301

Date: 5/5/2014



NVLAP LAB CODE 200927-0

Test Report: L041412301

Model Number: R1-LED4LO-04-SAL-YGW-UNV-SUR

Report Prepared For: Prudential Lighting
1737 East 22nd Street

Test: Electrical and Photometric tests as required by the IESNA test standards.

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. Fixture catalog number is R1-LED4LO-04-SAL-YGW-UNV-SUR. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 4/24/14

Date of Tests: 4/28/14 - 4/28/14

Seasoning of Sample SSL: 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	01/04/15
Xitron Power Analysis System	2503AH	MT-EL01	01/09/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/15
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/15
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.

LM-79 Test Summary

Manufacturer:	Prudential Lighting
Model Number:	R1-LED4LO-04-SAL-YGW-UNV-SUR
LAMPCAT:	N/A
Driver Model Number:	OSRAM OPTOTRONIC OT30W/PRG1050C/UNV/DIM/L
Total Lumens:	2226.94
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.16
Input Power (W):	19.14
Input Power Factor:	0.99
Total Harmonic Distortion @ 120V(%):	5%
Total Harmonic Distortion @ 277V(%):	17% (0.08A, 20.84W, 0.9PF)
Efficacy:	116
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	3980
Chromaticity Coordinate x:	0.3803
Chromaticity Coordinate y:	0.3737
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	2:05
Off State Power(W):	0.00

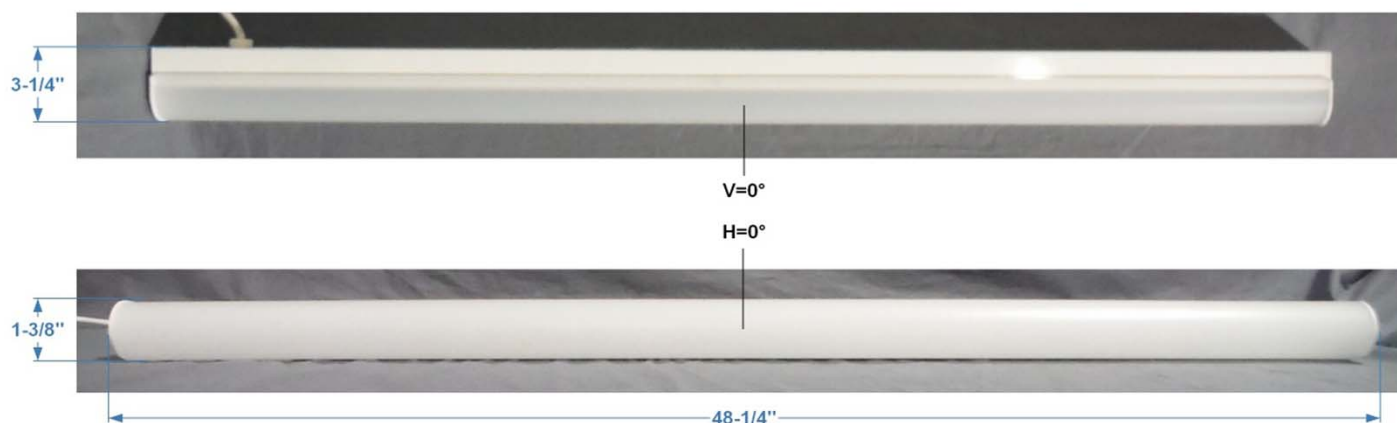
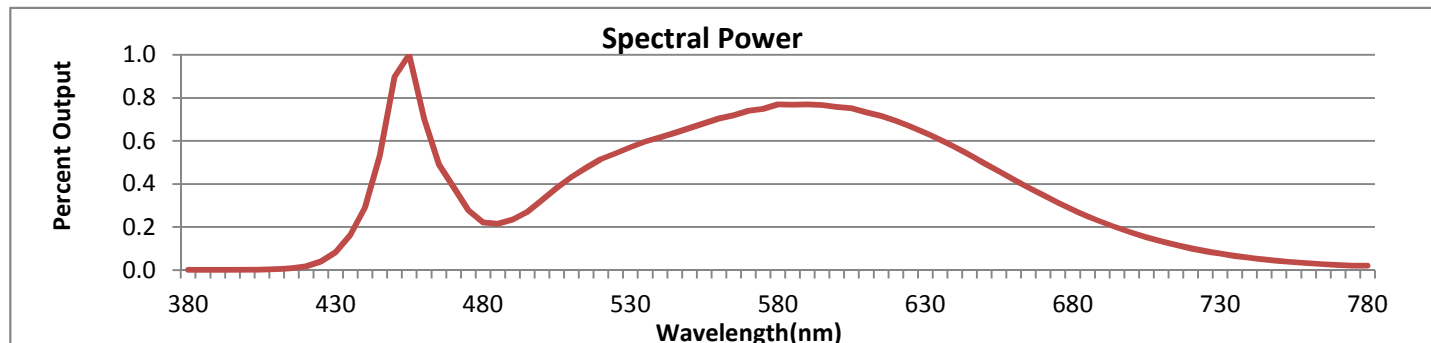


FIG.1 LUMINAIRE



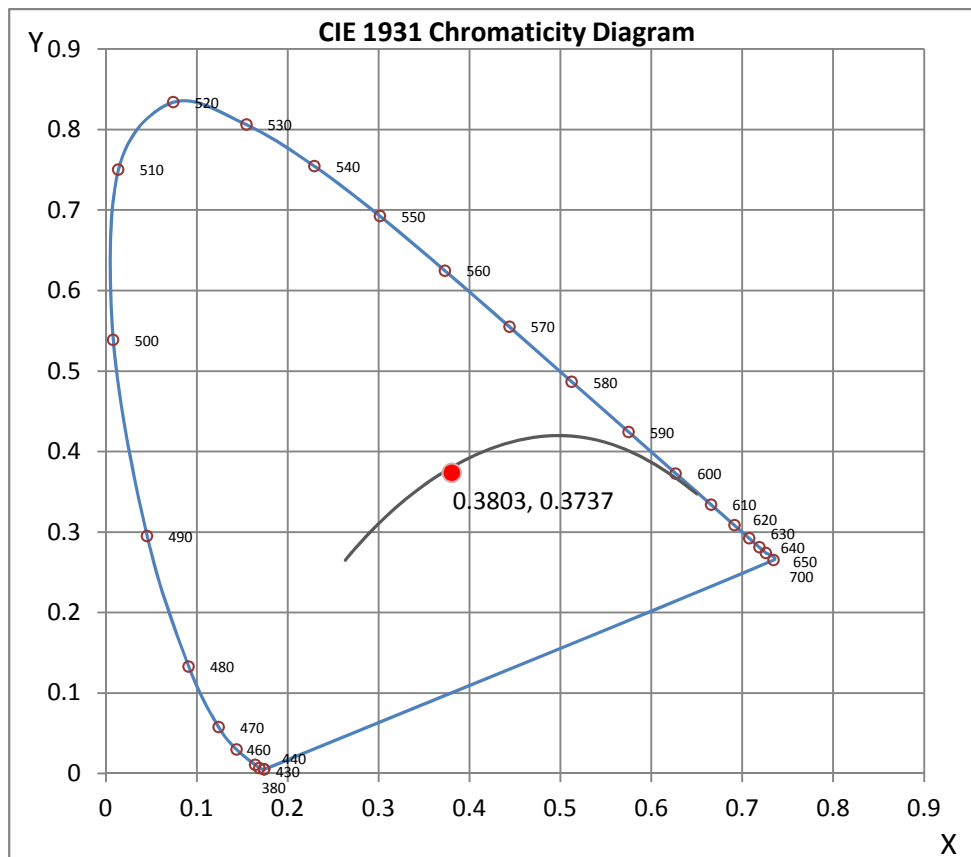
Wavelength	W/m ² nm	440	0.0120	510	0.0178	580	0.0317	650	0.0204	720	0.0041
380	0.0000	450	0.0368	520	0.0212	590	0.0317	660	0.0173	730	0.0031
390	0.0000	460	0.0288	530	0.0234	600	0.0312	670	0.0143	740	0.0023
400	0.0001	470	0.0158	540	0.0253	610	0.0302	680	0.0116	750	0.0017
410	0.0002	480	0.0091	550	0.0272	620	0.0285	690	0.0092	760	0.0013
420	0.0007	490	0.0096	560	0.0290	630	0.0262	700	0.0071	770	0.0010
430	0.0034	500	0.0134	570	0.0304	640	0.0235	710	0.0055	780	0.0008

CRI & CCT

x	0.3803
y	0.3737
u'	0.2262
v'	0.5002
CRI	84.20
CCT	3980
Duv	-0.00139

R Values

R1	83.12
R2	89.74
R3	92.96
R4	82.04
R5	81.78
R6	83.62
R7	88.51
R8	71.55
R9	27.66
R10	73.94
R11	79.37
R12	56.56
R13	84.75
R14	95.73





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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 : Wilson Khounlavong

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 : L041412301.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L041412301
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 5/5/2014
[MANUFAC] PRUDENTIAL LIGHTING
[LUMCAT] R1-LED4LO-04-SAL-YGW-UNV-SUR
[LUMINAIRE] 48-1/4"L X 1-3/8"W X 3-1/4"H. LED LUMINAIRE.
[MORE] DIFFUSED LENS.
[BALLASTCAT] OSRAM OPTOTRONIC OT30W/PRG1050C/UNV/DIM/L
[BALLAST] INPUT: 120-277VAC, 0.31-0.15A, 50/60HZ. OUTPUT: 10-55VDC, 0.35-1.05A.
[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, 19.14W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2227
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	116
Total Luminaire Watts	19.14
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.38
Spacing Criterion (90-270)	1.20
Spacing Criterion (Diagonal)	1.42
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	4.00 ft
Luminous Width (90-270)	0.11 ft
Luminous Height	0.18 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041412301.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	15121	6297	4304
55	16065	5236	3068
65	17842	4305	1986
75	22091	3520	1038
85	38845	2866	283

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L041412301.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	568.40	568.40	568.40	568.40	568.40	568.40	568.40	568.40	568.40	568.40
5	567.79	567.70	567.62	567.45	567.45	567.33	567.16	566.86	566.74	566.53
10	564.60	564.43	564.18	563.88	563.34	562.84	562.21	561.53	560.74	559.94
15	558.47	558.22	557.80	557.09	556.12	554.90	553.56	551.96	550.41	548.77
20	549.32	549.03	548.27	547.01	545.42	543.40	541.14	538.53	535.51	532.66
25	536.98	536.52	535.47	533.75	531.31	528.42	524.94	520.86	516.67	512.60
30	521.45	520.95	519.44	517.09	514.02	510.16	505.46	500.17	494.38	488.55
35	503.24	502.61	500.76	497.78	493.67	488.55	482.67	475.87	468.57	461.05
40	481.66	480.87	478.64	475.12	470.12	464.03	456.98	448.84	439.94	430.92
45	457.15	456.27	453.79	449.85	444.18	437.09	429.03	419.59	409.26	398.77
50	430.29	429.28	426.60	422.27	415.94	408.21	399.15	388.53	377.15	365.23
55	401.25	400.32	397.34	392.64	386.01	377.66	368.00	356.55	344.12	331.49
60	370.36	369.26	366.24	361.50	354.78	345.97	336.23	324.31	311.30	297.41
65	338.29	337.37	334.30	329.56	322.76	313.99	303.62	291.70	278.40	264.25
70	305.13	304.21	301.31	296.78	290.19	281.54	271.51	259.68	246.46	232.31
75	273.23	272.35	269.67	265.34	259.13	251.07	241.50	229.84	216.74	202.68
80	240.66	239.82	237.52	233.57	227.78	220.39	211.45	200.54	188.07	174.60
85	209.77	209.06	206.96	203.44	198.27	191.56	183.46	173.34	161.76	149.08
90	181.48	180.90	178.92	175.90	171.33	165.33	157.94	148.96	138.13	126.50
95	156.22	155.71	154.08	151.35	147.28	141.91	135.36	127.26	117.52	106.86
100	134.22	133.76	132.29	129.86	126.25	121.47	115.63	108.41	99.68	90.07
105	115.34	115.00	113.57	111.39	108.16	103.92	98.67	92.09	84.45	76.01
110	99.22	98.80	97.58	95.65	92.67	88.85	84.19	78.36	71.48	64.09
115	85.45	85.03	83.99	82.18	79.49	76.05	71.86	66.65	60.52	53.93
120	73.53	73.16	72.19	70.47	68.12	64.97	61.15	56.45	51.04	45.25
125	62.96	62.71	61.78	60.23	58.05	55.15	51.63	47.51	42.77	37.77
130	53.39	53.14	52.25	50.87	48.98	46.25	43.19	39.58	35.55	31.23
135	44.57	44.32	43.61	42.39	40.59	38.28	35.68	32.61	28.62	24.68
140	36.52	36.31	35.68	34.58	32.99	31.14	28.92	25.60	22.46	19.56
145	29.30	29.13	28.58	27.66	26.44	24.72	22.29	20.15	18.13	16.16
150	23.25	23.21	22.79	22.20	21.28	19.43	17.80	16.24	15.03	13.77
155	18.89	18.72	18.47	17.92	16.50	15.28	14.23	13.43	12.26	11.46
160	15.03	14.90	14.65	13.64	12.76	12.05	11.58	11.04	10.45	9.78
165	11.58	11.54	10.96	10.20	9.57	9.44	9.44	9.32	8.94	8.56
170	8.73	8.56	8.02	7.89	8.10	8.10	8.14	8.06	7.89	7.81
175	7.22	6.72	6.84	7.05	7.18	7.22	7.22	7.22	7.18	7.14
180	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>
0	568.40	568.40	568.40	568.40	568.40	568.40	568.40	568.40	568.40
5	566.32	566.11	565.90	565.82	565.69	565.52	565.52	565.44	565.35
10	559.14	558.34	557.67	557.00	556.33	555.87	555.53	555.28	555.28
15	546.93	545.12	543.53	541.98	540.63	539.50	538.74	538.20	537.99
20	529.59	526.61	523.84	521.24	518.98	517.04	515.58	514.74	514.48
25	508.10	503.66	499.54	495.56	492.11	489.26	487.04	485.65	485.10
30	482.33	476.29	470.50	465.21	460.47	456.44	453.37	451.40	450.60
35	453.12	445.44	438.05	431.09	425.09	419.92	415.89	413.33	412.41
40	421.27	411.95	402.80	394.40	386.85	380.51	375.52	372.33	371.11
45	387.31	376.57	365.74	355.96	347.02	339.67	333.63	329.68	328.30
50	352.43	340.39	328.34	316.97	306.56	297.70	290.69	286.08	284.23
55	317.43	303.96	290.48	277.68	266.18	255.86	247.71	242.38	240.24
60	282.43	267.90	253.34	239.32	226.27	214.81	205.53	199.28	196.85

IES INDOOR REPORT
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CANDELA TABULATION - (Cont.)

65	248.72	233.15	217.58	202.26	188.24	175.31	165.03	157.85	154.87
70	216.36	200.62	184.17	168.14	152.86	138.80	126.63	118.32	114.92
75	187.15	171.03	154.66	137.67	121.42	105.81	92.13	82.47	78.15
80	159.49	143.71	127.13	110.18	93.34	76.56	61.78	50.62	45.58
85	134.73	119.53	103.75	86.92	70.22	53.05	37.86	25.60	19.89
90	113.11	98.84	84.03	68.08	52.38	36.18	21.99	10.12	1.60
95	94.69	81.68	68.12	53.68	39.58	25.48	13.52	4.74	0.00
100	79.20	67.49	55.44	42.73	30.56	18.80	9.53	2.94	0.00
105	66.32	55.99	45.50	34.50	24.13	14.35	6.67	0.00	0.00
110	55.53	46.59	37.44	27.95	19.27	11.21	6.00	0.00	0.00
115	46.55	38.70	30.85	22.83	15.49	9.40	5.58	0.00	0.00
120	38.74	32.11	25.35	18.59	12.97	8.48	5.50	0.00	0.00
125	32.23	26.40	20.78	15.36	11.04	7.72	5.46	0.00	0.00
130	26.02	21.15	16.62	12.89	9.61	7.22	5.37	0.00	0.00
135	20.57	17.17	14.14	11.00	8.77	6.97	0.00	0.00	0.00
140	16.79	14.48	11.79	9.95	8.18	6.67	0.00	0.00	0.00
145	14.40	12.26	10.66	9.07	7.60	6.42	0.00	0.00	0.00
150	12.13	10.91	9.61	8.35	7.18	6.34	0.00	0.00	0.00
155	10.70	9.65	8.60	7.68	7.01	6.38	0.00	0.00	0.00
160	9.19	8.48	7.89	7.39	6.97	0.00	0.00	0.00	0.00
165	8.23	7.93	7.60	7.30	6.88	0.00	0.00	0.00	0.00
170	7.68	7.51	7.30	7.05	6.80	0.00	0.00	0.00	0.00
175	7.05	6.93	6.84	6.80	6.63	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	208.67	N.A.	9.40
0-30	444.62	N.A.	20.00
0-40	732.25	N.A.	32.90
0-60	1330.36	N.A.	59.70
0-80	1786.69	N.A.	80.20
0-90	1934.64	N.A.	86.90
10-90	1880.77	N.A.	84.50
20-40	523.58	N.A.	23.50
20-50	829.33	N.A.	37.20
40-70	852.27	N.A.	38.30
60-80	456.33	N.A.	20.50
70-80	202.17	N.A.	9.10
80-90	147.95	N.A.	6.60
90-110	175.44	N.A.	7.90
90-120	223.91	N.A.	10.10
90-130	255.44	N.A.	11.50
90-150	284.53	N.A.	12.80
90-180	292.30	N.A.	13.10
110-180	116.86	N.A.	5.20
0-180	2226.94	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	53.86
10-20	154.81
20-30	235.95
30-40	287.63
40-50	305.75
50-60	292.36
60-70	254.16
70-80	202.17
80-90	147.95
90-100	103.76
100-110	71.67
110-120	48.47
120-130	31.53
130-140	18.83
140-150	10.25
150-160	5.14
160-170	2.14
170-180	0.49

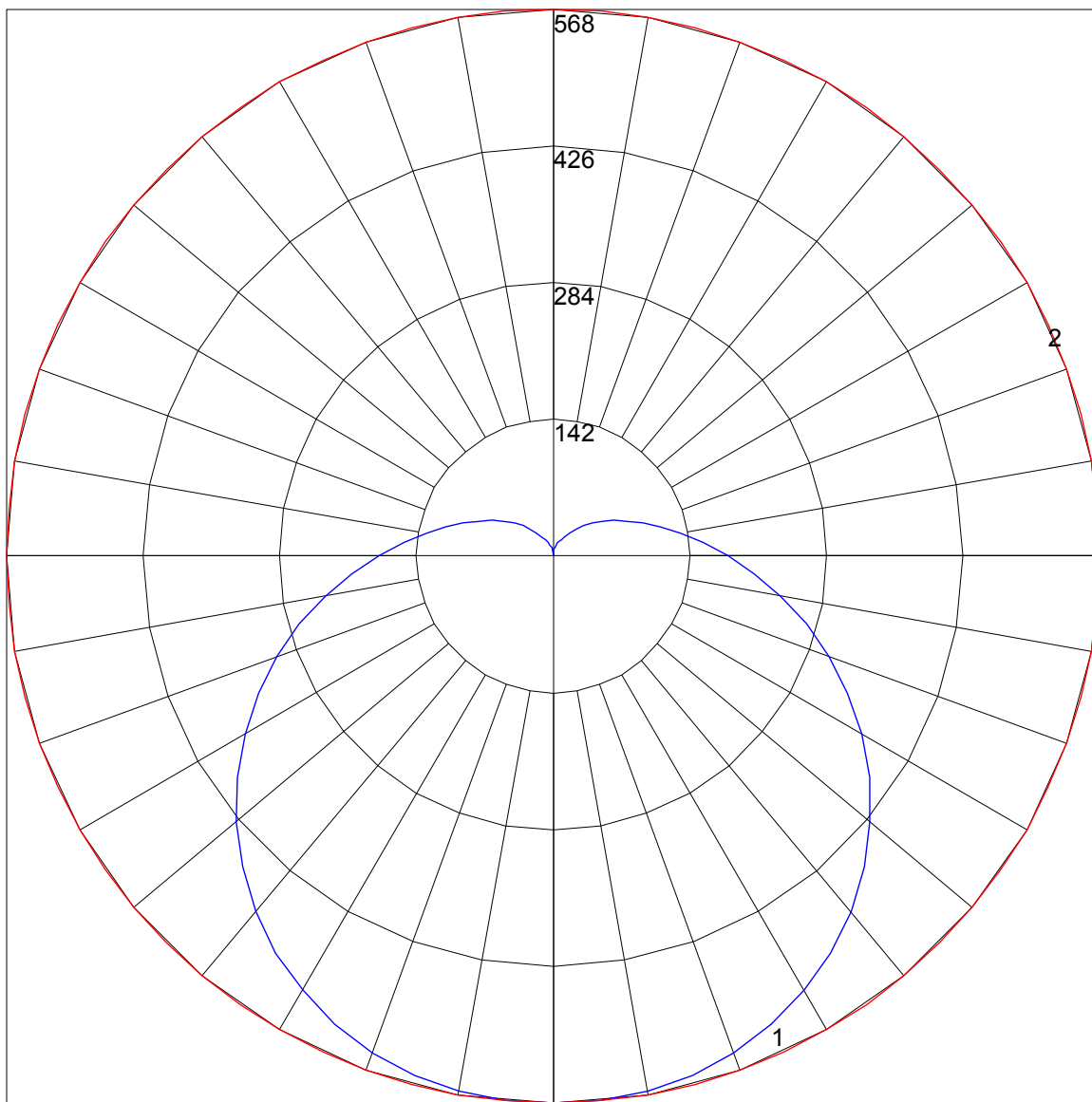
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	116	116	116	116	112	112	112	112	104	104	104	97	97	97	90	90	90	87
1	103	97	92	88	99	94	89	85	87	83	80	81	78	75	75	73	71	67
2	93	84	76	70	89	81	74	68	75	69	64	70	65	61	65	61	57	54
3	84	73	64	57	81	70	62	56	65	59	53	61	55	50	57	52	48	45
4	77	64	55	48	74	62	53	47	58	50	45	54	48	43	50	45	41	38
5	71	57	48	41	67	55	46	40	51	44	38	48	42	37	45	39	35	32
6	65	51	42	35	62	50	41	35	46	39	33	43	37	32	41	35	31	28
7	60	46	37	31	58	45	36	30	42	35	29	39	33	28	37	31	27	25
8	56	42	33	27	54	41	33	27	38	31	26	36	30	25	34	28	24	22
9	52	39	30	25	50	37	30	24	35	28	23	33	27	23	31	26	22	20
10	49	35	27	22	47	34	27	22	33	26	21	31	25	20	29	24	20	18

POLAR GRAPH



Maximum Candela = 568.4 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)