

## IES Report

# ZipTwo® | 707 | Round 3515, Diffuse | 90 CRI | SO

707-Z2-4-48-XX-XX-X-0-Z-SO-359-S4-X-WH-0

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	106	110	113	113
Total Lumens, 4' rail length (1219mm)	2779	2867	2925	2955
Lumens per foot (305mm)	695	717	731	739
Input Power (W), 4' rail length (1219mm)	26.2	26.2	26.1	26.2
Watts per foot (305mm)	6.6	6.6	6.6	6.6
CRI	94	94	94	94

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](#).



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

Report No: L121911531



**Report No:** L121911531

**Issue Date:** 1/13/2020

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

**Model Number:** 707-Z2-48-Z-SO-359-S4-AL

**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.

**Special Test Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 12/16/19

**Date of Tests:** 1/8/19 - 1/13/19

**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	1/9/21
BK PRECISION	1747	PS-DC04	1/10/21
Fluke Digital Thermometer	52K/J	MT-TP05	1/10/21
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

### General Information

<b>Manufacturer:</b>	Vode Lighting
<b>Model Number:</b>	707-Z2-48-Z-SO-359-S4-AL
<b>Driver Model Number:</b>	MEAN WELL HLG-40H-36A

### Test Summary

<b>Total Lumens:</b>	2925.33
<b>Efficacy:</b>	112.31
<b>Color Redering Index:</b>	94.0
<b>Correlated Color Temperature:</b>	3347
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.2183
<b>Input Power (W):</b>	26.05
<b>Input Power Factor:</b>	0.9944
<b>Current ATHD (%):</b>	7.9%

### Test Condition

<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:30
<b>Total Operating Time (Hours):</b>	2:05

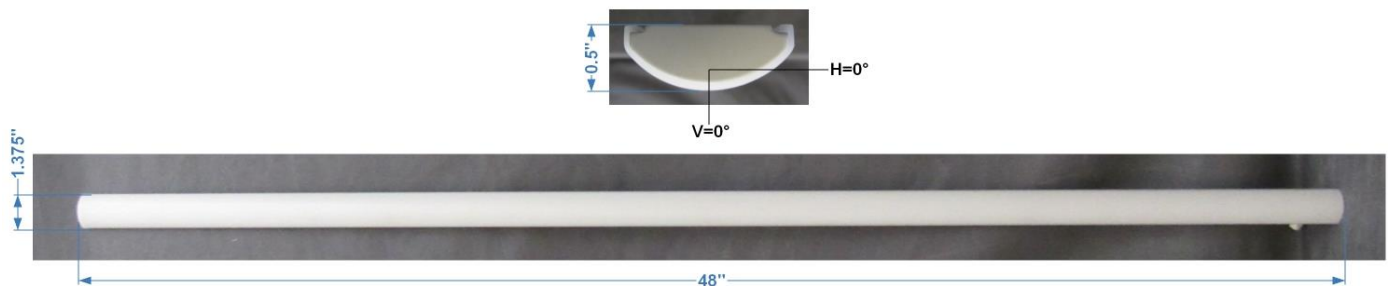
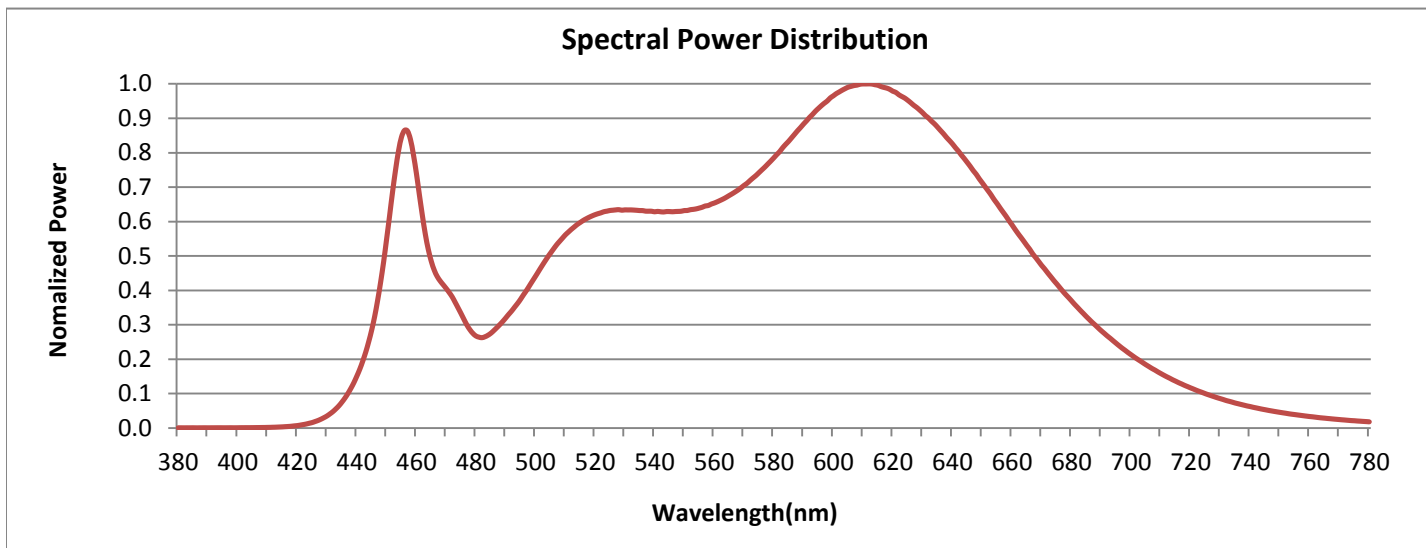


FIG. 1 LUMINAIRE

## Colorimetry Test Results

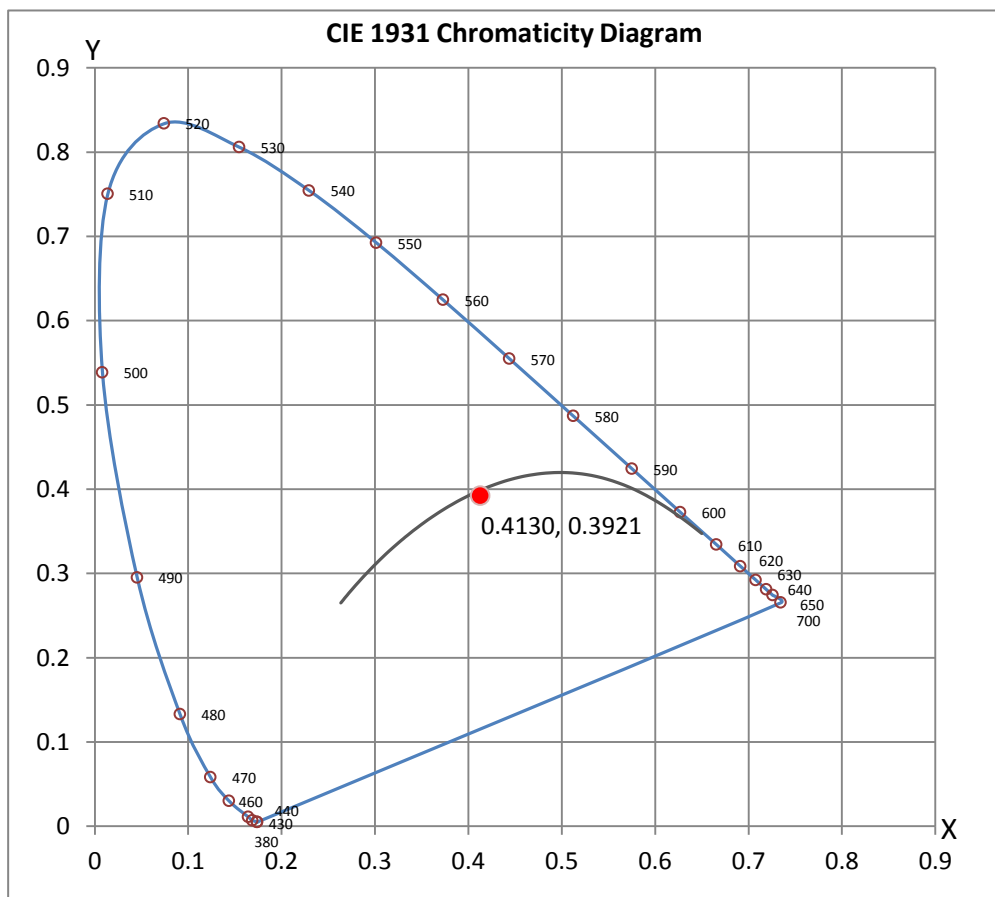


### CRI & CCT

x	0.4130
y	0.3921
u'	0.2401
v'	0.5130
CRI	94.00
CCT	3347
Duv	-0.00101

### R Values

R1	96.35
R2	99.36
R3	97.42
R4	96.15
R5	96.33
R6	95.34
R7	90.03
R8	80.93
R9	58.20
R10	98.49
R11	98.35
R12	77.48
R13	98.19
R14	99.46
R15	90.61





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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 : Keyur Patel

Test Report Reviewed by:

Steve Kang  
Quality Assurance

*\*Attached are photometric data reports. Total number of pages: 10*



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

## Photometric Test Report

### IES INDOOR REPORT

PHOTOMETRIC FILENAME : L121911531.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L121911531  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 1/13/2020  
[MANUFAC] Vode Lighting  
[LUMCAT] 707-Z2-48-Z-SO-359-S4-AL  
[LUMINAIRE] ZipTwo LED, 48", 3500K, 90 CRI, zipper board, round 3515, diffuse (WH) lens,  
[MORE] standard output, clear anodized finish  
[BALLASTCAT] MEAN WELL HLG-40H-36A  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 120.0VAC, 26.05W  
[TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2925
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	112
Total Luminaire Watts	26.05
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.30
Spacing Criterion (90-270)	1.28
Spacing Criterion (Diagonal)	1.40
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.11 ft
Luminous Width (90-270)	4.00 ft
Luminous Height	0.00 ft

### LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	21591	21046	20577
55	21881	20808	19941
65	23046	20823	18848
75	27254	22480	16742
85	54371	38620	13915

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L121911531.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>
<b>0</b>	879.57	879.57	879.57	879.57	879.57	879.57	879.57	879.57	879.57	879.57
<b>5</b>	877.14	877.18	877.09	877.09	877.05	877.05	877.01	876.97	876.97	877.14
<b>10</b>	867.66	867.66	867.71	867.58	867.58	867.45	867.29	867.16	867.03	866.87
<b>15</b>	851.82	851.82	851.69	851.57	851.40	851.11	850.77	850.61	850.27	849.98
<b>20</b>	828.85	828.94	828.73	828.60	828.14	827.72	827.22	826.67	826.09	825.46
<b>25</b>	799.60	799.51	799.26	798.93	798.17	797.63	796.87	795.99	795.11	794.23
<b>30</b>	763.89	763.81	763.47	762.97	762.17	761.25	760.16	758.94	757.64	756.47
<b>35</b>	722.40	722.40	721.81	721.14	720.09	718.88	717.41	715.94	714.31	712.67
<b>40</b>	675.96	675.71	675.12	674.24	672.90	671.39	669.55	667.66	665.52	663.43
<b>45</b>	624.66	624.41	623.65	622.44	620.76	618.71	616.48	614.01	611.37	608.90
<b>50</b>	570.09	569.75	568.79	567.24	565.14	562.50	559.57	556.51	553.07	550.05
<b>55</b>	513.51	513.17	511.91	510.07	507.47	504.20	500.51	496.66	492.51	488.32
<b>60</b>	456.00	455.58	454.03	451.60	448.50	444.35	439.87	434.92	429.68	424.40
<b>65</b>	398.50	397.83	396.19	393.30	389.49	384.71	379.18	373.14	366.61	360.07
<b>70</b>	342.34	341.67	339.57	336.60	332.32	326.79	320.42	313.29	305.50	297.41
<b>75</b>	288.61	287.94	285.71	282.28	277.42	271.42	264.38	256.33	247.49	238.06
<b>80</b>	238.23	237.56	235.17	231.52	226.41	219.91	212.37	203.82	194.10	183.78
<b>85</b>	193.89	193.13	190.66	187.01	181.73	175.15	167.31	158.43	148.41	137.72
<b>90</b>	152.90	152.23	149.88	146.23	141.12	134.54	127.04	118.32	108.59	98.20
<b>95</b>	117.52	116.85	114.76	111.32	106.62	100.46	93.46	85.42	76.62	67.19
<b>100</b>	87.93	87.35	85.50	82.36	78.12	72.84	66.72	59.73	52.14	44.26
<b>105</b>	63.96	63.46	61.78	59.18	55.62	51.26	46.15	40.45	34.37	28.25
<b>110</b>	45.18	44.76	43.42	41.37	38.48	35.00	31.14	26.66	22.17	17.69
<b>115</b>	30.93	30.60	29.59	28.00	25.86	23.30	20.45	17.31	14.21	11.15
<b>120</b>	20.62	20.41	19.66	18.61	17.10	15.26	13.33	11.27	9.30	7.42
<b>125</b>	13.66	13.54	13.04	12.36	11.40	10.23	9.01	7.75	6.62	5.62
<b>130</b>	9.39	9.30	8.97	8.51	8.01	7.25	6.66	5.95	5.32	4.82
<b>135</b>	6.96	6.87	6.79	6.50	6.25	5.91	5.57	5.20	4.90	4.57
<b>140</b>	5.95	5.87	5.78	5.70	5.53	5.37	5.07	4.86	4.65	4.40
<b>145</b>	5.45	5.45	5.45	5.37	5.24	5.07	4.82	4.65	4.49	4.36
<b>150</b>	5.20	5.16	5.11	5.11	4.90	4.82	4.65	4.53	4.49	4.40
<b>155</b>	4.95	4.95	4.95	4.82	4.69	4.65	4.57	4.57	4.49	0.00
<b>160</b>	4.86	4.78	4.74	4.65	4.61	4.57	4.57	4.53	4.40	0.00
<b>165</b>	4.61	4.65	4.57	4.53	4.53	4.53	4.53	4.49	0.00	0.00
<b>170</b>	4.53	4.53	4.53	4.53	4.53	4.53	4.49	0.00	0.00	0.00
<b>175</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>180</b>	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>
<b>0</b>	879.57	879.57	879.57	879.57	879.57	879.57	879.57	879.57	879.57
<b>5</b>	877.01	876.93	876.84	876.84	876.84	876.84	876.80	876.84	876.97
<b>10</b>	866.74	866.57	866.53	866.45	866.28	866.24	866.28	865.99	866.15
<b>15</b>	849.60	849.22	848.93	848.68	848.43	848.17	848.09	848.05	848.05
<b>20</b>	824.87	824.28	823.74	823.32	822.82	822.31	822.15	822.15	821.90
<b>25</b>	793.31	792.43	791.51	790.75	790.08	789.67	789.16	789.12	789.04
<b>30</b>	755.21	753.91	752.82	751.82	750.94	750.31	749.72	749.39	749.30
<b>35</b>	710.87	709.45	707.94	706.55	705.51	704.71	704.04	703.62	703.54
<b>40</b>	661.29	659.40	657.60	655.92	654.62	653.58	652.74	652.15	652.15
<b>45</b>	606.30	603.83	601.73	599.85	598.21	597.00	596.03	595.44	595.32
<b>50</b>	546.83	543.93	541.29	538.99	537.10	535.47	534.46	533.92	533.71
<b>55</b>	484.38	480.65	477.42	474.57	472.27	470.42	469.12	468.28	467.99
<b>60</b>	419.25	414.55	410.24	406.63	403.70	401.35	399.59	398.71	398.42

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L121911531.IES**

**CANDELA TABULATION - (Cont.)**

<b>65</b>	353.40	347.20	341.71	336.89	332.95	329.89	327.67	326.29	325.91
<b>70</b>	289.32	281.19	273.69	266.77	261.28	257.01	253.90	252.02	251.39
<b>75</b>	228.30	218.49	208.85	199.59	191.79	185.46	180.77	178.21	177.29
<b>80</b>	172.89	161.91	150.55	139.06	128.80	119.70	113.00	109.14	107.80
<b>85</b>	126.07	114.09	101.80	89.11	77.29	66.26	56.71	51.18	49.62
<b>90</b>	86.88	75.27	63.41	51.09	39.78	28.88	18.99	10.86	6.04
<b>95</b>	57.08	46.90	36.80	26.74	17.98	10.39	4.61	1.59	1.34
<b>100</b>	36.00	27.96	20.37	13.45	8.01	4.07	1.93	1.51	0.00
<b>105</b>	22.05	16.30	11.27	7.00	4.15	2.39	1.89	0.00	0.00
<b>110</b>	13.45	9.68	6.58	4.23	2.93	2.35	2.05	0.00	0.00
<b>115</b>	8.42	6.20	4.53	3.40	2.85	0.00	0.00	0.00	0.00
<b>120</b>	5.91	4.65	3.81	3.31	0.00	0.00	0.00	0.00	0.00
<b>125</b>	4.74	4.15	3.73	0.00	0.00	0.00	0.00	0.00	0.00
<b>130</b>	4.40	4.02	3.69	0.00	0.00	0.00	0.00	0.00	0.00
<b>135</b>	4.28	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>140</b>	4.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>145</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>150</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>155</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>160</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>165</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>170</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>175</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>180</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L121911531.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	323.30	N.A.	11.10
0-30	689.43	N.A.	23.60
0-40	1135.45	N.A.	38.80
0-60	2043.47	N.A.	69.90
0-80	2651.21	N.A.	90.60
0-90	2795.55	N.A.	95.60
10-90	2712.17	N.A.	92.70
20-40	812.16	N.A.	27.80
20-50	1282.34	N.A.	43.80
40-70	1265.91	N.A.	43.30
60-80	607.74	N.A.	20.80
70-80	249.85	N.A.	8.50
80-90	144.34	N.A.	4.90
90-110	103.83	N.A.	3.50
90-120	117.78	N.A.	4.00
90-130	123.54	N.A.	4.20
90-150	128.11	N.A.	4.40
90-180	129.78	N.A.	4.40
110-180	25.95	N.A.	0.90
0-180	2925.33	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	83.38
10-20	239.92
20-30	366.13
30-40	446.03
40-50	470.18
50-60	437.83
60-70	357.89
70-80	249.85
80-90	144.34
90-100	71.05
100-110	32.78
110-120	13.95
120-130	5.76
130-140	2.86
140-150	1.71
150-160	1.07
160-170	0.55
170-180	0.06

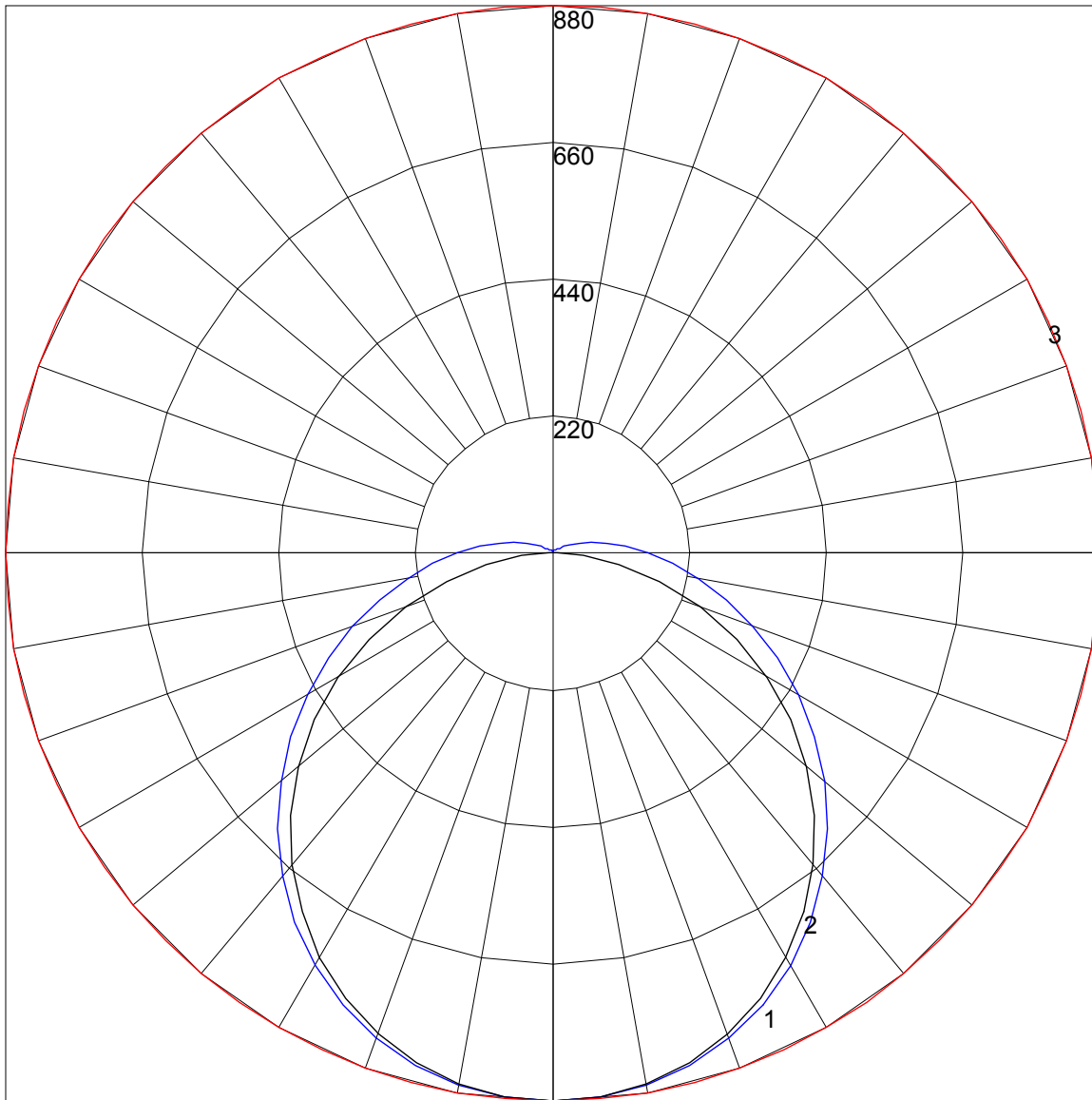
**IES INDOOR REPORT**  
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	118	118	118	118	115	115	115	115	109	109	109	103	103	103	98	98	98	96
1	106	101	96	91	103	98	93	89	93	89	86	88	85	82	84	81	79	77
2	96	87	79	73	93	85	78	72	80	75	70	76	72	67	73	69	65	63
3	87	76	67	60	84	74	66	59	70	63	58	67	61	56	64	59	55	52
4	80	67	58	51	77	65	57	50	62	55	49	59	53	48	57	51	47	44
5	73	60	50	43	71	58	49	43	56	48	42	53	46	41	51	45	40	38
6	67	54	44	38	65	52	44	37	50	42	37	48	41	36	46	40	35	33
7	62	48	39	33	60	47	39	33	45	38	32	44	37	32	42	36	31	29
8	58	44	35	29	56	43	35	29	42	34	29	40	33	28	38	32	28	26
9	54	40	32	26	53	40	32	26	38	31	26	37	30	26	35	30	25	23
10	51	37	29	24	49	37	29	24	35	28	23	34	28	23	33	27	23	21

POLAR GRAPH



Maximum Candela = 879.57 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 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 (0) (Through Max. Cd.)