

IES Report

ZipTwo® | 707 | Square, Diffuse | 90 CRI | SO

707-Z2-4-48-XX-XX-X-0-Z-SO-359-S6-X-WH-0

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	125	129	132	133
Total Lumens, 4' rail length (1219mm)	3251	3354	3422	3457
Lumens per foot (305mm)	813	838	856	864
Input Power (W), 4' rail length (1219mm)	26.1	26.1	26.1	26.1
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: L121911533



Report No: L121911533

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-S6-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

Manufacturer:	Vode Lighting
Model Number:	707-Z2-48-Z-SO-359-S6-AL
Driver Model Number:	MEAN WELL HLG-40H-36A

Test Summary

Total Lumens:	3422.39
Efficacy:	131.11
Color Redering Index:	94.2
Correlated Color Temperature:	3404
Input Voltage (VAC/60Hz):	119.98
Input Current (Amp):	0.2188
Input Power (W):	26.10
Input Power Factor:	0.9944
Current ATHD (%):	7.9%

Test Condition

Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	2:10

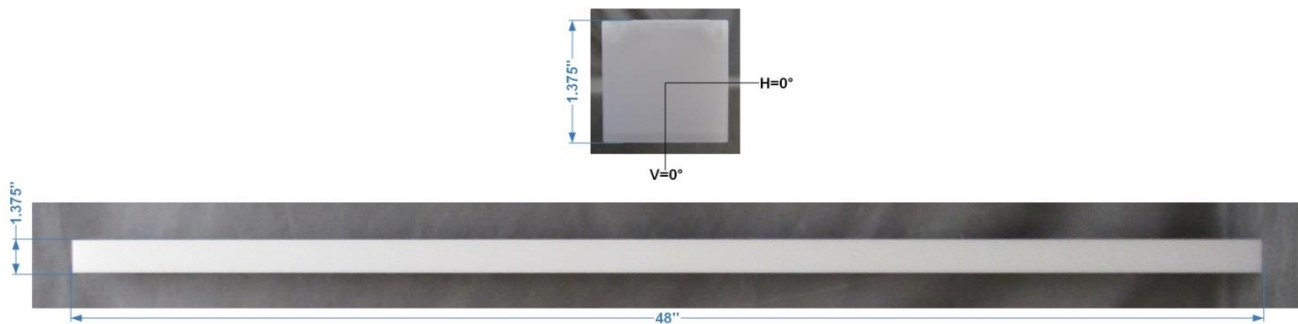
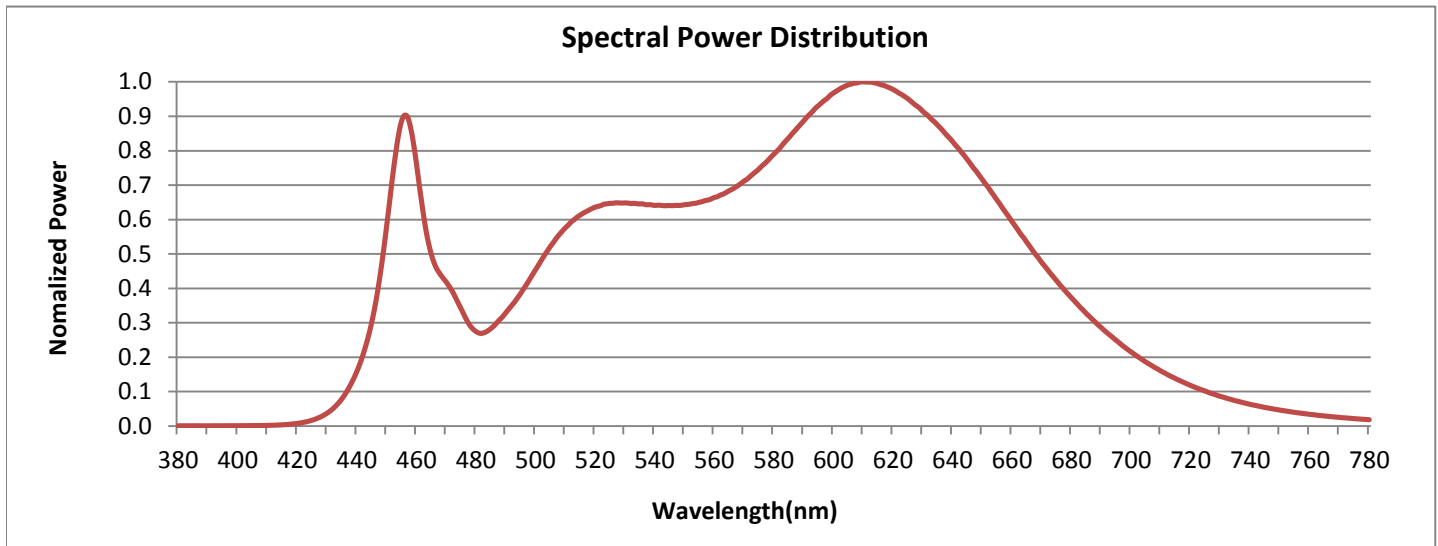


FIG. 1 LUMINAIRE

Colorimetry Test Results

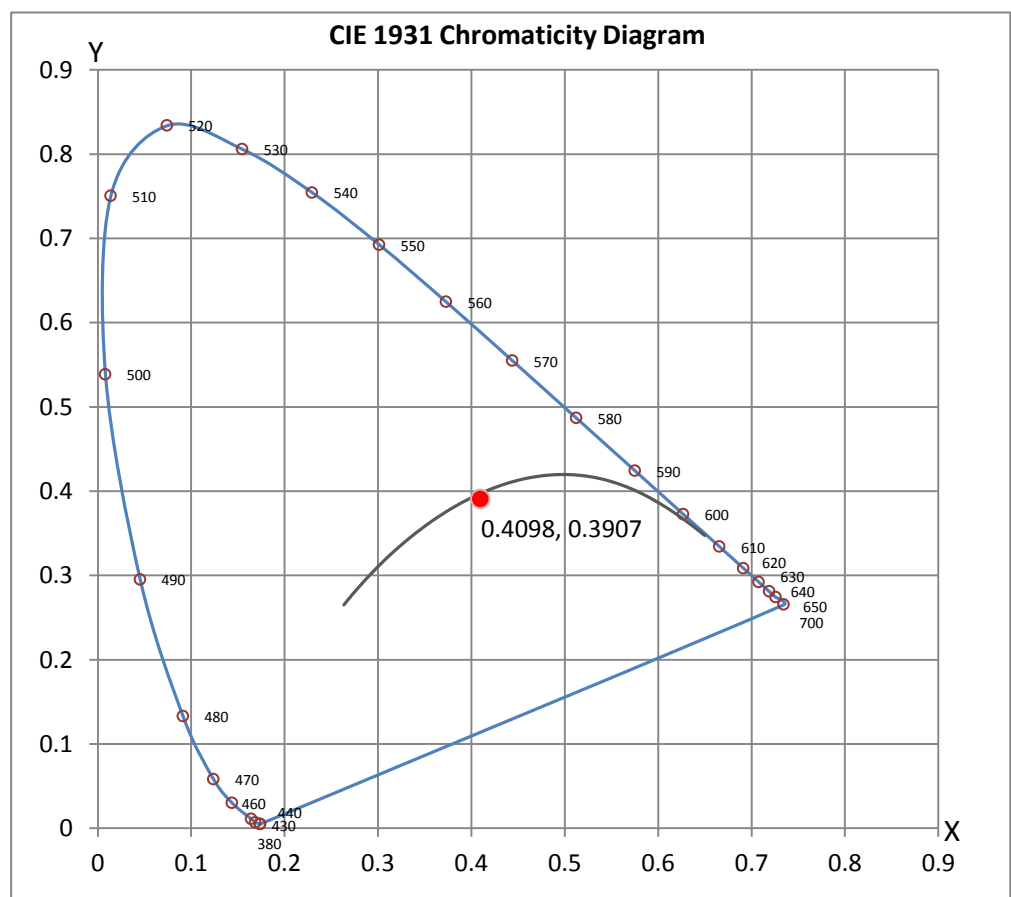


CRI & CCT

x	0.4098
y	0.3907
u'	0.2386
v'	0.5119
CRI	94.20
CCT	3404
Duv	-0.00097

R Values

R1	96.58
R2	99.37
R3	97.68
R4	96.40
R5	96.44
R6	95.42
R7	90.42
R8	81.69
R9	59.64
R10	98.49
R11	98.22
R12	77.00
R13	98.39
R14	99.54
R15	91.04





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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 : L121911533.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L121911533
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 1/13/2020
[MANUFAC] Vode Lighting
[LUMCAT] 707-Z2-48-Z-SO-359-S6-AL
[LUMINAIRE] ZipTwo LED, 48", 3500K, 90 CRI, zipper board, diffuse square 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, 26.10W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3422
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	131
Total Luminaire Watts	26.1
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.70
Spacing Criterion (90-270)	1.22
Spacing Criterion (Diagonal)	1.64
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	0.11 ft
Luminous Width (90-270)	4.00 ft
Luminous Height	0.09 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	11853	11097	11654
55	11807	10745	10977
65	11362	10301	10290
75	10494	9748	9720
85	9526	9169	9873

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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	561.10	561.10	561.10	561.10	561.10	561.10	561.10	561.10	561.10	561.10
5	574.95	574.91	574.91	574.66	573.90	573.44	572.69	571.85	570.72	569.50
10	589.62	589.54	589.03	588.19	587.06	585.47	583.63	581.45	579.31	576.84
15	600.10	599.85	599.01	597.71	595.70	593.18	590.25	586.77	582.62	578.34
20	608.23	607.68	606.30	604.16	601.31	597.37	592.68	587.52	581.66	575.54
25	614.26	613.51	611.66	608.65	604.16	598.80	592.55	585.01	576.92	568.45
30	618.96	618.50	615.65	611.54	605.50	598.34	589.91	580.15	569.38	558.31
35	622.81	621.85	618.75	613.26	605.46	596.16	585.39	572.85	559.15	545.11
40	624.99	623.69	619.59	612.84	603.58	591.88	578.55	563.30	546.74	529.77
45	623.48	621.85	617.03	609.15	598.21	584.59	568.83	551.02	531.45	511.91
50	616.28	614.43	608.98	600.35	587.98	572.60	555.08	534.71	513.05	490.83
55	600.85	598.88	593.35	584.09	571.05	554.62	535.85	514.01	490.54	466.23
60	575.96	574.03	568.45	559.19	546.20	529.48	510.28	487.81	463.09	437.73
65	541.17	539.53	534.25	525.28	513.13	497.04	478.05	455.71	431.23	405.21
70	498.42	496.99	492.17	484.21	472.68	457.47	439.45	418.53	394.98	369.46
75	450.47	449.09	444.98	437.77	427.55	413.92	397.33	377.84	355.79	332.24
80	400.34	399.21	395.69	389.41	380.35	368.11	353.32	334.67	315.93	293.68
85	351.64	350.55	347.37	341.88	334.37	324.15	310.90	294.73	275.45	254.87
90	308.64	307.63	304.58	299.59	292.13	282.19	270.08	255.04	237.98	218.07
95	289.36	288.48	285.67	281.06	274.31	264.88	253.74	239.99	223.94	206.12
100	276.45	275.74	273.14	268.70	262.24	253.53	242.96	229.93	214.59	197.70
105	265.05	264.34	261.78	257.59	251.31	242.96	232.82	220.33	205.75	189.69
110	253.90	253.15	250.84	246.57	240.32	232.36	222.60	210.73	196.53	181.27
115	242.34	241.54	239.23	235.17	229.05	221.38	211.91	200.34	187.10	172.38
120	229.93	229.22	226.83	222.80	217.02	209.39	200.26	189.48	176.74	162.87
125	216.10	215.47	213.12	209.23	203.73	196.44	187.72	177.54	165.39	152.39
130	200.93	200.21	197.95	194.26	189.02	182.23	174.10	164.25	153.27	140.11
135	184.16	183.49	181.35	178.00	173.06	166.77	159.27	149.84	137.09	123.39
140	166.14	165.47	163.54	160.44	155.91	150.17	141.87	129.93	118.65	107.13
145	146.86	146.32	144.51	141.66	137.81	130.31	120.16	110.48	101.22	91.83
150	126.83	126.32	124.77	122.38	116.43	107.59	99.71	92.12	85.33	79.34
155	106.12	105.66	104.40	100.88	92.75	86.38	80.56	76.45	72.30	67.19
160	85.17	84.87	83.53	76.28	71.04	66.77	64.59	61.78	57.46	50.84
165	62.62	62.32	56.75	52.22	48.95	47.91	46.36	43.59	39.31	36.13
170	39.31	36.09	31.77	29.88	30.60	30.64	29.84	28.63	27.20	25.44
175	15.93	15.17	15.21	16.43	17.02	16.93	16.60	15.93	15.17	14.33
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	561.10	561.10	561.10	561.10	561.10	561.10	561.10	561.10	561.10
5	568.33	566.86	565.60	563.93	562.46	560.91	559.53	558.18	557.68
10	573.86	570.97	567.87	564.43	560.95	557.60	554.04	550.60	548.80
15	573.73	568.91	564.09	558.86	553.57	548.13	542.55	537.10	533.21
20	568.75	561.87	554.50	547.20	539.87	532.41	525.12	517.70	512.25
25	559.40	549.76	540.25	530.44	520.97	511.70	502.40	493.26	485.59
30	546.49	534.09	522.01	509.94	498.17	486.39	475.07	464.13	454.49
35	530.36	515.35	500.43	486.01	471.47	457.51	444.10	431.44	420.13
40	512.00	494.14	476.08	458.90	442.05	425.99	410.57	396.15	383.24
45	490.92	470.25	449.72	429.81	410.49	392.21	375.07	359.06	344.77
50	466.98	444.06	421.01	398.71	377.88	357.26	338.61	321.00	305.54
55	440.29	415.31	390.29	366.02	343.34	321.55	301.26	282.45	265.89
60	410.36	384.08	357.68	332.36	308.31	285.00	263.08	243.59	225.82

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CANDELA TABULATION - (Cont.)

65	377.59	350.59	323.73	297.20	271.88	248.37	225.40	205.03	186.51
70	342.55	315.51	288.23	261.03	235.71	211.40	188.14	167.61	148.37
75	305.71	279.13	252.27	225.32	200.00	175.49	152.35	131.23	111.57
80	268.91	243.47	217.31	191.41	166.48	142.08	118.65	97.19	79.97
85	232.40	207.80	182.82	157.04	132.61	108.18	85.58	64.08	44.26
90	196.61	173.64	149.71	124.52	100.59	76.83	53.31	31.90	12.07
95	185.84	164.30	141.66	117.77	94.72	71.84	49.41	28.17	8.72
100	178.55	158.51	136.55	114.29	91.83	69.99	48.07	27.70	8.05
105	171.50	152.10	131.39	110.40	88.39	66.89	46.06	26.07	7.13
110	164.42	145.31	125.82	105.16	84.79	63.50	43.63	23.14	6.20
115	155.91	138.31	119.62	99.50	80.09	60.02	40.78	20.20	5.20
120	147.15	130.47	112.70	93.76	75.32	56.37	37.60	16.89	4.36
125	137.56	121.84	104.74	86.38	68.90	51.22	31.98	14.21	3.77
130	124.90	109.22	93.30	77.03	61.61	45.81	27.20	12.15	3.69
135	109.85	96.23	82.48	68.23	54.65	39.31	23.68	10.60	0.00
140	95.64	83.95	72.30	59.93	47.24	33.07	20.66	9.47	0.00
145	83.03	74.10	62.41	51.18	38.98	28.08	17.98	8.55	0.00
150	72.42	62.78	52.68	41.91	32.52	24.14	15.63	8.01	0.00
155	59.39	50.59	42.46	34.20	27.29	20.87	13.37	7.75	0.00
160	44.80	38.85	33.19	27.75	22.84	17.23	11.69	7.17	0.00
165	32.65	29.46	25.99	22.17	17.94	13.83	10.02	6.50	0.00
170	23.39	20.96	18.19	15.51	13.04	10.48	7.92	5.57	0.00
175	13.24	12.15	10.94	9.68	8.38	7.00	5.74	4.99	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	216.78	N.A.	6.30
0-30	476.41	N.A.	13.90
0-40	813.45	N.A.	23.80
0-60	1609.58	N.A.	47.00
0-80	2327.85	N.A.	68.00
0-90	2583.2	N.A.	75.50
10-90	2528.84	N.A.	73.90
20-40	596.67	N.A.	17.40
20-50	985.33	N.A.	28.80
40-70	1183.26	N.A.	34.60
60-80	718.27	N.A.	21.00
70-80	331.14	N.A.	9.70
80-90	255.35	N.A.	7.50
90-110	382.08	N.A.	11.20
90-120	535.12	N.A.	15.60
90-130	656.95	N.A.	19.20
90-150	799.14	N.A.	23.40
90-180	839.18	N.A.	24.50
110-180	457.11	N.A.	13.40
0-180	3422.39	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	54.36
10-20	162.42
20-30	259.63
30-40	337.04
40-50	388.66
50-60	407.47
60-70	387.13
70-80	331.14
80-90	255.35
90-100	202.52
100-110	179.56
110-120	153.04
120-130	121.84
130-140	87.40
140-150	54.79
150-160	28.45
160-170	10.20
170-180	1.40

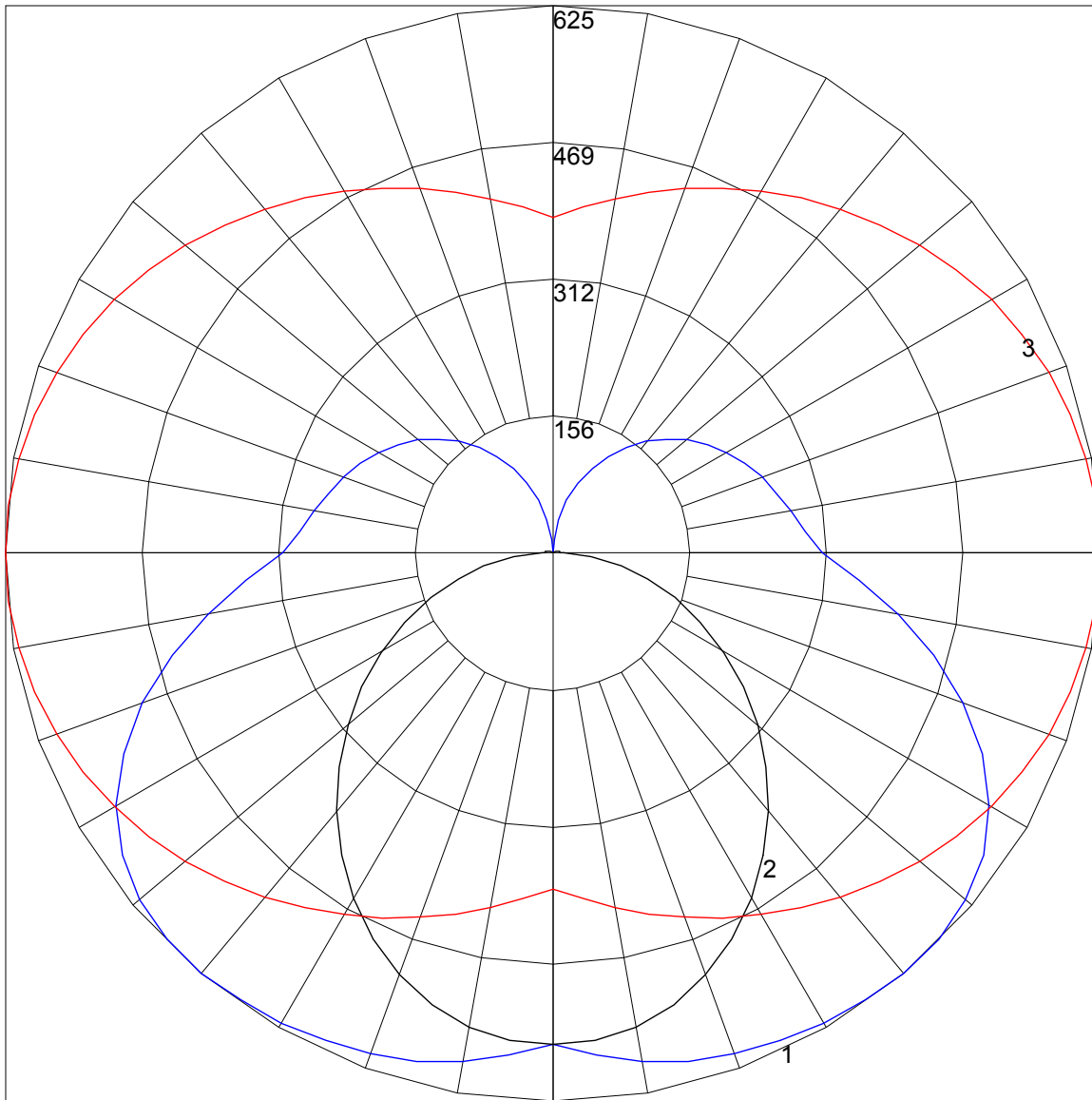
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	113	113	113	113	108	108	108	108	97	97	97	88	88	88	80	80	80	75
1	100	94	88	84	95	89	84	80	80	76	73	72	69	66	65	62	60	56
2	89	80	72	65	84	76	69	63	68	62	57	61	57	52	55	51	48	44
3	81	69	60	53	76	66	57	51	59	52	47	53	47	43	47	43	39	36
4	73	60	51	44	69	57	49	42	52	44	39	46	40	36	41	37	33	29
5	67	53	44	37	63	51	42	35	46	38	33	41	35	30	37	32	28	25
6	62	48	38	32	58	45	37	30	41	34	28	37	31	26	33	28	24	21
7	57	43	34	27	54	41	32	26	37	30	25	33	27	23	30	25	21	18
8	53	39	30	24	50	37	29	23	34	27	22	31	24	20	28	22	19	16
9	49	35	27	21	46	34	26	21	31	24	19	28	22	18	25	20	17	14
10	46	32	24	19	43	31	24	18	28	22	17	26	20	16	23	18	15	13

POLAR GRAPH



Maximum Candela = 624.99 Located At Horizontal Angle = 0, Vertical Angle = 40

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 (40) (Through Max. Cd.)