

**IES Report**

**DoubleRace™ | 107 | 120° Batwing, Flat, up | Diffuse, Round, down | 90 CRI | SO**

**107-DR-XX-4-48-XX-XX-XX-XX-X-X-Z-SO-359-G12-X-XX-X**

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	99	102	104	106
Total Lumens, 4' rail length (1219mm)	4747	4896	4996	5096
Lumens per foot (305mm)	1187	1224	1249	1274
Lumens per foot UP (305mm)	560	577	589	601
Lumens per foot DOWN (305mm)	627	647	660	673
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](#).



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

Report No: L011800112



**Report No:** L011800112

**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-G12

**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.

**Test Summary**

<b>Manufacturer:</b>	Vode Lighting
<b>Model Number:</b>	107-DR-48-Z-SO-359-G12
<b>Driver Model Number:</b>	MEAN WELL HLG-40H-36A (2 DRIVERS)
<b>Total Lumens:</b>	4996.34
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.4
<b>Input Power (W):</b>	48.16
<b>Input Power Factor:</b>	0.99
<b>Current ATHD @ 120V(%):</b>	10%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	104
<b>Color Rendering Index (CRI):</b>	96
<b>Correlated Color Temperature (K):</b>	3360
<b>Chromaticity Coordinate x:</b>	0.4126
<b>Chromaticity Coordinate y:</b>	0.3925
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:35
<b>Total Operating Time (Hours):</b>	2:10

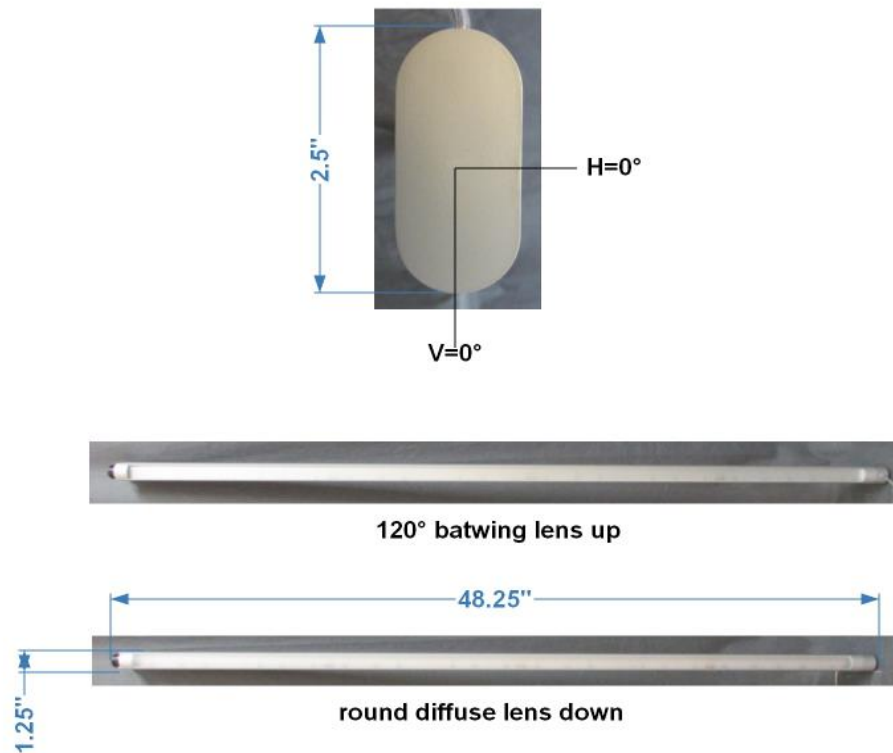
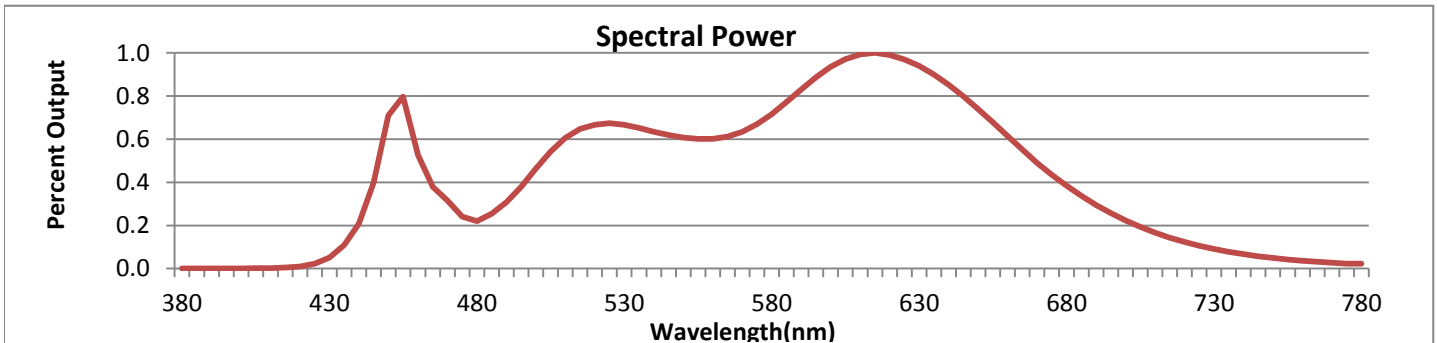


FIG. 1 LUMINAIRE

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



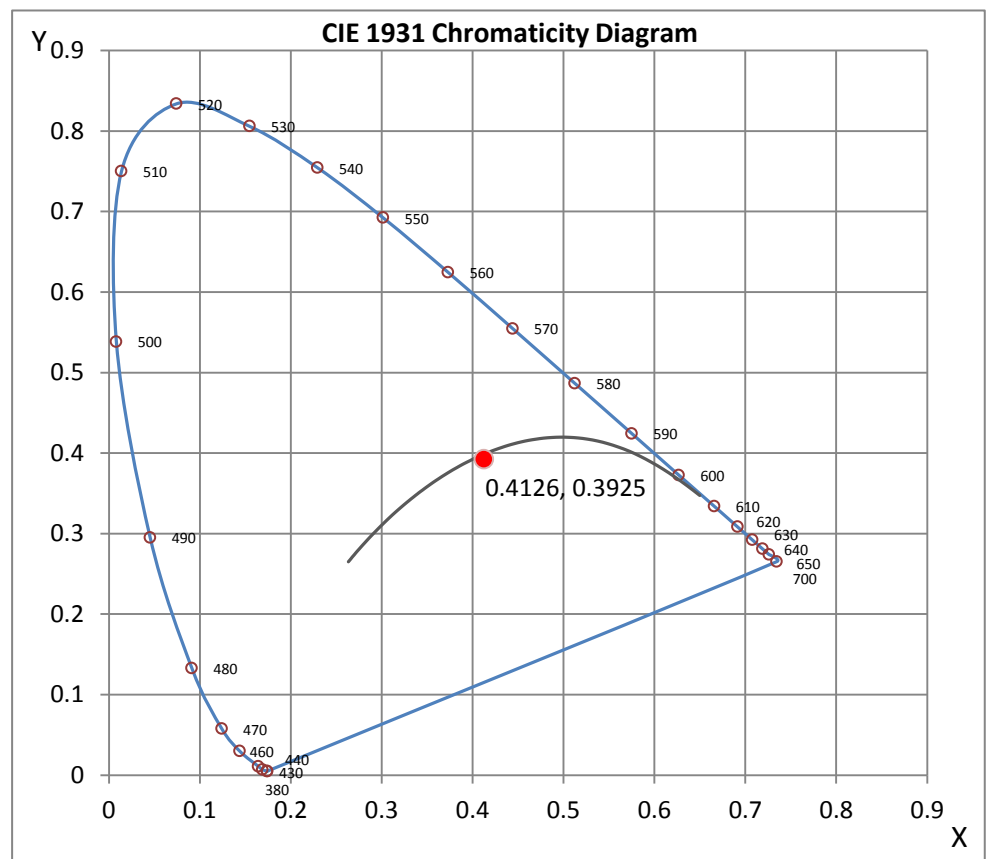
Wavelength	W/m <sup>2</sup> nm	440	0.2088	510	0.6054	580	0.7164	650	0.7400	720	0.1233
380	0.0008	450	0.7095	520	0.6669	590	0.8297	660	0.6151	730	0.0906
390	0.0009	460	0.5256	530	0.6661	600	0.9359	670	0.4908	740	0.0669
400	0.0012	470	0.3152	540	0.6349	610	0.9927	680	0.3841	750	0.0492
410	0.0023	480	0.2200	550	0.6075	620	0.9908	690	0.2945	760	0.0365
420	0.0099	490	0.3070	560	0.6012	630	0.9400	700	0.2225	770	0.0269
430	0.0512	500	0.4629	570	0.6347	640	0.8524	710	0.1665	780	0.0231

**CRI & CCT**

x	0.4126
y	0.3925
u'	0.2397
v'	0.5131
CRI	95.80
CCT	3360
Duv	-0.00076

**R Values**

R1	97.39
R2	98.85
R3	98.94
R4	95.38
R5	97.51
R6	94.38
R7	94.58
R8	89.16
R9	74.02
R10	98.19
R11	88.32
R12	82.73
R13	97.04
R14	98.41



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

## 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*



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# Photometric Test Report

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L011800112.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L011800112  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 1/9/2018  
[MANUFAC] Vode Lighting  
[LUMCAT] 107-DR-48-Z-SO-359-G12  
[LUMINAIRE] DoubleRace LED, 48", 3500K, 90 CRI, zipper board,  
[MORE] 120° batwing lens up/round diffuse 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, 48.16W  
[TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4996
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	104
Total Luminaire Watts	48.16
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	11208	13689	35705
55	7506	9611	28423
65	4690	6165	23387
75	2761	3697	17452
85	1421	1843	10799

**IES INDOOR REPORT**  
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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>
<b>0</b>	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024
<b>5</b>	1020	1020	1019	1019	1019	1018	1018	1018	1017	1017
<b>10</b>	1008	1007	1006	1006	1005	1005	1005	1004	1002	1002
<b>15</b>	986	984	984	983	983	981	979	978	978	977
<b>20</b>	954	952	952	952	949	947	946	943	942	940
<b>25</b>	912	911	911	908	907	905	902	901	896	892
<b>30</b>	860	858	857	855	853	851	849	845	842	836
<b>35</b>	795	794	793	792	789	787	785	780	776	770
<b>40</b>	722	721	720	718	717	716	711	708	703	697
<b>45</b>	639	639	639	638	637	636	632	630	623	618
<b>50</b>	549	548	549	549	550	550	549	546	541	535
<b>55</b>	457	457	459	460	461	460	461	459	457	453
<b>60</b>	371	371	372	370	367	368	370	372	370	367
<b>65</b>	295	296	290	286	287	289	292	294	295	294
<b>70</b>	229	226	218	220	224	226	228	229	229	229
<b>75</b>	174	164	166	168	169	170	172	173	174	173
<b>80</b>	125	119	121	123	123	124	124	125	125	125
<b>85</b>	87	89	90	90	90	88	87	85	83	82
<b>90</b>	64	66	66	67	64	62	59	57	56	54
<b>95</b>	62	79	75	77	77	78	77	79	78	76
<b>100</b>	155	150	153	153	153	151	148	145	139	132
<b>105</b>	248	230	233	233	232	229	224	219	212	201
<b>110</b>	338	331	317	314	316	315	310	300	297	281
<b>115</b>	435	434	422	412	408	405	401	393	383	365
<b>120</b>	534	533	531	522	513	505	498	491	472	446
<b>125</b>	629	627	626	622	617	605	597	576	553	522
<b>130</b>	710	709	705	699	693	682	667	645	614	575
<b>135</b>	773	772	766	759	749	737	714	692	655	616
<b>140</b>	811	808	802	793	781	766	742	713	679	636
<b>145</b>	826	823	817	807	792	775	753	720	685	644
<b>150</b>	818	815	809	796	781	762	739	709	675	637
<b>155</b>	781	778	772	760	745	727	704	681	651	620
<b>160</b>	718	716	710	702	689	674	657	637	615	595
<b>165</b>	644	642	638	633	627	617	606	594	582	567
<b>170</b>	578	577	576	573	571	567	564	558	552	546
<b>175</b>	537	537	537	536	535	535	534	533	532	531
<b>180</b>	524	524	524	524	524	524	524	524	524	524

**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>	1024	1024	1024	1024	1024	1024	1024	1024	1024
<b>5</b>	1017	1017	1017	1017	1017	1018	1018	1018	1019
<b>10</b>	1001	1001	1001	1000	999	999	999	999	1000
<b>15</b>	975	973	971	971	971	969	968	968	969
<b>20</b>	937	934	933	930	928	928	926	924	925
<b>25</b>	889	885	881	878	875	873	871	869	870
<b>30</b>	831	826	821	816	812	808	807	803	803
<b>35</b>	764	759	751	744	738	734	730	728	727
<b>40</b>	690	682	673	666	658	651	646	644	645
<b>45</b>	608	599	590	581	573	565	559	556	555
<b>50</b>	527	517	506	496	488	478	471	467	468
<b>55</b>	445	435	422	408	396	385	374	365	365
<b>60</b>	364	351	341	330	321	313	306	302	301

**IES INDOOR REPORT  
PHOTOMETRIC FILENAME : L011800112.IES**

**CANDELA TABULATION - (Cont.)**

<b>65</b>	291	284	274	263	252	242	235	230	228
<b>70</b>	225	220	211	201	190	180	173	167	165
<b>75</b>	170	166	158	148	136	126	118	113	111
<b>80</b>	123	118	112	103	93	83	76	73	73
<b>85</b>	78	74	69	66	56	47	40	33	30
<b>90</b>	51	45	39	33	27	20	13	8	4
<b>95</b>	71	65	54	46	38	30	25	23	21
<b>100</b>	123	108	95	84	77	70	71	67	62
<b>105</b>	185	166	146	129	117	110	107	105	103
<b>110</b>	259	233	207	184	169	160	155	152	151
<b>115</b>	340	306	269	240	220	207	201	197	196
<b>120</b>	413	368	326	294	270	254	245	241	241
<b>125</b>	477	428	380	338	313	296	285	280	279
<b>130</b>	531	477	426	382	352	333	321	315	314
<b>135</b>	564	513	462	422	390	367	351	342	340
<b>140</b>	589	539	492	452	422	398	385	378	376
<b>145</b>	599	556	513	477	449	428	414	408	404
<b>150</b>	599	561	525	497	471	455	440	435	431
<b>155</b>	590	560	533	508	491	476	465	460	456
<b>160</b>	575	553	532	518	505	492	487	483	480
<b>165</b>	554	544	533	523	513	509	505	501	498
<b>170</b>	540	534	527	524	522	519	517	515	512
<b>175</b>	530	529	528	527	526	525	524	523	522
<b>180</b>	524	524	524	524	524	524	524	524	524



**IES INDOOR REPORT**  
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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	371.90	N.A.	7.40
0-30	782.15	N.A.	15.70
0-40	1260.23	N.A.	25.20
0-60	2115.62	N.A.	42.30
0-80	2557.69	N.A.	51.20
0-90	2639.77	N.A.	52.80
10-90	2543.08	N.A.	50.90
20-40	888.33	N.A.	17.80
20-50	1356.09	N.A.	27.10
40-70	1130.35	N.A.	22.60
60-80	442.08	N.A.	8.80
70-80	167.12	N.A.	3.30
80-90	82.08	N.A.	1.60
90-110	270.85	N.A.	5.40
90-120	596.69	N.A.	11.90
90-130	1021.2	N.A.	20.40
90-150	1857.65	N.A.	37.20
90-180	2356.56	N.A.	47.20
110-180	2085.71	N.A.	41.70
0-180	4996.34	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	96.69
10-20	275.21
20-30	410.25
30-40	478.08
40-50	467.76
50-60	387.63
60-70	274.96
70-80	167.12
80-90	82.08
90-100	77.62
100-110	193.23
110-120	325.84
120-130	424.51
130-140	445.34
140-150	391.11
150-160	285.46
160-170	162.33
170-180	51.12

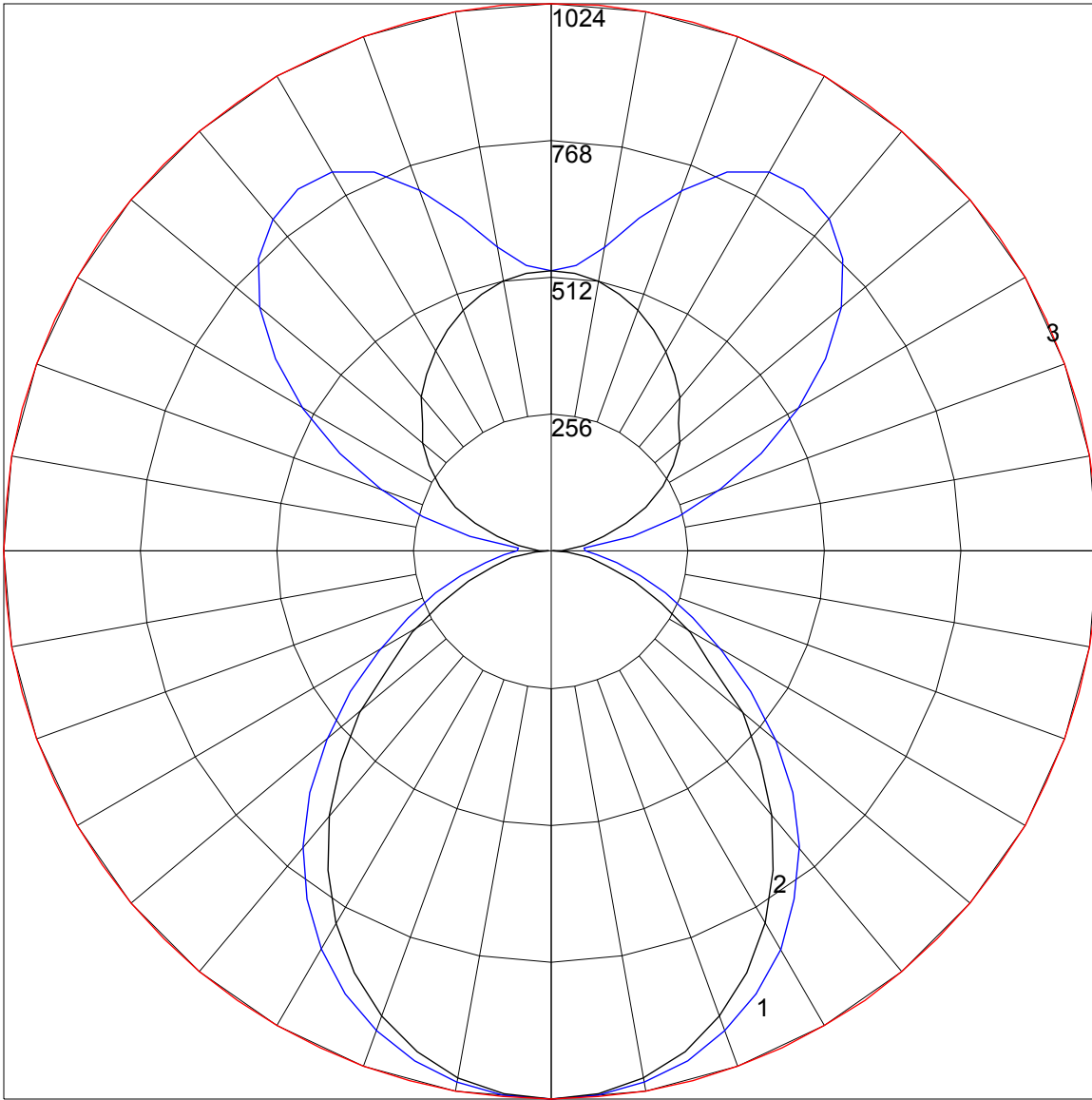
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	108	108	108	108	100	100	100	100	85	85	85	71	71	71	59	59	59	53
1	98	94	90	86	91	87	84	80	74	72	69	62	61	59	52	50	49	44
2	90	82	76	71	83	76	71	66	65	61	58	55	52	49	45	43	42	37
3	82	72	65	59	75	67	61	55	57	53	48	49	45	42	40	38	35	31
4	75	64	56	50	69	60	52	47	51	46	41	43	39	36	36	33	31	27
5	69	57	49	43	63	53	46	40	46	40	36	39	35	31	33	29	27	24
6	63	51	43	37	58	48	41	35	41	36	31	35	31	27	30	26	24	21
7	59	46	38	33	54	43	36	31	38	32	28	32	28	24	27	24	21	18
8	54	42	34	29	50	39	32	27	34	29	25	29	25	22	25	21	19	17
9	51	38	31	26	47	36	29	25	31	26	22	27	23	20	23	20	17	15
10	47	35	28	23	44	33	27	22	29	24	20	25	21	18	21	18	16	14

POLAR GRAPH



Maximum Candela = 1024 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.)