

IES File

Performance Summary

The performance data in black text is confirmed through third party testing (see the following Light Laboratory report for details). The performance data in grey text is calculated by Vode. For reference only.



DoubleBox LED - Zipper board™ with Diffuse Lens (up) and White Baffle (down), Standard Output

DoubleBox LED, 48", 3500K, Zipper board with diffuse lens (up) and white baffle (down), standard output
107-DB-X-4-48-X-X-X-X-X-Z-SO-35-1WB-X-X-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	79	83	86	90
Total Lumens, 4' rail length (1219mm)	3974	4147	4320	4493
Lumens per foot (305mm)	994	1037	1080	1123
Uplight Lumens per foot (305mm)	630	657	685	712
Downlight Lumens per foot (305mm)	364	379	395	411
Input Power (W), 4' rail length (1219mm)	50.4	50.4	50.4	50.4
Watts per foot (305mm)	12.6	12.6	12.6	12.6
CRI (>80min., 85 avg.)	-	-	84	-



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Report No: L031700417R02



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Issue Date: 4/19/2017

Report Prepared For: Vode Lighting
1206 E MacArthur Suite 3 Sonoma, CA 95476

Model Number: 107-DB-48-Z-SO-35-1WB-AL

Test: Electrical and Photometric tests

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: 3/15/17

Date of Tests: 3/16/17 - 3/21/17

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-S1	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
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

Manufacturer:	Vode Lighting
Model Number:	107-DB-48-Z-SO-35-1WB-AL
Driver Model Number:	MEAN WELL HLG-40H-36A(2 DRIVERS-700MA)
Total Lumens:	4319.85
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.42
Input Power (W):	50.39
Input Power Factor:	0.99
Current ATHD @ 120V(%):	9%
Current ATHD @ 277V(%):	N/A
Efficacy:	86
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	3506
Chromaticity Coordinate x:	0.4055
Chromaticity Coordinate y:	0.3920
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:40
Total Operating Time (Hours):	2:20

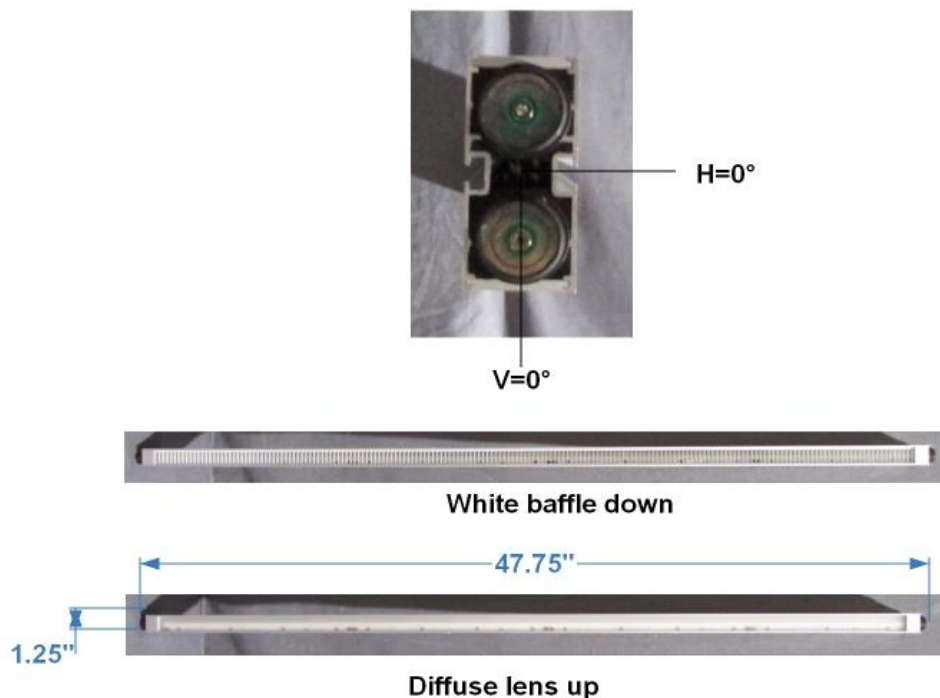
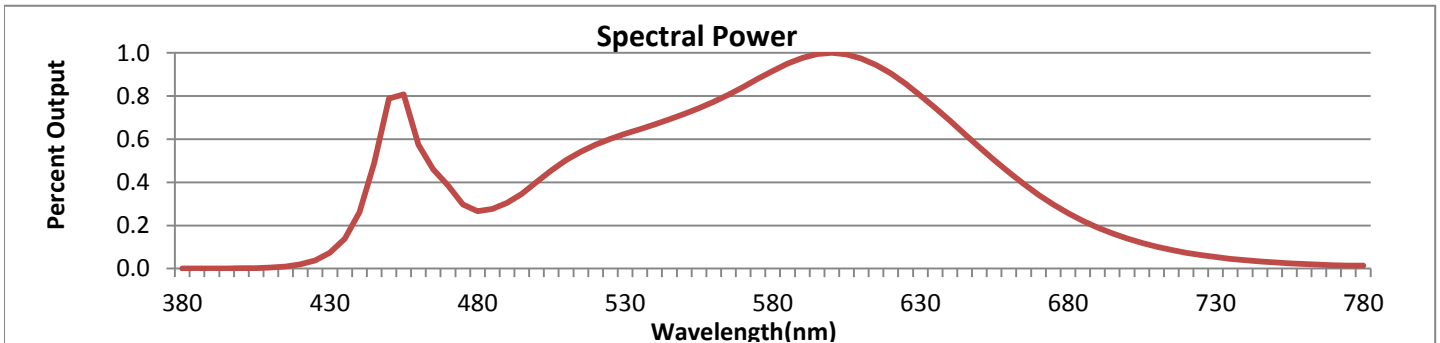


FIG. 1 LUMINAIRE

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



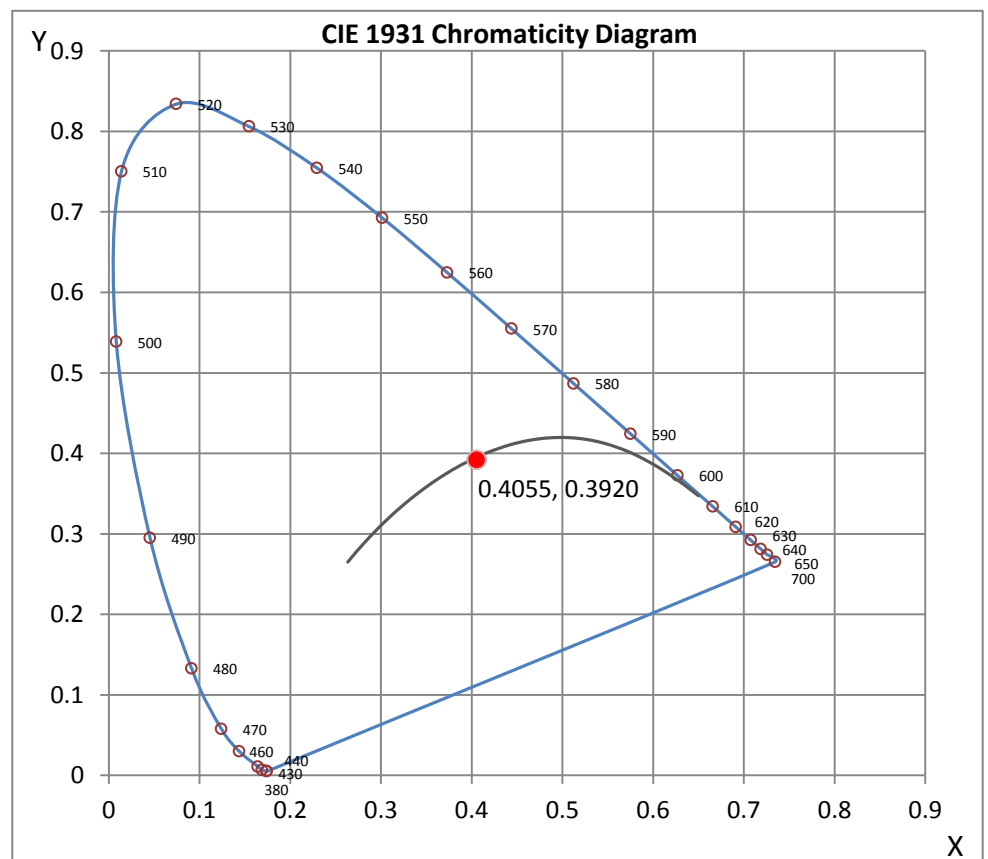
Wavelength	W/m ² nm	440	0.2617	510	0.5030	580	0.9167	650	0.5632	720	0.0739
380	0.0008	450	0.7886	520	0.5749	590	0.9776	660	0.4466	730	0.0534
390	0.0009	460	0.5742	530	0.6250	600	1.0000	670	0.3421	740	0.0391
400	0.0015	470	0.3853	540	0.6687	610	0.9742	680	0.2577	750	0.0286
410	0.0045	480	0.2663	550	0.7166	620	0.9051	690	0.1908	760	0.0211
420	0.0194	490	0.3043	560	0.7732	630	0.8023	700	0.1398	770	0.0156
430	0.0726	500	0.4015	570	0.8422	640	0.6854	710	0.1020	780	0.0134

CRI & CCT

x	0.4055
y	0.3920
u'	0.2353
v'	0.5118
CRI	84.20
CCT	3506
Duv	0.00051

R Values

R1	82.90
R2	91.45
R3	96.65
R4	82.32
R5	82.56
R6	88.27
R7	85.29
R8	64.03
R9	13.63
R10	79.40
R11	81.54
R12	65.27
R13	85.17
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.

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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 : L031700417R02.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
 [TEST] L031700417R02
 [TESTLAB] LIGHT LABORATORY, INC.
 [ISSUEDATE] 4/19/2017
 [MANUFAC] VODE LIGHTING
 [LUMCAT] 107-DB-48-Z-SO-35-1WB-AL
 [LUMINAIRE] DOUBLEBOX LED, 48", 3500K, ZIPPER BOARD,
 [MORE] DIFFUSE LENS UP/WHITE BAFFLE DOWN, STANDARD OUTPUT (700MA)
 [BALLASTCAT] MEAN WELL HLG-40H-36A(2 DRIVERS-700MA)
 [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, 50.39W
 [TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4320
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	86
Total Luminaire Watts	50.39
Ballast Factor	1.00
CIE Type	Semi-Indirect
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)	0.08 ft
Luminous Width (90-270)	3.77 ft
Luminous Height	0.21 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	2031	4911	10174
55	1309	2499	7831
65	980	1283	6105
75	293	461	3992
85	53	72	1250

**IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700417R02.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	1232	1232	1232	1232	1232	1232	1232	1232	1232	1232
5	1230	1223	1217	1210	1204	1198	1192	1187	1182	1177
10	1216	1203	1191	1179	1167	1156	1145	1130	1117	1105
15	1191	1171	1153	1135	1117	1095	1074	1055	1036	1016
20	1154	1130	1107	1082	1052	1024	997	968	942	915
25	1106	1077	1050	1014	978	940	902	867	825	786
30	1047	1014	981	938	894	848	800	747	698	655
35	978	942	900	853	800	744	685	626	573	516
40	785	746	693	646	618	603	561	498	433	374
45	146	170	226	288	333	343	351	349	311	282
50	109	115	123	132	144	175	194	204	212	206
55	100	103	108	114	121	131	140	145	148	149
60	94	94	95	96	97	101	103	106	108	109
65	77	77	74	71	71	70	72	73	75	77
70	48	47	46	44	44	44	44	46	48	50
75	23	23	23	23	23	23	24	24	26	27
80	12	12	12	12	11	11	11	11	11	12
85	4	4	5	5	4	5	4	4	5	4
90	1	1	1	1	1	1	1	1	1	1
95	9	9	9	9	9	9	9	10	12	15
100	38	37	36	37	39	42	46	53	59	67
105	103	97	98	102	104	108	112	117	124	130
110	183	182	174	174	178	182	186	190	195	201
115	268	268	265	260	259	261	266	270	276	283
120	356	356	357	357	352	353	355	360	362	365
125	450	450	451	452	453	454	456	458	461	463
130	547	546	547	548	548	549	552	553	554	555
135	644	644	643	644	644	645	647	650	650	652
140	737	737	736	736	738	740	739	741	743	744
145	826	825	824	825	825	826	828	827	829	830
150	906	905	905	904	905	905	907	907	908	909
155	976	975	975	974	975	975	976	979	978	978
160	1035	1033	1034	1034	1033	1034	1035	1035	1036	1037
165	1082	1080	1080	1081	1081	1080	1079	1080	1081	1082
170	1115	1114	1114	1113	1113	1114	1114	1113	1113	1113
175	1136	1135	1135	1134	1134	1134	1133	1133	1133	1133
180	1142	1142	1142	1142	1142	1142	1142	1142	1142	1142

Vert. 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	1232	1232	1232	1232	1232	1232	1232	1232	1232
5	1172	1168	1165	1162	1159	1157	1155	1155	1154
10	1094	1084	1076	1068	1062	1057	1054	1053	1053
15	997	980	964	952	942	934	929	926	927
20	886	858	833	812	794	781	772	765	766
25	751	718	689	665	645	629	618	609	608
30	614	576	536	501	474	451	435	425	426
35	459	407	382	365	352	340	331	325	322
40	342	315	299	287	278	272	266	262	260
45	265	251	240	231	225	221	217	214	213
50	205	197	190	185	180	176	174	172	171
55	151	149	147	145	142	140	139	138	136
60	110	110	111	111	110	109	109	108	107

**IES INDOOR REPORT
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CANDELA TABULATION - (Cont.)

65	80	80	81	82	83	82	81	80	81
70	51	53	55	56	56	57	56	56	57
75	29	31	32	33	34	35	35	34	35
80	13	14	15	15	16	17	17	17	17
85	4	5	5	5	5	5	5	5	5
90	1	1	1	1	1	1	2	3	4
95	18	24	27	30	35	40	41	43	44
100	72	84	86	87	89	91	92	92	94
105	136	143	147	148	149	152	151	151	154
110	207	213	216	217	218	219	220	220	220
115	288	291	292	293	294	294	294	295	295
120	372	363	376	377	375	371	366	362	364
125	463	465	467	467	467	468	468	468	466
130	557	560	561	561	561	561	562	562	561
135	652	654	655	655	656	658	658	658	658
140	744	746	747	747	747	749	749	749	750
145	831	834	834	835	835	836	837	837	838
150	910	912	913	912	914	914	916	915	918
155	981	981	980	981	981	983	984	983	985
160	1037	1037	1038	1037	1038	1040	1040	1040	1042
165	1082	1081	1081	1083	1085	1084	1084	1085	1087
170	1113	1114	1115	1115	1115	1115	1115	1116	1117
175	1133	1133	1134	1134	1134	1135	1135	1136	1136
180	1142	1142	1142	1142	1142	1142	1142	1142	1142

IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	399.50	N.A.	9.20
0-30	771.30	N.A.	17.90
0-40	1125.27	N.A.	26.00
0-60	1466.31	N.A.	33.90
0-80	1574.48	N.A.	36.40
0-90	1581.00	N.A.	36.60
10-90	1469.96	N.A.	34.00
20-40	725.77	N.A.	16.80
20-50	944.33	N.A.	21.90
40-70	417.54	N.A.	9.70
60-80	108.17	N.A.	2.50
70-80	31.67	N.A.	0.70
80-90	6.52	N.A.	0.20
90-110	166.62	N.A.	3.90
90-120	444.19	N.A.	10.30
90-130	855.42	N.A.	19.80
90-150	1876.01	N.A.	43.40
90-180	2738.85	N.A.	63.40
110-180	2572.23	N.A.	59.50
0-180	4319.85	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	111.04
10-20	288.47
20-30	371.79
30-40	353.98
40-50	218.55
50-60	122.48
60-70	76.50
70-80	31.67
80-90	6.52
90-100	29.46
100-110	137.16
110-120	277.57
120-130	411.23
130-140	501.78
140-150	518.80
150-160	450.36
160-170	304.85
170-180	107.64

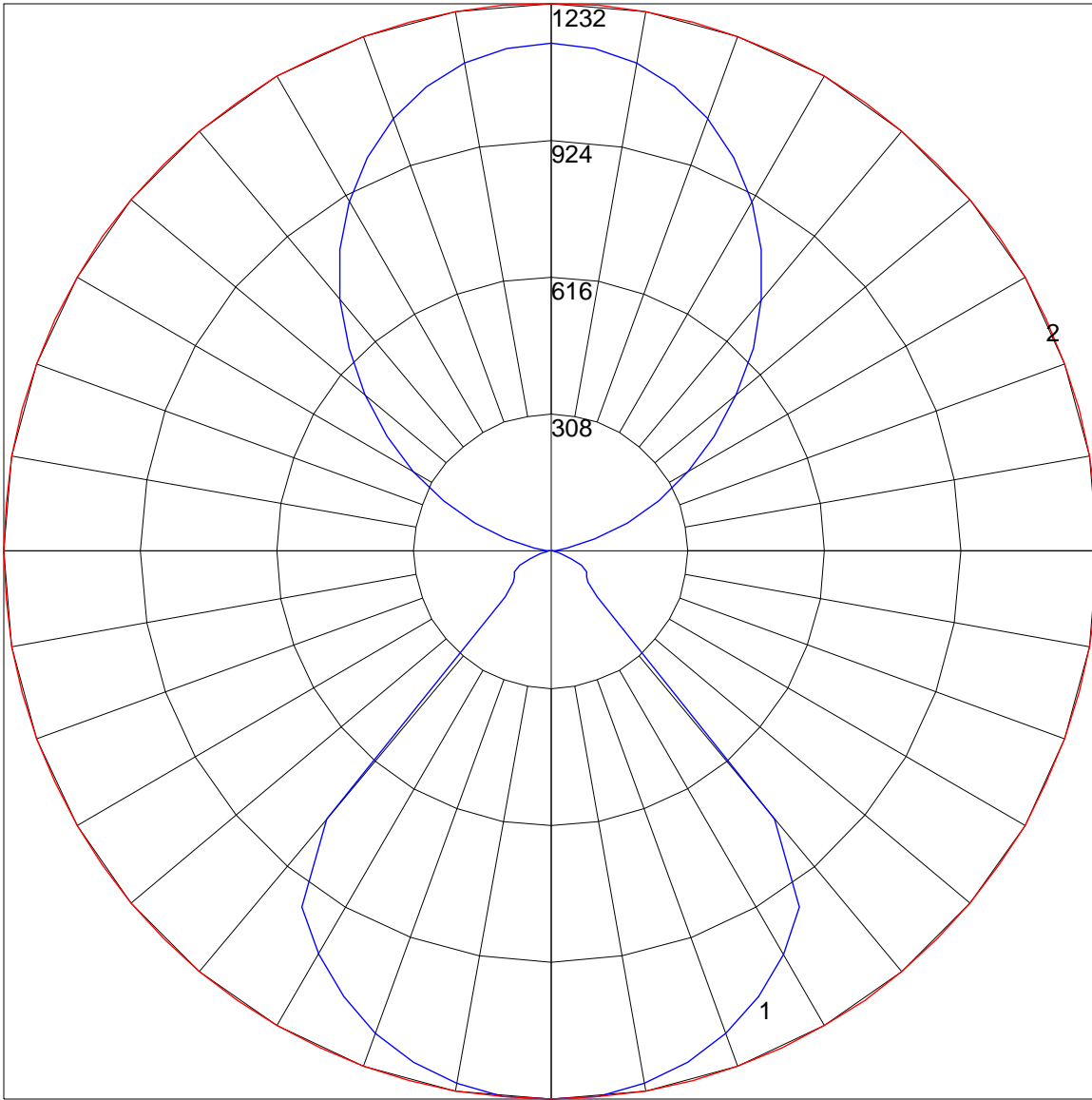
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	104	104	104	104	94	94	94	94	76	76	76	59	59	59	44	44	44	37	0
1	96	92	89	85	87	84	81	78	68	66	64	54	52	51	40	40	39	33	0
2	88	82	76	72	80	74	70	66	61	58	55	48	46	44	37	36	34	29	0
3	81	73	66	61	73	66	61	56	55	51	48	44	41	39	34	32	31	26	0
4	75	65	58	53	68	60	54	49	49	45	42	40	37	34	31	29	27	24	0
5	69	59	51	46	63	54	47	43	45	40	37	36	33	31	28	26	25	21	0
6	64	53	46	40	58	49	42	38	41	36	33	33	30	27	26	24	22	19	0
7	59	48	41	36	54	44	38	34	37	33	29	31	27	25	24	22	20	18	0
8	55	44	37	32	50	41	34	30	34	30	26	28	25	22	23	20	19	16	0
9	52	40	34	29	47	37	31	27	32	27	24	26	23	21	21	19	17	15	0
10	48	37	31	26	44	35	29	25	29	25	22	24	21	19	20	18	16	14	0

POLAR GRAPH



Maximum Candela = 1232 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.)