

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.



ZipWave™ LED - Zipper board™, Ceiling Cove, Standard Output

ZipWave LED, 48", 3500K, Zipper board with diffuse lens, ceiling cove, standard output
707-Z9-4-48-AC-X-X-X-Z-SO-35-1-X-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	96	100	104	108
Total Lumens, 4' rail length (1219mm)	2653	2769	2884	3000
Lumens per foot (305mm)	663	692	721	750
Input Power (W), 4' rail length (1219mm)	27.8	27.8	27.8	27.8
Watts per foot (305mm)	7.0	7.0	7.0	7.0
CRI (>80min., 85 avg.)	-	-	84	-



8165 E Kaiser Blvd. Anaheim, CA 92808
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Report No: L031700425



Report No: L031700425

Issue Date: 3/28/2017

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

Model Number: 707-Z9-48-AC-Z-SO-35-1-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: 3/25/17 - 3/28/17

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:	707-Z9-48-AC-Z-SO-35-1-AL
Driver Model Number:	eldoLED ECOdrive 566/L(700mA)
Total Lumens:	2884.20
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.24
Input Power (W):	27.84
Input Power Factor:	0.99
Current ATHD @ 120V(%):	9%
Current ATHD @ 277V(%):	N/A
Efficacy:	104
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	3452
Chromaticity Coordinate x:	0.4090
Chromaticity Coordinate y:	0.3945
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	2:30

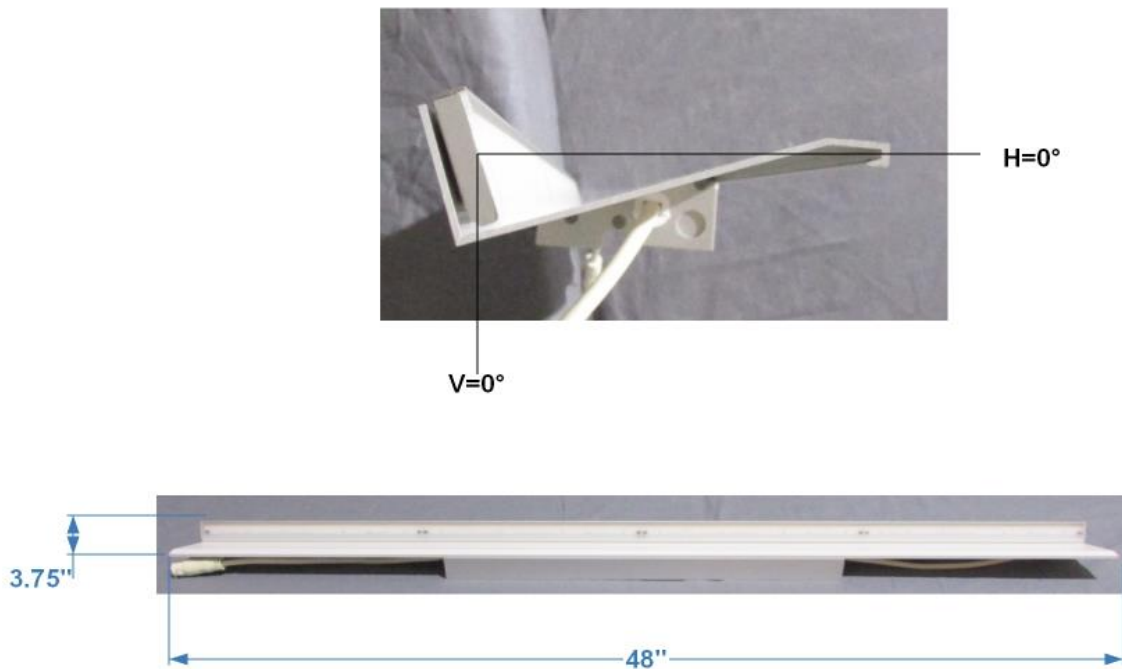
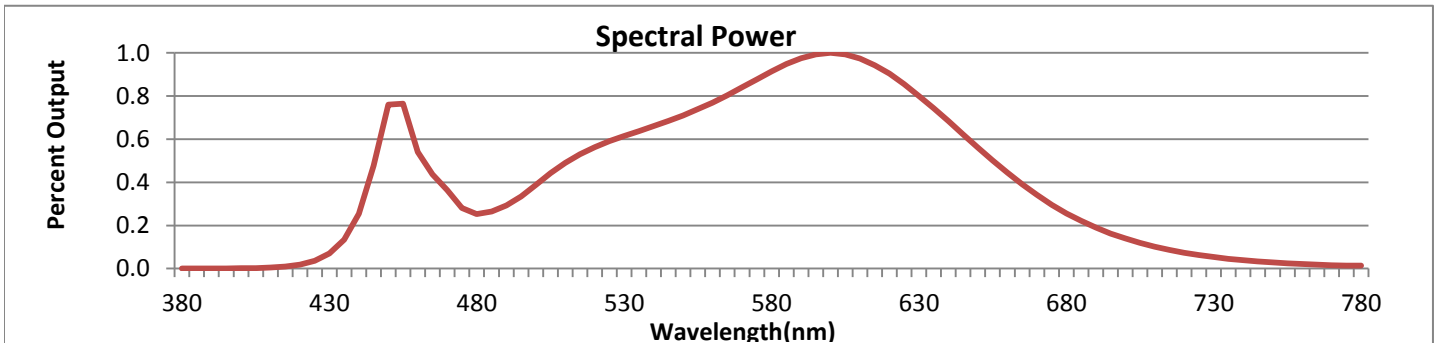


FIG. 1 LUMINAIRE

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



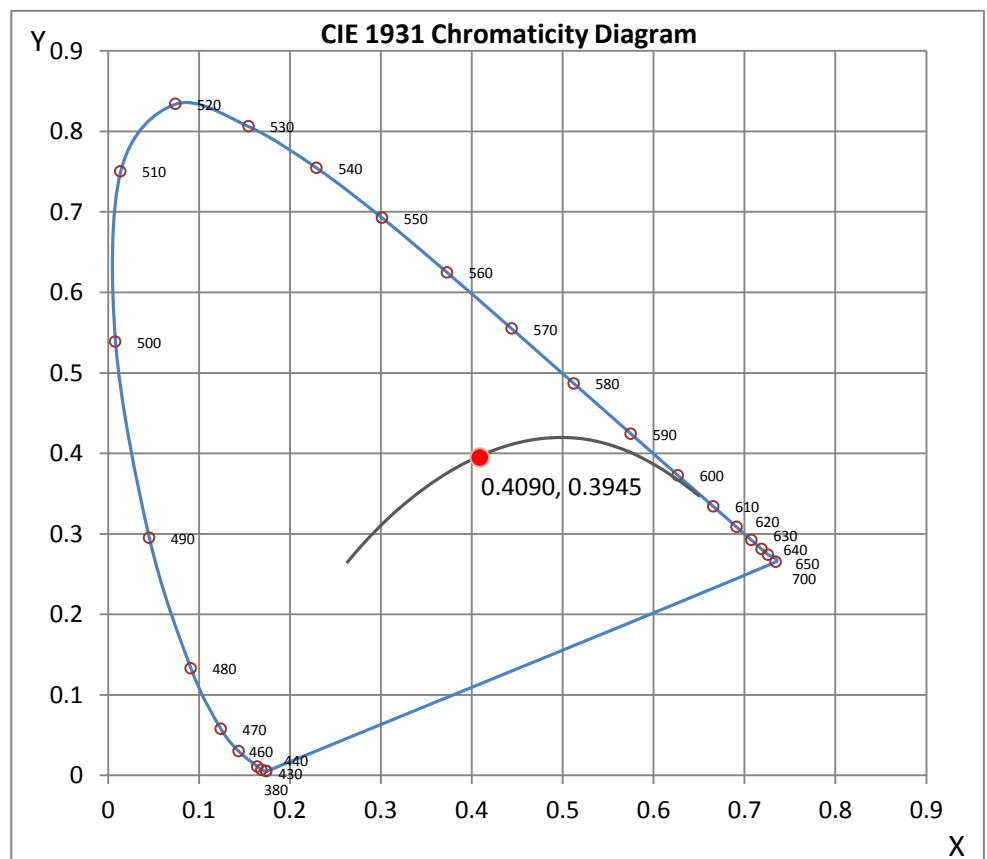
Wavelength	W/m ² nm	440	0.2543	510	0.4899	580	0.9148	650	0.5621	720	0.0735
380	0.0010	450	0.7607	520	0.5629	590	0.9760	660	0.4453	730	0.0532
390	0.0010	460	0.5404	530	0.6145	600	1.0000	670	0.3412	740	0.0389
400	0.0015	470	0.3635	540	0.6602	610	0.9742	680	0.2563	750	0.0285
410	0.0043	480	0.2534	550	0.7100	620	0.9042	690	0.1898	760	0.0210
420	0.0187	490	0.2924	560	0.7696	630	0.8002	700	0.1393	770	0.0156
430	0.0701	500	0.3885	570	0.8408	640	0.6839	710	0.1014	780	0.0133

CRI & CCT

x	0.4090
y	0.3945
u'	0.2366
v'	0.5134
CRI	83.60
CCT	3452
Duv	0.00085

R Values

R1	82.16
R2	90.92
R3	96.63
R4	81.72
R5	81.79
R6	87.66
R7	85.05
R8	63.02
R9	11.34
R10	78.28
R11	80.74
R12	64.66
R13	84.40
R14	98.35



*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: 11*



8165 E. Kaiser Blvd. Anaheim, CA 92808
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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700425.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031700425
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/28/2017
[MANUFAC] VODE LIGHTING
[LUMCAT] 707-Z9-48-AC-Z-SO-35-1-AL
[LUMINAIRE] ZIPWAVE LED, 48", ARMSTRONG CEILING COVE,
[MORE] 3500K, ZIPPER BOARD, DIFFUSE LENS, STANDARD OUTPUT (700MA)
[BALLASTCAT] eldoLED ECOdrive 566/L(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, 27.84W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2884
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	104
Total Luminaire Watts	27.84
Ballast Factor	1.00
CIE Type	Indirect
Spacing Criterion (0-180)	N.A.
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	N.A.
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.08 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	48	143	95
55	59	293	176
65	0	636	159
75	0	1818	260
85	0	10025	1157

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	0	0	0	0	0	0	0	0	0	0
5	2	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2
15	1	1	2	2	2	2	2	2	2	2
20	1	1	1	1	1	1	1	1	1	2
25	1	1	1	1	1	1	1	1	1	2
30	1	1	1	1	1	1	1	1	1	2
35	1	1	1	1	1	1	2	2	2	2
40	1	1	1	1	1	2	2	2	2	2
45	1	1	1	1	2	2	2	2	3	3
50	1	1	1	2	2	3	3	3	3	4
55	1	1	1	2	3	3	4	4	5	5
60	0	1	1	2	4	5	5	6	6	6
65	0	1	1	3	5	6	7	8	8	8
70	0	0	2	4	6	8	9	10	11	11
75	0	1	2	5	8	10	12	13	14	14
80	0	0	3	6	10	13	15	17	19	19
85	0	1	5	10	13	17	21	23	24	26
90	23	46	243	68	194	103	69	93	128	143
95	1167	1019	1034	993	1053	957	859	808	736	648
100	1269	1257	1241	1209	1167	1113	1044	961	870	769
105	1299	1293	1277	1247	1207	1153	1086	1001	909	808
110	1304	1301	1286	1256	1213	1156	1087	1008	920	828
115	1290	1283	1267	1239	1198	1148	1087	1015	936	855
120	1271	1265	1249	1225	1188	1140	1085	1023	963	908
125	1246	1244	1228	1205	1176	1144	1100	1072	1020	958
130	1242	1236	1231	1231	1198	1177	1129	1075	1004	926
135	1246	1240	1222	1196	1167	1123	1073	1013	948	879
140	1147	1142	1128	1106	1076	1038	993	942	886	826
145	1038	1034	1022	1003	977	945	908	865	818	769
150	923	921	912	896	875	850	819	786	749	711
155	811	809	803	792	776	757	734	709	683	654
160	708	709	703	696	686	673	657	639	621	603
165	622	622	619	615	609	601	592	581	569	556
170	552	552	550	548	545	542	537	531	525	518
175	498	498	498	496	495	494	492	490	487	485
180	454	454	454	454	454	454	454	454	454	454

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>	<u>95</u>
0	0	0	0	0	0	0	0	0	0	0
5	2	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2
15	2	2	2	2	2	2	2	2	2	2
20	2	2	2	2	2	2	2	2	2	2
25	2	2	2	2	2	2	2	2	2	2
30	2	2	2	2	2	2	2	2	2	2
35	2	2	2	2	2	2	2	2	2	2
40	2	2	2	2	2	2	2	2	2	2
45	3	3	2	2	2	2	2	2	2	3
50	3	3	3	3	2	2	2	2	3	3
55	5	4	4	3	3	2	2	2	3	3
60	6	6	5	4	4	3	2	2	2	3

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700425.IES

CANDELA TABULATION - (Cont.)

65	8	8	7	6	5	3	2	2	2	2
70	11	10	9	8	6	5	3	2	2	2
75	14	13	12	10	8	6	4	2	2	2
80	19	18	16	14	12	9	7	4	2	2
85	26	26	23	23	19	15	18	8	3	2
90	158	137	155	94	113	72	66	47	14	6
95	563	436	388	319	242	181	138	103	54	26
100	666	563	467	377	303	244	203	152	95	58
105	704	602	508	434	378	325	263	193	137	97
110	734	645	573	518	454	376	299	233	180	141
115	780	718	658	583	492	406	333	271	221	182
120	856	787	694	599	510	431	363	306	258	222
125	874	782	691	604	523	452	389	336	293	259
130	845	762	680	603	532	468	412	364	325	292
135	807	736	664	598	536	479	431	388	352	322
140	765	704	644	587	535	487	445	408	375	349
145	719	669	620	573	530	490	456	423	396	372
150	671	631	594	556	523	490	462	435	413	391
155	624	596	566	540	513	488	466	444	426	409
160	583	561	542	522	503	485	468	451	437	424
165	544	532	519	505	492	480	468	456	445	435
170	511	503	495	488	481	473	465	458	450	444
175	482	479	475	472	468	465	461	457	454	450
180	454	454	454	454	454	454	454	454	454	454

Vert. Angles	Horizontal Angles									
	<u>100</u>	<u>105</u>	<u>110</u>	<u>115</u>	<u>120</u>	<u>125</u>	<u>130</u>	<u>135</u>	<u>140</u>	<u>145</u>
0	0	0	0	0	0	0	0	0	0	0
5	2	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2
15	2	2	2	2	2	2	2	2	2	2
20	2	2	2	2	2	2	2	3	3	3
25	2	2	2	2	3	3	3	3	3	3
30	2	2	2	3	3	3	3	3	3	3
35	2	3	3	3	3	3	3	3	3	3
40	2	3	3	3	3	3	3	3	3	4
45	3	3	3	3	3	3	3	4	4	4
50	3	3	3	3	3	3	3	4	4	4
55	3	3	3	3	3	3	3	4	4	4
60	2	2	2	3	3	3	3	3	4	4
65	2	2	2	2	2	3	3	3	3	4
70	2	2	2	2	2	2	2	3	3	3
75	2	2	2	2	2	2	2	2	2	3
80	2	2	2	2	2	2	2	2	2	2
85	2	2	2	2	2	2	2	2	2	2
90	5	4	5	4	4	3	3	3	3	3
95	20	17	17	15	14	13	12	11	10	10
100	47	44	40	37	35	33	31	29	27	26
105	82	77	73	68	63	59	56	53	51	49
110	119	111	107	101	96	91	87	83	80	77
115	154	144	140	136	131	125	120	115	110	107
120	193	177	171	169	164	159	154	148	143	139
125	231	209	202	198	195	191	186	181	177	173
130	265	245	232	225	222	220	216	212	208	204
135	298	277	261	253	247	246	244	241	238	234

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700425.IES

CANDELA TABULATION - (Cont.)

140	326	307	292	280	273	268	267	265	263	261
145	351	334	320	308	299	292	288	286	284	284
150	374	358	345	334	325	317	311	307	304	302
155	394	380	368	358	349	341	335	330	326	323
160	411	400	390	380	372	366	360	354	350	346
165	425	416	408	401	395	389	383	379	375	371
170	438	432	426	420	415	411	407	403	400	397
175	447	444	441	438	436	433	431	429	427	425
180	454	454	454	454	454	454	454	454	454	454

Vert. Horizontal Angles

	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	0	0	0	0	0	0	0
5	2	2	2	2	2	2	2
10	2	2	2	2	2	2	2
15	2	2	2	2	2	2	2
20	3	3	3	3	3	3	3
25	3	3	3	3	3	3	3
30	3	3	3	3	3	3	3
35	3	4	4	4	4	4	4
40	4	4	4	4	4	4	4
45	4	4	4	4	4	4	4
50	4	4	4	5	5	5	5
55	4	5	5	5	5	5	5
60	4	5	5	5	5	5	5
65	4	4	4	4	5	5	6
70	3	3	4	4	4	4	4
75	3	3	3	3	3	3	3
80	2	3	3	3	3	3	3
85	2	2	2	2	2	2	2
90	3	3	3	2	3	3	2
95	10	9	9	9	9	10	9
100	25	24	24	24	25	25	25
105	47	46	45	46	45	45	45
110	74	73	71	71	70	69	69
115	104	102	100	99	97	97	96
120	136	133	131	129	128	127	127
125	169	166	163	161	160	159	159
130	201	198	195	193	192	191	191
135	231	229	227	225	223	223	223
140	259	257	255	254	252	252	252
145	283	281	280	279	279	278	279
150	301	300	300	300	300	300	300
155	321	319	318	316	316	315	315
160	344	341	339	337	336	335	335
165	368	366	364	362	361	360	360
170	395	393	391	389	388	388	388
175	423	422	421	420	419	419	419
180	454	454	454	454	454	454	454

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700425.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	0.73	N.A.	0.00
0-30	1.70	N.A.	0.10
0-40	3.20	N.A.	0.10
0-60	8.43	N.A.	0.30
0-80	18.37	N.A.	0.60
0-90	40.63	N.A.	1.40
10-90	40.46	N.A.	1.40
20-40	2.47	N.A.	0.10
20-50	4.63	N.A.	0.20
40-70	9.33	N.A.	0.30
60-80	9.94	N.A.	0.30
70-80	5.84	N.A.	0.20
80-90	22.26	N.A.	0.80
90-110	736.92	N.A.	25.60
90-120	1211.85	N.A.	42.00
90-130	1683.49	N.A.	58.40
90-150	2437.72	N.A.	84.50
90-180	2843.57	N.A.	98.60
110-180	2106.66	N.A.	73.00
0-180	2884.2	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	0.17
10-20	0.56
20-30	0.97
30-40	1.50
40-50	2.16
50-60	3.07
60-70	4.10
70-80	5.84
80-90	22.26
90-100	292.10
100-110	444.81
110-120	474.94
120-130	471.63
130-140	423.31
140-150	330.92
150-160	229.01
160-170	133.15
170-180	43.69

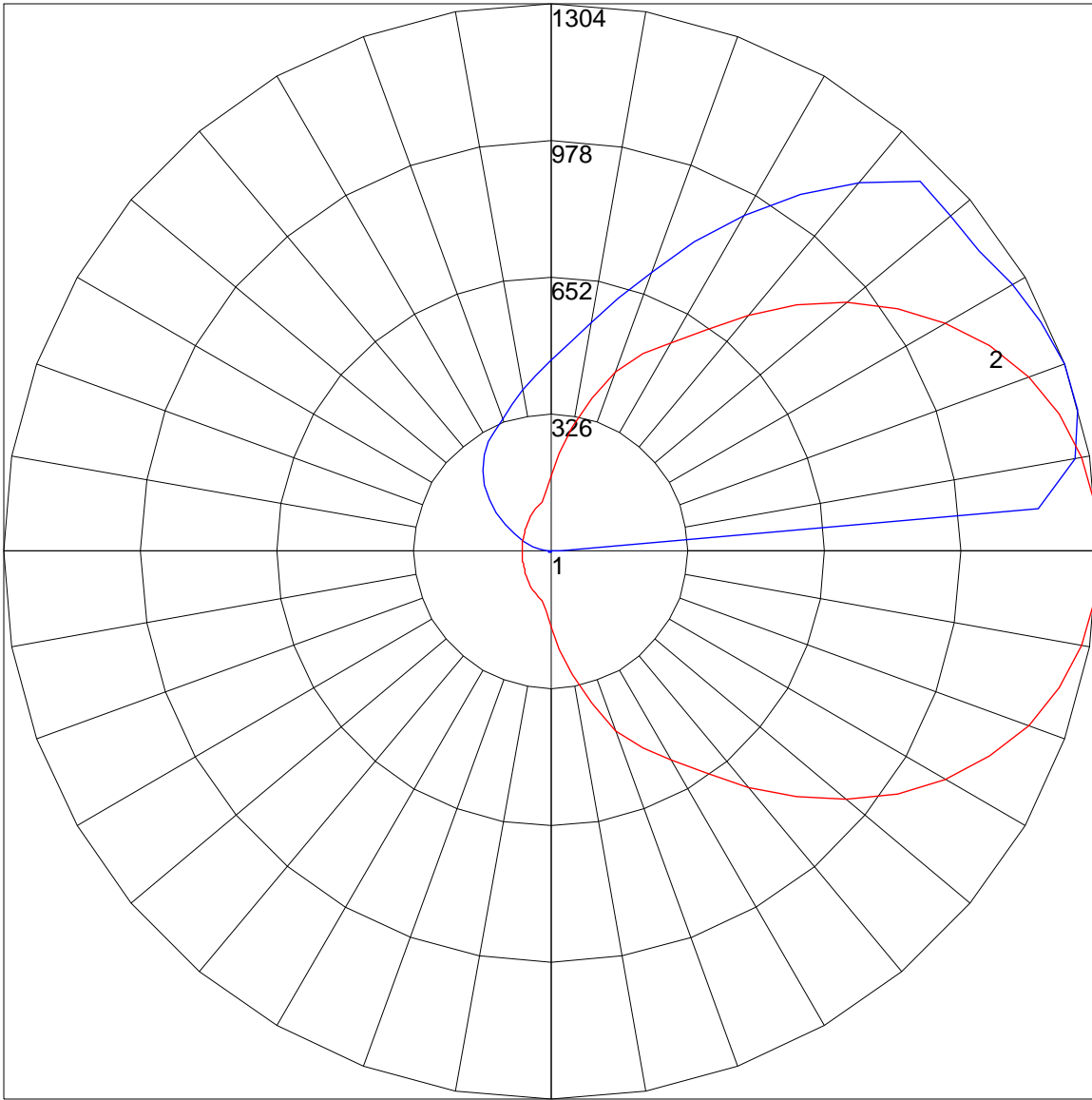
IES INDOOR REPORT
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	
0	96	96	96	96	82	82	82	82	56	56	56	33	33	33	11	11	11	1
1	87	82	79	75	74	71	68	65	49	47	45	28	27	27	10	9	9	1
2	79	72	66	61	67	62	57	53	42	40	37	25	23	22	8	8	7	0
3	72	63	56	51	61	54	49	44	37	34	31	22	20	18	7	7	6	0
4	65	55	48	43	56	48	42	37	33	29	26	19	17	16	6	6	5	0
5	60	49	42	36	51	42	36	31	29	25	22	17	15	13	6	5	5	0
6	55	44	36	31	47	38	31	27	26	22	19	15	13	11	5	4	4	0
7	50	39	32	27	43	34	28	23	23	19	17	14	12	10	5	4	3	0
8	47	35	28	23	40	30	24	20	21	17	14	12	10	9	4	3	3	0
9	43	32	25	20	37	27	22	18	19	15	13	11	9	8	4	3	3	0
10	40	29	22	18	34	25	19	16	17	14	11	10	8	7	4	3	2	0

POLAR GRAPH



Maximum Candela = 1304 Located At Horizontal Angle = 0, Vertical Angle = 110
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (110) (Through Max. Cd.)