



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Test #: L12132804

Date: 12/18/2013



NVLAP LAB CODE 200927-0

Test Report: L12132804

Model Number: LC40-BRZ-110-00

Report Prepared For: LUMATEQ

Test: Electrical and Photometric tests as required by the IESNA test standards.

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. Fixture catalog number is LC40-BRZ-110-00 .
 Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 12/10/13

Date of Tests: 12/17/13 - 12/17/13

Seasoning of Sample SSL: 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	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
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.

LM-79 Test Summary

Manufacturer:	Lumateq
Model Number:	LC40-BRZ-110-00
LAMPCAT:	N/A
Driver Model Number:	YIGUANG TECH LP40W-36-C1100
Total Lumens:	2817.66
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.32
Input Power (W):	37.07
Input Power Factor:	0.98
Total Harmonic Distortion @ 120V(%):	19%
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	76
Color Rendering Index (CRI):	87
Correlated Color Temperature (K):	5148
Chromaticity Coordinate x:	0.3410
Chromaticity Coordinate y:	0.3468
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:50
Total Operating Time (Hours):	1:35
Off State Power(W):	0.00

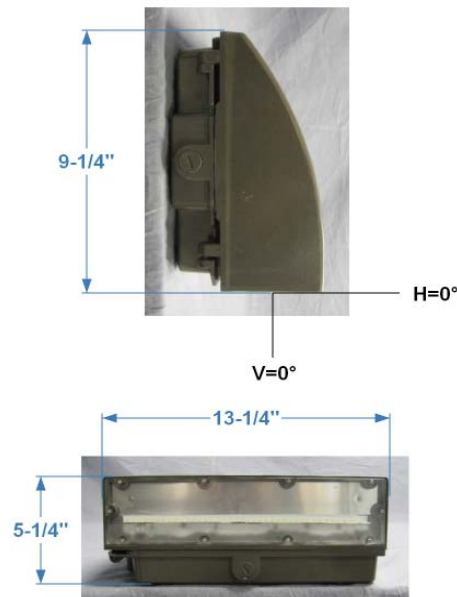
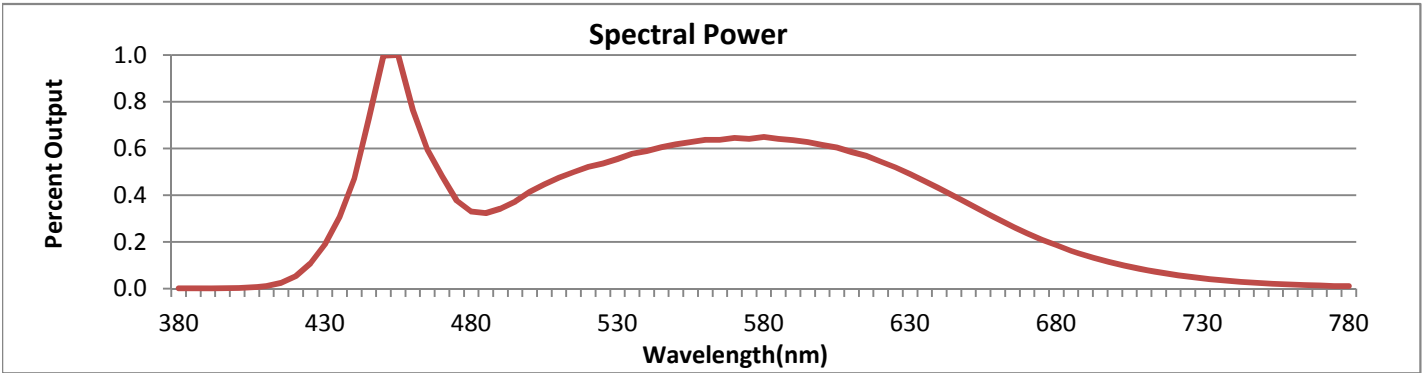


FIG.1 LUMINAIRE

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



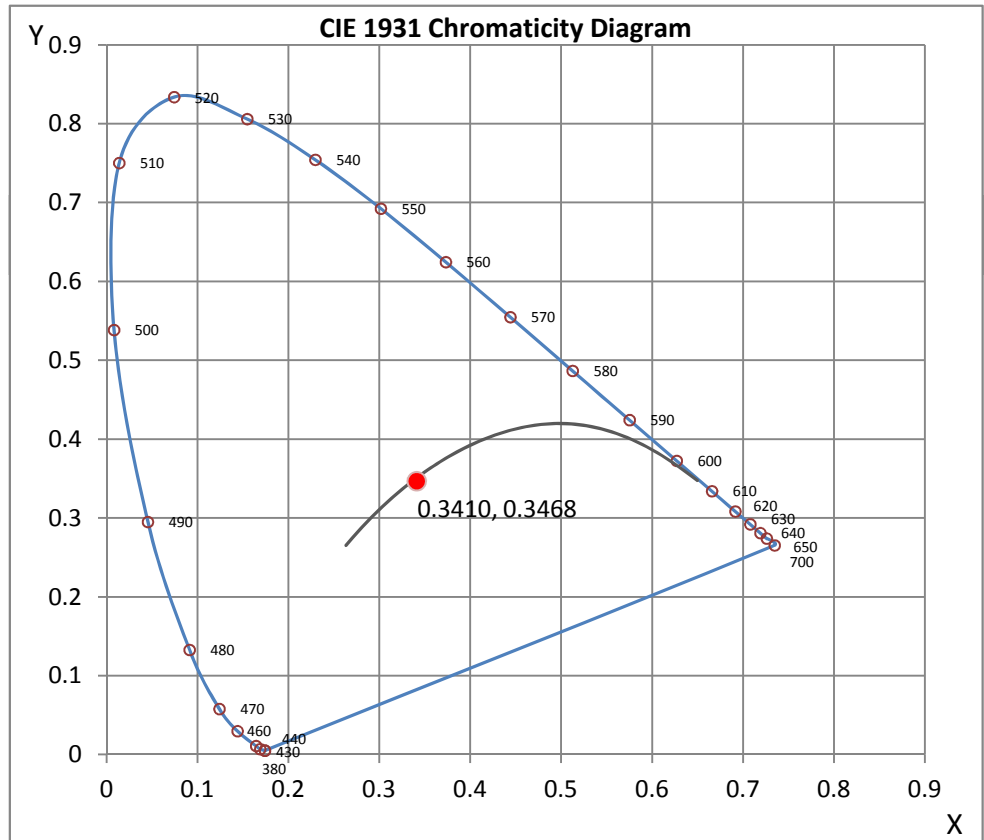
Wavelength	W/m ² nm	440	0.0220	510	0.0222	580	0.0303	650	0.0169	720	0.0028
380	0.0000	450	0.0466	520	0.0243	590	0.0297	660	0.0139	730	0.0021
390	0.0001	460	0.0357	530	0.0259	600	0.0287	670	0.0111	740	0.0015
400	0.0001	470	0.0225	540	0.0275	610	0.0273	680	0.0087	750	0.0011
410	0.0005	480	0.0154	550	0.0288	620	0.0254	690	0.0066	760	0.0008
420	0.0025	490	0.0160	560	0.0297	630	0.0229	700	0.0050	770	0.0006
430	0.0088	500	0.0193	570	0.0301	640	0.0200	710	0.0038	780	0.0005

CRI & CCT

x	0.3410
y	0.3468
u'	0.2105
v'	0.4817
CRI	86.80
CCT	5148
Duv	-0.00074

R Values

R1	86.09
R2	91.62
R3	93.46
R4	85.94
R5	85.99
R6	86.38
R7	89.27
R8	75.26
R9	32.33
R10	78.48
R11	84.71
R12	67.19
R13	87.74
R14	96.22



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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 : THI NGUYEN

Test Report Released by:

Test Report Reviewed by:

Jeff Ahn
 Engineering Manager

Steve Kang
 Quality Assurance

**Attached are photometric data reports. Total number of pages: 12*

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



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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L12132804.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L12132804
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUE DATE] 12/18/2013
[MANUFAC] LUMATEQ
[LUMCAT] LC40-BRZ-110-00
[LUMINAIRE] 5-1/4"L. X 13-1/4"W. X 9-1/4"H. LED FIXTURE
[MORE] CLEAR LENS
[BALLASTCAT] YIGUANG TECH LP40W-36-C1100
[BALLAST] INPUT: 90-305VAC, 50/60HZ, 0.6A OUTPUT: 22-36VDC, 1100mA
[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, 37.07W
[_TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2818
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	76
Total Luminaire Watts	37.07
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	2.22
Spacing Criterion (90-270)	1.26
Spacing Criterion (Diagonal)	1.48
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.17 ft
Luminous Width (90-270)	1.04 ft
Luminous Height	0.00 ft

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L12132804.IES

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	141502	121115	58235
55	153553	134041	54613
65	161339	134569	47927
75	106224	115390	27261
85	10468	12562	13958

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L12132804.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>
0.0	960	960	960	960	960	960	960	960	960	960
5.0	1111	1111	1110	1109	1106	1105	1101	1097	1092	1079
15.0	1198	1197	1193	1184	1173	1158	1144	1127	1113	1094
25.0	1491	1488	1481	1465	1443	1415	1380	1340	1292	1232
35.0	1662	1658	1649	1631	1608	1573	1532	1485	1432	1373
37.5	1681	1679	1671	1655	1631	1597	1555	1506	1449	1388
40.0	1685	1683	1676	1662	1641	1610	1569	1518	1464	1402
42.5	1674	1673	1668	1654	1631	1607	1569	1524	1471	1407
45.0	1645	1644	1639	1626	1609	1585	1552	1510	1465	1408
47.5	1607	1604	1599	1587	1571	1549	1521	1488	1446	1393
50.0	1561	1557	1553	1544	1527	1505	1478	1448	1413	1364
52.5	1509	1509	1503	1491	1474	1451	1423	1395	1362	1324
55.0	1448	1447	1441	1429	1411	1389	1363	1333	1302	1264
57.5	1380	1380	1375	1363	1345	1321	1292	1263	1233	1196
60.0	1309	1308	1302	1289	1269	1246	1218	1189	1156	1114
62.5	1231	1229	1223	1211	1191	1167	1136	1108	1071	1028
65.0	1121	1122	1119	1112	1099	1080	1051	1016	974	935
67.5	973	974	976	976	968	959	951	917	875	831
70.0	807	810	816	821	821	818	815	794	773	736
72.5	639	640	647	651	653	658	663	651	635	617
75.0	452	468	482	494	493	486	493	496	498	491
77.5	167	171	177	192	213	234	255	309	348	341
80.0	66	68	70	74	78	86	93	106	127	154
85.0	15	15	15	14	15	15	15	16	17	18
90.0	0	0	0	0	0	0	0	0	0	0

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>	<u>95</u>
0.0	960	960	960	960	960	960	960	960	960	960
5.0	1075	1070	1059	1046	1032	1014	996	973	951	922
15.0	1087	1084	1080	1074	1066	1053	1032	987	923	829
25.0	1174	1122	1076	1037	1019	1008	998	962	876	695
35.0	1306	1234	1151	1059	980	927	913	890	749	535
37.5	1321	1249	1165	1066	976	906	884	867	744	494
40.0	1327	1253	1170	1081	970	889	856	839	726	466
42.5	1332	1255	1180	1084	968	873	824	811	695	424
45.0	1331	1253	1169	1079	966	857	792	760	677	382
47.5	1325	1245	1156	1069	966	843	762	708	637	324
50.0	1307	1229	1140	1052	953	822	733	695	599	281
52.5	1270	1204	1119	1028	928	806	696	659	558	252
55.0	1217	1157	1091	999	899	743	661	612	515	213
57.5	1149	1104	1042	960	862	731	629	565	487	163
60.0	1074	1034	983	915	824	710	599	525	442	135
62.5	993	957	912	857	785	677	561	475	390	134
65.0	901	864	821	781	705	620	517	418	333	126
67.5	797	757	730	691	643	568	470	365	285	113
70.0	685	653	628	597	557	502	414	311	172	107
72.5	586	547	515	496	472	431	357	262	141	106
75.0	473	443	414	389	376	351	296	213	116	23
77.5	346	334	317	286	271	265	228	166	94	19
80.0	189	209	210	195	179	172	163	123	71	16
85.0	21	25	29	31	37	39	41	37	20	12
90.0	0	0	0	0	0	0	0	0	0	0

**IES INDOOR REPORT
PHOTOMETRIC FILENAME : L12132804.IES**

CANDELA TABULATION - (Cont.)

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	960	960	960	960	960	960	960	960	960	960
5.0	895	864	833	804	774	744	715	692	663	639
15.0	712	585	461	351	262	188	151	99	75	61
25.0	491	294	156	84	54	45	43	41	39	38
35.0	273	125	49	42	39	37	35	34	33	32
37.5	216	126	45	40	37	35	34	32	31	30
40.0	187	115	43	38	36	34	32	31	30	29
42.5	147	55	41	37	34	32	31	29	29	28
45.0	134	49	38	35	33	31	29	28	28	28
47.5	131	44	37	34	31	29	28	27	27	27
50.0	120	41	35	32	30	28	27	27	27	27
52.5	125	38	33	31	28	27	27	26	27	27
55.0	61	35	32	29	27	26	26	26	26	26
57.5	44	33	30	28	26	26	25	26	26	26
60.0	41	33	29	27	25	25	25	25	25	26
62.5	34	30	28	26	25	24	24	24	25	25
65.0	30	26	24	24	23	23	23	24	24	25
67.5	27	24	23	22	22	22	23	23	23	24
70.0	24	22	21	21	21	21	21	22	22	23
72.5	21	20	19	19	19	20	20	21	21	21
75.0	19	18	18	18	18	18	18	18	18	18
77.5	16	16	16	16	16	16	16	16	16	16
80.0	14	14	14	14	14	14	13	13	13	13
85.0	10	10	10	9	9	9	9	9	9	8
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles	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	960	960	960	960	960	960	960
5.0	618	601	585	573	566	561	559
15.0	54	50	48	47	46	46	45
25.0	37	37	36	36	36	35	35
35.0	31	30	30	29	29	29	29
37.5	29	29	29	28	28	28	28
40.0	28	28	28	28	28	28	28
42.5	28	28	28	28	28	28	28
45.0	28	28	28	28	28	28	28
47.5	27	27	28	28	28	28	28
50.0	27	27	28	28	28	28	28
52.5	27	27	27	28	28	28	28
55.0	27	27	27	28	28	28	28
57.5	26	27	27	27	27	27	27
60.0	26	26	27	27	27	27	27
62.5	26	26	27	27	27	27	27
65.0	25	26	26	26	26	26	26
67.5	24	25	25	25	25	25	25
70.0	23	23	23	23	23	23	23
72.5	21	21	21	21	21	21	21
75.0	18	19	19	19	19	19	19
77.5	16	16	16	16	15	15	15
80.0	13	13	13	13	13	13	13
85.0	8	8	8	8	8	8	8

IES INDOOR REPORT
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CANDELA TABULATION - (Cont.)

90.0	0	0	0	0	0	0	0
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IES INDOOR REPORT
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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	171.26	N.A.	6.10
0-30	427.35	N.A.	15.20
0-40	1044.68	N.A.	37.10
0-60	2112.59	N.A.	75.00
0-80	2788.91	N.A.	99.00
0-90	2817.66	N.A.	100.00
10-90	2795.55	N.A.	99.20
20-40	873.42	N.A.	31.00
20-50	1402.85	N.A.	49.80
40-70	1518.05	N.A.	53.90
60-80	676.32	N.A.	24.00
70-80	226.19	N.A.	8.00
80-90	28.74	N.A.	1.00
90-110	0.00	N.A.	0.00
90-120	0.00	N.A.	0.00
90-130	0.00	N.A.	0.00
90-150	0.00	N.A.	0.00
90-180	0.00	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	2817.66	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	22.11
10-20	149.15
20-30	256.09
30-40	617.33
40-50	529.43
50-60	538.48
60-70	450.14
70-80	226.19
80-90	28.74
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

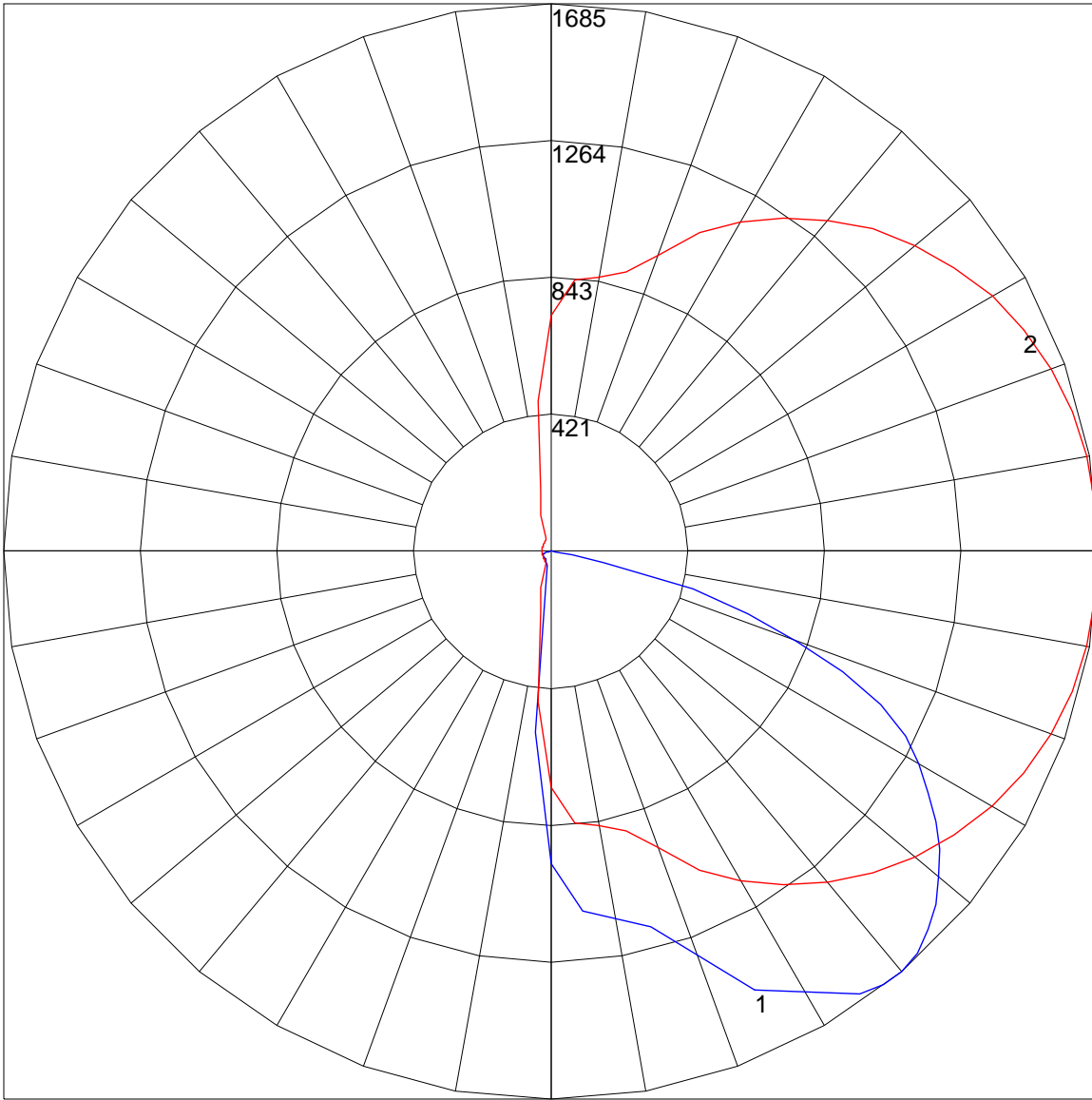
IES INDOOR REPORT
PHOTOMETRIC FILENAME : L12132804.IES

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	119	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	103	98	94	94	105	101	97	93	96	93	90	92	90	87	89	87	85	82
2	97	88	81	75	75	94	86	80	74	83	77	72	79	75	70	76	72	69	67
3	88	76	67	60	60	85	75	66	60	71	64	59	69	63	57	66	61	56	54
4	79	66	57	49	49	77	65	56	49	62	55	48	60	53	48	58	52	47	45
5	72	58	48	41	41	70	57	48	41	55	47	41	53	46	40	51	45	40	37
6	66	52	42	35	35	64	51	41	35	49	40	34	47	40	34	45	39	34	32
7	61	46	37	30	30	59	45	36	30	44	35	30	42	35	29	41	34	29	27
8	56	41	32	26	26	54	41	32	26	39	31	26	38	31	25	37	30	25	23
9	52	37	29	23	23	50	37	28	23	36	28	22	34	27	22	33	27	22	20
10	48	34	26	20	20	47	34	25	20	32	25	20	31	25	20	31	24	20	18

POLAR GRAPH



Maximum Candela = 1685 Located At Horizontal Angle = 0, Vertical Angle = 40
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (40) (Through Max. Cd.)