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.

ZipTwo LED - Zipper board™ with 60° Symmetric Lens, Standard Output

ZipTwo LED, 48", 3500K, Zipper board with 60° symmetric lens, standard output
707-Z2-4-48-X-X-X-X-Z-SO-35-S2-X-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	76	80	83	86
Total Lumens, 4' rail length (1219mm)	2081	2172	2262	2353
Lumens per foot (305mm)	520	543	566	588
Input Power (W), 4' rail length (1219mm)	27.5	27.5	27.5	27.5
Watts per foot (305mm)	6.9	6.9	6.9	6.9
CRI (>80min., 85 avg.)	-	-	84	-

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

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: **L031700422** **Issue Date: 3/22/2017**

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

Model Number: **707-Z2-48-Z-SO-35-S2-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: 3/21/17 - 3/22/17

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.

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NVLAP TESTING
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Test Summary	
Manufacturer:	Vode Lighting
Model Number:	707-Z2-48-Z-SO-35-S2-AL
Driver Model Number:	MEAN WELL HLG-40H-36A(700MA)
Total Lumens:	2262.04
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.23
Input Power (W):	27.45
Input Power Factor:	0.99
Current ATHD @ 120V(%):	9%
Current ATHD @ 277V(%):	N/A
Efficacy:	82
Color Rendering Index (CRI):	84
Correlated Color Temperature (K):	3497
Chromaticity Coordinate x:	0.4060
Chromaticity Coordinate y:	0.3920
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:50
Total Operating Time (Hours):	1:50

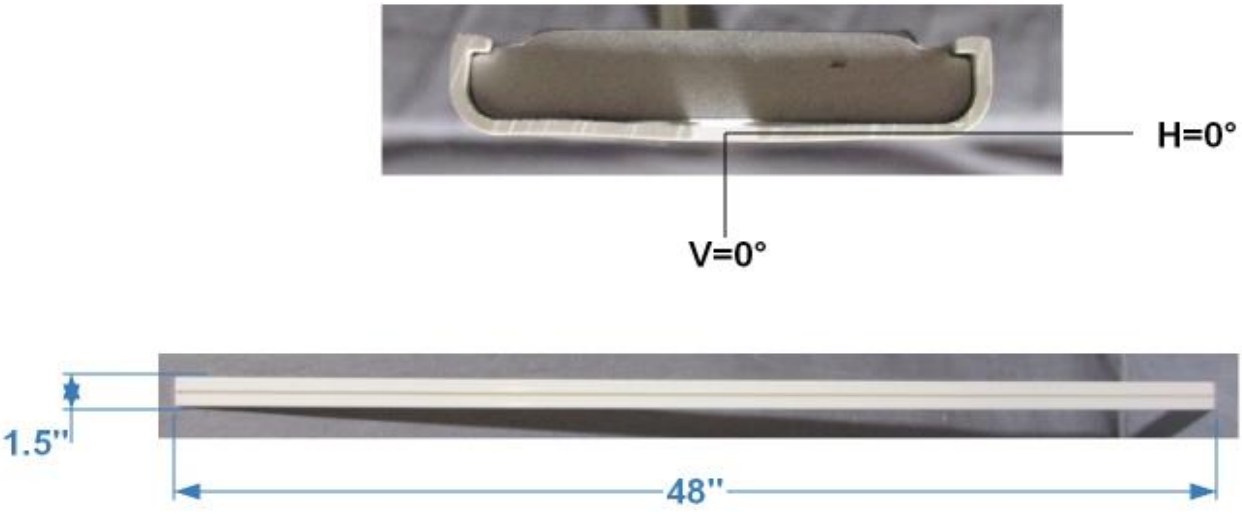

FIG. 1 LUMINAIRE

*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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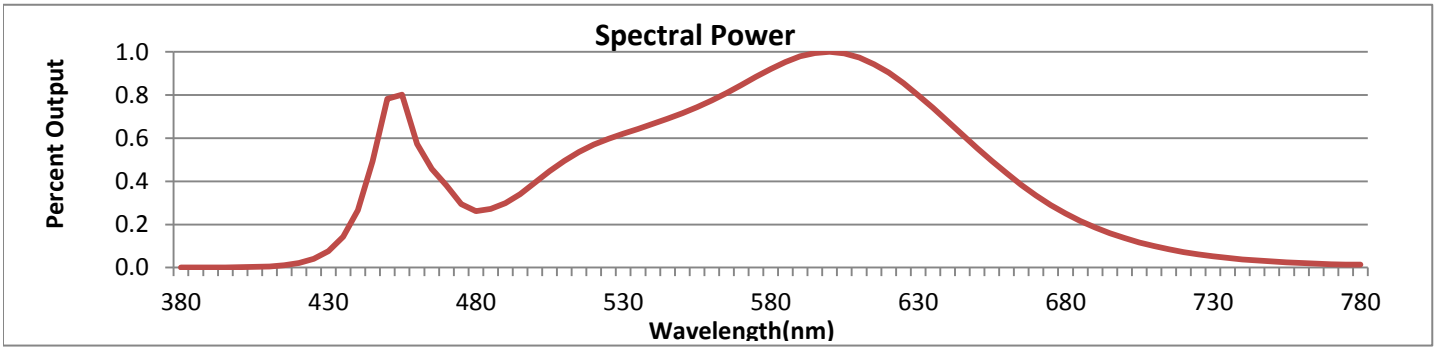
Report No: L031700422

NVLAP TESTING
NVLAP LAB CODE 200927-0



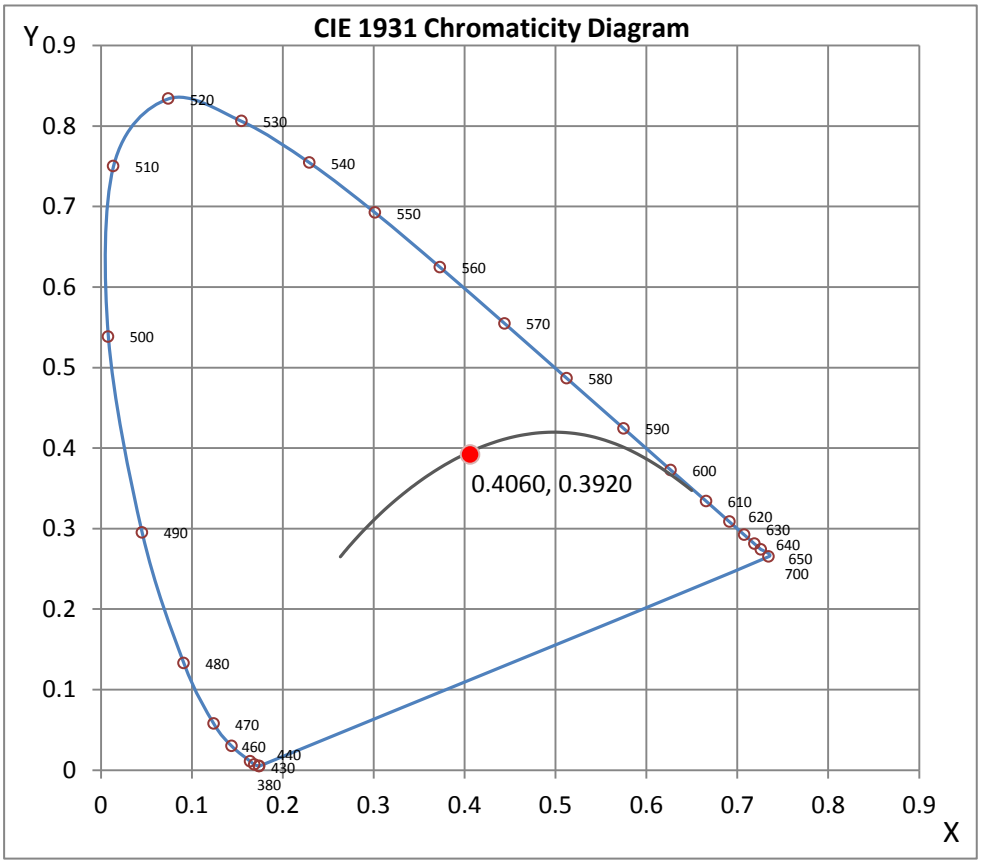
Wavelength	W/m²nm	440	0.2668	510	0.4952	580	0.9211	650	0.5545	720	0.0722
380	0.0008	450	0.7832	520	0.5696	590	0.9794	660	0.4378	730	0.0523
390	0.0010	460	0.5726	530	0.6205	600	1.0000	670	0.3347	740	0.0383
400	0.0017	470	0.3802	540	0.6667	610	0.9739	680	0.2512	750	0.0281
410	0.0050	480	0.2623	550	0.7164	620	0.9037	690	0.1857	760	0.0208
420	0.0206	490	0.2981	560	0.7756	630	0.7989	700	0.1363	770	0.0154
430	0.0756	500	0.3934	570	0.8462	640	0.6787	710	0.0995	780	0.0133

CRI & CCT

x	0.4060
y	0.3920
u'	0.2356
v'	0.5119
CRI	83.70
CCT	3497
Duv	0.00040

R Values

R1	82.30
R2	91.08
R3	96.51
R4	81.69
R5	81.94
R6	87.74
R7	84.97
R8	63.17
R9	11.53
R10	78.53
R11	80.68
R12	64.71
R13	84.58
R14	98.31



*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: 9*

*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 : L031700422.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031700422
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/22/2017
[MANUFAC] VODE LIGHTING
[LUMCAT] 707-Z2-48-Z-SO-35-S2-AL
[LUMINAIRE] ZIPTWO LED, 48", 3500K, ZIPPER BOARD,
[MORE] 60 DEG SYMMETRIC LENS,STANDARD OUTPUT (700MA)
[BALLASTCAT] MEAN WELL HLG-40H-36A(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, 27.45W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2262
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	82
Total Luminaire Watts	27.45
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.06
Spacing Criterion (90-270)	1.20
Spacing Criterion (Diagonal)	1.16
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.02 ft
Luminous Width (90-270)	3.98 ft
Luminous Height	0.00 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	54547	94860	119029
55	31091	56764	85264
65	24615	37721	60418
75	21923	28709	44368
85	18601	21701	31002

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700422.IES

CANDELA TABULATION

	0	5	10	15	20	25	30	35	40	45
0.0	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263
1.0	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263
3.0	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263
5.0	1260	1260	1260	1260	1260	1260	1260	1260	1260	1260
7.0	1254	1254	1255	1255	1255	1255	1255	1255	1255	1256
9.0	1246	1246	1246	1247	1247	1247	1247	1248	1248	1248
11.0	1235	1235	1235	1236	1236	1237	1237	1238	1239	1239
13.0	1219	1220	1220	1221	1222	1223	1224	1225	1226	1227
15.0	1200	1200	1201	1202	1203	1205	1207	1209	1210	1212
17.0	1176	1176	1177	1178	1181	1183	1186	1188	1191	1193
19.5	1135	1136	1138	1141	1144	1149	1153	1158	1162	1165
22.5	1071	1072	1075	1080	1086	1094	1102	1110	1117	1123
25.5	987	989	994	1002	1012	1024	1037	1049	1061	1071
29.0	864	867	875	886	902	920	940	960	978	995
33.0	702	706	715	731	752	777	805	834	863	888
37.5	517	520	531	548	573	602	635	673	711	746
42.5	345	348	357	372	394	422	455	493	535	576
47.5	226	229	235	246	262	283	309	341	379	417
55.0	132	133	137	142	150	161	175	193	215	241
65.0	77	77	79	81	83	87	93	99	108	118
75.0	42	42	43	43	44	45	47	49	52	55
85.0	12	12	12	12	12	13	13	13	14	14
90.0	0	0	0	0	0	0	0	0	0	0

Vert. Angles **Horizontal Angles**

	50	55	60	65	70	75	80	85	90
0.0	1263	1263	1263	1263	1263	1263	1263	1263	1263
1.0	1263	1263	1263	1263	1263	1263	1263	1263	1263
3.0	1263	1263	1263	1263	1263	1263	1263	1263	1264
5.0	1260	1260	1260	1261	1260	1261	1261	1260	1260
7.0	1256	1256	1256	1256	1256	1256	1256	1256	1256
9.0	1248	1249	1249	1249	1249	1250	1250	1250	1250
11.0	1239	1240	1240	1241	1241	1241	1241	1242	1241
13.0	1227	1228	1229	1229	1230	1230	1230	1230	1230
15.0	1213	1214	1215	1215	1216	1216	1216	1216	1216
17.0	1195	1197	1198	1199	1199	1200	1200	1200	1200
19.5	1169	1171	1173	1174	1175	1175	1175	1175	1175
22.5	1129	1133	1135	1137	1138	1138	1138	1138	1138
25.5	1080	1086	1090	1092	1094	1094	1094	1094	1094
29.0	1009	1019	1026	1030	1032	1032	1032	1031	1031
33.0	911	927	938	944	947	947	947	946	945
37.5	778	803	820	831	835	836	835	834	833
42.5	616	649	673	688	696	697	696	695	694
47.5	458	494	522	541	551	554	554	552	552
55.0	270	298	324	344	355	361	362	362	362
65.0	131	144	158	170	179	184	187	188	189
75.0	60	65	70	75	79	82	83	84	85
85.0	15	16	17	18	19	19	20	20	20
90.0	0	0	0	0	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700422.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	438.84	N.A.	19.40
0-30	896.11	N.A.	39.60
0-40	1325.38	N.A.	58.60
0-60	1942.23	N.A.	85.90
0-80	2217.22	N.A.	98.00
0-90	2262.04	N.A.	100.00
10-90	2164.82	N.A.	95.70
20-40	886.54	N.A.	39.20
20-50	1293.54	N.A.	57.20
40-70	795.20	N.A.	35.20
60-80	274.99	N.A.	12.20
70-80	96.64	N.A.	4.30
80-90	44.83	N.A.	2.00
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	2262.04	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	97.22
10-20	341.62
20-30	457.28
30-40	429.26
40-50	407.01
50-60	209.85
60-70	178.34
70-80	96.64
80-90	44.83
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 : L031700422.IES

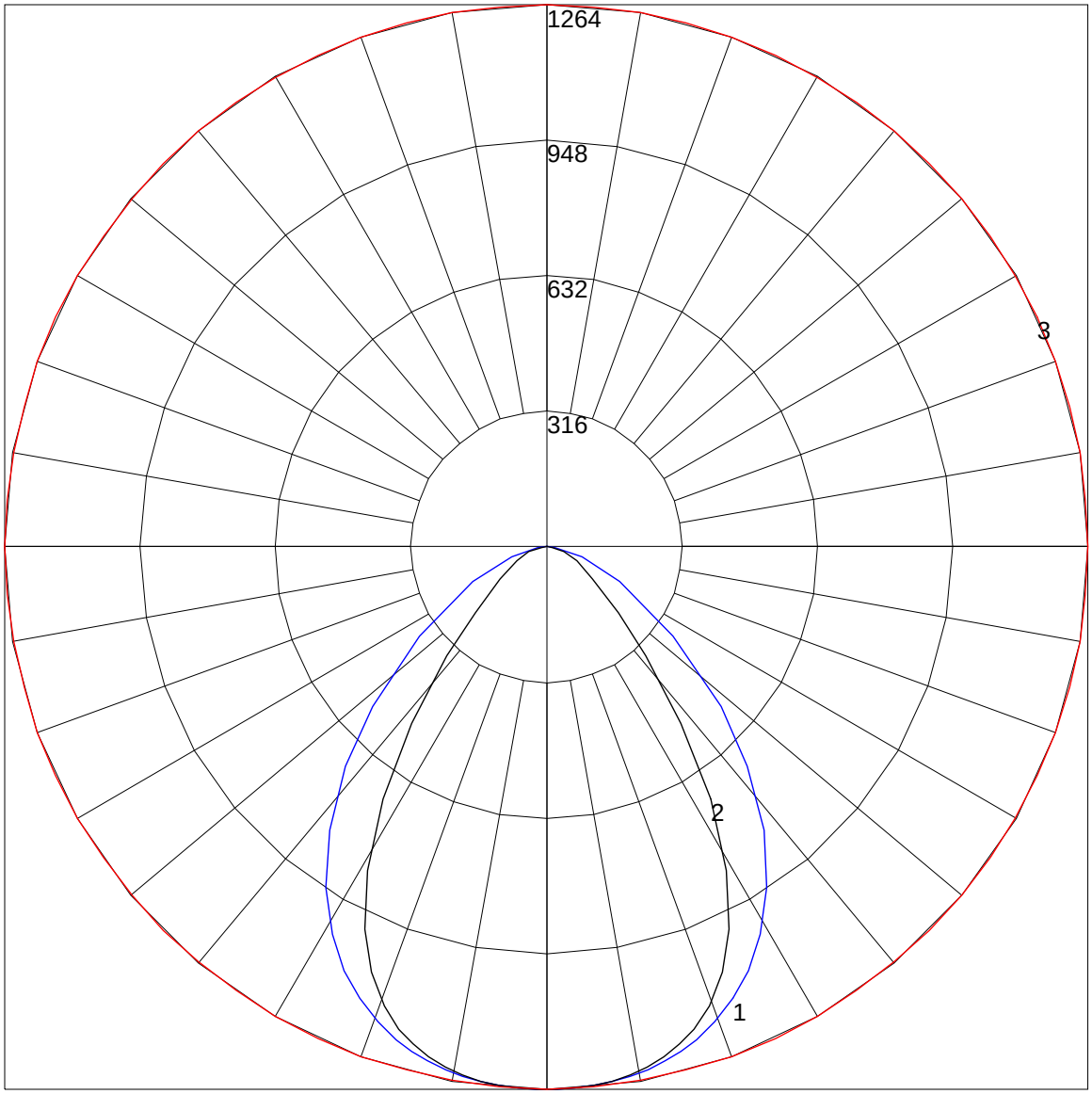
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	106	102	99	107	104	100	97	99	97	94	96	93	91	92	90	88	86
2	102	94	88	83	99	92	87	82	89	84	80	86	82	79	83	80	77	75
3	94	85	77	72	92	83	76	71	80	74	70	77	73	69	75	71	67	65
4	87	76	68	62	85	75	68	62	73	66	61	70	65	60	68	64	60	58
5	81	69	61	55	79	68	61	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	55	49	61	54	49	59	53	48	57	52	48	46
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42
8	66	53	46	40	64	53	45	40	52	45	40	50	44	40	49	44	40	38
9	62	49	42	37	61	49	42	37	48	41	37	47	41	36	46	40	36	34
10	58	46	39	34	57	45	38	34	45	38	34	44	38	33	43	37	33	32

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700422.IES

POLAR GRAPH



Maximum Candela = 1264 Located At Horizontal Angle = 90, Vertical Angle = 3
1 - Vertical Plane Through Horizontal Angles (90 - 270) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (0 - 180)
3 - Horizontal Cone Through Vertical Angle (3) (Through Max. Cd.)