

IES Report

ZipThree® | 707 | Symmetric, up | 85° Asymmetric , down | 90 CRI | SO

707-Z3-4-48-XX-XX-X-0-Z-SO-359-U1A1-X-XX-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	91	93	95	99
Total Lumens, 4' rail length (1219mm)	4714	4863	4962	5061
Lumens per foot (305mm)	1179	1216	1241	1265
Lumens per foot UP (305mm)	765	789	805	821
Lumens per foot DOWN (305mm)	414	427	435	444
Input Power (W), 4' rail length (1219mm)	52.3	52.3	52.3	52.3
Watts per foot (305mm)	13.1	13.1	13.1	13.1
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: L091700107



Report No: L091700107

Issue Date: 9/21/2017

Report Prepared For: Vode Lighting
21684 8th Street East, Suite 700, Sonoma, CA 95476

Model Number: 707-Z3-48-Z-SO-359-U1A1

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: 9/15/17

Date of Tests: 9/19/17 - 9/21/17

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:	707-Z3-48-Z-SO-359-U1A1
Driver Model Number:	MEAN WELL HLG-40H-36A (2 DRIVERS)
Total Lumens:	4962.19
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.44
Input Power (W):	52.42
Input Power Factor:	0.99
Current ATHD @ 120V(%):	9%
Current ATHD @ 277V(%):	N/A
Efficacy:	95
Color Rendering Index (CRI):	95
Correlated Color Temperature (K):	3274
Chromaticity Coordinate x:	0.4172
Chromaticity Coordinate y:	0.3934
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	2:00

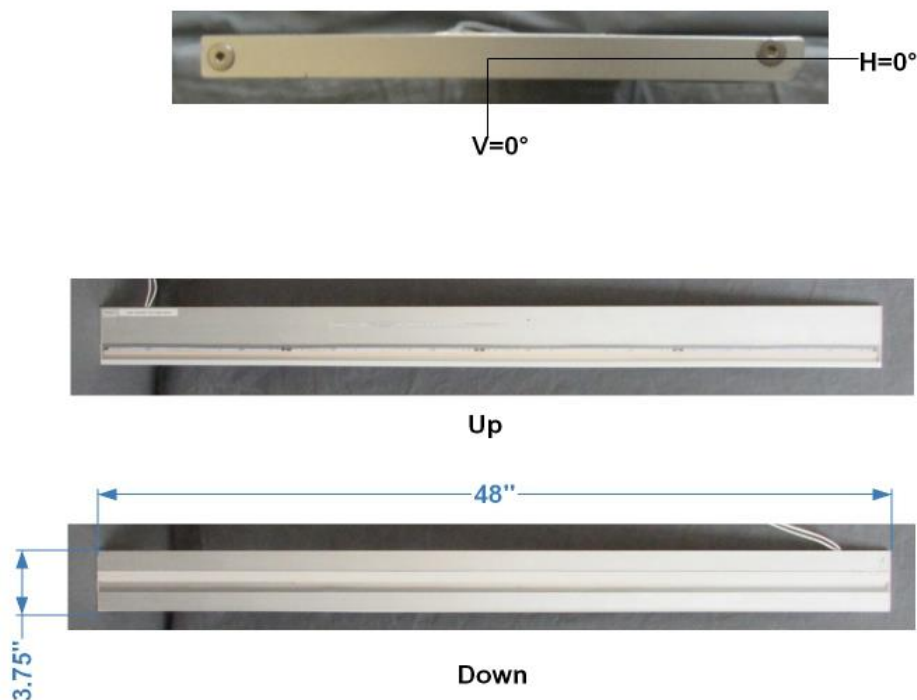
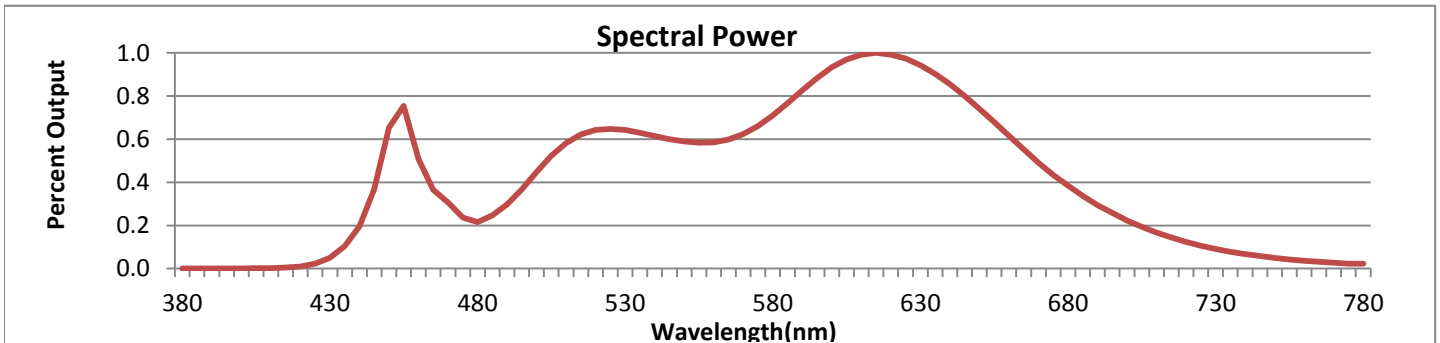


FIG. 1 LUMINAIRE



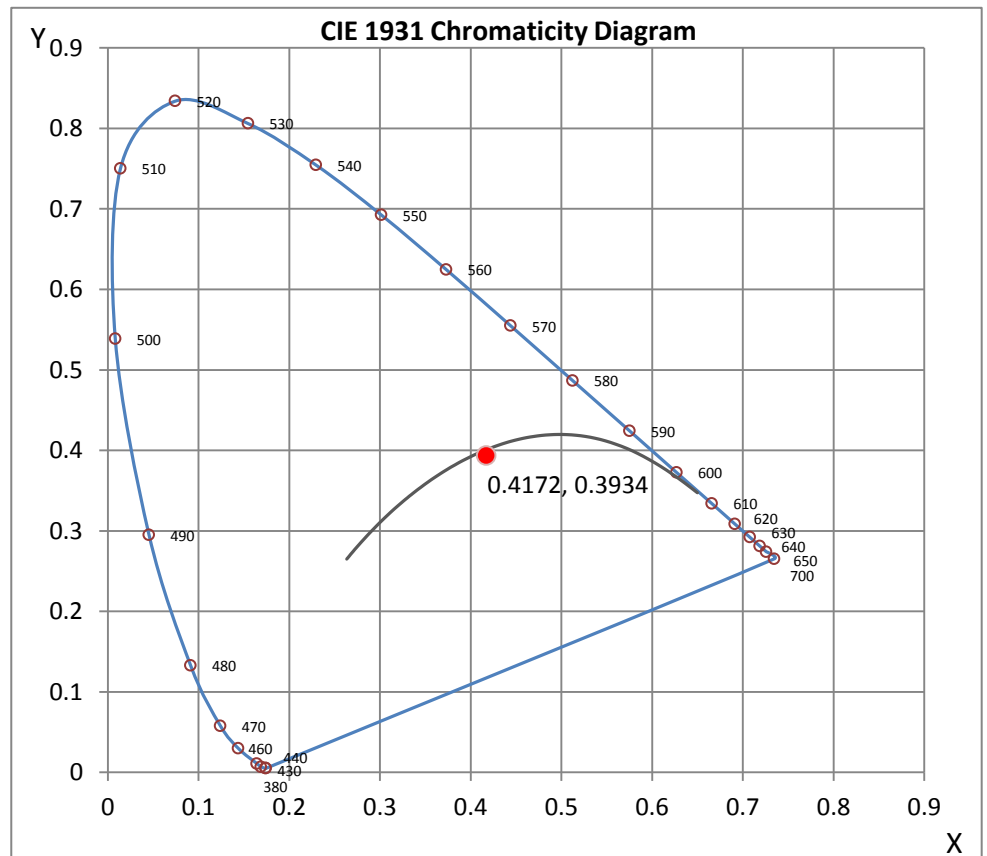
Wavelength	W/m ² nm	440	0.1971	510	0.5816	580	0.7092	650	0.7414	720	0.1239
380	0.0008	450	0.6535	520	0.6430	590	0.8270	660	0.6161	730	0.0912
390	0.0008	460	0.5099	530	0.6424	600	0.9333	670	0.4906	740	0.0673
400	0.0012	470	0.3065	540	0.6141	610	0.9919	680	0.3842	750	0.0495
410	0.0023	480	0.2154	550	0.5889	620	0.9924	690	0.2950	760	0.0365
420	0.0099	490	0.2979	560	0.5845	630	0.9423	700	0.2229	770	0.0270
430	0.0497	500	0.4468	570	0.6236	640	0.8554	710	0.1670	780	0.0233

CRI & CCT

x	0.4172
y	0.3934
u'	0.2423
v'	0.5141
CRI	95.40
CCT	3274
Duv	-0.00125

R Values

R1	97.31
R2	98.42
R3	98.92
R4	95.48
R5	97.20
R6	93.58
R7	93.92
R8	88.42
R9	73.08
R10	97.15
R11	88.24
R12	83.80
R13	96.81
R14	98.71





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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 : 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*

**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 : L091700107.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L091700107
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 9/21/2017
[MANUFAC] Vode Lighting
[LUMCAT] 707-Z3-48-Z-SO-359-U1A1
[LUMINAIRE] ZipThree LED, 48", 3500K, 90 CRI, zipper board,
[MORE] symmetric up/85 deg asymmetric 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, 52.42W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	4962
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	95
Total Luminaire Watts	52.42
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)	0.19 ft
Luminous Width (90-270)	3.98 ft
Luminous Height	0.02 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	17213	16268	6323
55	15475	15125	6056
65	12573	12483	5393
75	9073	9065	4423
85	4221	4141	2469

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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>
0	436	436	436	436	436	436	436	436	436	436
5	562	561	560	557	553	549	543	537	530	522
10	710	709	705	699	691	681	669	655	639	621
15	855	853	848	839	827	812	794	772	748	720
20	975	973	967	957	943	925	904	877	846	812
25	1055	1053	1048	1038	1024	1007	984	957	923	885
30	1088	1086	1082	1074	1062	1047	1027	1002	970	933
35	1077	1076	1072	1066	1057	1044	1028	1008	982	949
40	1028	1027	1024	1020	1013	1004	992	976	955	928
45	946	946	944	941	936	930	921	909	893	872
50	840	840	839	836	833	828	822	813	802	787
55	718	717	716	715	712	708	703	697	689	678
60	587	587	586	585	583	580	576	571	564	556
65	458	458	457	456	454	452	448	444	439	433
70	338	337	337	336	334	332	329	326	323	318
75	230	230	229	228	227	225	223	220	217	213
80	135	135	134	133	132	131	129	127	125	122
85	57	57	57	56	55	54	53	52	50	48
90	21	21	21	21	20	19	18	17	15	14
95	67	67	66	66	65	64	62	61	59	56
100	129	128	128	128	127	126	124	123	121	118
105	202	202	202	202	201	200	199	198	196	194
110	290	290	290	290	290	289	288	286	285	283
115	390	390	390	390	389	389	388	386	385	383
120	499	499	499	498	498	498	497	497	495	494
125	611	611	611	611	610	610	610	610	609	608
130	721	721	720	720	720	720	720	719	719	719
135	822	822	822	822	821	821	821	821	821	821
140	912	912	912	912	912	911	911	911	911	911
145	990	990	990	990	990	989	989	989	989	988
150	1056	1056	1056	1055	1055	1055	1054	1054	1054	1053
155	1110	1110	1110	1109	1109	1109	1108	1108	1107	1107
160	1152	1152	1152	1152	1152	1151	1151	1150	1150	1149
165	1184	1184	1184	1184	1183	1183	1183	1182	1182	1182
170	1205	1205	1205	1205	1205	1205	1205	1204	1204	1204
175	1218	1218	1218	1218	1218	1217	1217	1217	1217	1217
180	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221

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	436	436	436	436	436	436	436	436	436	436
5	514	505	495	485	475	465	455	445	434	425
10	602	582	560	538	517	495	472	451	430	411
15	691	659	625	591	557	521	487	455	423	394
20	774	732	687	640	593	545	499	455	413	376
25	843	793	739	682	624	564	507	452	400	355
30	889	837	778	713	647	577	510	444	384	333
35	908	857	798	730	659	581	503	431	366	309
40	892	849	794	728	655	576	490	413	337	280
45	845	809	760	702	633	555	470	390	316	251
50	766	738	701	652	589	517	435	346	283	221
55	663	642	614	576	523	458	387	315	246	189
60	545	530	509	479	439	386	328	265	206	157

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CANDELA TABULATION - (Cont.)

65	424	413	397	375	345	306	260	209	162	125
70	311	302	290	274	253	225	190	155	121	93
75	208	202	193	182	168	150	127	103	82	63
80	118	114	109	102	94	83	71	58	46	35
85	46	44	41	38	35	31	26	21	16	13
90	12	10	8	7	5	4	3	2	1	1
95	54	51	48	45	42	39	36	33	30	27
100	116	113	110	106	103	98	94	90	85	81
105	191	188	185	181	177	173	168	163	158	153
110	280	277	274	271	267	263	258	253	247	241
115	381	379	376	373	370	366	361	356	350	343
120	492	490	489	486	484	480	475	470	464	458
125	607	605	604	602	600	597	592	588	582	576
130	718	717	716	714	712	709	705	701	696	691
135	821	820	819	817	815	812	809	805	801	798
140	911	910	909	907	905	903	900	897	895	892
145	988	987	986	984	983	981	979	977	975	973
150	1052	1051	1050	1049	1047	1046	1044	1043	1042	1040
155	1106	1105	1104	1103	1102	1100	1099	1098	1098	1097
160	1148	1148	1147	1146	1145	1144	1144	1143	1143	1142
165	1181	1181	1180	1179	1179	1179	1178	1178	1177	1177
170	1204	1203	1203	1203	1203	1202	1202	1202	1202	1202
175	1217	1217	1217	1217	1217	1217	1217	1217	1217	1216
180	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221

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	436	436	436	436	436	436	436	436	436	436
5	415	405	397	388	380	373	366	360	354	349
10	392	373	357	341	327	314	303	292	283	275
15	367	341	319	298	279	263	249	236	225	216
20	342	310	282	259	237	219	204	190	179	170
25	315	279	248	222	199	181	167	153	143	134
30	288	248	216	190	167	150	136	124	115	108
35	261	220	187	161	140	124	112	102	95	89
40	231	190	159	135	116	103	93	85	80	76
45	202	163	134	113	97	86	79	73	69	67
50	174	139	113	94	83	73	67	63	60	58
55	146	116	94	82	69	62	58	54	52	51
60	121	95	81	66	57	52	48	46	44	42
65	96	78	62	53	47	42	39	37	35	34
70	73	57	47	41	36	32	30	28	26	25
75	49	39	33	28	25	22	20	19	18	17
80	28	23	19	16	14	13	11	11	10	9
85	10	8	7	6	5	5	4	4	4	3
90	1	1	1	1	1	1	1	1	1	1
95	25	23	21	19	17	16	15	14	13	13
100	77	74	70	67	64	61	58	56	54	52
105	148	143	138	134	129	125	121	117	114	111
110	235	229	223	217	212	206	201	196	191	186
115	336	330	323	317	310	303	297	290	285	279
120	451	444	437	429	421	414	407	400	393	387
125	570	563	556	549	541	534	527	520	513	507
130	686	681	675	669	662	656	649	642	636	630
135	794	790	785	781	775	770	764	759	753	748

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CANDELA TABULATION - (Cont.)

140	889	886	883	880	876	872	868	863	860	856
145	971	969	967	965	962	959	957	954	951	948
150	1039	1038	1037	1036	1034	1032	1031	1029	1027	1026
155	1096	1095	1095	1094	1093	1092	1091	1090	1089	1089
160	1142	1141	1141	1140	1140	1140	1139	1139	1138	1138
165	1177	1177	1176	1176	1176	1176	1176	1176	1175	1175
170	1202	1201	1201	1201	1201	1201	1201	1201	1201	1201
175	1216	1216	1216	1216	1216	1216	1216	1216	1216	1216
180	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221

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	436	436	436	436	436	436	436
5	344	341	338	336	334	333	333
10	268	262	257	254	251	250	249
15	208	202	197	193	190	188	187
20	162	156	151	147	145	143	143
25	127	122	118	115	112	111	111
30	102	98	95	92	91	90	90
35	85	83	80	79	78	77	77
40	74	72	70	69	69	68	68
45	65	63	62	62	61	61	61
50	57	56	55	55	54	54	54
55	49	48	48	47	47	47	47
60	41	40	40	39	39	39	39
65	33	32	31	31	30	30	30
70	24	24	23	23	22	22	22
75	16	16	15	15	15	15	14
80	9	9	8	8	8	8	8
85	3	3	3	3	3	3	3
90	1	1	1	0	0	0	0
95	12	12	12	12	11	11	11
100	50	49	48	47	46	46	46
105	108	105	103	101	100	99	99
110	183	179	176	174	172	171	171
115	274	270	266	263	261	260	259
120	382	377	373	369	367	365	365
125	501	496	491	488	486	484	483
130	625	620	616	612	610	608	608
135	744	740	736	734	731	730	730
140	852	849	846	845	843	842	842
145	946	944	942	940	939	939	938
150	1024	1023	1021	1021	1020	1020	1019
155	1088	1087	1086	1086	1085	1085	1085
160	1138	1137	1137	1137	1136	1136	1136
165	1175	1175	1175	1175	1175	1175	1175
170	1201	1201	1201	1201	1201	1201	1201
175	1216	1216	1216	1216	1216	1216	1216
180	1221	1221	1221	1221	1221	1221	1221

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L091700107.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	177.63	N.A.	3.60
0-30	410.76	N.A.	8.30
0-40	722.09	N.A.	14.60
0-60	1369.88	N.A.	27.60
0-80	1709.05	N.A.	34.40
0-90	1741.65	N.A.	35.10
10-90	1699.09	N.A.	34.20
20-40	544.46	N.A.	11.00
20-50	885.35	N.A.	17.80
40-70	868.84	N.A.	17.50
60-80	339.17	N.A.	6.80
70-80	118.12	N.A.	2.40
80-90	32.60	N.A.	0.70
90-110	212.12	N.A.	4.30
90-120	548.70	N.A.	11.10
90-130	1053.26	N.A.	21.20
90-150	2266.54	N.A.	45.70
90-180	3220.55	N.A.	64.90
110-180	3008.43	N.A.	60.60
0-180	4962.19	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	42.56
10-20	135.07
20-30	233.14
30-40	311.33
40-50	340.88
50-60	306.91
60-70	221.05
70-80	118.12
80-90	32.60
90-100	44.47
100-110	167.65
110-120	336.58
120-130	504.56
130-140	607.36
140-150	605.92
150-160	505.71
160-170	332.61
170-180	115.68

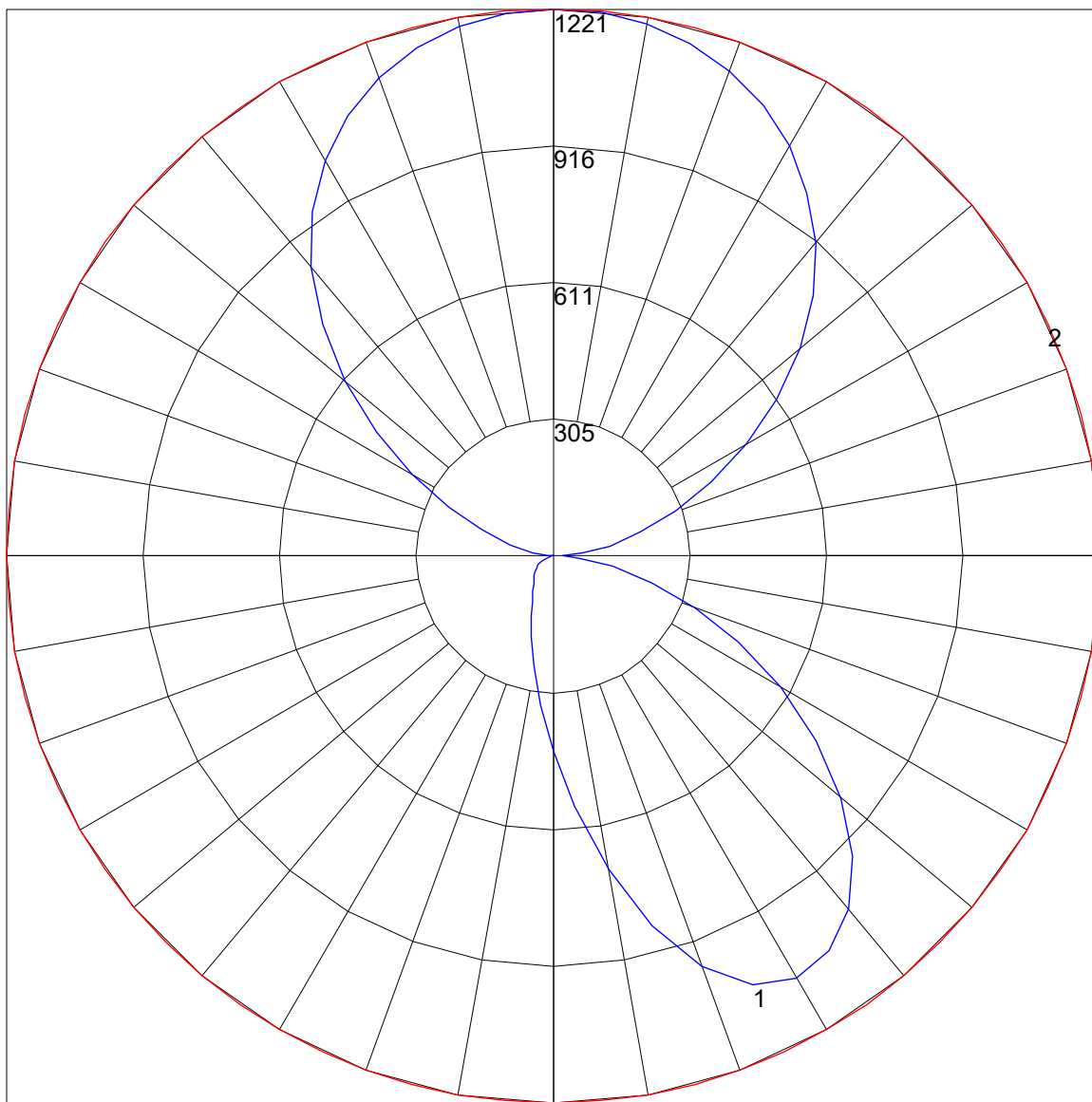
IES INDOOR REPORT
PHOTOMETRIC FILENAME : L091700107.IES

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	104	104	104	104	94	94	94	94	75	75	75	58	58	58	42	42	42	35
1	94	90	86	83	85	81	78	75	65	63	61	51	49	48	37	36	35	29
2	86	78	72	67	77	71	66	61	57	53	50	44	42	40	32	31	30	24
3	78	69	61	55	70	62	56	51	50	46	42	39	36	33	29	27	25	20
4	71	60	53	47	64	55	48	43	44	39	35	34	31	28	25	23	21	17
5	65	54	45	40	58	49	42	36	39	34	30	31	27	24	23	20	18	15
6	60	48	40	34	54	43	36	31	35	30	26	27	24	21	20	18	16	13
7	55	43	35	29	49	39	32	27	32	26	23	25	21	18	18	16	14	11
8	51	39	31	26	46	35	28	24	29	24	20	23	19	16	17	14	12	10
9	47	35	28	23	43	32	25	21	26	21	18	21	17	14	15	13	11	9
10	44	32	25	20	40	29	23	19	24	19	16	19	15	13	14	12	10	8

POLAR GRAPH



Maximum Candela = 1221 Located At Horizontal Angle = 0, Vertical Angle = 180
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (180) (Through Max. Cd.)