

IES Report

ZipTwo® | 707 | 85° Asymmetric | 90 CRI | HO

707-Z2-4-48-XX-XX-X-0-Z-HO-359-A1-X-WH-0

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	57	59	60	61
Total Lumens, 4' rail length (1219mm)	2227	2298	2345	2392
Lumens per foot (305mm)	557	574	586	598
Input Power (W), 4' rail length (1219mm)	39.4	39.4	39.4	39.4
Watts per foot (305mm)	9.9	9.9	9.9	9.9
CRI	95	95	95	95

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](#).

**Report No:** L101707607 **Issue Date:** 11/1/2017

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

**Model Number:** 707-Z2-48-Z-HO-359-A1-AL

**Test:** Photometric/Colorimetric/Electrical Test

**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:** 10/26/17

**Date of Tests:** 10/27/17 - 11/1/17

**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**

<b>Manufacturer:</b>	Vode Lighting
<b>Model Number:</b>	707-Z2-48-Z-HO-359-A1-AL
<b>Driver Model Number:</b>	MEAN WELL HLG-40H-36A
<b>Total Lumens:</b>	2344.68
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.33
<b>Input Power (W):</b>	39.36
<b>Input Power Factor:</b>	1.00
<b>Current ATHD @ 120V(%):</b>	6%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	60
<b>Color Rendering Index (CRI):</b>	95
<b>Correlated Color Temperature (K):</b>	3235
<b>Chromaticity Coordinate x:</b>	0.4193
<b>Chromaticity Coordinate y:</b>	0.3938
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:35
<b>Total Operating Time (Hours):</b>	1:50

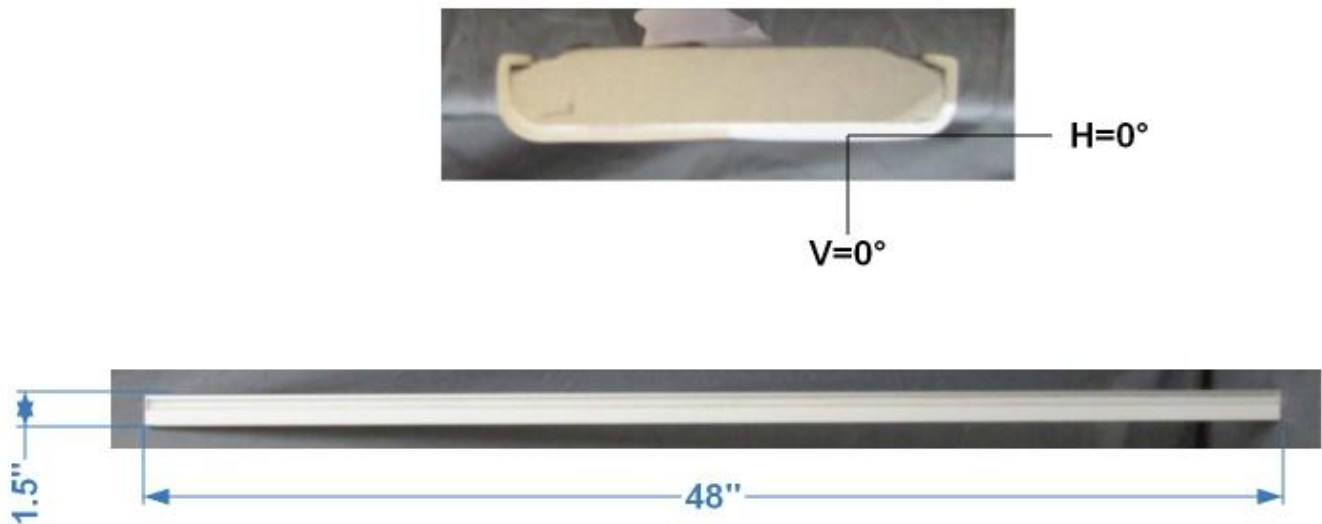
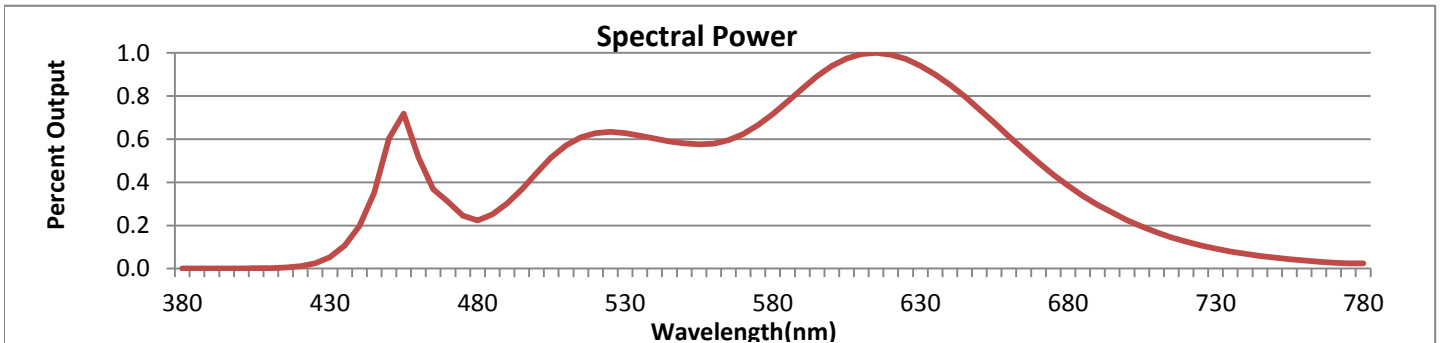


FIG. 1 LUMINAIRE

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



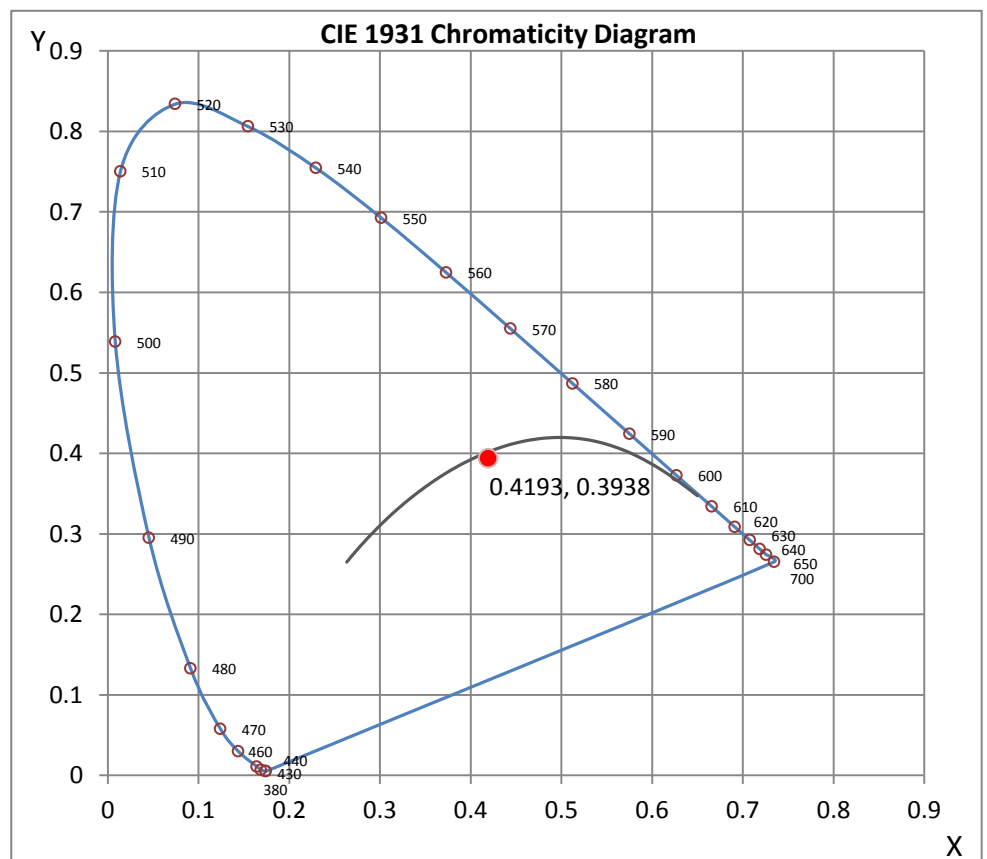
Wavelength	W/m <sup>2</sup> nm	440	0.1975	510	0.5715	580	0.7157	650	0.7383	720	0.1250
380	0.0007	450	0.6028	520	0.6289	590	0.8350	660	0.6136	730	0.0924
390	0.0007	460	0.5173	530	0.6285	600	0.9399	670	0.4911	740	0.0681
400	0.0010	470	0.3088	540	0.6028	610	0.9947	680	0.3845	750	0.0503
410	0.0024	480	0.2225	550	0.5802	620	0.9914	690	0.2960	760	0.0372
420	0.0110	490	0.3015	560	0.5796	630	0.9399	700	0.2242	770	0.0276
430	0.0530	500	0.4430	570	0.6240	640	0.8525	710	0.1681	780	0.0238

**CRI & CCT**

x	0.4193
y	0.3938
u'	0.2435
v'	0.5146
CRI	95.10
CCT	3235
Duv	-0.00146

**R Values**

R1	97.68
R2	98.21
R3	98.29
R4	96.27
R5	97.39
R6	93.10
R7	93.05
R8	87.03
R9	70.66
R10	96.52
R11	89.04
R12	84.44
R13	97.04
R14	99.00



\*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  
www.lightlaboratory.com

# Photometric Test Report

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L101707607.IES**

## DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L101707607  
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
[ISSUEDATE] 11/1/2017  
[MANUFAC] Vode Lighting  
[LUMCAT] 707-Z2-48-Z-HO-359-A1-AL  
[LUMINAIRE] ZipTwo LED, 48", 3500K, 90 CRI, zipper board,  
[MORE] 85° white asymmetric lens, high output  
[BALLASTCAT] MEAN WELL HLG-40H-36A  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 120VAC, 39.36W  
[TEST PROCEDURE] IESNA:LM-79-08

## CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2345
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	60
Total Luminaire Watts	39.36
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	2.46
Spacing Criterion (90-270)	1.24
Spacing Criterion (Diagonal)	1.68
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	0.04 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	132690	110049	34104
55	122479	97041	28971
65	104372	78479	24615
75	84561	61333	19835
85	72854	48052	12401

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>
<b>0</b>	610	610	610	610	610	610	610	610	610	610
<b>5</b>	790	789	786	783	778	771	763	754	744	733
<b>10</b>	1004	1003	997	989	977	961	944	923	900	875
<b>15</b>	1221	1218	1210	1197	1180	1156	1128	1096	1058	1018
<b>20</b>	1405	1402	1393	1378	1356	1327	1293	1251	1203	1150
<b>25</b>	1532	1530	1521	1505	1482	1452	1416	1370	1316	1255
<b>30</b>	1591	1588	1579	1565	1544	1515	1479	1434	1378	1314
<b>35</b>	1583	1581	1573	1561	1541	1515	1481	1437	1383	1320
<b>40</b>	1511	1509	1503	1492	1475	1450	1419	1377	1325	1264
<b>45</b>	1389	1387	1382	1372	1356	1333	1302	1261	1211	1152
<b>50</b>	1226	1225	1220	1210	1195	1172	1141	1102	1053	998
<b>55</b>	1040	1039	1034	1025	1010	987	957	920	874	824
<b>60</b>	844	843	839	830	816	795	768	733	693	650
<b>65</b>	653	652	649	641	628	611	587	558	525	491
<b>70</b>	477	476	473	467	457	443	425	403	377	350
<b>75</b>	324	323	320	316	308	298	285	269	253	235
<b>80</b>	193	192	191	187	182	176	167	157	147	136
<b>85</b>	94	94	93	91	87	83	79	73	67	62
<b>90</b>	35	35	34	33	31	29	27	25	22	20
<b>95</b>	25	25	25	24	23	22	20	19	17	15
<b>100</b>	23	23	23	22	21	20	19	17	16	14
<b>105</b>	21	21	21	20	19	18	17	16	14	13
<b>110</b>	20	19	19	19	18	17	16	15	13	12
<b>115</b>	18	18	18	17	17	16	15	13	12	11
<b>120</b>	17	17	16	16	15	14	13	12	11	10
<b>125</b>	15	15	15	14	14	13	12	11	10	9
<b>130</b>	14	14	13	13	12	12	11	10	9	8
<b>135</b>	12	12	12	12	11	10	10	9	7	6
<b>140</b>	0	0	0	0	0	0	0	0	0	0
<b>145</b>	0	0	0	0	0	0	0	0	0	0
<b>150</b>	0	0	0	0	0	0	0	0	0	0
<b>155</b>	0	0	0	0	0	0	0	0	0	0
<b>160</b>	0	0	0	0	0	0	0	0	0	0
<b>165</b>	0	0	0	0	0	0	0	0	0	0
<b>170</b>	0	0	0	0	0	0	0	0	0	0
<b>175</b>	0	0	0	0	0	0	0	0	0	0
<b>180</b>	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>
<b>0</b>	610	610	610	610	610	610	610	610	610	610
<b>5</b>	720	708	694	680	666	651	636	622	608	593
<b>10</b>	846	818	787	755	724	692	661	631	602	572
<b>15</b>	973	928	877	829	779	730	681	635	590	547
<b>20</b>	1090	1026	961	894	825	758	692	631	572	517
<b>25</b>	1185	1108	1028	945	857	774	692	617	546	482
<b>30</b>	1239	1154	1064	969	868	771	676	590	510	440
<b>35</b>	1244	1156	1062	960	850	745	642	550	467	394
<b>40</b>	1190	1104	1010	905	798	692	588	496	414	345
<b>45</b>	1082	1001	912	817	714	614	517	432	357	295
<b>50</b>	933	860	782	698	608	521	437	364	300	247
<b>55</b>	767	704	639	569	496	425	357	298	246	204
<b>60</b>	603	552	500	446	392	337	285	239	198	165

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**CANDELA TABULATION - (Cont.)**

65	455	415	376	338	297	256	218	184	154	130
70	327	299	271	242	215	186	160	136	113	96
75	217	199	180	162	143	125	107	91	76	65
80	125	114	103	92	82	71	61	51	43	37
85	56	50	45	39	34	29	24	19	16	14
90	17	15	12	10	8	5	3	2	0	0
95	13	11	9	7	5	4	2	0	0	0
100	12	10	8	6	4	3	0	0	0	0
105	11	9	7	6	4	3	0	0	0	0
110	10	8	7	5	4	2	0	0	0	0
115	9	8	6	5	3	0	0	0	0	0
120	8	7	5	4	3	0	0	0	0	0
125	7	6	5	4	3	0	0	0	0	0
130	6	5	4	3	2	0	0	0	0	0
135	5	5	4	3	2	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0

**Vert. 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	610	610	610	610	610	610	610	610	610	610
5	580	566	554	542	531	520	511	502	494	487
10	546	520	497	476	456	438	421	407	394	383
15	510	475	443	414	389	367	348	331	317	304
20	470	429	391	359	332	308	288	272	258	247
25	428	382	342	310	282	260	243	228	217	208
30	384	337	297	266	241	222	207	196	188	181
35	338	293	256	229	207	191	180	171	165	161
40	292	251	219	196	179	167	158	151	146	142
45	249	213	187	168	154	144	137	132	128	125
50	208	180	158	143	132	123	117	113	110	108
55	173	149	132	120	111	104	99	96	93	91
60	140	122	108	99	91	86	83	79	77	75
65	111	96	86	78	72	68	65	63	61	59
70	83	72	65	59	54	51	49	47	45	44
75	56	49	44	40	37	35	33	32	31	30
80	32	28	25	23	21	20	19	18	18	17
85	12	11	10	9	8	8	8	8	8	7
90	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0



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**CANDELA TABULATION - (Cont.)**

140	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0

**Vert. Horizontal Angles**  
**Angles**

	<u>150</u>	<u>155</u>	<u>160</u>	<u>165</u>	<u>170</u>	<u>175</u>	<u>180</u>
0	610	610	610	610	610	610	610
5	481	476	471	468	466	464	464
10	373	366	359	354	351	349	348
15	294	286	280	275	271	269	269
20	238	232	226	222	219	218	217
25	202	196	193	190	188	187	186
30	176	173	170	168	167	166	166
35	157	154	152	151	150	149	149
40	139	137	136	134	134	133	133
45	122	121	120	119	118	118	118
50	106	104	103	103	102	102	102
55	89	88	88	87	87	86	87
60	74	73	72	72	71	71	71
65	58	57	57	56	56	56	56
70	43	43	42	42	41	41	41
75	29	29	28	28	28	28	28
80	17	17	16	16	16	16	16
85	7	7	7	7	7	7	7
90	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L101707607.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	250.41	N.A.	10.70
0-30	582.80	N.A.	24.90
0-40	1022.16	N.A.	43.60
0-60	1871.09	N.A.	79.80
0-80	2277.81	N.A.	97.10
0-90	2319.84	N.A.	98.90
10-90	2260.21	N.A.	96.40
20-40	771.74	N.A.	32.90
20-50	1232.21	N.A.	52.60
40-70	1115.38	N.A.	47.60
60-80	406.73	N.A.	17.30
70-80	140.27	N.A.	6.00
80-90	42.03	N.A.	1.80
90-110	14.39	N.A.	0.60
90-120	19.28	N.A.	0.80
90-130	22.89	N.A.	1.00
90-150	24.84	N.A.	1.10
90-180	24.84	N.A.	1.10
110-180	10.45	N.A.	0.40
0-180	2344.68	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	59.63
10-20	190.79
20-30	332.38
30-40	439.36
40-50	460.47
50-60	388.46
60-70	266.45
70-80	140.27
80-90	42.03
90-100	8.20
100-110	6.19
110-120	4.88
120-130	3.62
130-140	1.95
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

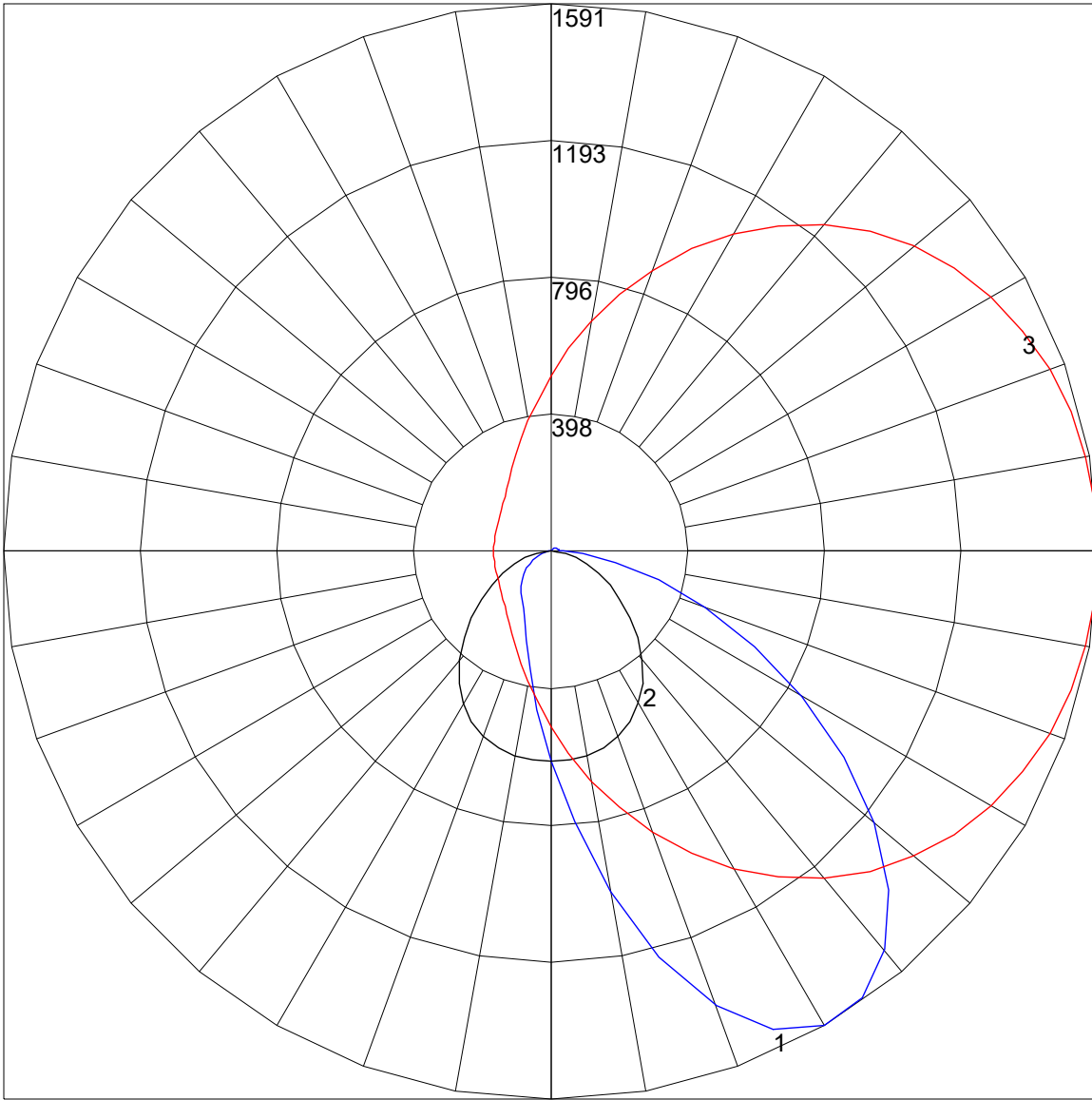
**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L101707607.IES**

**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	101	101	101	99
1	109	104	100	96	106	101	98	94	97	94	91	93	90	88	89	87	85	83
2	99	91	84	78	96	89	82	77	85	80	75	81	77	73	78	75	71	69
3	90	79	71	65	87	78	70	64	75	68	63	72	66	62	69	64	60	58
4	82	70	61	55	80	69	60	54	66	59	53	64	57	52	61	56	52	49
5	75	62	53	47	73	61	53	46	59	52	46	57	50	45	55	49	45	42
6	69	56	47	40	67	55	46	40	53	45	40	51	45	39	50	44	39	37
7	64	51	42	36	62	50	41	35	48	40	35	46	40	35	45	39	34	32
8	60	46	37	31	58	45	37	31	44	36	31	42	36	31	41	35	31	29
9	56	42	34	28	54	41	33	28	40	33	28	39	32	28	38	32	27	25
10	52	39	31	25	51	38	30	25	37	30	25	36	29	25	35	29	25	23

POLAR GRAPH



Maximum Candela = 1591 Located At Horizontal Angle = 0, Vertical Angle = 30  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)  
# 3 - Horizontal Cone Through Vertical Angle (30) (Through Max. Cd.)