

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 40° Symmetric Lens, Standard Output

ZipTwo LED, 48", 3500K, Zipper board with 40° symmetric lens, standard output
707-Z2-4-48-X-X-X-X-Z-SO-35-S1-X-X

	2700K	3000K	3500K	4000K
Efficacy - Lumens per Watt	55	57	60	62
Total Lumens, 4' rail length (1219mm)	1491	1556	1621	1686
Lumens per foot (305mm)	373	389	405	421
Input Power (W), 4' rail length (1219mm)	27.3	27.3	27.3	27.3
Watts per foot (305mm)	6.9	6.9	6.9	6.9
CRI (>80min., 85 avg.)	-	-	83	-



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Report No: L031700421



Report No: L031700421

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-S1-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.

Test Summary

Manufacturer:	Vode Lighting
Model Number:	707-Z2-48-Z-SO-35-S1-AL
Driver Model Number:	MEAN WELL HLG-40H-36A(700MA)
Total Lumens:	1621.01
Input Voltage (VAC/60Hz):	120.00
Input Current (Amp):	0.23
Input Power (W):	27.32
Input Power Factor:	0.99
Current ATHD @ 120V(%):	9%
Current ATHD @ 277V(%):	N/A
Efficacy:	59
Color Rendering Index (CRI):	83
Correlated Color Temperature (K):	3443
Chromaticity Coordinate x:	0.4090
Chromaticity Coordinate y:	0.3936
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:50

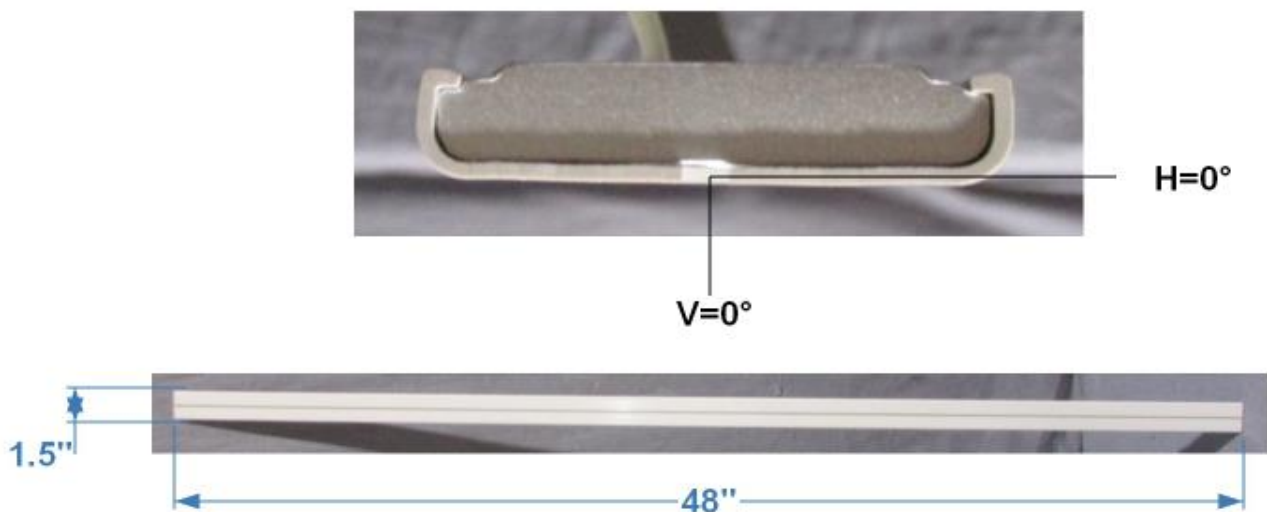
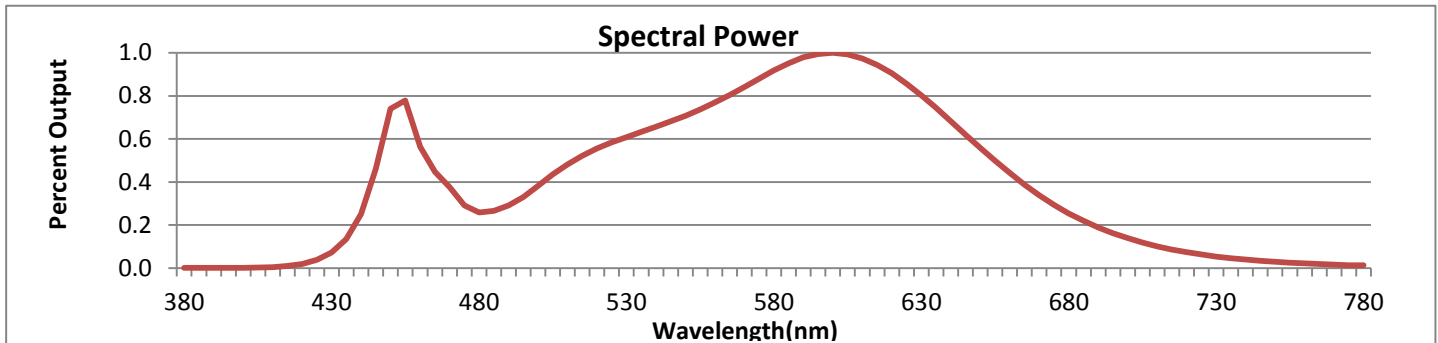


FIG. 1 LUMINAIRE

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



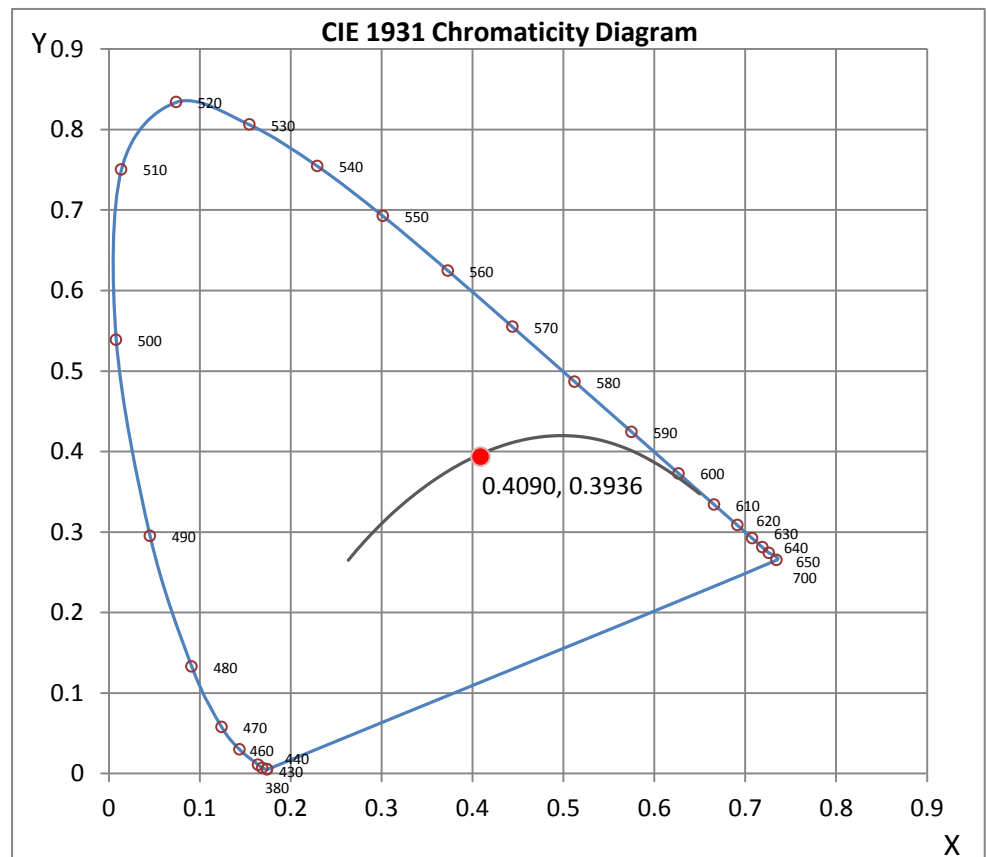
Wavelength	W/m ² nm	440	0.2511	510	0.4816	580	0.9184	650	0.5589	720	0.0740
380	0.0008	450	0.7403	520	0.5557	590	0.9790	660	0.4420	730	0.0537
390	0.0010	460	0.5637	530	0.6084	600	1.0000	670	0.3380	740	0.0392
400	0.0016	470	0.3752	540	0.6566	610	0.9742	680	0.2545	750	0.0288
410	0.0047	480	0.2577	550	0.7075	620	0.9046	690	0.1889	760	0.0213
420	0.0197	490	0.2907	560	0.7694	630	0.8019	700	0.1389	770	0.0159
430	0.0720	500	0.3818	570	0.8412	640	0.6823	710	0.1015	780	0.0136

CRI & CCT

x	0.4090
y	0.3936
u'	0.2369
v'	0.5130
CRI	83.40
CCT	3443
Duv	0.00046

R Values

R1	82.01
R2	91.05
R3	96.53
R4	81.24
R5	81.62
R6	87.74
R7	84.68
R8	62.60
R9	10.81
R10	78.47
R11	80.09
R12	64.76
R13	84.35
R14	98.37



*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.

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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*



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Photometric Test Report

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700421.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L031700421
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 3/22/2017
[MANUFAC] VODE LIGHTING
[LUMCAT] 707-Z2-48-Z-SO-35-S1-AL
[LUMINAIRE] ZIPTWO LED, 48", 3500K, ZIPPER BOARD,
[MORE] 40 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, 27.32W
[TEST PROCEDURE] IESNA:LM-79-08

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	1621
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	59
Total Luminaire Watts	27.32
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.82
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.00
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	31047	54834	101261
55	21198	34388	71132
65	18221	24934	49229
75	16703	20357	34973
85	13951	17051	24801

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700421.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	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105
1.0	1106	1106	1106	1106	1106	1106	1106	1106	1106	1107
3.0	1104	1105	1105	1105	1105	1105	1105	1105	1105	1105
5.0	1092	1093	1093	1093	1094	1095	1095	1097	1098	1098
7.0	1070	1071	1071	1072	1074	1076	1078	1080	1083	1085
9.0	1038	1039	1040	1042	1045	1048	1052	1056	1061	1066
11.0	998	999	1000	1003	1008	1013	1019	1026	1034	1041
13.0	951	952	955	959	965	972	980	990	1000	1010
15.0	899	900	904	909	916	926	936	948	962	975
17.0	844	846	850	856	865	876	888	903	919	936
19.5	773	775	779	787	797	810	825	843	863	883
22.5	686	688	693	701	713	728	746	767	790	814
25.5	598	600	606	615	629	645	665	688	715	742
29.0	497	499	505	516	531	550	572	597	625	655
33.0	385	388	395	406	421	441	465	492	522	556
37.5	278	280	286	297	311	331	353	381	412	445
42.5	190	192	197	204	216	232	251	274	303	333
47.5	135	136	139	144	152	162	176	194	216	241
55.0	90	90	92	94	98	103	110	119	131	146
65.0	57	58	58	59	60	62	65	68	72	78
75.0	32	32	32	33	33	34	34	35	37	39
85.0	9	9	9	9	10	10	10	10	10	11
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>
0.0	1105	1105	1105	1105	1105	1105	1105	1105	1105
1.0	1106	1107	1107	1107	1107	1107	1107	1107	1107
3.0	1106	1106	1106	1106	1107	1107	1107	1106	1107
5.0	1100	1101	1102	1102	1103	1104	1104	1104	1104
7.0	1088	1091	1093	1095	1097	1098	1100	1100	1101
9.0	1071	1076	1080	1084	1088	1090	1093	1094	1095
11.0	1049	1057	1064	1070	1076	1080	1084	1086	1087
13.0	1021	1032	1043	1052	1060	1067	1072	1074	1075
15.0	990	1004	1018	1031	1042	1050	1057	1061	1062
17.0	954	973	989	1005	1019	1031	1039	1045	1046
19.5	905	927	949	970	988	1003	1014	1021	1024
22.5	841	867	894	920	943	963	978	987	989
25.5	772	803	834	864	892	915	933	945	948
29.0	688	723	758	792	824	852	873	887	892
33.0	590	627	665	703	738	770	795	810	816
37.5	482	518	557	596	632	666	693	710	715
42.5	368	404	440	477	511	543	570	587	592
47.5	270	301	333	365	395	424	448	463	468
55.0	164	185	207	230	252	271	288	299	302
65.0	86	95	105	116	127	137	146	151	154
75.0	41	45	48	52	57	61	64	66	67
85.0	11	12	12	13	14	14	15	16	16
90.0	0	0	0	0	0	0	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700421.IES

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	360.67	N.A.	22.20
0-30	693.64	N.A.	42.80
0-40	983.92	N.A.	60.70
0-60	1393.66	N.A.	86.00
0-80	1587.9	N.A.	98.00
0-90	1621.01	N.A.	100.00
10-90	1536.76	N.A.	94.80
20-40	623.25	N.A.	38.40
20-50	891.70	N.A.	55.00
40-70	534.19	N.A.	33.00
60-80	194.24	N.A.	12.00
70-80	69.78	N.A.	4.30
80-90	33.12	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	1621.01	N.A.	100.00

Total Luminaire Efficiency = N.A.%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	84.25
10-20	276.42
20-30	332.97
30-40	290.28
40-50	268.45
50-60	141.29
60-70	124.45
70-80	69.78
80-90	33.12
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

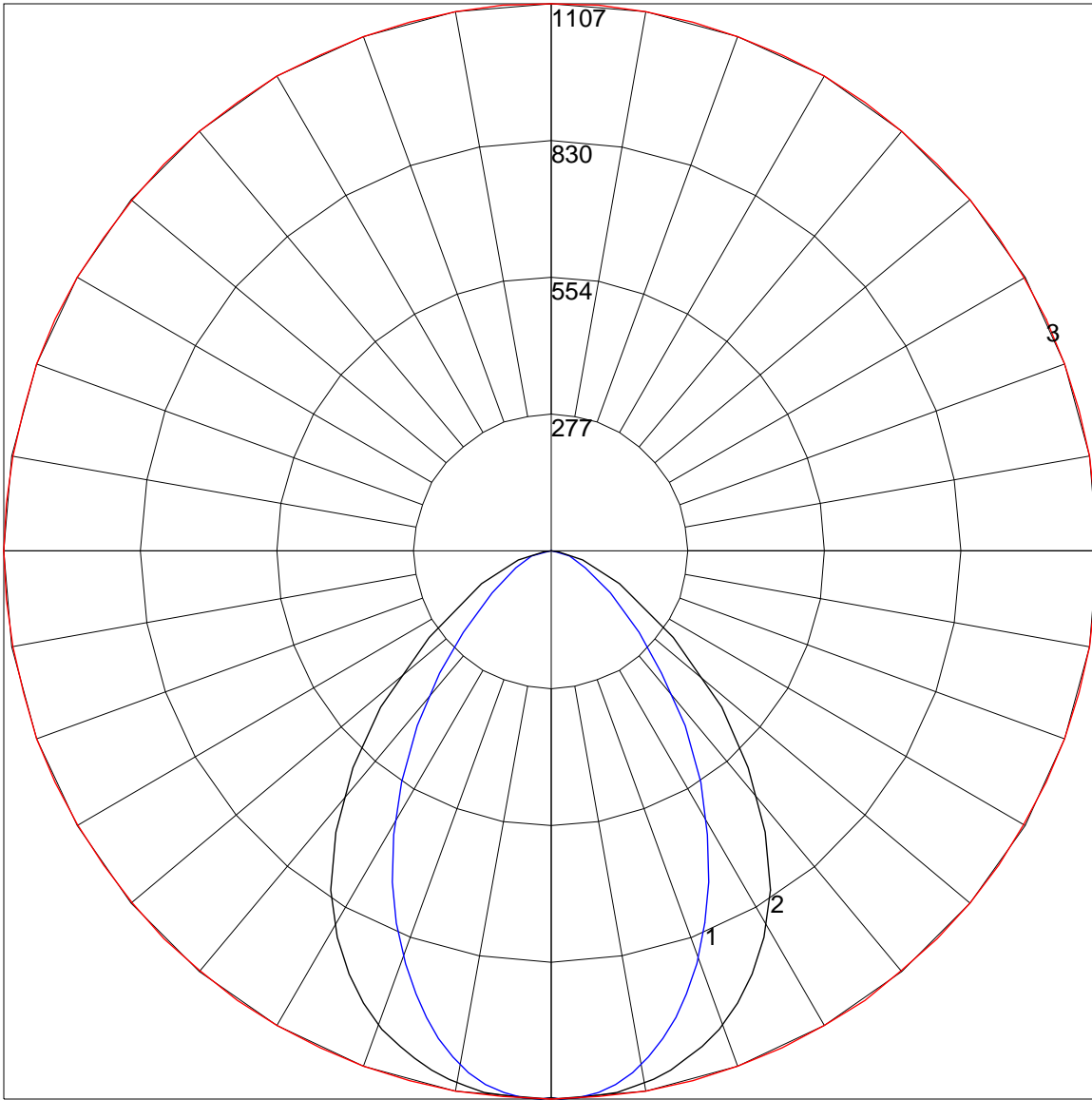
IES INDOOR REPORT
PHOTOMETRIC FILENAME : L031700421.IES

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	108	104	100	97	100	97	94	96	93	91	92	90	89	87
2	102	95	89	84	99	93	88	83	89	85	81	86	83	79	83	80	77	75
3	94	85	78	73	92	84	77	72	81	75	71	78	73	69	76	72	68	66
4	88	77	70	64	86	76	69	63	74	67	62	71	66	62	69	65	61	59
5	82	70	62	57	80	69	62	56	67	61	56	65	60	55	64	59	55	53
6	76	64	57	51	74	64	56	51	62	55	50	60	54	50	59	54	49	48
7	71	59	52	46	70	59	51	46	57	50	46	56	50	45	54	49	45	43
8	67	55	47	42	66	54	47	42	53	46	42	52	46	41	51	45	41	40
9	63	51	44	39	62	50	43	38	49	43	38	48	42	38	47	42	38	36
10	60	48	40	36	58	47	40	36	46	40	35	45	39	35	44	39	35	34

POLAR GRAPH



Maximum Candela = 1107 Located At Horizontal Angle = 45, Vertical Angle = 1
1 - Vertical Plane Through Horizontal Angles (45 - 225) (Through Max. Cd.)
2 - Vertical Plane Through Horizontal Angles (90 - 270)
3 - Horizontal Cone Through Vertical Angle (1) (Through Max. Cd.)