



8165 E Kaiser Blvd. Anaheim, CA 92808  
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Test #: L051407101

Date: 7/8/2014



NVLAP LAB CODE 200927-0

**Test Report:** L051407101

**Model Number:** BSS110-435-DM24CV-U

**Report Prepared For:** BARTCO LIGHTING, INC.  
 5761 RESEARCH DRIVE, HUNTINGTON BEACH, CA 92649

**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. Catalog number is BSS110-435-DM24CV-U. Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 7/3/14

**Date of Tests:** 7/7/14 - 7/7/14

**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	01/04/15
Xitron Power Analysis System	2503AH	MT-EL01	01/09/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/15
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/15
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.

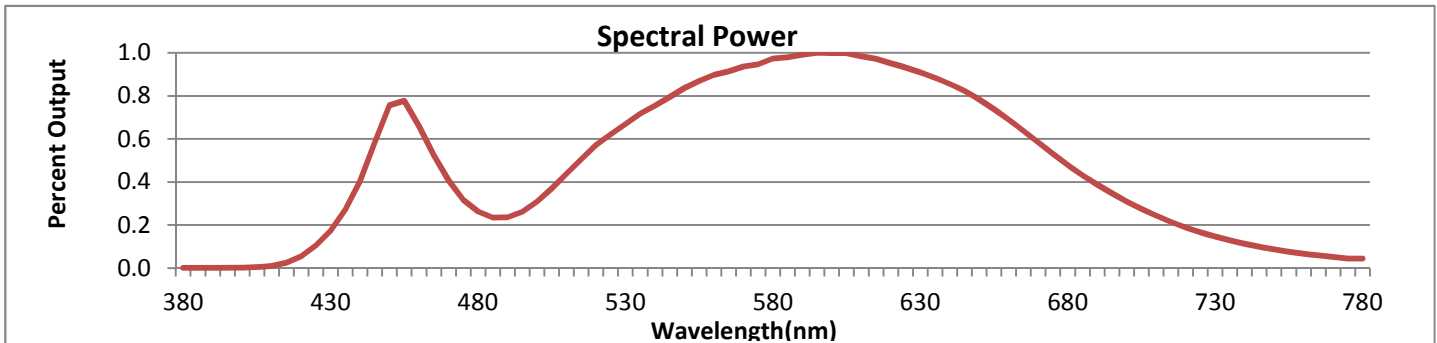
**LM-79 Test Summary**

<b>Manufacturer:</b>	BARTCO LIGHTING, INC.
<b>Model Number:</b>	BSS110-435-DM24CV-U
<b>Driver Model Number:</b>	DIODE SHIELD AC-A60VD24H2.5
<b>Total Lumens:</b>	2667.85
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.38
<b>Input Power (W):</b>	45.26
<b>Input Power Factor:</b>	0.99
<b>Total Harmonic Distortion @ 120V(%):</b>	3%
<b>Total Harmonic Distortion @ 277V(%):</b>	N/A
<b>Efficacy:</b>	59
<b>Color Rendering Index (CRI):</b>	84
<b>Correlated Color Temperature (K):</b>	3446
<b>Chromaticity Coordinate x:</b>	0.4063
<b>Chromaticity Coordinate y:</b>	0.3867
<b>Ambient Temperature (°F):</b>	77.0
<b>Stabilization Time (Hours):</b>	1:25
<b>Total Operating Time (Hours):</b>	2:40
<b>Off State Power(W):</b>	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.



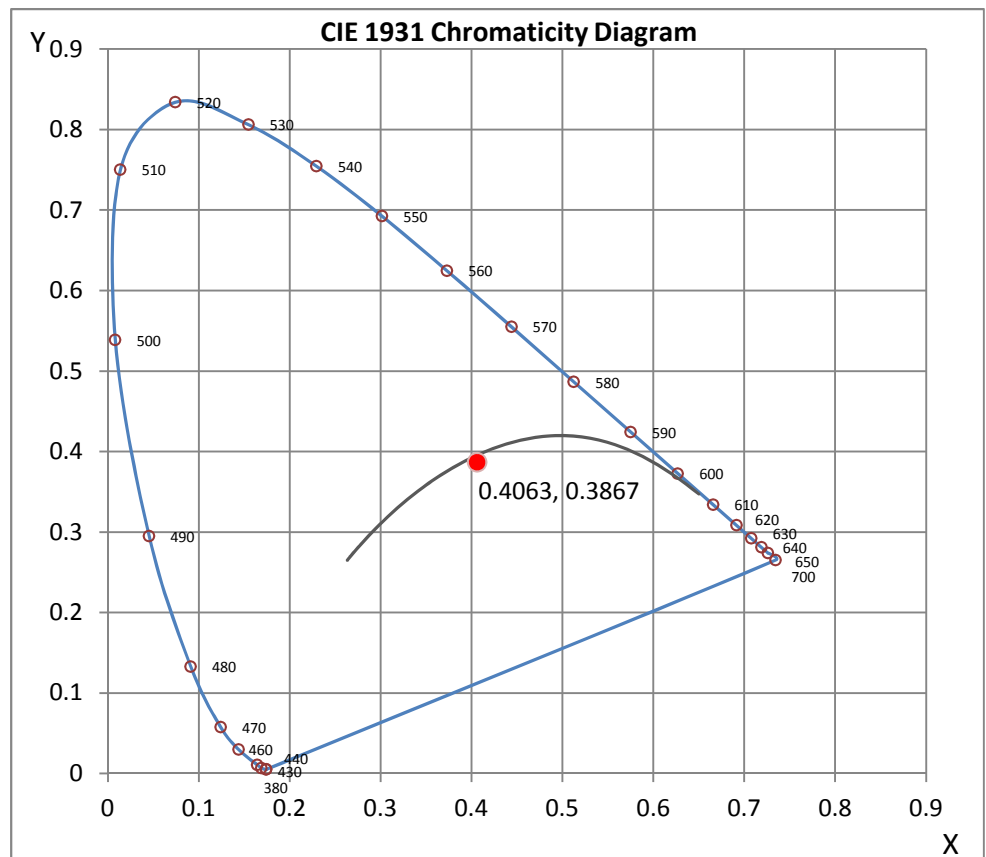
Wavelength	W/m <sup>2</sup> nm	440	0.0128	510	0.0139	580	0.0309	650	0.0249	720	0.0060
380	0.0000	450	0.0240	520	0.0181	590	0.0315	660	0.0219	730	0.0046
390	0.0000	460	0.0209	530	0.0213	600	0.0317	670	0.0186	740	0.0036
400	0.0001	470	0.0129	540	0.0240	610	0.0313	680	0.0153	750	0.0028
410	0.0003	480	0.0084	550	0.0266	620	0.0302	690	0.0123	760	0.0021
420	0.0017	490	0.0075	560	0.0285	630	0.0289	700	0.0098	770	0.0016
430	0.0055	500	0.0098	570	0.0298	640	0.0272	710	0.0078	780	0.0014

**CRI & CCT**

x	0.4063
y	0.3867
u'	0.2380
v'	0.5097
CRI	83.70
CCT	3446
Duv	-0.00199

**R Values**

R1	82.80
R2	88.80
R3	91.23
R4	81.40
R5	80.83
R6	82.15
R7	89.03
R8	73.21
R9	34.63
R10	71.09
R11	76.88
R12	60.28
R13	83.86
R14	94.36



\*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.

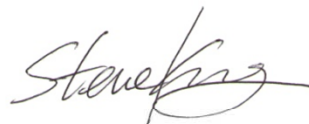
Report Prepared by : Wilson Khounlavong

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*



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## Photometric Test Report

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L051407101.IES**

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L051407101  
[TESTLAB] LIGHT LABORATORY, INC.  
[ISSUEDATE] 7/8/2014  
[MANUFAC] BARTCO LIGHTING, INC.  
[LUMCAT] BSS110-435-DM24CV-U  
[LUMINAIRE] 45-1/2"L X 3"W X 1-7/8"H. LED LUMINAIRE  
[MORE] DIFFUSED LENS  
[BALLASTCAT] DIODE SHIELD AC-A60VD24H2.5  
[BALLAST] INPUT: 120-277VAC, 0.6-0.26A, 50/60HZ. OUTPUT: 24VDC, 2.5A  
[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, 45.26W  
[TEST PROCEDURE] IESNA:LM-79-08

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	2668
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	59
Total Luminaire Watts	45.26
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.18
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.28
Basic Luminous Shape	Rectangular w/Sides
Luminous Length (0-180)	3.77 ft
Luminous Width (90-270)	0.08 ft
Luminous Height	0.01 ft

**IES INDOOR REPORT**  
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**LUMINANCE DATA (cd/sq.m)**

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	29823	27241	26131
55	27249	23899	22207
65	25419	20923	18563
75	23736	17312	13809
85	30971	12887	7580

**IES INDOOR REPORT**  
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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>
<b>0</b>	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054
<b>5</b>	1047	1045	1046	1044	1044	1046	1047	1048	1047	1047
<b>10</b>	1026	1025	1024	1023	1023	1025	1026	1027	1028	1027
<b>15</b>	992	990	988	990	989	989	991	991	991	992
<b>20</b>	943	944	943	943	944	943	944	945	946	946
<b>25</b>	885	886	884	885	887	887	887	886	887	889
<b>30</b>	820	820	819	819	821	821	820	819	821	821
<b>35</b>	750	748	747	748	749	748	749	747	749	748
<b>40</b>	673	671	670	670	671	672	672	671	670	670
<b>45</b>	593	592	592	592	593	593	592	591	590	589
<b>50</b>	514	515	515	514	514	514	513	512	511	509
<b>55</b>	440	441	440	439	440	439	438	437	436	434
<b>60</b>	374	375	374	374	373	373	372	370	369	367
<b>65</b>	303	304	304	303	303	302	301	299	298	296
<b>70</b>	236	237	237	237	236	235	234	233	231	229
<b>75</b>	174	174	174	174	174	173	172	172	170	168
<b>80</b>	119	119	119	118	118	117	116	115	113	111
<b>85</b>	78	78	77	77	75	73	72	69	67	64
<b>90</b>	53	53	52	51	50	48	46	43	40	37
<b>95</b>	34	34	34	33	32	30	28	26	24	22
<b>100</b>	25	25	24	24	23	22	21	19	18	16
<b>105</b>	0	0	0	0	0	0	0	0	0	0
<b>110</b>	0	0	0	0	0	0	0	0	0	0
<b>115</b>	0	0	0	0	0	0	0	0	0	0
<b>120</b>	0	0	0	0	0	0	0	0	0	0
<b>125</b>	0	0	0	0	0	0	0	0	0	0
<b>130</b>	0	0	0	0	0	0	0	0	0	0
<b>135</b>	0	0	0	0	0	0	0	0	0	0
<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. Horizontal Angles**  
**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>
<b>0</b>	1054	1054	1054	1054	1054	1054	1054	1054	1054
<b>5</b>	1049	1047	1049	1046	1045	1043	1044	1045	1045
<b>10</b>	1028	1025	1025	1025	1023	1024	1023	1023	1025
<b>15</b>	992	993	992	990	993	990	992	991	993
<b>20</b>	946	946	946	944	945	942	942	941	942
<b>25</b>	889	889	888	887	886	885	884	884	885
<b>30</b>	823	822	820	819	817	818	818	819	819
<b>35</b>	748	748	746	747	745	744	743	744	745
<b>40</b>	670	670	669	668	666	663	663	664	664
<b>45</b>	589	588	588	587	585	584	582	582	583
<b>50</b>	508	508	506	505	504	501	500	501	502
<b>55</b>	431	430	428	428	425	424	422	421	421
<b>60</b>	365	363	360	359	357	355	353	352	353

IES INDOOR REPORT  
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CANDELA TABULATION - (Cont.)

65	294	291	288	286	284	281	280	278	279
70	227	225	221	218	215	213	211	208	209
75	166	164	161	158	155	152	149	148	147
80	110	108	106	104	101	98	95	93	92
85	61	58	56	55	52	51	49	46	45
90	34	30	27	23	21	16	12	11	10
95	20	17	15	14	12	10	10	10	10
100	14	13	11	10	9	9	9	9	9
105	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0



**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L051407101.IES**

**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	378.24	N.A.	14.20
0-30	786.14	N.A.	29.50
0-40	1253.07	N.A.	47.00
0-60	2096.7	N.A.	78.60
0-80	2563.85	N.A.	96.10
0-90	2637.64	N.A.	98.90
10-90	2538.45	N.A.	95.10
20-40	874.83	N.A.	32.80
20-50	1329.44	N.A.	49.80
40-70	1135.34	N.A.	42.60
60-80	467.15	N.A.	17.50
70-80	175.44	N.A.	6.60
80-90	73.80	N.A.	2.80
90-110	30.20	N.A.	1.10
90-120	30.20	N.A.	1.10
90-130	30.20	N.A.	1.10
90-150	30.20	N.A.	1.10
90-180	30.20	N.A.	1.10
110-180	0.00	N.A.	0.00
0-180	2667.85	N.A.	100.00

Total Luminaire Efficiency = N.A.%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	99.19
10-20	279.05
20-30	407.90
30-40	466.93
40-50	454.61
50-60	389.03
60-70	291.71
70-80	175.44
80-90	73.80
90-100	25.85
100-110	4.36
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

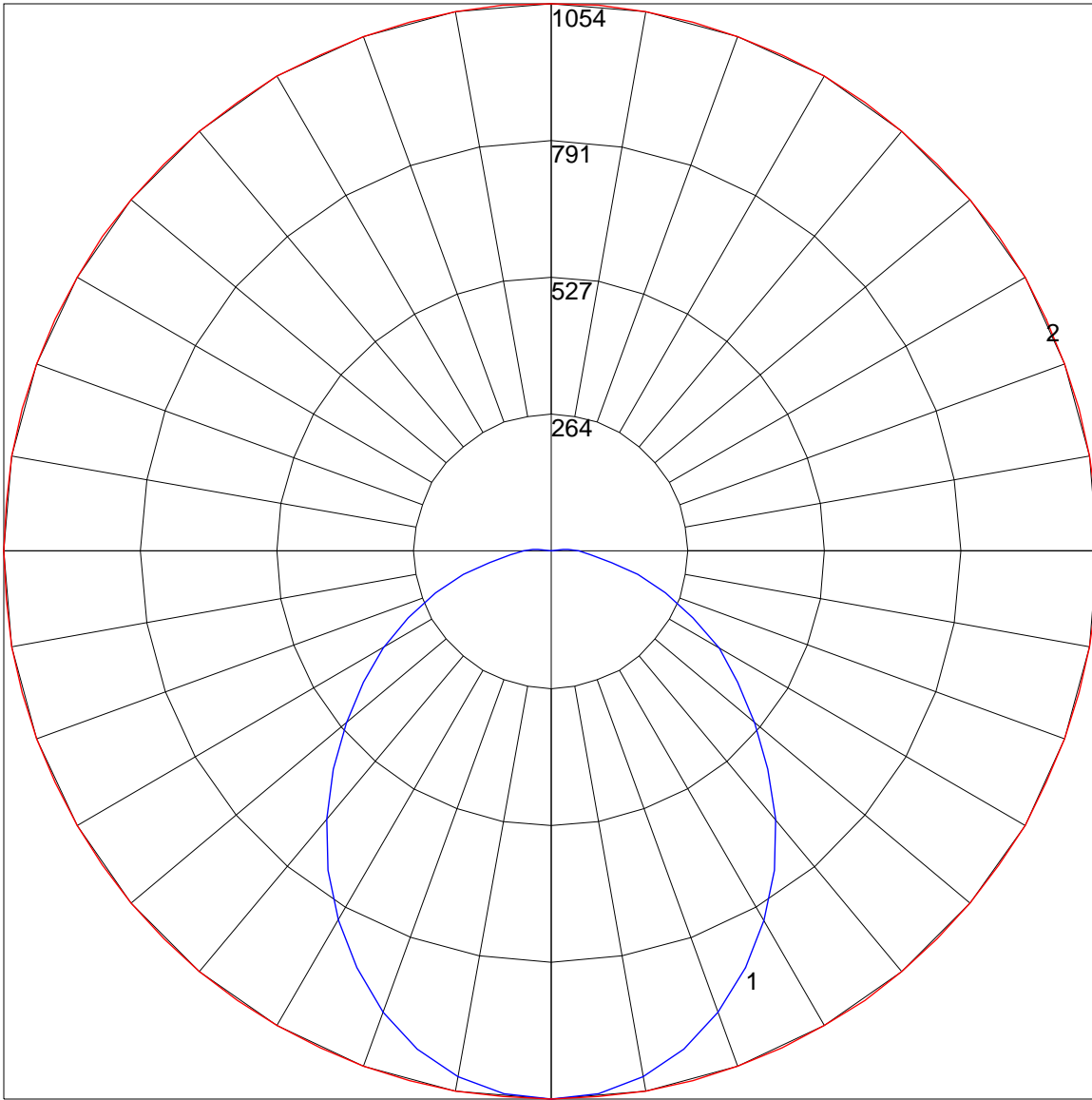
**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L051407101.IES**

**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	116	110	110	110	106	106	106	101	101	101	99
1	108	104	99	95	95	106	101	97	94	94	97	93	91	93	90	88	89	87	85	83
2	99	91	84	78	78	96	89	82	77	77	85	80	75	81	77	73	78	75	71	69
3	90	80	72	65	65	88	78	71	65	65	75	69	63	72	67	62	69	65	61	59
4	83	71	62	56	56	80	70	62	55	55	67	60	54	65	58	54	62	57	53	51
5	76	64	55	48	48	74	63	54	48	48	60	53	47	58	52	47	56	51	46	44
6	71	58	49	42	42	69	57	48	42	42	55	47	42	53	46	41	51	45	41	39
7	66	52	44	38	38	64	51	43	37	37	50	42	37	48	42	37	47	41	36	34
8	61	48	39	34	34	60	47	39	34	34	46	38	33	44	38	33	43	37	33	31
9	57	44	36	30	30	56	43	36	30	30	42	35	30	41	35	30	40	34	30	28
10	54	41	33	28	28	52	40	33	28	28	39	32	27	38	32	27	37	31	27	25

POLAR GRAPH



Maximum Candela = 1054 Located At Horizontal Angle = 0, Vertical Angle = 0  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)