



**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : HETG-AR22-L38-840-A-DIM-UNV.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
[TEST] GEN FROM ORIG TEST  
[TESTLAB] Intertek  
[ISSUE DATE] 03/18/2019  
[MANUFAC] WILLIAMS INDOOR  
[OTHER] H.E. WILLIAMS, INC. - CARTHAGE, MO.  
[LUMCAT] HETG-AR22-L38-840-A-DIM-UNV  
[LUMINAIRE] 2x2 RECESSED GRID LUMINAIRE  
[LAMP] LED  
[LAMPCAT] HLM 80 CRI 4000K CCT  
[ \_SEARCH\_APPLICATION] INDOOR  
[ \_SEARCH\_SOURCETYPE] LED  
[ \_SEARCH\_MOUNTING] RECESSED

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	3906
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	130
Total Luminaire Watts	30.1
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	1.22
Spacing Criterion (90-270)	1.18
Spacing Criterion (Diagonal)	1.30
Basic Luminous Shape	Rectangular
Luminous Length (0-180)	1.92 ft
Luminous Width (90-270)	1.92 ft
Luminous Height	0.00 ft

**LUMINANCE DATA (cd/sq.m)**

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	3955	3795	3601
55	3652	3408	3045
65	2847	3028	2511
75	1807	2321	2016
85	613	1158	1486

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**CANDELA TABULATION**

	<u>0.0</u>	<u>22.5</u>	<u>45.0</u>	<u>67.5</u>	<u>90.0</u>	<u>112.5</u>	<u>135.0</u>	<u>157.5</u>	<u>180.0</u>	<u>202.5</u>
<b>0.0</b>	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964
<b>2.5</b>	1611.102	1616.688	1613.846	1608.457	1603.753	1608.555	1613.944	1616.590	1610.416	1616.590
<b>5.0</b>	1605.223	1609.926	1606.987	1602.381	1597.677	1602.283	1607.771	1610.220	1603.753	1610.220
<b>7.5</b>	1595.032	1599.245	1596.011	1591.210	1586.114	1591.014	1596.991	1598.951	1592.288	1598.951
<b>10.0</b>	1579.255	1583.762	1580.431	1574.943	1569.259	1574.551	1581.802	1583.762	1577.589	1583.762
<b>12.5</b>	1559.264	1563.282	1559.166	1553.287	1547.701	1552.895	1561.714	1564.360	1557.598	1564.360
<b>15.0</b>	1535.256	1538.784	1533.786	1527.710	1521.047	1526.338	1536.824	1540.351	1533.394	1540.351
<b>17.5</b>	1507.328	1509.778	1504.290	1496.451	1489.395	1494.883	1507.230	1511.542	1505.368	1511.542
<b>20.0</b>	1475.284	1476.558	1469.797	1461.271	1453.138	1458.821	1472.344	1478.224	1473.520	1478.224
<b>22.5</b>	1439.321	1439.321	1430.305	1420.996	1412.667	1418.350	1433.833	1441.183	1437.067	1441.183
<b>25.0</b>	1398.556	1396.988	1386.405	1375.821	1367.296	1373.469	1390.618	1399.830	1396.498	1399.830
<b>27.5</b>	1353.185	1351.225	1338.976	1327.217	1317.809	1324.277	1343.582	1354.655	1352.009	1354.655
<b>30.0</b>	1303.894	1301.641	1286.648	1274.105	1263.913	1271.263	1292.429	1304.972	1304.090	1304.972
<b>32.5</b>	1251.370	1248.430	1230.988	1217.171	1206.097	1214.133	1237.161	1251.762	1252.154	1251.762
<b>35.0</b>	1196.200	1192.084	1172.584	1156.905	1144.166	1153.965	1178.757	1195.024	1195.514	1195.024
<b>37.5</b>	1138.874	1133.093	1111.828	1093.700	1079.393	1090.466	1117.904	1135.739	1136.914	1135.739
<b>40.0</b>	1080.078	1072.435	1048.917	1027.848	1011.483	1024.712	1055.188	1074.199	1077.041	1074.199
<b>42.5</b>	1019.715	1010.993	985.123	960.625	942.496	957.391	990.415	1011.581	1016.579	1011.581
<b>45.0</b>	958.665	949.062	919.860	892.422	872.823	888.600	924.662	948.376	954.941	948.376
<b>47.5</b>	898.498	886.836	856.459	826.179	803.052	817.555	857.536	884.681	894.284	884.681
<b>50.0</b>	839.996	827.453	793.253	758.270	733.477	749.646	791.097	820.103	831.470	820.103
<b>52.5</b>	780.416	766.991	730.734	691.536	665.078	682.521	726.912	758.368	770.323	758.368
<b>55.0</b>	717.994	706.823	670.076	626.861	598.737	617.062	664.000	696.926	705.941	696.926
<b>57.5</b>	644.402	643.912	610.888	564.244	535.336	553.954	603.245	633.133	631.075	633.133
<b>60.0</b>	565.419	571.593	553.660	504.174	475.266	493.885	544.841	560.716	556.502	560.716
<b>62.5</b>	491.239	497.510	497.118	447.240	417.940	437.245	488.103	490.651	479.970	490.651
<b>65.0</b>	412.452	427.445	438.715	393.442	363.750	383.838	429.993	418.626	400.399	418.626
<b>67.5</b>	335.724	354.539	376.783	343.171	312.892	333.470	370.413	346.111	325.435	346.111
<b>70.0</b>	267.815	286.433	318.477	296.037	265.365	286.335	312.108	278.594	258.211	278.594
<b>72.5</b>	208.921	225.384	260.661	251.352	220.484	242.043	253.704	217.348	199.710	217.348
<b>75.0</b>	160.316	172.370	205.883	208.137	178.837	199.514	199.514	164.922	152.281	164.922
<b>77.5</b>	124.549	127.783	155.221	164.922	141.110	157.279	149.439	122.295	117.984	122.295
<b>80.0</b>	100.639	102.207	109.164	122.981	105.440	116.808	104.950	100.737	98.679	100.737
<b>82.5</b>	51.152	59.776	75.945	83.196	72.711	80.942	78.198	64.479	56.542	64.479
<b>85.0</b>	18.325	22.342	34.592	46.743	44.391	46.645	37.041	23.714	18.913	23.714
<b>87.5</b>	5.978	7.545	9.897	17.345	19.599	17.443	10.387	7.643	5.880	7.643
<b>90.0</b>	0.980	1.274	0.980	0.392	0.294	0.686	1.470	1.666	1.176	1.666
<b>92.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>95.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>97.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>100.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>102.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>105.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>107.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>110.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>112.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>115.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>117.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>120.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>122.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>125.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>127.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>130.0</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>132.5</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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**CANDELA TABULATION - (Cont.)**

135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
142.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
147.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
152.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
157.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
162.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
167.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
172.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
177.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

	<u>225.0</u>	<u>247.5</u>	<u>270.0</u>	<u>292.5</u>	<u>315.0</u>	<u>337.5</u>	<u>360.0</u>
0.0	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964	1612.964
2.5	1613.944	1608.555	1603.753	1608.457	1613.846	1616.688	1611.102
5.0	1607.771	1602.283	1597.677	1602.381	1606.987	1609.926	1605.223
7.5	1596.991	1591.014	1586.114	1591.210	1596.011	1599.245	1595.032
10.0	1581.802	1574.551	1569.259	1574.943	1580.431	1583.762	1579.255
12.5	1561.714	1552.895	1547.701	1553.287	1559.166	1563.282	1559.264
15.0	1536.824	1526.338	1521.047	1527.710	1533.786	1538.784	1535.256
17.5	1507.230	1494.883	1489.395	1496.451	1504.290	1509.778	1507.328
20.0	1472.344	1458.821	1453.138	1461.271	1469.797	1476.558	1475.284
22.5	1433.833	1418.350	1412.667	1420.996	1430.305	1439.321	1439.321
25.0	1390.618	1373.469	1367.296	1375.821	1386.405	1396.988	1398.556
27.5	1343.582	1324.277	1317.809	1327.217	1338.976	1351.225	1353.185
30.0	1292.429	1271.263	1263.913	1274.105	1286.648	1301.641	1303.894
32.5	1237.161	1214.133	1206.097	1217.171	1230.988	1248.430	1251.370
35.0	1178.757	1153.965	1144.166	1156.905	1172.584	1192.084	1196.200
37.5	1117.904	1090.466	1079.393	1093.700	1111.828	1133.093	1138.874
40.0	1055.188	1024.712	1011.483	1027.848	1048.917	1072.435	1080.078
42.5	990.415	957.391	942.496	960.625	985.123	1010.993	1019.715
45.0	924.662	888.600	872.823	892.422	919.860	949.062	958.665
47.5	857.536	817.555	803.052	826.179	856.459	886.836	898.498
50.0	791.097	749.646	733.477	758.270	793.253	827.453	839.996
52.5	726.912	682.521	665.078	691.536	730.734	766.991	780.416
55.0	664.000	617.062	598.737	626.861	670.076	706.823	717.994
57.5	603.245	553.954	535.336	564.244	610.888	643.912	644.402
60.0	544.841	493.885	475.266	504.174	553.660	571.593	565.419
62.5	488.103	437.245	417.940	447.240	497.118	497.510	491.239
65.0	429.993	383.838	363.750	393.442	438.715	427.445	412.452
67.5	370.413	333.470	312.892	343.171	376.783	354.539	335.724
70.0	312.108	286.335	265.365	296.037	318.477	286.433	267.815
72.5	253.704	242.043	220.484	251.352	260.661	225.384	208.921
75.0	199.514	199.514	178.837	208.137	205.883	172.370	160.316
77.5	149.439	157.279	141.110	164.922	155.221	127.783	124.549
80.0	104.950	116.808	105.440	122.981	109.164	102.207	100.639

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CANDELA TABULATION - (Cont.)

82.5	78.198	80.942	72.711	83.196	75.945	59.776	51.152
85.0	37.041	46.645	44.391	46.743	34.592	22.342	18.325
87.5	10.387	17.443	19.599	17.345	9.897	7.545	5.978
90.0	1.470	0.686	0.294	0.392	0.980	1.274	0.980
92.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
97.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
105.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
107.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
110.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
112.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
115.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
117.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
120.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
122.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
125.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
127.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
130.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
132.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
135.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
137.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
140.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
142.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
145.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
147.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
152.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
155.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
157.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
160.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
162.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
165.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
167.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
170.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
172.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
175.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
177.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
180.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	584.18	N.A.	15.00
0-30	1221.86	N.A.	31.30
0-40	1954.97	N.A.	50.00
0-60	3255.01	N.A.	83.30
0-80	3859.54	N.A.	98.80
0-90	3906.23	N.A.	100.00
10-90	3753.86	N.A.	96.10
20-40	1370.79	N.A.	35.10
20-50	2079.78	N.A.	53.20
40-70	1704.13	N.A.	43.60
60-80	604.53	N.A.	15.50
70-80	200.44	N.A.	5.10
80-90	46.69	N.A.	1.20
90-110	0.13	N.A.	0.00
90-120	0.13	N.A.	0.00
90-130	0.13	N.A.	0.00
90-150	0.13	N.A.	0.00
90-180	0.13	N.A.	0.00
110-180	0.00	N.A.	0.00
0-180	3906.36	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	152.37
10-20	431.81
20-30	637.68
30-40	733.11
40-50	708.99
50-60	591.05
60-70	404.09
70-80	200.44
80-90	46.69
90-100	0.13
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

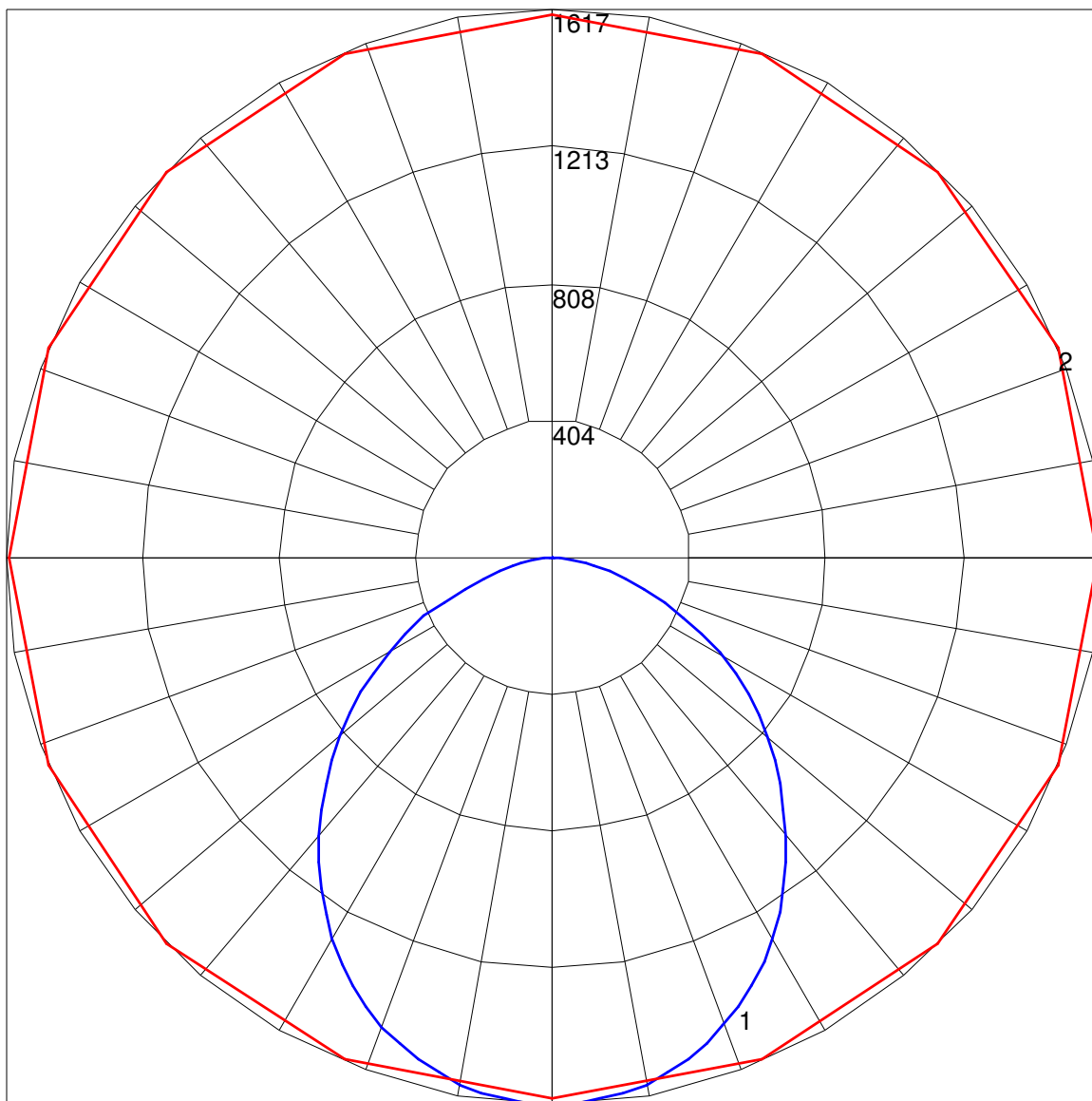
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

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	105	101	98	107	103	99	96	99	96	93	95	92	90	91	89	88	85
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74	72
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62
4	84	73	65	58	82	72	64	58	69	62	57	67	61	56	65	60	55	53
5	78	66	57	51	76	64	56	50	62	55	50	60	54	49	59	53	49	47
6	72	59	51	44	70	58	50	44	57	49	44	55	48	43	53	48	43	41
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	37
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30
10	55	42	34	29	54	41	34	29	40	34	29	40	33	29	39	33	29	27

POLAR GRAPH



Maximum Candela = 1616.688 Located At Horizontal Angle = 22.5, Vertical Angle = 2.5  
# 1 - Vertical Plane Through Horizontal Angles (22.5 - 202.5) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)