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## IES INDOOR REPORT PHOTOMETRIC FILENAME : PNA-8631.IES

### DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] LM-79-08  
[TESTLAB] Orb Optronix, Inc.  
[ISSUE DATE] 07-22-2019  
[MANUFAC] Justice Design  
[LUMINAIRE] PNA-8631

### CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	439
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	19
Total Luminaire Watts	22.92
Ballast Factor	1.00
CIE Type	General Diffuse
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)	0.21 ft
Luminous Width (90-270)	1.75 ft
Luminous Height	0.42 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	982	919	621
55	1099	1033	788
65	1214	1152	1026
75	1335	1285	1413
85	1477	1445	2225

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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>	4.556	4.556	4.556	4.556	4.556	4.556	4.556	4.556	4.556	4.556
<b>2.5</b>	4.029	4.624	4.573	4.454	4.871	4.837	7.140	5.704	5.780	6.239
<b>5.0</b>	7.310	8.143	7.650	6.690	6.588	7.149	8.432	8.687	8.755	8.339
<b>7.5</b>	12.164	12.317	10.931	9.197	8.016	8.279	7.956	8.381	8.611	8.160
<b>10.0</b>	16.006	16.992	14.603	11.016	8.254	7.786	8.058	8.126	7.914	7.897
<b>12.5</b>	24.242	24.820	20.536	14.382	9.461	7.948	8.288	7.880	7.404	7.557
<b>15.0</b>	29.912	30.099	25.628	17.859	10.787	8.398	8.628	7.693	7.217	7.327
<b>17.5</b>	34.629	34.468	29.215	20.604	11.943	8.823	8.704	7.642	7.463	7.259
<b>20.0</b>	39.185	38.939	32.810	22.916	12.946	9.240	8.730	7.778	7.769	7.387
<b>22.5</b>	43.716	42.730	35.896	24.922	13.745	9.801	8.687	7.922	8.237	7.778
<b>25.0</b>	47.558	46.376	38.743	26.792	14.535	10.107	8.687	8.254	8.951	8.177
<b>27.5</b>	51.111	49.640	41.676	28.688	15.215	10.217	8.551	8.619	9.750	8.492
<b>30.0</b>	54.349	52.836	44.413	30.634	15.793	10.294	8.390	9.053	10.430	8.874
<b>32.5</b>	57.324	55.267	46.606	32.326	16.295	10.481	8.118	9.486	10.974	9.053
<b>35.0</b>	60.512	58.072	48.595	33.669	16.677	10.710	7.837	9.775	11.509	9.206
<b>37.5</b>	63.572	60.920	51.026	35.165	17.153	10.787	7.701	9.996	12.104	9.435
<b>40.0</b>	66.147	63.385	53.372	36.635	17.655	10.974	7.548	10.175	12.648	9.614
<b>42.5</b>	68.595	65.705	55.454	38.199	18.148	11.203	7.463	10.464	13.175	9.767
<b>45.0</b>	71.171	68.060	57.358	39.627	18.607	11.356	7.395	10.676	13.592	9.996
<b>47.5</b>	73.916	70.635	59.373	40.911	19.142	11.467	7.344	10.829	14.051	10.141
<b>50.0</b>	76.959	73.372	61.515	42.313	19.746	11.620	7.293	10.982	14.510	10.234
<b>52.5</b>	80.181	76.296	63.801	43.690	20.273	11.739	7.157	11.135	14.892	10.379
<b>55.0</b>	83.079	78.982	66.079	45.127	20.732	11.917	7.157	11.280	15.122	10.566
<b>57.5</b>	85.782	81.405	68.094	46.453	21.114	12.036	7.038	11.305	15.462	10.583
<b>60.0</b>	88.188	83.606	69.802	47.626	21.573	12.189	6.987	11.348	15.768	10.685
<b>62.5</b>	90.500	85.731	71.511	48.731	21.990	12.300	6.851	11.467	16.065	10.761
<b>65.0</b>	92.752	87.763	73.134	49.674	22.440	12.529	6.894	11.645	16.371	10.991
<b>67.5</b>	94.546	89.318	74.401	50.482	22.712	12.529	6.902	11.756	16.754	11.093
<b>70.0</b>	96.169	90.959	75.710	51.357	23.052	12.691	6.953	11.841	17.017	11.152
<b>72.5</b>	98.141	92.812	77.316	52.318	23.392	12.988	7.055	11.977	17.400	11.331
<b>75.0</b>	99.935	94.333	78.574	53.236	23.698	13.235	7.089	12.121	17.740	11.509
<b>77.5</b>	101.380	95.141	79.747	53.967	24.081	13.456	7.242	12.232	17.927	11.611
<b>80.0</b>	102.740	96.543	80.716	54.604	24.353	13.702	7.319	12.325	18.309	11.688
<b>82.5</b>	104.032	97.725	81.660	55.182	24.616	13.830	7.361	12.368	18.496	11.773
<b>85.0</b>	104.984	98.643	82.212	55.607	24.803	13.974	7.412	12.368	18.649	11.722
<b>87.5</b>	105.519	99.263	82.544	55.777	24.922	14.042	7.429	12.334	18.760	11.722
<b>90.0</b>	105.825	99.433	82.612	55.726	24.965	14.000	7.412	12.232	18.760	11.671
<b>92.5</b>	105.630	99.255	82.348	55.752	24.956	13.957	7.370	12.121	18.760	11.467
<b>95.0</b>	105.137	98.864	82.025	55.548	24.965	13.813	7.412	12.002	18.607	11.356
<b>97.5</b>	104.491	98.320	81.558	55.250	24.888	13.719	7.370	11.951	18.564	11.203
<b>100.0</b>	103.726	97.589	80.886	54.825	24.769	13.532	7.387	11.917	18.564	11.220
<b>102.5</b>	102.578	96.526	79.926	54.230	24.506	13.396	7.174	11.586	18.139	10.778
<b>105.0</b>	101.286	95.277	79.008	53.678	24.353	12.980	6.953	11.280	17.961	10.608
<b>107.5</b>	99.926	94.053	78.013	52.989	24.285	12.742	6.885	11.144	17.680	10.464
<b>110.0</b>	98.430	92.701	76.738	52.301	24.132	12.393	6.724	10.957	17.306	10.336
<b>112.5</b>	96.560	91.001	75.217	51.332	23.826	12.079	6.554	10.795	16.966	10.064
<b>115.0</b>	94.435	89.055	73.636	50.346	23.562	12.062	6.384	10.600	16.660	9.911
<b>117.5</b>	92.463	87.159	72.072	49.402	23.214	12.002	6.418	10.387	16.320	9.690
<b>120.0</b>	90.287	85.204	70.278	48.297	22.797	11.934	6.588	10.183	15.861	9.537
<b>122.5</b>	87.984	83.045	68.459	47.141	22.457	11.739	6.792	10.175	15.487	9.503
<b>125.0</b>	85.842	80.946	66.530	45.926	22.109	11.586	6.919	10.132	15.096	9.452
<b>127.5</b>	83.113	78.447	64.328	44.634	21.582	11.450	6.970	10.141	14.476	9.257
<b>130.0</b>	80.427	75.914	63.215	45.280	21.242	11.297	7.089	10.098	13.915	8.934
<b>132.5</b>	78.413	74.214	62.849	43.605	20.817	11.161	7.030	9.860	13.311	8.985

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**CANDELA TABULATION - (Cont.)**

135.0	76.441	72.225	58.965	41.200	20.281	10.906	7.055	9.750	12.827	8.543
137.5	74.273	70.210	56.933	39.678	19.788	10.846	6.987	9.707	12.028	7.973
140.0	71.443	67.711	54.553	38.293	19.049	10.370	6.800	8.747	10.659	7.055
142.5	68.017	64.617	52.921	35.624	18.114	10.115	6.460	7.497	9.758	6.350
145.0	59.985	59.568	49.113	35.020	17.791	9.792	5.916	6.724	8.823	5.610
147.5	60.835	58.523	48.399	32.674	16.771	9.010	5.372	6.078	7.446	4.735
150.0	56.704	54.409	44.719	30.005	15.708	8.228	4.573	4.930	5.806	3.315
152.5	52.998	50.516	41.268	27.829	14.748	7.370	3.366	3.587	4.021	2.321
155.0	50.006	47.447	38.633	26.248	13.354	5.993	2.746	2.525	2.542	1.641
157.5	46.716	44.685	36.236	23.979	11.484	4.012	2.278	1.938	1.615	1.275
160.0	41.888	40.698	32.912	20.783	9.155	2.882	1.913	1.598	1.224	0.944
162.5	37.451	36.202	28.960	16.431	6.239	2.227	1.292	1.063	0.901	0.757
165.0	31.161	30.711	22.160	10.345	4.658	1.556	0.935	0.723	0.536	0.621
167.5	20.502	19.686	14.314	7.693	3.094	1.088	0.663	0.527	0.434	0.544
170.0	13.260	13.226	9.962	4.548	1.717	0.714	0.527	0.451	0.425	0.493
172.5	7.778	7.956	5.304	2.168	1.156	0.595	0.400	0.417	0.340	0.510
175.0	2.848	3.290	2.406	0.799	0.417	0.374	0.323	0.306	0.383	0.510
177.5	0.383	0.808	0.459	0.340	0.451	0.400	0.383	0.451	0.425	0.553
180.0	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476	0.476

**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	4.556	4.556	4.556	4.556	4.556	4.556	4.556
2.5	5.627	5.338	5.109	4.080	3.655	3.961	3.638
5.0	8.007	7.497	6.911	6.341	6.622	7.531	7.846
7.5	7.956	7.905	8.160	8.934	10.141	12.053	12.674
10.0	7.956	7.948	8.891	10.855	13.303	16.320	16.958
12.5	8.135	8.330	10.149	14.008	18.581	23.528	25.169
15.0	8.492	8.704	11.008	16.847	23.001	28.475	30.592
17.5	8.577	8.917	11.773	19.159	26.342	32.538	35.029
20.0	8.509	9.274	12.368	21.080	29.759	36.856	39.755
22.5	8.551	9.622	12.954	22.712	32.683	40.690	44.115
25.0	8.517	9.996	13.507	24.276	35.386	44.166	47.932
27.5	8.517	10.260	13.932	25.968	38.216	47.226	51.374
30.0	8.449	10.566	14.229	27.574	40.673	50.201	54.672
32.5	8.432	10.829	14.544	29.096	42.917	53.066	57.562
35.0	8.254	11.135	14.969	30.498	45.263	56.015	60.767
37.5	8.245	11.322	15.360	31.892	47.702	58.812	63.750
40.0	8.169	11.705	15.725	33.261	49.793	61.285	66.343
42.5	8.135	12.045	16.108	34.629	51.842	63.606	68.876
45.0	8.101	12.198	16.490	35.947	53.933	66.283	71.519
47.5	8.092	12.538	16.924	37.213	56.202	68.995	74.375
50.0	8.058	12.895	17.298	38.616	58.438	71.885	77.469
52.5	8.024	13.184	17.706	40.044	60.826	74.851	80.657
55.0	8.016	13.524	18.114	41.336	63.070	77.648	83.581
57.5	7.948	13.830	18.360	42.602	65.093	80.019	86.224
60.0	7.871	14.093	18.649	43.682	66.836	82.212	88.570
62.5	7.795	14.314	18.998	44.778	68.621	84.422	90.882
65.0	7.795	14.569	19.304	45.671	70.253	86.454	93.160
67.5	7.786	14.612	19.516	46.402	71.587	88.111	94.869
70.0	7.829	14.807	19.695	47.090	72.803	89.582	96.450
72.5	7.863	15.045	19.950	47.991	74.205	91.350	98.362
75.0	7.863	15.343	20.111	48.663	75.531	92.965	100.105
77.5	7.905	15.530	20.383	49.351	76.594	94.248	101.558
80.0	7.982	15.870	20.621	49.921	77.580	95.498	102.910

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**CANDELA TABULATION - (Cont.)**

<b>82.5</b>	7.982	16.014	20.723	50.473	78.600	96.671	104.125
<b>85.0</b>	8.058	16.244	20.808	50.830	79.169	97.393	104.975
<b>87.5</b>	8.058	16.320	20.859	51.085	79.620	97.886	105.502
<b>90.0</b>	8.016	16.414	20.910	51.179	79.875	98.039	105.647
<b>92.5</b>	7.905	16.346	20.876	51.213	79.798	97.818	105.392
<b>95.0</b>	7.795	16.286	20.825	50.966	79.365	97.240	104.890
<b>97.5</b>	7.642	16.218	20.723	50.677	78.914	96.603	104.168
<b>100.0</b>	7.565	16.082	20.604	50.346	78.336	95.795	103.335
<b>102.5</b>	7.259	15.878	20.417	49.759	77.486	94.673	102.145
<b>105.0</b>	7.072	15.589	20.205	49.147	76.466	93.364	100.819
<b>107.5</b>	6.843	15.402	20.035	48.535	75.361	92.106	99.450
<b>110.0</b>	6.732	15.122	20.120	47.796	74.171	90.585	97.912
<b>112.5</b>	6.537	14.841	19.967	47.005	72.760	88.740	95.982
<b>115.0</b>	6.426	14.909	19.780	46.130	71.273	86.828	93.959
<b>117.5</b>	6.392	14.918	19.542	45.331	69.760	84.992	91.894
<b>120.0</b>	6.545	14.850	19.363	44.396	68.153	82.892	89.692
<b>122.5</b>	6.775	14.722	19.074	43.486	66.521	80.869	87.499
<b>125.0</b>	6.919	14.527	18.887	42.390	64.728	78.710	85.281
<b>127.5</b>	6.928	14.212	18.615	41.327	62.781	76.126	82.535
<b>130.0</b>	6.979	13.957	18.343	41.421	61.260	73.882	79.951
<b>132.5</b>	6.979	13.481	17.978	40.001	60.418	72.157	78.115
<b>135.0</b>	7.234	13.192	17.561	38.089	58.259	69.981	76.067
<b>137.5</b>	7.038	12.682	17.153	36.788	55.522	67.864	73.925
<b>140.0</b>	6.163	12.640	16.533	35.360	53.202	65.068	71.052
<b>142.5</b>	5.644	11.722	16.346	33.779	50.201	60.707	67.601
<b>145.0</b>	5.143	10.821	15.496	31.918	48.153	57.588	61.481
<b>147.5</b>	4.539	9.690	14.442	30.303	44.736	54.902	60.427
<b>150.0</b>	3.638	8.364	13.328	28.654	41.769	51.145	56.134
<b>152.5</b>	3.018	6.792	11.807	26.971	39.211	48.051	52.454
<b>155.0</b>	2.457	4.888	9.869	25.203	36.839	45.441	49.428
<b>157.5</b>	2.159	3.290	8.177	22.738	33.533	41.939	46.002
<b>160.0</b>	1.658	2.703	6.545	19.975	29.640	37.383	39.738
<b>162.5</b>	1.173	2.125	4.896	15.309	25.398	32.674	32.853
<b>165.0</b>	0.927	1.641	3.893	10.651	18.794	26.070	27.260
<b>167.5</b>	0.782	1.233	2.559	8.636	12.640	16.286	18.505
<b>170.0</b>	0.638	0.961	1.564	5.491	8.237	10.693	11.909
<b>172.5</b>	0.612	0.876	1.173	3.026	4.242	5.585	6.656
<b>175.0</b>	0.663	0.672	0.765	1.768	1.981	2.525	2.703
<b>177.5</b>	0.638	0.723	0.791	0.757	0.612	0.442	0.468
<b>180.0</b>	0.476	0.476	0.476	0.476	0.476	0.476	0.476

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	5.29	N.A.	1.20
0-30	15.58	N.A.	3.50
0-40	32.63	N.A.	7.40
0-60	88.98	N.A.	20.30
0-80	172.25	N.A.	39.20
0-90	220.07	N.A.	50.10
10-90	219.26	N.A.	49.90
20-40	27.35	N.A.	6.20
20-50	51.66	N.A.	11.80
40-70	95.25	N.A.	21.70
60-80	83.27	N.A.	19.00
70-80	44.37	N.A.	10.10
80-90	47.82	N.A.	10.90
90-110	92.47	N.A.	21.10
90-120	131.68	N.A.	30.00
90-130	164.21	N.A.	37.40
90-150	206.51	N.A.	47.00
90-180	218.96	N.A.	49.90
110-180	126.49	N.A.	28.80
0-180	439.03	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	0.81
10-20	4.47
20-30	10.29
30-40	17.05
40-50	24.32
50-60	32.03
60-70	38.90
70-80	44.37
80-90	47.82
90-100	47.83
100-110	44.64
110-120	39.21
120-130	32.53
130-140	25.30
140-150	17.00
150-160	9.20
160-170	3.03
170-180	0.22

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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	
0	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	92	86	80	74	84	78	73	68	65	61	57	52	49	46	41	39	37	31
2	82	72	63	56	74	66	58	52	54	48	43	43	39	35	33	30	27	22
3	73	61	52	45	67	56	48	41	46	39	34	36	31	27	28	24	20	16
4	66	53	44	36	60	49	40	33	40	33	27	31	26	22	24	20	16	12
5	60	47	37	30	55	43	34	27	35	28	23	28	22	18	21	17	13	10
6	55	41	32	25	50	38	29	23	31	24	19	24	19	15	18	14	11	8
7	51	37	28	22	46	34	26	20	28	21	16	22	17	13	17	13	9	7
8	47	33	25	19	43	30	23	17	25	19	14	20	15	11	15	11	8	5
9	44	30	22	16	40	28	20	15	23	17	12	18	13	10	14	10	7	5
10	41	27	20	14	37	25	18	13	21	15	11	17	12	8	13	9	6	4

**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : PNA-8631.IES**

**UGR TABLE - CORRECTED**

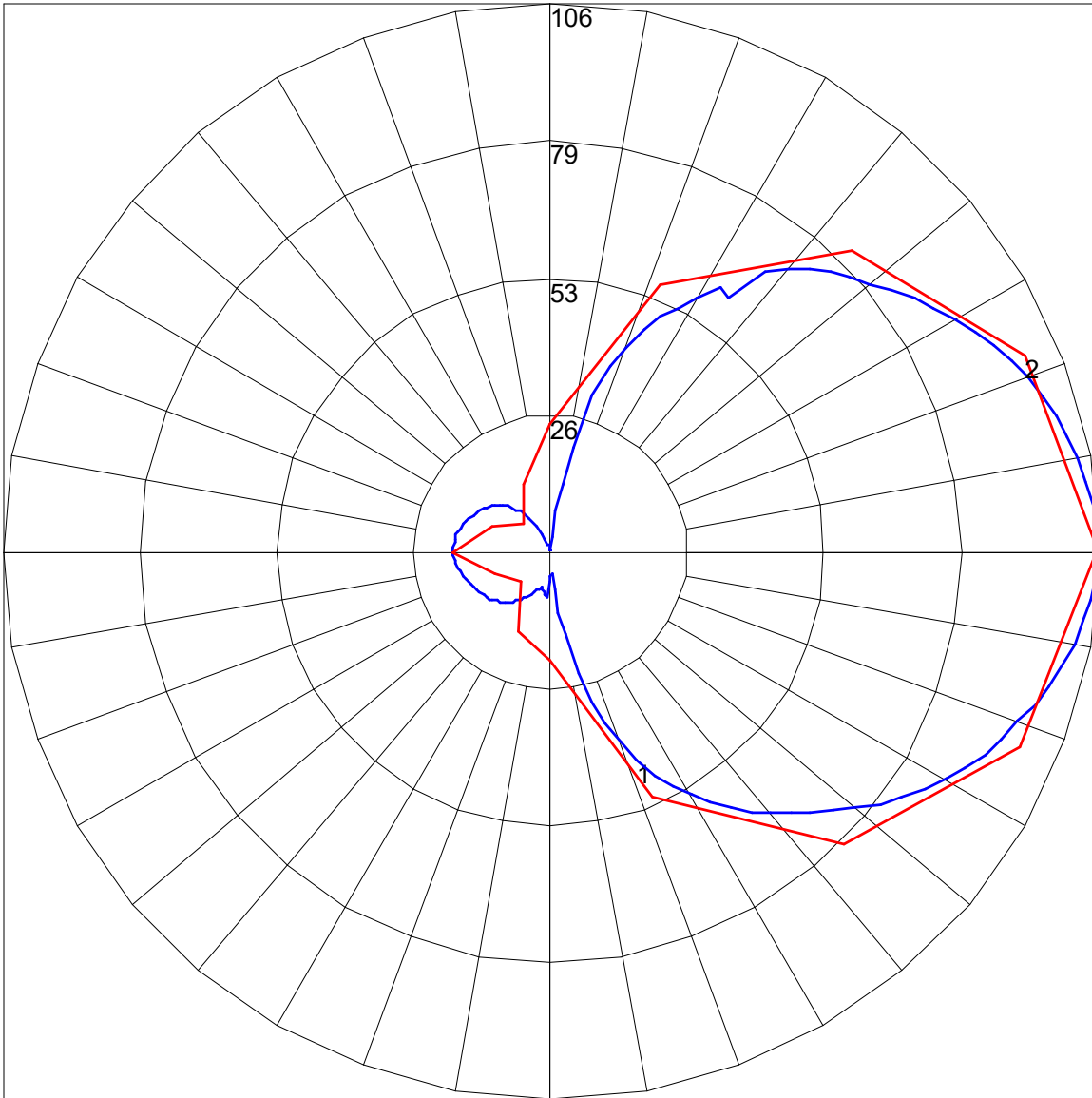
Reflectances

Ceiling Cavity	70	70	50	50	30	70	70	50	50	30
Walls	50	30	50	30	30	50	30	50	30	30
Floor Cavity	20	20	20	20	20	20	20	20	20	20

Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	13.2	14.3	14.2	15.2	16.5	4.6	5.6	5.5	6.6	7.9
	3H	17.1	18.1	18.0	19.0	20.3	7.0	8.0	7.9	8.9	10.2
	4H	19.1	20.0	20.0	21.0	22.3	8.2	9.1	9.1	10.1	11.3
	6H	21.2	22.0	22.1	23.0	24.3	9.3	10.2	10.3	11.1	12.4
	8H	22.2	23.0	23.2	24.0	25.3	9.8	10.7	10.8	11.7	13.0
	12H	23.3	24.1	24.3	25.1	26.4	10.4	11.2	11.3	12.2	13.5
4H	2H	13.6	14.5	14.5	15.5	16.7	7.1	8.0	8.1	9.0	10.3
	3H	17.6	18.4	18.6	19.4	20.7	9.6	10.4	10.6	11.4	12.7
	4H	19.8	20.5	20.7	21.5	22.8	10.8	11.6	11.8	12.6	13.9
	6H	22.0	22.7	23.0	23.7	25.0	12.0	12.6	12.9	13.7	15.0
	8H	23.2	23.8	24.2	24.8	26.2	12.5	13.1	13.5	14.1	15.5
	12H	24.4	25.0	25.4	26.0	27.3	13.0	13.6	14.0	14.6	15.9
8H	4H	20.0	20.6	20.9	21.6	23.0	12.5	13.2	13.5	14.2	15.5
	6H	22.4	22.9	23.4	24.0	25.3	13.9	14.5	14.9	15.5	16.8
	8H	23.7	24.2	24.7	25.2	26.6	14.6	15.1	15.6	16.1	17.4
	12H	25.1	25.5	26.1	26.6	27.9	15.2	15.6	16.2	16.6	18.0
12H	4H	20.0	20.6	21.0	21.6	22.9	13.1	13.7	14.1	14.7	16.0
	6H	22.4	22.9	23.5	24.0	25.3	14.6	15.1	15.6	16.1	17.5
	8H	23.8	24.2	24.8	25.3	26.7	15.4	15.8	16.4	16.9	18.2

Maximum UGR = 27.9

POLAR GRAPH



Maximum Candela = 105.825 Located At Horizontal Angle = 0, Vertical Angle = 90  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (90) (Through Max. Cd.)