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IES INDOOR REPORT
PHOTOMETRIC FILENAME : PNA-8605.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] LM-79-08
[TESTLAB] Orb Optronix, Inc.
[ISSUEDATE] 07-18-2019
[MANUFAC] Justice Design
[LUMINAIRE] PNA-8605

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	713
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	24
Total Luminaire Watts	30.02
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)	2.38 ft
Luminous Height	0.38 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	1222	1163	798
55	1414	1391	1106
65	1568	1601	1528
75	1722	1807	2305
85	1905	2057	4045

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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>
0.0	1.122	1.122	1.122	1.122	1.122	1.122	1.122	1.122	1.122	1.122
2.5	6.443	5.780	2.312	3.400	2.117	1.267	1.165	0.689	0.672	0.816
5.0	12.181	11.560	6.987	5.916	3.766	2.635	2.219	1.046	0.595	0.935
7.5	18.063	17.672	12.172	8.993	5.491	4.004	3.111	1.403	0.638	1.148
10.0	24.429	24.072	17.468	12.827	7.208	5.517	4.233	1.836	0.578	1.403
12.5	30.660	30.379	22.857	16.677	8.891	6.902	5.236	2.236	0.697	1.641
15.0	36.899	36.754	28.050	20.451	10.617	8.347	6.239	2.712	0.544	1.743
17.5	43.299	43.248	33.354	24.174	12.436	9.852	7.183	3.069	0.519	2.134
20.0	49.878	49.912	38.862	28.144	14.195	11.297	8.237	3.528	0.663	2.355
22.5	56.406	56.517	44.277	31.969	16.014	12.818	9.189	3.944	0.646	2.525
25.0	62.926	63.113	49.836	35.683	17.680	14.467	10.251	4.420	0.638	2.805
27.5	69.360	69.479	55.208	39.372	19.346	15.887	11.135	4.777	0.595	3.026
30.0	75.480	75.531	60.469	42.730	20.936	17.323	12.079	5.117	0.578	3.264
32.5	81.592	81.549	65.552	46.079	22.508	18.624	12.912	5.593	0.595	3.468
35.0	87.661	87.491	70.559	49.198	23.911	19.933	13.796	5.899	0.646	3.715
37.5	93.993	93.483	75.642	52.454	25.475	21.403	14.680	6.239	0.697	3.851
40.0	100.317	99.654	80.835	55.760	27.166	22.857	15.564	6.732	0.646	4.165
42.5	106.692	105.876	86.275	59.016	28.832	24.336	16.507	7.064	0.646	4.284
45.0	112.821	111.826	91.469	62.416	30.396	25.662	17.459	7.472	0.595	4.539
47.5	118.839	117.394	96.552	65.433	31.858	27.005	18.394	7.905	0.697	4.803
50.0	124.525	122.698	101.388	68.468	33.303	28.450	19.219	8.237	0.595	4.964
52.5	129.957	127.925	106.284	71.273	34.748	29.614	20.120	8.636	0.816	5.185
55.0	135.142	132.898	110.832	74.197	36.210	30.974	20.936	8.968	0.816	5.466
57.5	139.842	137.428	115.252	76.815	37.392	32.113	21.701	9.367	0.765	5.619
60.0	143.990	141.151	119.136	79.101	38.505	32.844	22.457	9.631	0.884	5.831
62.5	147.339	144.347	122.485	81.116	39.347	33.796	23.052	9.937	0.884	6.001
65.0	150.297	147.169	125.316	82.858	40.299	34.493	23.639	10.081	0.935	6.163
67.5	152.949	149.915	127.781	84.499	41.081	35.156	24.166	10.421	0.995	6.256
70.0	155.499	152.380	130.144	86.105	41.956	35.853	24.769	10.583	0.995	6.282
72.5	158.194	154.879	132.498	87.686	43.384	36.329	25.356	10.940	1.114	6.443
75.0	160.574	157.327	134.691	89.395	44.251	36.924	26.019	11.067	1.122	6.588
77.5	162.877	159.758	136.561	90.959	44.863	37.579	26.520	11.348	1.114	6.715
80.0	164.781	162.019	138.380	92.421	45.501	38.114	26.928	11.535	1.411	6.868
82.5	166.439	163.583	139.842	93.891	46.070	38.590	27.404	11.637	1.292	7.021
85.0	167.340	164.662	140.973	95.013	46.291	38.888	27.668	11.875	1.530	7.115
87.5	167.663	165.181	141.602	95.727	46.461	38.947	27.787	11.866	1.530	7.183
90.0	167.323	165.181	141.398	96.033	46.342	39.015	27.812	11.900	1.590	7.234
92.5	166.303	164.441	140.658	96.059	46.070	38.726	27.761	11.773	1.590	7.344
95.0	164.832	163.277	139.562	95.634	45.645	38.607	27.566	11.747	1.530	7.302
97.5	163.285	161.883	138.202	95.226	45.220	38.199	27.387	11.560	1.411	7.208
100.0	161.560	160.361	136.927	94.682	44.702	37.961	26.954	11.373	1.352	7.064
102.5	159.800	158.967	135.278	93.891	44.073	37.426	26.376	10.965	1.173	7.038
105.0	157.692	157.191	133.544	92.956	43.393	36.899	26.172	10.702	0.995	6.656
107.5	155.287	155.210	131.529	91.766	42.721	36.372	25.662	10.532	0.935	6.494
110.0	152.439	152.592	129.311	90.415	41.982	35.845	25.160	10.353	1.003	6.443
112.5	149.201	149.549	126.735	88.783	41.106	35.131	24.497	10.022	0.876	6.256
115.0	145.869	146.302	123.913	86.760	40.078	34.425	23.783	9.818	0.765	6.086
117.5	142.222	142.911	120.836	84.737	39.041	33.592	23.103	9.614	0.765	5.925
120.0	138.448	139.366	117.623	82.467	37.995	32.708	22.483	9.299	0.816	5.848
122.5	134.615	135.252	114.223	80.002	36.805	31.824	21.675	8.925	0.697	5.712
125.0	130.365	130.951	110.653	77.452	35.641	30.813	20.859	8.704	0.646	5.491
127.5	125.477	125.962	106.947	74.486	34.417	29.759	20.094	8.330	0.714	5.330
130.0	120.122	120.539	102.723	71.366	32.963	28.518	19.142	7.965	0.638	5.160
132.5	114.580	115.056	98.218	67.864	31.476	27.328	18.250	7.633	0.646	4.973

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135.0	109.013	109.378	93.577	64.413	29.954	26.044	17.323	7.344	0.595	4.718
137.5	103.199	103.547	89.038	60.920	28.356	25.050	16.575	6.996	0.689	4.548
140.0	97.274	97.529	84.235	57.418	26.903	23.248	15.513	6.545	0.595	4.310
142.5	90.899	91.154	79.526	53.661	25.288	22.007	14.442	6.112	0.578	4.021
145.0	83.802	83.853	74.171	49.793	23.579	20.528	13.388	5.661	0.595	3.834
147.5	76.764	76.815	68.247	45.552	21.667	18.862	12.291	5.236	0.638	3.502
150.0	70.057	70.083	62.560	41.438	19.814	17.272	11.322	4.896	0.595	3.375
152.5	63.274	63.351	57.146	37.655	17.935	15.742	10.302	4.446	0.519	2.975
155.0	56.661	56.500	51.476	33.686	16.218	14.323	9.274	3.944	0.663	2.882
157.5	49.700	49.649	45.909	29.801	14.391	12.733	8.254	3.562	0.578	2.610
160.0	42.934	42.747	40.112	25.781	12.555	11.254	7.132	2.873	0.638	2.193
162.5	36.083	36.134	34.349	21.743	10.795	9.656	6.044	2.287	0.544	1.853
165.0	30.694	30.524	28.875	17.765	8.985	8.271	4.667	1.641	0.621	1.496
167.5	25.186	23.528	23.265	13.872	7.489	7.013	3.239	1.054	0.527	1.139
170.0	19.797	15.606	16.388	9.444	5.593	5.134	1.802	0.612	0.646	0.884
172.5	11.450	7.353	9.223	5.236	3.494	3.026	0.663	0.544	0.578	0.816
175.0	3.477	0.978	3.026	2.066	1.335	1.292	0.502	0.451	0.612	0.765
177.5	0.570	0.646	0.544	0.502	0.408	0.400	0.451	0.553	0.544	0.697
180.0	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724	0.724

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	1.122	1.122	1.122	1.122	1.122	1.122	1.122
2.5	1.097	1.454	1.666	1.955	5.185	5.899	6.443
5.0	1.777	2.567	2.992	4.879	10.132	11.637	12.181
7.5	2.525	3.808	4.471	8.211	15.292	17.774	18.063
10.0	3.409	5.049	6.018	11.866	20.655	23.996	24.429
12.5	4.233	6.469	7.608	15.479	26.078	30.184	30.660
15.0	5.117	7.761	9.138	19.142	31.416	36.270	36.899
17.5	6.001	9.061	10.710	22.738	36.831	42.526	43.299
20.0	6.851	10.421	12.325	26.495	42.390	48.782	49.878
22.5	7.727	11.773	13.940	30.252	47.821	55.046	56.406
25.0	8.543	13.201	15.564	33.881	53.210	61.115	62.926
27.5	9.444	14.433	17.204	37.460	58.633	67.133	69.360
30.0	10.319	15.844	18.726	40.962	63.682	72.981	75.480
32.5	11.093	17.204	20.247	44.370	68.706	78.642	81.592
35.0	11.934	18.505	21.913	47.745	73.814	84.252	87.661
37.5	12.614	19.746	23.554	50.975	75.115	89.990	93.993
40.0	13.447	21.046	25.194	54.137	78.625	96.025	100.317
42.5	14.229	22.355	26.767	57.426	83.657	101.983	106.692
45.0	15.003	23.647	28.356	60.775	88.732	107.823	112.821
47.5	15.717	24.829	29.895	63.759	93.585	113.492	118.839
50.0	16.431	26.002	31.450	66.623	98.337	119.085	124.525
52.5	17.077	27.064	32.921	69.369	102.935	124.670	129.957
55.0	17.774	28.237	34.298	71.893	107.551	129.948	135.142
57.5	18.386	29.181	35.539	74.358	111.869	134.827	139.842
60.0	18.845	29.997	36.805	76.628	115.677	139.307	143.990
62.5	19.270	30.694	37.723	78.506	119.170	143.183	147.339
65.0	19.763	31.348	38.743	80.028	122.315	146.889	150.297
67.5	20.103	31.994	39.542	81.515	125.214	150.238	152.949
70.0	20.528	32.521	40.248	82.969	127.815	153.527	155.499
72.5	20.817	33.048	41.089	84.184	130.407	156.766	158.194
75.0	21.225	33.635	41.778	85.587	132.838	159.970	160.574
77.5	21.522	34.119	42.458	86.828	135.261	162.903	162.877
80.0	21.930	34.587	43.027	88.179	137.683	165.708	164.781

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82.5	22.296	35.165	43.512	89.420	139.689	167.994	166.439
85.0	22.474	35.394	43.860	90.270	141.228	169.558	167.340
87.5	22.712	35.564	43.894	90.916	141.823	170.374	167.663
90.0	22.831	35.675	43.954	91.044	141.942	170.485	167.323
92.5	22.831	35.496	43.699	90.967	141.534	169.839	166.303
95.0	22.670	35.394	43.316	90.602	140.701	168.581	164.832
97.5	22.483	34.986	42.815	90.032	139.332	166.872	163.285
100.0	22.313	34.680	42.220	89.301	137.785	165.113	161.560
102.5	21.905	34.043	41.727	88.494	135.788	162.512	159.800
105.0	21.599	33.796	41.106	87.584	133.765	158.024	157.692
107.5	21.242	33.278	40.418	86.513	131.410	156.383	155.287
110.0	20.953	32.640	39.721	85.238	129.090	154.029	152.439
112.5	20.596	32.088	38.828	83.776	126.004	151.343	149.201
115.0	20.179	31.450	37.842	82.144	122.817	148.172	145.869
117.5	19.771	30.685	36.873	80.164	119.323	144.917	142.222
120.0	19.244	29.980	35.913	78.166	115.779	141.185	138.448
122.5	18.768	29.189	34.850	76.050	112.285	137.403	134.615
125.0	18.241	28.254	33.873	73.831	108.545	133.399	130.365
127.5	17.646	27.336	32.572	71.383	104.406	128.716	125.477
130.0	16.873	26.265	31.212	68.434	99.892	123.599	120.122
132.5	16.227	25.160	29.929	65.374	95.158	117.921	114.580
135.0	15.632	24.004	28.492	62.084	90.440	112.234	109.013
137.5	14.629	22.840	27.183	58.999	85.825	106.310	103.199
140.0	13.864	21.556	25.687	55.590	81.014	100.368	97.274
142.5	12.971	20.120	24.285	52.122	75.676	94.146	90.899
145.0	12.138	18.700	22.500	48.340	70.321	87.108	83.802
147.5	11.322	17.323	20.766	44.464	65.042	80.240	76.764
150.0	10.438	15.836	19.108	40.605	59.534	73.262	70.057
152.5	9.665	14.535	17.510	36.831	54.375	66.504	63.274
155.0	8.891	13.133	15.793	33.116	49.054	59.874	56.661
157.5	8.084	11.756	14.136	29.232	43.597	53.040	49.700
160.0	7.166	10.345	12.487	25.313	38.063	46.291	42.934
162.5	6.239	8.823	10.727	21.429	32.810	39.508	36.083
165.0	5.330	7.727	9.393	17.587	27.506	33.380	30.694
167.5	4.072	6.061	7.710	13.745	21.743	27.481	25.186
170.0	2.729	4.021	5.925	9.682	15.105	19.550	19.797
172.5	1.683	2.091	3.468	5.763	8.016	10.991	11.450
175.0	1.029	1.054	1.428	2.567	2.669	3.375	3.477
177.5	1.003	1.088	1.097	1.122	0.969	0.808	0.570
180.0	0.724	0.724	0.724	0.724	0.724	0.724	0.724

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	5.46	N.A.	0.80
0-30	18.53	N.A.	2.60
0-40	42.99	N.A.	6.00
0-60	134.23	N.A.	18.80
0-80	275.49	N.A.	38.60
0-90	357.35	N.A.	50.10
10-90	356.69	N.A.	50.00
20-40	37.53	N.A.	5.30
20-50	75.77	N.A.	10.60
40-70	156.97	N.A.	22.00
60-80	141.26	N.A.	19.80
70-80	75.53	N.A.	10.60
80-90	81.86	N.A.	11.50
90-110	157.02	N.A.	22.00
90-120	222.77	N.A.	31.20
90-130	275.85	N.A.	38.70
90-150	338.82	N.A.	47.50
90-180	355.96	N.A.	49.90
110-180	198.93	N.A.	27.90
0-180	713.30	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	0.66
10-20	4.80
20-30	13.07
30-40	24.46
40-50	38.24
50-60	53.00
60-70	65.73
70-80	75.53
80-90	81.86
90-100	81.50
100-110	75.53
110-120	65.75
120-130	53.07
130-140	38.58
140-150	24.39
150-160	12.45
160-170	4.30
170-180	0.39

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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	85	79	73	84	78	72	68	64	60	56	52	49	46	40	38	36	30
2	81	71	63	55	74	65	57	51	53	47	42	42	38	34	32	29	26	21
3	73	61	51	43	66	55	47	40	45	38	33	36	30	26	27	23	19	15
4	66	52	43	35	60	48	39	32	39	32	26	31	25	21	23	19	15	11
5	60	46	36	29	54	42	33	27	34	27	22	27	21	17	20	16	12	9
6	55	41	31	24	50	37	28	22	30	23	18	24	18	14	18	13	10	7
7	50	36	27	21	46	33	25	19	27	20	15	21	16	12	16	12	9	6
8	47	33	24	18	42	30	22	16	24	18	13	19	14	10	14	10	7	5
9	43	29	21	15	39	27	19	14	22	16	11	17	12	9	13	9	6	4
10	40	27	19	14	36	25	17	12	20	14	10	16	11	8	12	8	5	3

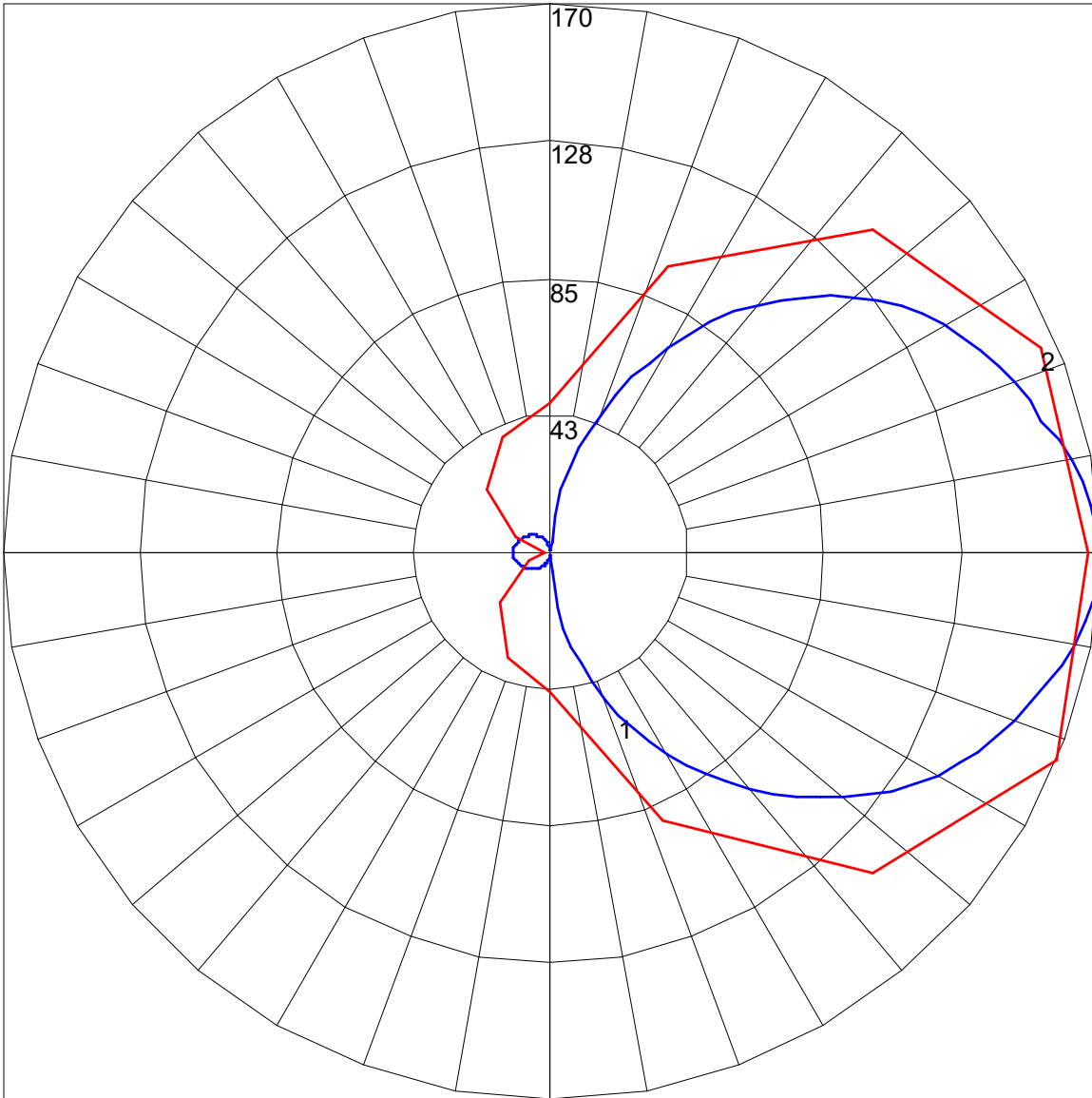
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UGR TABLE - CORRECTED

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	14.4	15.4	15.3	16.4	17.7	6.0	7.1	7.0	8.0	9.3
	3H	18.3	19.2	19.2	20.2	21.5	8.6	9.5	9.5	10.5	11.8
	4H	20.3	21.2	21.2	22.2	23.4	9.8	10.7	10.8	11.7	13.0
	6H	22.4	23.2	23.3	24.2	25.5	11.0	11.9	12.0	12.9	14.2
	8H	23.4	24.3	24.4	25.3	26.6	11.6	12.4	12.6	13.4	14.7
	12H	24.5	25.3	25.5	26.3	27.7	12.2	13.0	13.1	14.0	15.3
4H	2H	14.8	15.7	15.7	16.7	18.0	8.5	9.5	9.5	10.4	11.7
	3H	18.8	19.7	19.8	20.7	22.0	11.1	11.9	12.1	12.9	14.2
	4H	21.0	21.8	22.0	22.8	24.1	12.4	13.1	13.3	14.1	15.4
	6H	23.3	23.9	24.2	25.0	26.3	13.6	14.3	14.6	15.3	16.6
	8H	24.4	25.1	25.4	26.1	27.4	14.2	14.8	15.1	15.8	17.1
	12H	25.7	26.3	26.7	27.3	28.6	14.7	15.3	15.7	16.3	17.7
8H	4H	21.2	21.9	22.2	22.9	24.2	14.0	14.7	15.0	15.7	17.0
	6H	23.7	24.2	24.7	25.3	26.6	15.5	16.0	16.5	17.1	18.4
	8H	25.0	25.5	26.0	26.5	27.9	16.2	16.7	17.2	17.7	19.0
	12H	26.4	26.8	27.4	27.9	29.3	16.8	17.3	17.8	18.3	19.7
12H	4H	21.2	21.8	22.2	22.8	24.2	14.5	15.1	15.5	16.2	17.5
	6H	23.7	24.2	24.7	25.3	26.6	16.1	16.6	17.1	17.7	19.0
	8H	25.1	25.5	26.1	26.6	28.0	16.9	17.4	17.9	18.4	19.8

Maximum UGR = 29.3

POLAR GRAPH



Maximum Candela = 170.485 Located At Horizontal Angle = 337.5, Vertical Angle = 90
1 - Vertical Plane Through Horizontal Angles (337.5 - 157.5) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (90) (Through Max. Cd.)