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IES INDOOR REPORT
PHOTOMETRIC FILENAME : FSN-8601-MROR.IES

DESCRIPTION INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] LM-79-08
[TESTLAB] Orb Optronix, Inc.
[ISSUE DATE] 07-18-2019
[MANUFAC] Justice Design
[LUMINAIRE] FSN-8601-MROR

CHARACTERISTICS

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	421
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	22
Total Luminaire Watts	19.3
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)	1.45 ft
Luminous Height	0.38 ft

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	1183	1093	709
55	1369	1302	957
65	1518	1491	1272
75	1667	1676	1800
85	1844	1899	2769

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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	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663
2.5	3.799	3.409	1.365	2.005	1.248	0.749	0.686	0.406	0.398	0.484
5.0	7.184	6.817	4.118	3.487	2.223	1.552	1.310	0.616	0.351	0.554
7.5	10.655	10.421	7.176	5.304	3.237	2.363	1.833	0.827	0.374	0.679
10.0	14.407	14.196	10.304	7.566	4.251	3.253	2.496	1.084	0.343	0.827
12.5	18.080	17.917	13.478	9.836	5.242	4.072	3.089	1.318	0.413	0.967
15.0	21.762	21.676	16.544	12.059	6.263	4.922	3.682	1.599	0.320	1.030
17.5	25.537	25.506	19.672	14.258	7.332	5.811	4.235	1.810	0.304	1.256
20.0	29.414	29.437	22.916	16.598	8.369	6.661	4.859	2.083	0.390	1.388
22.5	33.267	33.329	26.114	18.853	9.446	7.558	5.421	2.324	0.382	1.490
25.0	37.112	37.222	29.390	21.044	10.429	8.533	6.045	2.605	0.374	1.654
27.5	40.903	40.973	32.557	23.221	11.411	9.368	6.568	2.816	0.351	1.786
30.0	44.515	44.546	35.662	25.202	12.347	10.218	7.121	3.019	0.343	1.927
32.5	48.118	48.095	38.657	27.175	13.276	10.982	7.613	3.299	0.351	2.044
35.0	51.698	51.597	41.613	29.016	14.102	11.755	8.135	3.479	0.382	2.192
37.5	55.435	55.130	44.608	30.935	15.023	12.620	8.658	3.682	0.413	2.270
40.0	59.163	58.773	47.674	32.885	16.021	13.478	9.181	3.970	0.382	2.457
42.5	62.923	62.439	50.879	34.804	17.004	14.352	9.734	4.165	0.382	2.527
45.0	66.534	65.949	53.945	36.808	17.924	15.132	10.296	4.407	0.351	2.675
47.5	70.083	69.233	56.940	38.587	18.790	15.928	10.850	4.664	0.413	2.831
50.0	73.437	72.361	59.795	40.381	19.640	16.778	11.333	4.859	0.351	2.925
52.5	76.643	75.442	62.681	42.034	20.491	17.464	11.864	5.093	0.484	3.058
55.0	79.700	78.374	65.364	43.758	21.356	18.268	12.347	5.288	0.484	3.221
57.5	82.469	81.050	67.969	45.302	22.051	18.938	12.800	5.522	0.452	3.315
60.0	84.919	83.242	70.262	46.652	22.706	19.367	13.244	5.678	0.523	3.440
62.5	86.892	85.129	72.236	47.837	23.205	19.929	13.595	5.858	0.523	3.541
65.0	88.639	86.791	73.905	48.867	23.767	20.342	13.939	5.944	0.554	3.635
67.5	90.199	88.413	75.356	49.834	24.227	20.732	14.251	6.146	0.585	3.689
70.0	91.705	89.864	76.752	50.778	24.742	21.146	14.609	6.240	0.585	3.705
72.5	93.296	91.338	78.140	51.714	25.584	21.427	14.953	6.451	0.655	3.799
75.0	94.700	92.781	79.435	52.720	26.099	21.778	15.343	6.529	0.663	3.884
77.5	96.057	94.216	80.535	53.641	26.458	22.160	15.639	6.692	0.655	3.962
80.0	97.180	95.550	81.611	54.506	26.832	22.480	15.881	6.802	0.835	4.048
82.5	98.155	96.470	82.469	55.372	27.167	22.760	16.162	6.864	0.764	4.142
85.0	98.686	97.110	83.140	56.035	27.300	22.932	16.318	7.004	0.905	4.196
87.5	98.881	97.414	83.507	56.456	27.401	22.971	16.388	6.997	0.905	4.235
90.0	98.678	97.414	83.390	56.636	27.331	23.010	16.403	7.020	0.936	4.267
92.5	98.077	96.977	82.953	56.651	27.167	22.838	16.372	6.942	0.936	4.329
95.0	97.211	96.291	82.306	56.402	26.918	22.768	16.255	6.926	0.905	4.306
97.5	96.299	95.472	81.502	56.160	26.668	22.526	16.154	6.817	0.835	4.251
100.0	95.277	94.575	80.753	55.840	26.364	22.386	15.896	6.708	0.796	4.165
102.5	94.240	93.748	79.778	55.372	25.990	22.074	15.553	6.466	0.694	4.150
105.0	92.999	92.703	78.757	54.818	25.592	21.762	15.436	6.310	0.585	3.923
107.5	91.580	91.533	77.571	54.116	25.194	21.450	15.132	6.209	0.554	3.830
110.0	89.903	89.989	76.261	53.321	24.757	21.138	14.836	6.107	0.593	3.799
112.5	87.992	88.195	74.740	52.361	24.242	20.717	14.446	5.912	0.515	3.689
115.0	86.026	86.284	73.078	51.168	23.634	20.303	14.024	5.788	0.452	3.588
117.5	83.873	84.279	71.261	49.975	23.026	19.812	13.627	5.671	0.452	3.494
120.0	81.650	82.189	69.365	48.633	22.409	19.289	13.260	5.483	0.484	3.448
122.5	79.388	79.763	67.361	47.182	21.707	18.767	12.784	5.265	0.413	3.370
125.0	76.885	77.228	65.255	45.677	21.021	18.174	12.301	5.132	0.382	3.237
127.5	73.999	74.287	63.071	43.930	20.296	17.550	11.848	4.914	0.421	3.143
130.0	70.840	71.089	60.583	42.089	19.438	16.817	11.287	4.696	0.374	3.042
132.5	67.571	67.852	57.923	40.022	18.564	16.115	10.764	4.501	0.382	2.933

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135.0	64.288	64.506	55.185	37.986	17.667	15.358	10.218	4.329	0.351	2.785
137.5	60.863	61.066	52.510	35.927	16.723	14.773	9.773	4.126	0.406	2.683
140.0	57.369	57.517	49.678	33.860	15.865	13.712	9.149	3.861	0.351	2.543
142.5	53.609	53.758	46.901	31.645	14.914	12.979	8.518	3.604	0.343	2.371
145.0	49.421	49.452	43.742	29.367	13.907	12.106	7.894	3.338	0.351	2.262
147.5	45.271	45.302	40.248	26.863	12.776	11.123	7.246	3.089	0.374	2.067
150.0	41.317	41.332	36.894	24.437	11.684	10.187	6.677	2.886	0.351	1.989
152.5	37.315	37.362	33.704	22.207	10.577	9.282	6.076	2.621	0.304	1.755
155.0	33.415	33.322	30.358	19.867	9.563	8.447	5.468	2.324	0.390	1.700
157.5	29.312	29.281	27.074	17.573	8.486	7.511	4.867	2.098	0.343	1.537
160.0	25.319	25.210	23.657	15.202	7.402	6.638	4.204	1.693	0.374	1.295
162.5	21.278	21.310	20.257	12.823	6.365	5.694	3.565	1.349	0.320	1.092
165.0	18.104	18.002	17.027	10.475	5.296	4.875	2.753	0.967	0.367	0.881
167.5	14.851	13.876	13.720	8.182	4.415	4.134	1.911	0.624	0.312	0.671
170.0	11.677	9.204	9.664	5.569	3.299	3.026	1.061	0.359	0.382	0.523
172.5	6.755	4.337	5.437	3.089	2.059	1.786	0.390	0.320	0.343	0.484
175.0	2.051	0.577	1.786	1.217	0.788	0.764	0.296	0.265	0.359	0.452
177.5	0.335	0.382	0.320	0.296	0.242	0.234	0.265	0.328	0.320	0.413
180.0	0.382	0.343	0.328	0.250	0.242	0.273	0.335	0.382	0.343	0.413

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	0.663	0.663	0.663	0.663	0.663	0.663	0.663
2.5	0.647	0.858	0.983	1.154	3.058	3.479	3.799
5.0	1.045	1.513	1.763	2.878	5.975	6.864	7.184
7.5	1.490	2.246	2.636	4.844	9.017	10.483	10.655
10.0	2.012	2.980	3.549	6.997	12.184	14.149	14.407
12.5	2.496	3.814	4.485	9.126	15.382	17.800	18.080
15.0	3.019	4.579	5.390	11.287	18.525	21.388	21.762
17.5	3.541	5.343	6.318	13.408	21.723	25.077	25.537
20.0	4.040	6.146	7.270	15.623	24.999	28.766	29.414
22.5	4.555	6.942	8.221	17.839	28.205	32.464	33.267
25.0	5.039	7.784	9.181	19.984	31.379	36.044	37.112
27.5	5.569	8.510	10.148	22.090	34.577	39.593	40.903
30.0	6.084	9.344	11.045	24.157	37.557	43.040	44.515
32.5	6.544	10.148	11.942	26.169	40.521	46.379	48.118
35.0	7.036	10.912	12.925	28.158	43.532	49.686	51.698
37.5	7.441	11.645	13.892	30.061	44.296	53.071	55.435
40.0	7.933	12.410	14.859	31.925	46.371	56.628	59.163
42.5	8.393	13.182	15.787	33.868	49.335	60.146	62.923
45.0	8.845	13.946	16.723	35.841	52.330	63.586	66.534
47.5	9.266	14.641	17.628	37.604	55.193	66.932	70.083
50.0	9.688	15.335	18.548	39.289	57.993	70.231	73.437
52.5	10.070	15.959	19.414	40.911	60.707	73.523	76.643
55.0	10.483	16.653	20.225	42.401	63.430	76.635	79.700
57.5	10.842	17.207	20.959	43.852	65.972	79.513	82.469
60.0	11.115	17.690	21.707	45.193	68.219	82.157	84.919
62.5	11.365	18.104	22.246	46.301	70.278	84.443	86.892
65.0	11.653	18.486	22.846	47.198	72.134	86.627	88.639
67.5	11.856	18.868	23.322	48.071	73.843	88.600	90.199
70.0	12.106	19.180	23.735	48.929	75.379	90.542	91.705
72.5	12.277	19.492	24.235	49.647	76.908	92.453	93.296
75.0	12.519	19.835	24.640	50.474	78.343	94.341	94.700
77.5	12.691	20.124	25.038	51.207	79.771	96.073	96.057
80.0	12.932	20.397	25.373	52.003	81.198	97.726	97.180

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82.5	13.151	20.740	25.662	52.736	82.384	99.076	98.155
85.0	13.252	20.873	25.865	53.235	83.288	99.996	98.686
87.5	13.393	20.974	25.888	53.617	83.639	100.480	98.881
90.0	13.463	21.037	25.919	53.695	83.710	100.542	98.678
92.5	13.463	20.935	25.771	53.648	83.468	100.160	98.077
95.0	13.369	20.873	25.545	53.430	82.976	99.419	97.211
97.5	13.260	20.631	25.249	53.095	82.173	98.413	96.299
100.0	13.159	20.452	24.898	52.666	81.260	97.375	95.277
102.5	12.917	20.077	24.609	52.190	80.083	95.839	94.240
105.0	12.737	19.929	24.242	51.652	78.889	93.194	92.999
107.5	12.527	19.625	23.837	51.020	77.501	92.227	91.580
110.0	12.355	19.250	23.423	50.271	76.128	90.839	89.903
112.5	12.145	18.923	22.901	49.405	74.311	89.255	87.992
115.0	11.903	18.548	22.316	48.446	72.431	87.383	86.026
117.5	11.661	18.096	21.746	47.276	70.372	85.465	83.873
120.0	11.349	17.683	21.177	46.098	68.281	83.265	81.650
122.5	11.068	17.215	20.553	44.850	66.222	81.034	79.388
125.0	10.756	16.661	19.976	43.540	64.015	78.671	76.885
127.5	10.405	16.123	19.211	42.097	61.573	75.910	73.999
130.0	9.953	15.491	18.408	40.357	58.913	72.891	70.840
132.5	9.571	14.836	17.651	38.555	56.121	69.545	67.571
135.0	9.220	14.157	16.801	36.613	53.336	66.191	64.288
137.5	8.627	13.471	16.029	34.796	50.614	62.696	60.863
140.0	8.174	12.714	15.148	32.783	47.775	59.194	57.369
142.5	7.652	11.864	14.321	30.740	44.632	55.520	53.609
145.0	7.160	11.029	13.268	28.509	41.473	51.371	49.421
147.5	6.677	10.218	12.246	26.224	38.360	47.323	45.271
150.0	6.154	9.337	11.271	23.946	35.108	43.204	41.317
152.5	5.702	8.572	10.327	21.723	32.066	39.218	37.315
155.0	5.242	7.745	9.313	19.531	28.930	35.311	33.415
157.5	4.766	6.934	8.338	17.238	25.709	31.278	29.312
160.0	4.228	6.100	7.363	14.929	22.448	27.300	25.319
162.5	3.682	5.203	6.326	12.636	19.352	23.299	21.278
165.0	3.143	4.555	5.538	10.374	16.224	19.687	18.104
167.5	2.402	3.572	4.547	8.104	12.823	16.208	14.851
170.0	1.607	2.371	3.494	5.710	8.908	11.528	11.677
172.5	0.991	1.232	2.044	3.401	4.727	6.482	6.755
175.0	0.608	0.624	0.842	1.513	1.576	1.989	2.051
177.5	0.593	0.640	0.647	0.663	0.569	0.476	0.335
180.0	0.593	0.686	0.601	0.624	0.593	0.507	0.382

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ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-20	3.22	N.A.	0.80
0-30	10.93	N.A.	2.60
0-40	25.35	N.A.	6.00
0-60	79.16	N.A.	18.80
0-80	162.47	N.A.	38.60
0-90	210.74	N.A.	50.10
10-90	210.36	N.A.	50.00
20-40	22.13	N.A.	5.30
20-50	44.68	N.A.	10.60
40-70	92.57	N.A.	22.00
60-80	83.31	N.A.	19.80
70-80	44.54	N.A.	10.60
80-90	48.28	N.A.	11.50
90-110	92.60	N.A.	22.00
90-120	131.38	N.A.	31.20
90-130	162.68	N.A.	38.70
90-150	199.82	N.A.	47.50
90-180	209.92	N.A.	49.90
110-180	117.32	N.A.	27.90
0-180	420.67	N.A.	100.00

Total Luminaire Efficiency = N.A. %

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	0.39
10-20	2.83
20-30	7.71
30-40	14.42
40-50	22.55
50-60	31.26
60-70	38.76
70-80	44.54
80-90	48.28
90-100	48.06
100-110	44.54
110-120	38.78
120-130	31.30
130-140	22.75
140-150	14.39
150-160	7.34
160-170	2.53
170-180	0.23

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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	67	64	60	56	52	49	46	40	38	36	30
2	81	71	62	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	35	30	26	27	23	19	15
4	66	52	43	35	59	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	49	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	46	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

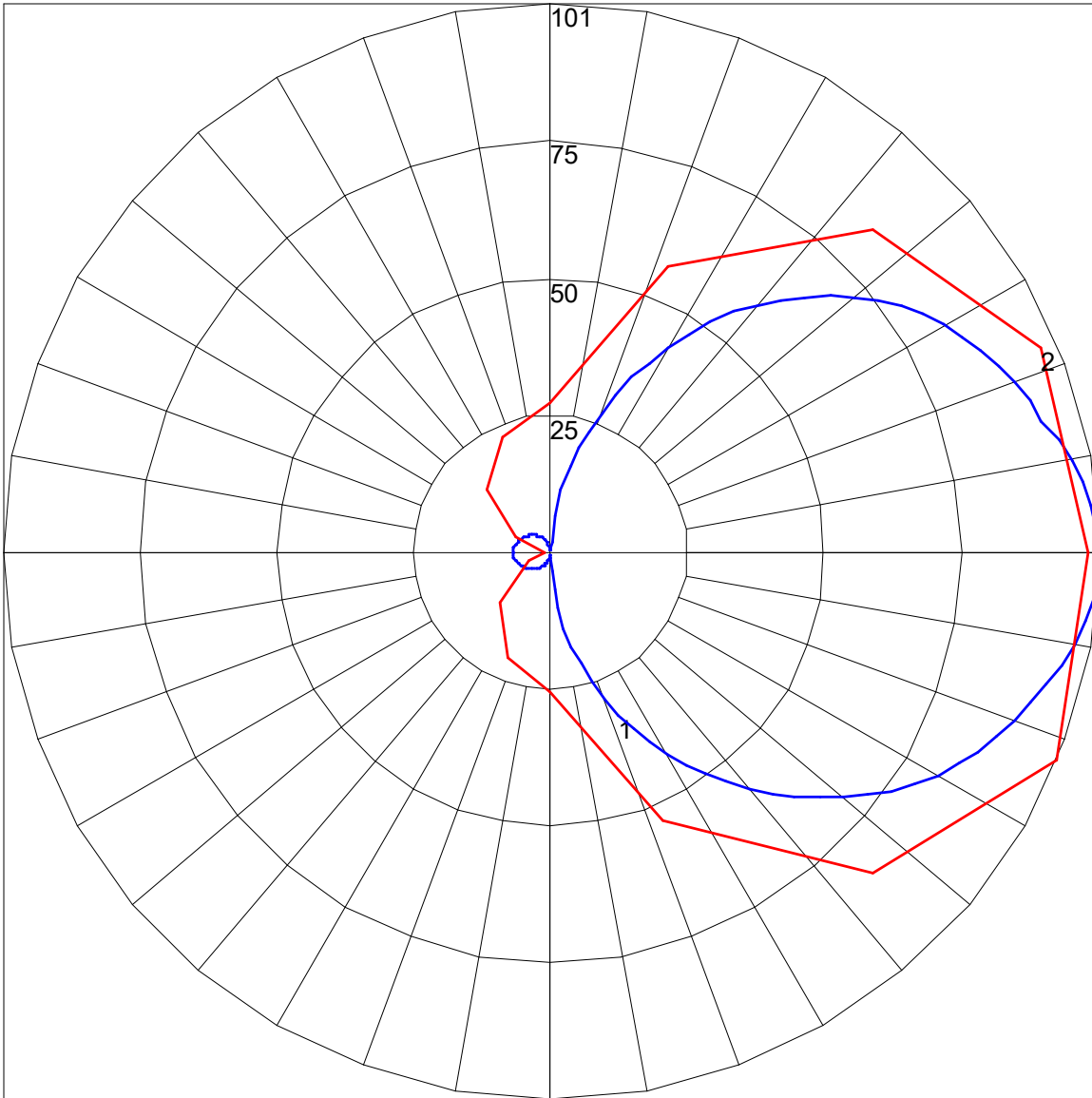
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UGR TABLE - CORRECTED

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	14.1	15.1	15.0	16.1	17.4	5.9	7.0	6.8	7.9	9.2
	3H	17.9	18.8	18.8	19.8	21.1	8.5	9.4	9.4	10.4	11.7
	4H	19.8	20.7	20.7	21.7	23.0	9.7	10.6	10.7	11.6	12.9
	6H	21.8	22.7	22.7	23.6	24.9	10.9	11.8	11.9	12.8	14.1
	8H	22.8	23.6	23.8	24.6	25.9	11.5	12.3	12.5	13.3	14.6
	12H	23.8	24.6	24.8	25.6	26.9	12.1	12.9	13.0	13.9	15.2
4H	2H	14.5	15.4	15.4	16.4	17.7	8.4	9.3	9.3	10.3	11.5
	3H	18.5	19.3	19.4	20.3	21.6	11.0	11.8	11.9	12.8	14.1
	4H	20.6	21.3	21.5	22.3	23.6	12.2	13.0	13.2	14.0	15.3
	6H	22.8	23.4	23.7	24.5	25.8	13.5	14.1	14.4	15.2	16.5
	8H	23.9	24.5	24.8	25.5	26.9	14.0	14.7	15.0	15.7	17.0
	12H	25.0	25.6	26.0	26.6	28.0	14.6	15.2	15.6	16.2	17.5
8H	4H	20.8	21.4	21.8	22.5	23.8	13.9	14.5	14.8	15.5	16.8
	6H	23.2	23.7	24.2	24.8	26.1	15.3	15.9	16.3	16.9	18.2
	8H	24.4	25.0	25.5	26.0	27.3	16.0	16.5	17.0	17.5	18.9
	12H	25.8	26.2	26.8	27.3	28.7	16.7	17.1	17.7	18.1	19.5
12H	4H	20.8	21.4	21.8	22.4	23.8	14.3	14.9	15.3	16.0	17.3
	6H	23.3	23.8	24.3	24.8	26.2	16.0	16.5	17.0	17.5	18.9
	8H	24.6	25.0	25.6	26.1	27.4	16.8	17.2	17.8	18.2	19.6

Maximum UGR = 28.7

POLAR GRAPH



Maximum Candela = 100.542 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.)