



**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L072111001R01.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L072111001R01  
 [TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
 [ISSUE DATE] 9/6/2021  
 [MANUFAC] LUX DYNMAICS  
 [LUMCAT] WAVEP-4-840-U10-WSA4-DEF4  
 [LUMINAIRE] WAVE+, 4' Length, Standard Aiming, 4000K, Standard Acrylic Lenses, w/ Deflector  
 [BALLASTCAT] OSRAM OPTOTRONIC OTI 85/120-277/2A3 DIM L HB (11 DRIVER)  
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
 [INPUT] 120VAC  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	141411
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	164
Total Luminaire Watts	861.7
Ballast Factor	1.00
CIE Type	Semi-Indirect
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)	1.33 ft
Luminous Width (90-270)	3.83 ft
Luminous Height	1.19 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4965	5241	8451
55	4882	4244	7541
65	5184	4683	6637
75	4230	7468	8105
85	26885	19046	8872

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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>	5744	5744	5744	5744	5744	5744	5744	5744	5744	5744
<b>5</b>	5609	5607	5620	5632	5643	5637	5628	5630	5642	5650
<b>10</b>	5527	5523	5525	5520	5511	5500	5488	5489	5495	5504
<b>15</b>	5406	5406	5419	5442	5489	5564	5642	5661	5580	5445
<b>20</b>	5157	5158	5179	5195	5214	5221	5216	5212	5204	5273
<b>25</b>	4681	4683	4702	4729	4765	4808	4857	4911	4958	4985
<b>30</b>	4352	4377	4444	4525	4571	4578	4503	4489	4535	4601
<b>35</b>	3808	3814	3828	3852	3884	3949	4041	4200	4338	4282
<b>40</b>	3565	3573	3592	3567	3515	3540	3569	3600	3665	3816
<b>45</b>	3151	3155	3149	3147	3174	3232	3275	3271	3235	3252
<b>50</b>	2987	2985	2973	2971	3022	3023	2914	2870	2885	2908
<b>55</b>	3021	3017	3014	2989	2899	2776	2713	2711	2667	2557
<b>60</b>	3131	3119	3107	3086	3048	2979	2916	2735	2573	2433
<b>65</b>	3029	3050	3140	3203	3195	3144	3113	3050	2873	2651
<b>70</b>	2711	2746	2922	3087	3275	3416	3400	3378	3333	3055
<b>75</b>	2250	2305	2581	2947	3222	3505	3785	3949	3984	3828
<b>80</b>	9337	9247	9038	8834	8496	7926	7093	6330	5657	5067
<b>85</b>	12461	12408	12345	12194	11873	11386	10789	10081	9363	8447
<b>90</b>	18476	18399	18231	17942	17510	16897	16079	14979	13739	12267
<b>95</b>	19434	19392	19332	19162	18832	18234	17276	16132	14818	13357
<b>100</b>	22135	22139	22209	22257	22102	21575	20910	19990	18942	17406
<b>105</b>	28929	28832	28574	28045	27748	26679	25381	23726	21807	20227
<b>110</b>	30863	30717	30377	29945	29479	28490	28032	27214	26063	24479
<b>115</b>	35581	35560	35455	35149	34690	34113	33431	31984	30133	27743
<b>120</b>	40062	39909	39484	39025	38392	37279	35957	34364	32374	30418
<b>125</b>	40548	40382	40027	39442	38725	37946	37001	36019	34690	33013
<b>130</b>	40632	40611	40472	40368	40222	39658	38878	37669	36200	34760
<b>135</b>	41398	41398	41258	41140	40917	40424	39575	38949	37675	36234
<b>140</b>	41746	41766	41822	41773	41349	40750	40159	39282	38308	37132
<b>145</b>	41940	41884	41793	41460	41063	40548	39714	38740	37174	35275
<b>150</b>	41036	41021	40674	39721	38663	37390	36012	35324	35393	35824
<b>155</b>	35845	35824	35859	35943	35803	35963	36638	37056	37230	36875
<b>160</b>	36249	36986	37411	37119	36952	36791	36409	35873	35101	33827
<b>165</b>	33674	33424	33090	33779	33738	33250	32554	31504	30515	29395
<b>170</b>	33334	33111	33017	33243	33129	32882	32509	32134	31758	31264
<b>175</b>	32993	32798	32944	32707	32520	32513	32464	32763	33000	33132
<b>180</b>	31768	31768	31768	31768	31768	31768	31768	31768	31768	31768

**Vert. Angles**      **Horizontal 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>	<u>95</u>
<b>0</b>	5744	5744	5744	5744	5744	5744	5744	5744	5744	5744
<b>5</b>	5657	5658	5657	5661	5676	5689	5690	5689	5687	5697
<b>10</b>	5516	5521	5527	5535	5552	5569	5587	5590	5587	5626
<b>15</b>	5355	5346	5344	5350	5373	5397	5414	5426	5427	5510
<b>20</b>	5420	5364	5167	5120	5137	5162	5189	5209	5219	5342
<b>25</b>	4979	5006	5155	5002	4876	4898	4930	4960	4976	5108
<b>30</b>	4672	4706	4691	4796	4709	4614	4645	4674	4696	4794
<b>35</b>	4264	4324	4381	4374	4466	4373	4318	4348	4397	4467
<b>40</b>	4006	3943	3985	4050	4052	4120	3990	4014	4067	4126
<b>45</b>	3328	3549	3658	3661	3696	3770	3700	3661	3710	3760
<b>50</b>	2899	2953	3158	3281	3291	3328	3336	3291	3359	3339
<b>55</b>	2562	2590	2616	2787	2917	2926	2994	2913	2958	2970
<b>60</b>	2390	2271	2262	2282	2437	2501	2572	2562	2561	2573

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**CANDELA TABULATION - (Cont.)**

65	2387	2115	1947	1893	1936	2052	2122	2162	2214	2249
70	2746	2343	2012	1741	1685	1767	1890	1957	2067	2144
75	3505	3093	2616	2072	1803	1798	1936	2042	2146	2214
80	4461	4079	3558	2949	2413	2052	1852	1962	2074	2139
85	7389	6262	5021	3957	3155	2488	1865	1568	1667	1816
90	10638	8846	7059	5595	4291	3319	2481	1850	1672	1771
95	11886	10314	8834	7409	6176	4912	3780	2883	2439	2372
100	15422	13541	11738	10130	8687	6953	5536	4571	3865	3577
105	18716	17038	15260	13214	11100	9277	8234	7040	6137	5470
110	22728	20403	17882	15805	13921	12406	11207	10029	9168	8645
115	25580	23136	21114	19025	17217	15757	14453	13392	12568	11548
120	28226	26364	24202	22636	21125	19365	18356	17275	16621	15409
125	30801	29159	27747	25597	23968	23162	21739	21043	20570	19504
130	33319	31782	30071	27990	26988	26522	24734	24546	24108	22919
135	35066	33466	31420	30273	30175	28685	27037	27809	27371	25617
140	35386	33222	32749	33090	32290	30078	29235	30335	29695	27496
145	34621	35240	35455	34280	32360	30509	30947	31963	30662	28421
150	36340	36228	34683	32582	30300	29876	31260	31713	30433	28964
155	35901	34328	32221	30147	29082	30147	31427	31038	29967	28714
160	32352	30697	29229	28846	29952	31295	31434	30362	29479	28373
165	28839	29013	30022	31602	32457	32658	32325	31546	30941	30154
170	31045	31160	31664	32412	32781	32860	32673	32211	31856	31354
175	33250	33306	33306	33222	33104	33062	33020	32875	32770	32554
180	31768	31768	31768	31768	31768	31768	31768	31768	31768	31768

**Vert. Horizontal Angles**

	<b>100</b>	<b>105</b>	<b>110</b>	<b>115</b>	<b>120</b>	<b>125</b>	<b>130</b>	<b>135</b>	<b>140</b>	<b>145</b>
<b>0</b>	5744	5744	5744	5744	5744	5744	5744	5744	5744	5744
<b>5</b>	5729	5793	5851	5884	5888	5863	5823	5785	5764	5747
<b>10</b>	5738	5774	5704	5646	5650	5661	5656	5659	5698	5765
<b>15</b>	5613	5515	5469	5484	5512	5630	5714	5723	5716	5703
<b>20</b>	5324	5256	5258	5373	5499	5506	5493	5495	5523	5523
<b>25</b>	5044	5008	5123	5252	5245	5263	5283	5254	5223	5207
<b>30</b>	4733	4815	4956	4956	4985	4970	4942	4897	4792	4700
<b>35</b>	4412	4576	4637	4658	4634	4591	4488	4376	4293	4236
<b>40</b>	4159	4295	4315	4287	4225	4096	3991	3930	3963	3989
<b>45</b>	3825	3930	3917	3842	3704	3604	3603	3652	3597	3532
<b>50</b>	3463	3500	3449	3325	3221	3293	3243	3144	3144	3190
<b>55</b>	3071	3046	2925	2833	2900	2805	2778	2834	2989	3300
<b>60</b>	2606	2533	2427	2457	2402	2444	2625	3149	3761	4137
<b>65</b>	2222	2039	2029	2029	2186	2692	3291	3740	4139	4426
<b>70</b>	2003	1768	1679	1953	2488	3003	3494	3928	4109	4130
<b>75</b>	2181	2001	1875	2103	2617	3005	3216	3317	3332	3386
<b>80</b>	2170	2080	2128	2226	2345	2616	2740	2803	2832	2812
<b>85</b>	1870	1825	1830	1882	1989	2206	2386	2546	2683	2743
<b>90</b>	1853	1827	1809	1869	1992	2221	2388	2481	2553	2599
<b>95</b>	2024	2062	1900	1857	1973	2194	2351	2414	2478	2517
<b>100</b>	3495	3091	2599	2161	1922	1827	1883	1880	1925	2016
<b>105</b>	5177	4790	4162	3632	3145	2706	2398	2227	2017	1873
<b>110</b>	7571	7060	6519	5768	5085	4453	3842	3399	3067	2713
<b>115</b>	10774	9996	9371	8642	7621	6742	5966	5056	4519	4181
<b>120</b>	14434	13785	12742	11542	10399	9355	8248	7445	6446	5753
<b>125</b>	18101	17363	16534	14869	13094	11946	10838	9634	8419	7631
<b>130</b>	21342	20493	19725	18126	16265	14608	13326	12083	10811	9721
<b>135</b>	25151	22911	22571	21290	19390	17512	15801	14221	13059	12057

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**CANDELA TABULATION - (Cont.)**

<b>140</b>	27232	24803	23496	23538	22216	20553	18758	17172	15599	14186
<b>145</b>	27405	26446	23823	23461	23538	22473	21380	20295	18883	17401
<b>150</b>	26954	27092	25666	23287	23071	23426	22807	22104	21283	20517
<b>155</b>	26397	25666	26236	24699	22744	21589	21937	22549	22334	22055
<b>160</b>	26453	24609	24859	25841	25235	23454	22146	20719	20901	21485
<b>165</b>	28651	27099	25688	25730	26278	26961	26863	25770	24448	23343
<b>170</b>	30457	29496	28600	28419	28400	28495	28192	27392	26459	25569
<b>175</b>	32263	31893	31511	31107	30522	30029	29521	29013	28470	27795
<b>180</b>	31768	31768	31768	31768	31768	31768	31768	31768	31768	31768

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

	<b>150</b>	<b>155</b>	<b>160</b>	<b>165</b>	<b>170</b>	<b>175</b>	<b>180</b>
<b>0</b>	5744	5744	5744	5744	5744	5744	5744
<b>5</b>	5744	5745	5747	5749	5745	5742	5735
<b>10</b>	5818	5852	5869	5869	5862	5853	5854
<b>15</b>	5689	5682	5688	5692	5698	5698	5709
<b>20</b>	5502	5479	5455	5453	5450	5440	5437
<b>25</b>	5165	5094	5044	5000	4971	4952	4952
<b>30</b>	4635	4576	4535	4506	4493	4479	4486
<b>35</b>	4199	4217	4251	4238	4232	4230	4241
<b>40</b>	3995	3915	3842	3825	3824	3816	3821
<b>45</b>	3523	3506	3502	3509	3523	3529	3545
<b>50</b>	3255	3330	3423	3512	3626	3753	3803
<b>55</b>	3792	4118	4326	4510	4636	4713	4725
<b>60</b>	4394	4652	4820	4939	5011	5054	5058
<b>65</b>	4613	4724	4767	4783	4786	4783	4775
<b>70</b>	4089	4042	3998	3951	3924	3895	3884
<b>75</b>	3420	3378	3329	3293	3273	3261	3254
<b>80</b>	2769	2715	2674	2639	2612	2595	2586
<b>85</b>	2768	2765	2751	2742	2740	2740	2738
<b>90</b>	2628	2634	2608	2584	2577	2573	2571
<b>95</b>	2540	2538	2494	2447	2424	2413	2409
<b>100</b>	2106	2154	2159	2148	2146	2148	2146
<b>105</b>	1772	1654	1542	1483	1474	1478	1474
<b>110</b>	2465	2306	2170	2059	2001	1965	1952
<b>115</b>	3772	3471	3250	3103	3013	2953	2934
<b>120</b>	5276	4864	4586	4402	4293	4211	4176
<b>125</b>	7045	6465	6087	5797	5625	5497	5456
<b>130</b>	8789	8100	7666	7355	7118	7019	6888
<b>135</b>	11111	10311	9705	9337	9031	8829	8767
<b>140</b>	13164	12433	11946	11577	11313	11111	11090
<b>145</b>	16127	15077	14284	13700	13303	13108	13039
<b>150</b>	19523	18591	17602	16963	16531	16204	16127
<b>155</b>	21693	21318	20943	20517	20038	19787	19621
<b>160</b>	22007	22578	22514	22369	22403	22334	22139
<b>165</b>	22660	22076	21443	21109	21353	21346	21304
<b>170</b>	24915	24400	23948	23701	23837	24129	24157
<b>175</b>	27169	26724	26453	26293	26320	26912	27010
<b>180</b>	31768	31768	31768	31768	31768	31768	31768

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	2100.84	N.A.	1.50
0-30	4408.09	N.A.	3.10
0-40	7093.88	N.A.	5.00
0-60	12664.42	N.A.	9.00
0-80	18998.04	N.A.	13.40
0-90	24634.35	N.A.	17.40
10-90	24091.29	N.A.	17.00
20-40	4993.05	N.A.	3.50
20-50	7735.73	N.A.	5.50
40-70	8574.41	N.A.	6.10
60-80	6333.62	N.A.	4.50
70-80	3329.75	N.A.	2.40
80-90	5636.31	N.A.	4.00
90-110	19957.21	N.A.	14.10
90-120	35988.65	N.A.	25.40
90-130	55095.9	N.A.	39.00
90-150	92494.22	N.A.	65.40
90-180	116776.6	N.A.	82.60
110-180	96819.37	N.A.	68.50
0-180	141410.9	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	543.06
10-20	1557.78
20-30	2307.25
30-40	2685.8
40-50	2742.68
50-60	2827.85
60-70	3003.87
70-80	3329.75
80-90	5636.31
90-100	8262.63
100-110	11694.58
110-120	16031.45
120-130	19107.25
130-140	19723.9
140-150	17674.42
150-160	13234.9
160-170	8124.89
170-180	2922.56

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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

Effective Floor Cavity Reflectance 0.20

RC RW	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	
0	99	99	99	99	87	87	87	87	65	65	65	45	45	45	26	26	26	17
1	89	84	80	76	78	74	70	67	55	52	50	37	35	34	21	20	19	11
2	80	73	66	61	70	64	59	54	47	44	40	32	29	27	17	16	15	9
3	73	64	56	50	64	56	50	45	41	37	33	28	25	23	15	14	12	7
4	67	56	48	42	58	49	43	37	36	32	28	25	22	19	13	12	10	6
5	61	50	42	36	53	44	37	32	32	28	24	22	19	16	12	10	9	5
6	56	44	36	31	49	39	32	27	29	24	21	20	17	14	11	9	8	4
7	52	40	32	27	45	35	28	24	26	21	18	18	15	12	10	8	7	4
8	48	36	28	23	42	32	25	21	24	19	16	16	13	11	9	7	6	3
9	44	32	25	20	39	29	22	18	22	17	14	15	12	10	8	7	5	3
10	41	30	23	18	36	26	20	16	20	15	12	14	11	9	8	6	5	3

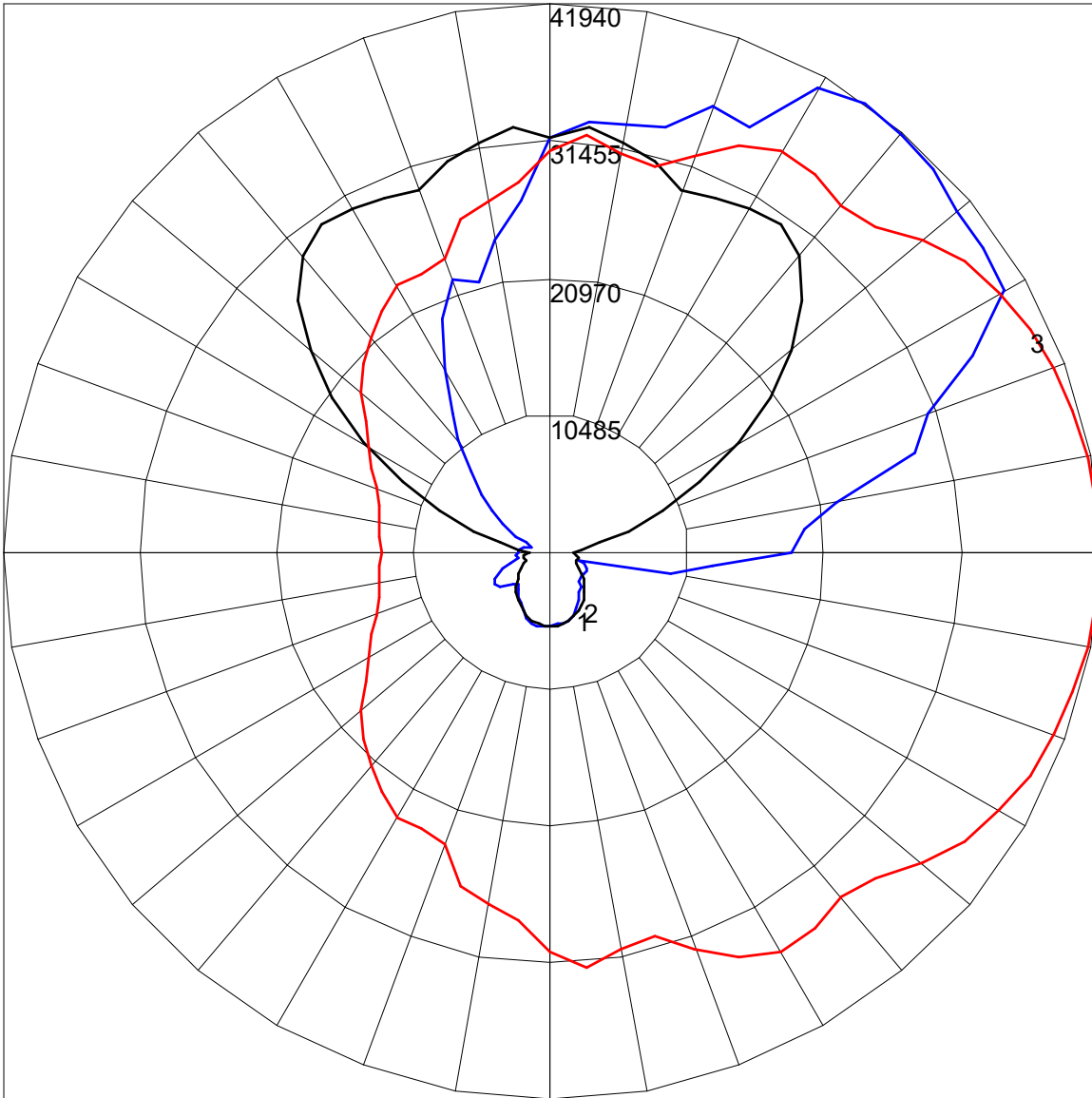
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**UGR TABLE - CORRECTED**

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	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
	3H	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
	4H	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
	6H	19.6	20.1	20.8	21.3	23.0	17.2	17.2	17.2	17.2	17.2
	8H	22.2	22.7	23.4	23.9	25.6	17.2	17.2	17.2	17.2	17.2
	12H	24.4	24.9	25.7	26.1	27.8	17.2	17.2	17.2	17.2	17.2
4H	2H	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
	3H	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
	4H	17.2	17.2	17.2	17.2	18.5	17.2	17.2	17.2	17.2	17.2
	6H	21.0	21.4	22.3	22.6	24.4	17.2	17.2	17.2	17.2	17.2
	8H	23.7	24.1	24.9	25.3	27.0	17.2	17.2	17.2	17.2	17.2
	12H	26.0	26.4	27.3	27.6	29.3	17.2	17.2	17.2	17.2	17.7
8H	4H	17.2	17.2	17.2	17.6	19.3	17.2	17.2	17.2	17.2	17.2
	6H	21.9	22.2	23.1	23.4	25.1	17.2	17.2	17.2	17.2	18.4
	8H	24.7	24.9	25.9	26.2	27.9	17.2	17.2	17.2	17.4	19.1
	12H	27.2	27.4	28.4	28.7	30.4	17.2	17.2	17.8	18.0	19.8
12H	4H	17.2	17.2	17.4	17.7	19.4	17.2	17.2	17.2	17.2	17.6
	6H	22.0	22.3	23.2	23.5	25.3	17.2	17.2	17.4	17.6	19.4
	8H	24.9	25.1	26.1	26.4	28.1	17.2	17.3	18.3	18.5	20.3

Maximum UGR = 30.4

POLAR GRAPH



Maximum Candela = 41940 Located At Horizontal Angle = 0, Vertical Angle = 145  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)  
# 3 - Horizontal Cone Through Vertical Angle (145) (Through Max. Cd.)