



**IES INDOOR REPORT**  
**PHOTOMETRIC FILENAME : L072111003.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 [TEST] L072111003  
 [TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)  
 [ISSUE DATE] 9/17/2021  
 [MANUFAC] LUX DYNAMICS  
 [LUMCAT] WAVEP-1-840-U10-WSA1  
 [LUMINAIRE] WAVE+, 1' Length, Standard Aiming, 4000K, Standard Acrylic Lenses, no Deflector  
 [BALLASTCAT] OSRAM OPTOTRONIC OTI50/120-277/1A4 DIM-1 L G2 (6 DRIVER)  
 [OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
 [MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
 [INPUT] 277VAC  
 [TEST PROCEDURE] IESNA:LM-79-08

**CHARACTERISTICS**

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	33631
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	153
Total Luminaire Watts	219.57
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)	1.25 ft
Luminous Width (90-270)	1.00 ft
Luminous Height	1.19 ft

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

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	10515	6885	7800
55	15466	6629	5967
65	26704	9081	4092
75	42571	14235	2273
85	55056	18198	703

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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>	2364	2364	2364	2364	2364	2364	2364	2364	2364	2364
<b>5</b>	2326	2325	2324	2323	2320	2318	2316	2314	2313	2312
<b>10</b>	2295	2294	2293	2291	2289	2287	2285	2283	2281	2281
<b>15</b>	2291	2294	2297	2300	2297	2280	2260	2235	2226	2223
<b>20</b>	2094	2094	2098	2107	2116	2125	2131	2144	2179	2192
<b>25</b>	1899	1899	1901	1906	1911	1919	1934	1957	1986	2011
<b>30</b>	1792	1792	1792	1785	1773	1771	1773	1776	1788	1808
<b>35</b>	1685	1685	1684	1678	1673	1667	1672	1668	1647	1643
<b>40</b>	1633	1634	1629	1618	1603	1586	1575	1562	1542	1534
<b>45</b>	1687	1686	1676	1650	1614	1584	1538	1482	1446	1423
<b>50</b>	1899	1895	1875	1831	1761	1687	1619	1520	1434	1349
<b>55</b>	2433	2420	2369	2279	2156	2016	1860	1687	1541	1398
<b>60</b>	3134	3121	3067	2955	2768	2597	2350	2079	1806	1537
<b>65</b>	3990	3966	3877	3715	3469	3209	2911	2567	2254	1895
<b>70</b>	5026	5006	4901	4712	4453	4143	3758	3329	2791	2329
<b>75</b>	5831	5810	5717	5534	5260	4930	4542	4020	3471	2849
<b>80</b>	6244	6230	6150	5977	5712	5372	4936	4501	3995	3101
<b>85</b>	6627	6609	6522	6340	6009	5629	5192	4700	4146	3376
<b>90</b>	7058	7037	6951	6802	6513	6139	5657	5112	4444	3785
<b>95</b>	7606	7586	7503	7329	7029	6622	6058	5460	4828	4160
<b>100</b>	8166	8135	8028	7825	7505	7064	6517	5850	5124	4446
<b>105</b>	8535	8506	8411	8189	7857	7361	6799	6233	5557	4868
<b>110</b>	8799	8766	8650	8425	8112	7660	7149	6552	5931	5333
<b>115</b>	8997	8969	8874	8676	8325	7862	7413	6926	6302	5619
<b>120</b>	9245	9220	9136	8942	8614	8255	7735	7223	6679	6067
<b>125</b>	9244	9221	9131	8973	8744	8447	8050	7520	6975	6388
<b>130</b>	9375	9354	9280	9129	8831	8542	8250	7775	7286	6794
<b>135</b>	9367	9354	9291	9174	8997	8786	8500	8078	7560	7123
<b>140</b>	9499	9483	9432	9310	9056	8814	8615	8278	7719	7228
<b>145</b>	9450	9430	9363	9216	8950	8709	8415	7968	7410	6899
<b>150</b>	8616	8599	8546	8474	8281	8043	7749	7524	7378	7340
<b>155</b>	7988	7978	7947	7899	7859	7838	7799	7681	7490	7336
<b>160</b>	7338	7323	7294	7273	7331	7320	7233	7082	6886	6632
<b>165</b>	6349	6290	6226	6160	6063	5986	5916	5831	5754	5730
<b>170</b>	5368	5391	5420	5432	5424	5410	5408	5419	5441	5520
<b>175</b>	5659	5644	5589	5515	5433	5328	5262	5194	5155	5052
<b>180</b>	4807	4807	4807	4807	4807	4807	4807	4807	4807	4807

**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>	2364	2364	2364	2364	2364	2364	2364	2364	2364	2364
<b>5</b>	2312	2313	2313	2313	2315	2316	2325	2340	2359	2364
<b>10</b>	2281	2280	2278	2276	2274	2271	2268	2278	2303	2306
<b>15</b>	2221	2219	2216	2212	2208	2203	2199	2197	2222	2218
<b>20</b>	2160	2135	2128	2122	2120	2114	2107	2099	2120	2104
<b>25</b>	2030	2064	2033	2015	2009	2006	1998	1988	2000	1977
<b>30</b>	1843	1874	1904	1908	1886	1878	1872	1859	1865	1841
<b>35</b>	1647	1670	1712	1746	1751	1738	1731	1720	1719	1694
<b>40</b>	1513	1501	1516	1558	1593	1591	1585	1574	1565	1543
<b>45</b>	1399	1372	1351	1362	1407	1433	1430	1421	1404	1384
<b>50</b>	1297	1263	1226	1200	1214	1254	1263	1258	1240	1216
<b>55</b>	1259	1153	1099	1065	1041	1065	1089	1091	1074	1051
<b>60</b>	1328	1137	971	912	882	873	899	912	896	875

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**CANDELA TABULATION - (Cont.)**

<b>65</b>	1542	1188	956	771	703	696	707	725	714	697
<b>70</b>	1835	1439	1058	722	632	513	521	544	546	528
<b>75</b>	2349	1743	1201	795	601	367	348	362	372	374
<b>80</b>	2741	2096	1430	924	602	321	216	208	218	228
<b>85</b>	2845	2197	1603	1106	689	521	190	105	104	115
<b>90</b>	2911	2381	1759	1244	828	583	287	146	54	66
<b>95</b>	3100	2743	2109	1536	1065	724	569	310	187	103
<b>100</b>	3750	2923	2480	1913	1411	1023	765	612	372	244
<b>105</b>	4172	3346	2790	2303	1826	1382	1085	844	650	439
<b>110</b>	4542	3829	2976	2712	2242	1825	1523	1220	976	762
<b>115</b>	4906	4246	3598	2934	2721	2294	2009	1728	1483	1234
<b>120</b>	5365	4681	4155	3691	3001	2674	2520	2264	2075	1812
<b>125</b>	5846	5270	4680	4227	3493	3256	3063	2778	2745	2450
<b>130</b>	6211	5670	5193	4459	4078	4001	3433	3476	3507	2956
<b>135</b>	6639	6002	5187	4969	4966	4507	3935	4376	4293	3489
<b>140</b>	6546	5931	5846	5882	5537	4797	4647	5175	5091	4170
<b>145</b>	6607	6666	6594	6307	5756	5142	5552	5855	5765	4763
<b>150</b>	7245	6966	6692	6262	5711	5718	6304	6399	6254	5370
<b>155</b>	7108	6863	6468	6032	5958	6326	6581	6546	6423	5831
<b>160</b>	6390	6110	5898	5912	6121	6363	6361	6305	6218	5801
<b>165</b>	5754	5810	5899	6046	6086	6050	5971	5948	5849	5625
<b>170</b>	5591	5612	5605	5544	5444	5320	5220	5156	5111	4998
<b>175</b>	4966	4870	4724	4623	4530	4442	4401	4381	4345	4335
<b>180</b>	4807	4807	4807	4807	4807	4807	4807	4807	4807	4807

**Vert. Horizontal Angles**  
**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>	2364	2364	2364	2364	2364	2364	2364	2364	2364	2364
<b>5</b>	2361	2348	2333	2322	2315	2313	2312	2310	2307	2304
<b>10</b>	2284	2263	2260	2259	2256	2255	2264	2271	2274	2270
<b>15</b>	2188	2180	2177	2184	2197	2199	2195	2192	2191	2192
<b>20</b>	2082	2077	2087	2095	2094	2094	2101	2105	2105	2106
<b>25</b>	1962	1965	1976	1975	1979	1985	1989	1994	1995	1985
<b>30</b>	1831	1839	1839	1847	1854	1858	1856	1842	1824	1804
<b>35</b>	1689	1691	1696	1705	1709	1699	1676	1652	1638	1628
<b>40</b>	1540	1540	1550	1554	1539	1511	1491	1485	1489	1501
<b>45</b>	1377	1378	1390	1375	1348	1330	1334	1339	1327	1333
<b>50</b>	1206	1213	1209	1184	1169	1179	1170	1178	1193	1221
<b>55</b>	1037	1042	1021	1005	1009	1013	1037	1077	1130	1214
<b>60</b>	865	859	844	842	855	902	965	1044	1135	1216
<b>65</b>	690	684	686	702	748	827	911	1013	1095	1158
<b>70</b>	521	529	552	593	657	742	829	913	970	997
<b>75</b>	372	393	437	485	555	625	684	724	756	779
<b>80</b>	249	276	312	359	408	459	502	536	559	574
<b>85</b>	132	159	190	228	273	328	376	417	445	470
<b>90</b>	82	103	135	174	214	261	304	341	371	396
<b>95</b>	87	91	109	133	162	209	261	311	347	377
<b>100</b>	161	145	143	140	152	174	204	235	263	286
<b>105</b>	338	270	244	237	236	228	212	203	209	225
<b>110</b>	650	515	447	402	394	368	339	309	283	258
<b>115</b>	1011	877	766	700	631	586	538	474	401	371
<b>120</b>	1523	1403	1239	1074	1000	923	804	711	655	545
<b>125</b>	2140	2042	1869	1625	1472	1401	1283	1125	951	809
<b>130</b>	2705	2604	2582	2284	2029	1860	1764	1620	1429	1253
<b>135</b>	3434	2854	3227	3007	2720	2490	2298	2152	1990	1793

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**CANDELA TABULATION - (Cont.)**

<b>140</b>	4209	3511	3259	3668	3431	3192	2989	2782	2602	2400
<b>145</b>	4614	4696	3697	3687	4086	3942	3746	3559	3366	3161
<b>150</b>	5001	5432	4855	4062	4104	4504	4518	4312	4142	3959
<b>155</b>	5168	5378	5633	5082	4488	4200	4382	4666	4760	4664
<b>160</b>	5229	4930	5129	5262	5018	4507	4220	4039	4150	4287
<b>165</b>	5301	4970	4742	4772	4883	4843	4655	4509	4320	4153
<b>170</b>	4841	4671	4518	4336	4160	4048	3997	4001	3971	3889
<b>175</b>	4317	4311	4293	4264	4252	4238	4209	4170	4167	4188
<b>180</b>	4807	4807	4807	4807	4807	4807	4807	4807	4807	4807

**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>	2364	2364	2364	2364	2364	2364	2364
<b>5</b>	2301	2298	2295	2292	2289	2288	2290
<b>10</b>	2266	2263	2260	2257	2253	2255	2257
<b>15</b>	2195	2194	2191	2189	2187	2190	2192
<b>20</b>	2107	2107	2107	2106	2101	2101	2104
<b>25</b>	1972	1957	1945	1934	1926	1922	1921
<b>30</b>	1788	1774	1763	1755	1750	1751	1754
<b>35</b>	1632	1626	1629	1631	1631	1628	1627
<b>40</b>	1482	1475	1475	1476	1479	1480	1480
<b>45</b>	1344	1350	1362	1373	1382	1388	1391
<b>50</b>	1258	1290	1343	1406	1442	1465	1474
<b>55</b>	1291	1351	1400	1442	1472	1492	1499
<b>60</b>	1293	1348	1389	1422	1449	1460	1464
<b>65</b>	1203	1236	1261	1277	1290	1295	1294
<b>70</b>	1012	1021	1024	1029	1039	1046	1047
<b>75</b>	793	802	808	813	817	820	821
<b>80</b>	583	592	601	608	615	619	621
<b>85</b>	487	497	500	502	504	505	505
<b>90</b>	413	425	432	435	438	440	439
<b>95</b>	398	415	425	432	439	443	443
<b>100</b>	307	330	345	358	371	377	378
<b>105</b>	247	263	276	286	294	298	299
<b>110</b>	238	224	220	221	221	220	219
<b>115</b>	341	310	291	278	269	262	258
<b>120</b>	486	435	382	359	345	338	334
<b>125</b>	738	686	585	535	497	475	468
<b>130</b>	1109	983	863	776	718	694	677
<b>135</b>	1601	1444	1324	1228	1150	1104	1087
<b>140</b>	2218	2033	1879	1756	1661	1611	1596
<b>145</b>	2952	2785	2628	2475	2367	2306	2286
<b>150</b>	3795	3650	3515	3382	3265	3198	3172
<b>155</b>	4586	4516	4443	4370	4283	4228	4209
<b>160</b>	4441	4654	4868	4944	4902	4886	4880
<b>165</b>	4059	4006	3956	3968	3993	3997	4016
<b>170</b>	3750	3634	3543	3509	3480	3471	3488
<b>175</b>	4217	4280	4343	4396	4436	4402	4341
<b>180</b>	4807	4807	4807	4807	4807	4807	4807

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-20	843.52	N.A.	2.50
0-30	1751.41	N.A.	5.20
0-40	2803.09	N.A.	8.30
0-60	5168.17	N.A.	15.40
0-80	8586.00	N.A.	25.50
0-90	10653.17	N.A.	31.70
10-90	10432.93	N.A.	31.00
20-40	1959.57	N.A.	5.80
20-50	3073.1	N.A.	9.10
40-70	3903.27	N.A.	11.60
60-80	3417.83	N.A.	10.20
70-80	1879.64	N.A.	5.60
80-90	2067.17	N.A.	6.10
90-110	5039.84	N.A.	15.00
90-120	8054.77	N.A.	24.00
90-130	11403.54	N.A.	33.90
90-150	18315.54	N.A.	54.50
90-180	22977.46	N.A.	68.30
110-180	17937.62	N.A.	53.30
0-180	33630.64	N.A.	100.00

Total Luminaire Efficiency = N.A. %

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	220.24
10-20	623.28
20-30	907.89
30-40	1051.68
40-50	1113.53
50-60	1251.54
60-70	1538.2
70-80	1879.64
80-90	2067.17
90-100	2356.25
100-110	2683.59
110-120	3014.92
120-130	3348.77
130-140	3527.92
140-150	3384.09
150-160	2711.6
160-170	1501.45
170-180	448.87

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	103	103	103	103	92	92	92	92	73	73	73	56	56	56	39	39	39	32
1	91	85	81	76	81	76	72	69	60	57	54	44	42	40	30	29	27	21
2	82	73	66	60	73	65	59	54	51	47	43	38	35	32	25	23	21	16
3	74	64	56	49	66	57	50	44	44	39	35	33	29	26	22	19	17	12
4	67	56	47	41	60	50	43	37	39	34	29	29	25	22	19	17	14	10
5	62	49	41	35	55	44	37	31	35	29	25	26	22	18	17	14	12	8
6	57	44	36	30	50	40	32	27	31	25	21	23	19	16	15	13	11	7
7	52	40	31	26	46	36	28	23	28	23	19	21	17	14	14	11	9	6
8	48	36	28	23	43	32	25	20	25	20	16	19	15	12	13	10	8	6
9	45	33	25	20	40	29	23	18	23	18	14	17	14	11	12	9	7	5
10	42	30	22	18	37	27	20	16	21	16	13	16	12	10	11	9	7	5

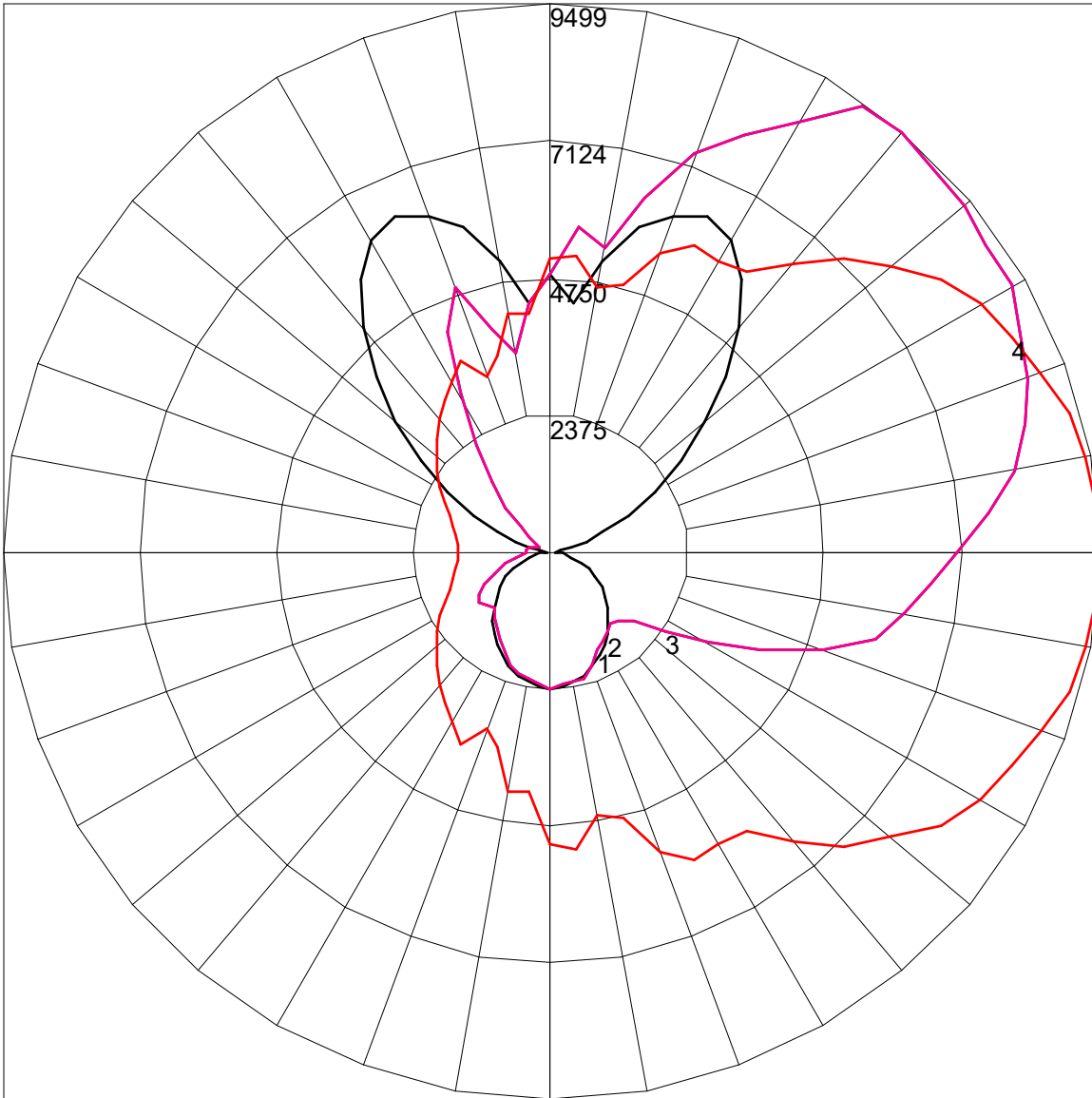
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**UGR TABLE - CORRECTED**

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	16.4	17.2	17.4	18.3	19.7	12.2	12.2	12.2	12.2	13.2
	3H	22.1	22.9	23.2	24.0	25.5	12.2	12.2	12.2	12.9	14.4
	4H	24.7	25.4	25.8	26.5	28.0	12.2	12.2	12.5	13.2	14.8
	6H	27.0	27.6	28.1	28.7	30.2	12.2	12.3	12.8	13.4	14.9
	8H	28.0	28.6	29.1	29.7	31.2	12.2	12.3	12.8	13.4	15.0
	12H	28.9	29.5	30.0	30.6	32.2	12.2	12.3	12.8	13.4	15.0
4H	2H	16.7	17.4	17.8	18.5	20.0	12.2	12.3	12.7	13.4	14.9
	3H	22.8	23.4	23.9	24.5	26.1	13.2	13.8	14.3	14.9	16.4
	4H	25.6	26.2	26.7	27.3	28.8	13.7	14.2	14.8	15.3	16.9
	6H	28.1	28.6	29.3	29.8	31.3	14.0	14.4	15.1	15.6	17.1
	8H	29.3	29.7	30.4	30.9	32.4	14.0	14.5	15.1	15.6	17.2
	12H	30.4	30.8	31.5	32.0	33.5	14.0	14.4	15.2	15.6	17.1
8H	4H	25.8	26.3	26.9	27.4	29.0	17.0	17.4	18.1	18.6	20.1
	6H	28.6	29.0	29.8	30.2	31.7	17.7	18.1	18.8	19.2	20.8
	8H	30.0	30.3	31.1	31.5	33.1	17.9	18.2	19.0	19.3	20.9
	12H	31.3	31.7	32.5	32.8	34.4	17.9	18.2	19.1	19.4	21.0
12H	4H	25.8	26.2	26.9	27.4	28.9	18.1	18.5	19.3	19.7	21.2
	6H	28.7	29.0	29.8	30.2	31.8	19.2	19.5	20.3	20.7	22.3
	8H	30.1	30.4	31.3	31.6	33.2	19.6	19.9	20.7	21.0	22.6

Maximum UGR = 34.4

POLAR GRAPH



Maximum Candela = 9499 Located At Horizontal Angle = 0, Vertical Angle = 140  
# 1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)  
# 2 - Vertical Plane Through Horizontal Angles (90 - 270)  
# 3 - Vertical Plane Through Horizontal Angles (0 - 180)  
# 4 - Horizontal Cone Through Vertical Angle (140) (Through Max. Cd.)