



LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING
MEMBER
of the
IESNA

905 Harrison Street · Allentown, PA 18103 · 610-770-1044 · Fax 610-770-8912 · www.LuminaireTesting.com

LTL NUMBER: 16736

DATE: 10-05-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-WPW4-MN-232-UNV-12L

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, CLEAR PRISMATIC PLASTIC ENCLOSURE WITH LINEAR PRISMATIC SIDES.

LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH.

LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO

BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE2X32T8/UNV-ISL-SC

MOUNTING: SURFACE

ELECTRICAL VALUES: 120.0VAC, 0.4038A, 48.36W

Candela Distribution

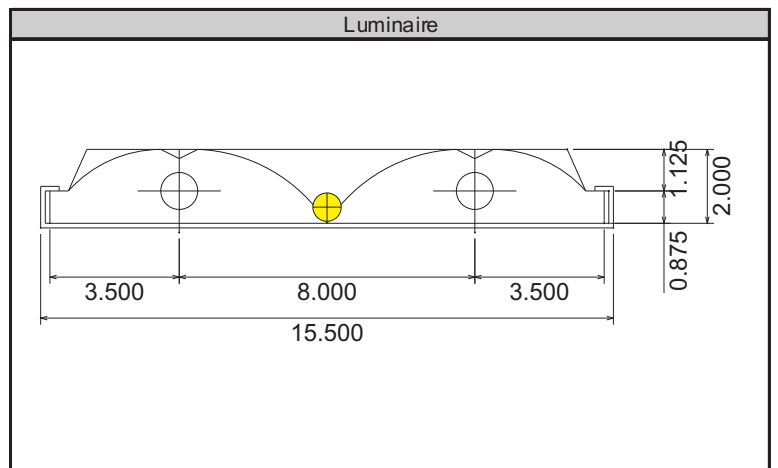
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	
5	2240	2241	2239	2231	2228	2231	2239	2241	2240	2241	2239	2231	2228	2231	2239	2241	212.0
15	2177	2156	2101	2035	2010	2035	2101	2156	2177	2156	2101	2035	2010	2035	2101	2156	589.3
25	2033	1937	1798	1734	1715	1734	1798	1937	2033	1937	1798	1734	1715	1734	1798	1937	845.3
35	1759	1589	1524	1476	1455	1476	1524	1589	1759	1589	1524	1476	1455	1476	1524	1589	967.2
45	1274	1196	1177	1147	1124	1147	1177	1196	1274	1196	1177	1147	1124	1147	1177	1196	903.3
55	653	686	737	720	672	720	737	686	653	686	737	720	672	720	737	686	633.9
65	376	354	368	412	410	412	368	354	376	354	368	412	410	412	368	354	382.7
75	177	190	183	240	257	240	183	190	177	190	183	240	257	240	183	190	221.8
85	59	76	89	144	150	144	89	76	59	76	89	144	150	144	89	76	113.9
90	2	18	59	108	129	108	59	18	2	18	59	108	129	108	59	18	
95	1	18	72	129	150	129	72	18	1	18	72	129	150	129	72	18	78.2
105	2	27	72	94	98	94	72	27	2	27	72	94	98	94	72	27	64.1
115	3	23	47	56	57	56	47	23	3	23	47	56	57	56	47	23	39.1
125	4	17	34	44	47	44	34	17	4	17	34	44	47	44	34	17	27.2
135	5	13	23	30	34	30	23	13	5	13	23	30	34	30	23	13	16.8
145	5	10	17	21	23	21	17	10	5	10	17	21	23	21	17	10	9.9
155	6	8	12	16	17	16	12	8	6	8	12	16	17	16	12	8	5.4
165	6	6	8	10	11	10	8	6	6	6	8	10	11	10	8	6	2.4
175	6	6	6	6	7	6	6	6	6	6	6	6	7	6	6	6	0.6
180	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1646.7	28.9%	32.2%
0-40	2613.9	45.9%	51.1%
0-60	4151.0	72.8%	81.2%
0-90	4869.4	85.4%	95.2%
90-180	243.7	4.3%	4.8%
0-180	5113.1	89.7%	100.0%

Total luminaire efficiency: 89.7%

CIE Type: Direct
Spacing Criterion: 0 deg: 1.26 90 deg: 1.07
180 deg: 1.26 270 deg: 1.07



Approved By: MG

THIS REPORT BASED ON LM-41 AND OTHER PERTINENT IESNA PROCEDURES.



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Candela Tabulation (5 degree Vertical Increments)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250
5	2240	2241	2239	2231	2228	2231	2239	2241	2240	2241	2239	2231	2228	2231	2239	2241
10	2217	2212	2193	2167	2157	2167	2193	2212	2217	2212	2193	2167	2157	2167	2193	2212
15	2177	2156	2101	2035	2010	2035	2101	2156	2177	2156	2101	2035	2010	2035	2101	2156
20	2118	2068	1957	1872	1849	1872	1957	2068	2118	2068	1957	1872	1849	1872	1957	2068
25	2033	1937	1798	1734	1715	1734	1798	1937	2033	1937	1798	1734	1715	1734	1798	1937
30	1914	1769	1660	1609	1591	1609	1660	1769	1914	1769	1660	1609	1591	1609	1660	1769
35	1759	1589	1524	1476	1455	1476	1524	1589	1759	1589	1524	1476	1455	1476	1524	1589
40	1552	1403	1369	1326	1305	1326	1369	1403	1552	1403	1369	1326	1305	1326	1369	1403
45	1274	1196	1177	1147	1124	1147	1177	1196	1274	1196	1177	1147	1124	1147	1177	1196
50	940	944	954	934	899	934	954	944	940	944	954	934	899	934	954	944
55	653	686	737	720	672	720	737	686	653	686	737	720	672	720	737	686
60	499	487	536	543	519	543	536	487	499	487	536	543	519	543	536	487
65	376	354	368	412	410	412	368	354	376	354	368	412	410	412	368	354
70	261	260	252	311	320	311	252	260	261	260	252	311	320	311	252	260
75	177	190	183	240	257	240	183	190	177	190	183	240	257	240	183	190
80	113	134	133	189	199	189	133	134	113	134	133	189	199	189	133	134
85	59	76	89	144	150	144	89	76	59	76	89	144	150	144	89	76
90	2	18	59	108	129	108	59	18	2	18	59	108	129	108	59	18
95	1	18	72	129	150	129	72	18	1	18	72	129	150	129	72	18
100	2	23	82	125	136	125	82	23	2	23	82	125	136	125	82	23
105	2	27	72	94	98	94	72	27	2	27	72	94	98	94	72	27
110	3	26	55	66	67	66	55	26	3	26	55	66	67	66	55	26
115	3	23	47	56	57	56	47	23	3	23	47	56	57	56	47	23
120	4	20	41	51	54	51	41	20	4	20	41	51	54	51	41	20
125	4	17	34	44	47	44	34	17	4	17	34	44	47	44	34	17
130	4	14	29	36	40	36	29	14	4	14	29	36	40	36	29	14
135	5	13	23	30	34	30	23	13	5	13	23	30	34	30	23	13
140	5	11	20	26	29	26	20	11	5	11	20	26	29	26	20	11
145	5	10	17	21	23	21	17	10	5	10	17	21	23	21	17	10
150	6	9	14	19	21	19	14	9	6	9	14	19	21	19	14	9
155	6	8	12	16	17	16	12	8	6	8	12	16	17	16	12	8
160	5	7	10	13	14	13	10	7	5	7	10	13	14	13	10	7
165	6	6	8	10	11	10	8	6	6	6	8	10	11	10	8	6
170	5	6	7	8	8	8	7	6	5	6	7	8	8	8	7	6
175	6	6	6	6	7	6	6	6	6	6	6	6	7	6	6	6
180	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	53.6	45-50	427.8	90-95	37.1	135-140	7.4
5-10	158.4	50-55	354.4	95-100	41.1	140-145	5.6
10-15	254.4	55-60	279.5	100-105	36.7	145-150	4.3
15-20	334.9	60-65	216.9	105-110	27.5	150-155	3.1
20-25	398.6	65-70	165.7	110-115	21.1	155-160	2.2
25-30	446.7	70-75	126.0	115-120	18.1	160-165	1.5
30-35	478.0	75-80	95.9	120-125	15.2	165-170	0.9
35-40	489.2	80-85	69.7	125-130	12.0	170-175	0.5
40-45	475.4	85-90	44.1	130-135	9.4	175-180	0.1



Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.089	1.089	1.089	1.089	1.058	1.058	1.058	1.058	1.028	1.028	1.028	1.028
1	1.003	0.959	0.92	0.885	0.973	0.934	0.899	0.867	0.945	0.91	0.878	0.849
2	0.923	0.848	0.787	0.736	0.894	0.827	0.771	0.724	0.867	0.806	0.755	0.712
3	0.849	0.753	0.681	0.623	0.822	0.736	0.669	0.615	0.797	0.719	0.657	0.607
4	0.783	0.674	0.596	0.537	0.758	0.659	0.586	0.531	0.735	0.645	0.577	0.525
5	0.724	0.607	0.527	0.469	0.701	0.594	0.519	0.464	0.68	0.582	0.512	0.46
6	0.671	0.55	0.47	0.414	0.651	0.539	0.464	0.41	0.631	0.528	0.458	0.407
7	0.624	0.501	0.423	0.369	0.606	0.492	0.418	0.366	0.588	0.483	0.413	0.363
8	0.582	0.459	0.383	0.332	0.565	0.451	0.379	0.329	0.549	0.443	0.375	0.327
9	0.545	0.422	0.349	0.3	0.529	0.415	0.346	0.298	0.515	0.409	0.342	0.297
10	0.511	0.391	0.32	0.274	0.497	0.385	0.317	0.272	0.484	0.378	0.314	0.271

Ceiling Cavity Reflectance	50				30			10			0
Wall Reflectance	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.973	0.973	0.973	0.973	0.922	0.922	0.922	0.876	0.876	0.876	0.854
1	0.893	0.864	0.838	0.814	0.822	0.801	0.782	0.784	0.767	0.752	0.73
2	0.818	0.768	0.726	0.689	0.733	0.698	0.667	0.7	0.672	0.647	0.626
3	0.751	0.686	0.634	0.591	0.657	0.613	0.576	0.629	0.592	0.561	0.541
4	0.693	0.617	0.559	0.514	0.592	0.542	0.502	0.569	0.526	0.491	0.472
5	0.642	0.559	0.498	0.451	0.537	0.484	0.443	0.517	0.471	0.434	0.415
6	0.596	0.509	0.446	0.4	0.49	0.435	0.394	0.472	0.425	0.387	0.369
7	0.556	0.465	0.403	0.358	0.449	0.394	0.353	0.434	0.385	0.348	0.33
8	0.52	0.428	0.367	0.323	0.414	0.359	0.318	0.401	0.351	0.314	0.297
9	0.488	0.395	0.335	0.293	0.383	0.329	0.289	0.371	0.322	0.286	0.27
10	0.46	0.367	0.308	0.268	0.356	0.302	0.265	0.346	0.297	0.262	0.246

Average Luminance Table (cd/m²)

	0	45	90
0	4688	4688	4688
45	3752	3285	3067
55	2372	2477	2191
65	1852	1617	1723
75	1422	1217	1589
85	1401	1290	1863

THIS TEST WAS CONDUCTED USING RELATIVE PHOTOMETRY TECHNIQUES ACCORDING TO STANDARD IESNA PROCEDURES. THE USER MUST THEREFORE USE CAUTION IN THE FOLLOWING SITUATIONS: 1) THIS TEST WAS PERFORMED USING A SPECIFIC BALLAST/LAMP COMBINATION. EXTRAPOLATION OF THESE DATA FOR OTHER BALLAST/LAMP COMBINATIONS MAY PRODUCE ERRONEOUS RESULTS. 2) ACCORDING TO IESNA PROCEDURES, THE BALLAST(S) AND LAMP(S) ARE PRESUMED TO PRODUCE 100% OF RATED OUTPUT. AN APPROPRIATE BALLAST FACTOR MUST BE APPLIED TO THE LUMEN OUTPUT RATINGS AND LUMINOUS INTENSITY VALUES GIVEN. 3) THIS TEST WAS CONDUCTED IN A CONTROLLED LABORATORY ENVIRONMENT WHERE THE AMBIENT TEMPERATURE WAS HELD AT 25 °C ±1°C. FIELD PERFORMANCE MAY DIFFER PARTICULARLY IN REGARDS TO CHANGE IN LUMINOUS OUTPUT AS A RESULT OF DIFFERENCE IN AMBIENT TEMPERATURE AND METHOD OF MOUNTING THE LUMINAIRE.

