



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: 16734

DATE: 10-06-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-MPW4-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, 0.4035A, 48.37W

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	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	
5	2078	2073	2067	2048	2045	2048	2067	2073	2078	2073	2067	2048	2045	2048	2067	2073	194.6
15	1984	1952	1900	1856	1846	1856	1900	1952	1984	1952	1900	1856	1846	1856	1900	1952	537.3
25	1791	1748	1709	1679	1667	1679	1709	1748	1791	1748	1709	1679	1667	1679	1709	1748	790.0
35	1497	1505	1475	1425	1404	1425	1475	1505	1497	1505	1475	1425	1404	1425	1475	1505	911.8
45	1096	1145	1077	1031	1020	1031	1077	1145	1096	1145	1077	1031	1020	1031	1077	1145	826.0
55	596	653	646	628	621	628	646	653	596	653	646	628	621	628	646	653	574.1
65	298	350	410	425	412	425	410	350	298	350	410	425	412	425	410	350	386.2
75	178	206	278	338	349	338	278	206	178	206	278	338	349	338	278	206	286.7
85	65	91	176	256	284	256	176	91	65	91	176	256	284	256	176	91	188.7
90	4	39	132	201	219	201	132	39	4	39	132	201	219	201	132	39	
95	2	41	128	176	185	176	128	41	2	41	128	176	185	176	128	41	117.8
105	1	45	88	97	96	97	88	45	1	45	88	97	96	97	88	45	75.3
115	1	33	61	75	78	75	61	33	1	33	61	75	78	75	61	33	52.0
125	1	25	50	61	63	61	50	25	1	25	50	61	63	61	50	25	38.2
135	1	13	37	48	51	48	37	13	1	13	37	48	51	48	37	13	24.2
145	1	2	26	36	39	36	26	2	1	2	26	36	39	36	26	2	13.3
155	1	1	6	20	23	20	6	1	1	1	6	20	23	20	6	1	4.6
165	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5
175	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

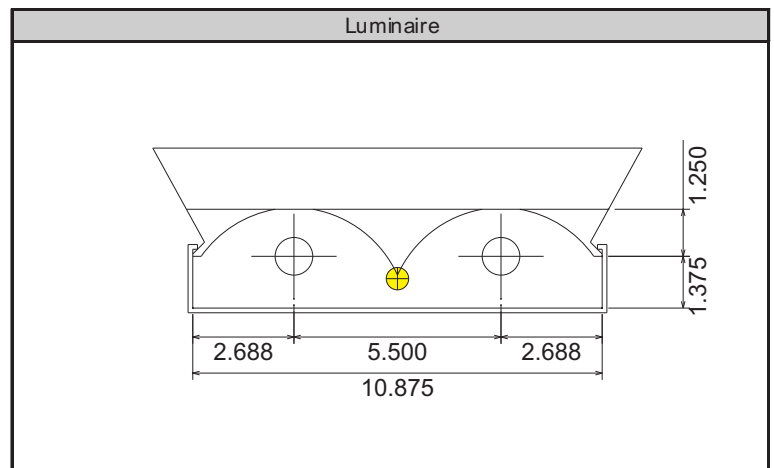
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1521.9	26.7%	30.3%
0-40	2433.7	42.7%	48.5%
0-60	3833.8	67.3%	76.4%
0-90	4695.4	82.4%	93.5%
90-180	326.0	5.7%	6.5%
0-180	5021.4	88.1%	100.0%

Total luminaire efficiency: 88.1%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.18 90 deg: 1.12
180 deg: 1.18 270 deg: 1.12



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	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090
5	2078	2073	2067	2048	2045	2048	2067	2073	2078	2073	2067	2048	2045	2048	2067	2073
10	2044	2026	1994	1957	1947	1957	1994	2026	2044	2026	1994	1957	1947	1957	1994	2026
15	1984	1952	1900	1856	1846	1856	1900	1952	1984	1952	1900	1856	1846	1856	1900	1952
20	1901	1858	1802	1768	1758	1768	1802	1858	1901	1858	1802	1768	1758	1768	1802	1858
25	1791	1748	1709	1679	1667	1679	1709	1748	1791	1748	1709	1679	1667	1679	1709	1748
30	1658	1633	1607	1568	1551	1568	1607	1633	1658	1633	1607	1568	1551	1568	1607	1633
35	1497	1505	1475	1425	1404	1425	1475	1505	1497	1505	1475	1425	1404	1425	1475	1505
40	1314	1350	1299	1238	1220	1238	1299	1350	1314	1350	1299	1238	1220	1238	1299	1350
45	1096	1145	1077	1031	1020	1031	1077	1145	1096	1145	1077	1031	1020	1031	1077	1145
50	844	894	840	818	808	818	840	894	844	894	840	818	808	818	840	894
55	596	653	646	628	621	628	646	653	596	653	646	628	621	628	646	653
60	414	470	507	501	491	501	507	470	414	470	507	501	491	501	507	470
65	298	350	410	425	412	425	410	350	298	350	410	425	412	425	410	350
70	226	267	336	373	369	373	336	267	226	267	336	373	369	373	336	267
75	178	206	278	338	349	338	278	206	178	206	278	338	349	338	278	206
80	129	150	225	301	326	301	225	150	129	150	225	301	326	301	225	150
85	65	91	176	256	284	256	176	91	65	91	176	256	284	256	176	91
90	4	39	132	201	219	201	132	39	4	39	132	201	219	201	132	39
95	2	41	128	176	185	176	128	41	2	41	128	176	185	176	128	41
100	2	44	111	135	137	135	111	44	2	44	111	135	137	135	111	44
105	1	45	88	97	96	97	88	45	1	45	88	97	96	97	88	45
110	1	41	69	79	80	79	69	41	1	41	69	79	80	79	69	41
115	1	33	61	75	78	75	61	33	1	33	61	75	78	75	61	33
120	1	29	58	70	73	70	58	29	1	29	58	70	73	70	58	29
125	1	25	50	61	63	61	50	25	1	25	50	61	63	61	50	25
130	1	20	42	55	57	55	42	20	1	20	42	55	57	55	42	20
135	1	13	37	48	51	48	37	13	1	13	37	48	51	48	37	13
140	1	5	32	42	44	42	32	5	1	5	32	42	44	42	32	5
145	1	2	26	36	39	36	26	2	1	2	26	36	39	36	26	2
150	1	1	16	29	33	29	16	1	1	1	16	29	33	29	16	1
155	1	1	6	20	23	20	6	1	1	1	6	20	23	20	6	1
160	1	1	1	7	11	7	1	1	1	1	1	7	11	7	1	1
165	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
170	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
175	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	49.6	45-50	387.2	90-95	63.2	135-140	10.5
5-10	145.0	50-55	319.0	95-100	54.5	140-145	7.8
10-15	231.1	55-60	255.1	100-105	42.5	145-150	5.5
15-20	306.2	60-65	209.2	105-110	32.9	150-155	3.3
20-25	370.0	65-70	177.0	110-115	27.5	155-160	1.4
25-30	420.0	70-75	153.7	115-120	24.5	160-165	0.3
30-35	452.0	75-80	133.0	120-125	21.0	165-170	0.1
35-40	459.8	80-85	109.1	125-130	17.2	170-175	0.1
40-45	438.8	85-90	79.6	130-135	13.7	175-180	0.0



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	1.067	1.067	1.067	1.067	1.035	1.035	1.035	1.035	1.004	1.004	1.004	1.004
1	0.976	0.929	0.888	0.851	0.945	0.903	0.865	0.831	0.915	0.877	0.843	0.812
2	0.895	0.817	0.754	0.701	0.865	0.795	0.737	0.688	0.837	0.774	0.721	0.676
3	0.822	0.724	0.65	0.592	0.794	0.706	0.637	0.583	0.768	0.688	0.625	0.574
4	0.757	0.647	0.568	0.508	0.732	0.631	0.558	0.502	0.707	0.616	0.548	0.495
5	0.7	0.582	0.502	0.443	0.676	0.569	0.493	0.438	0.654	0.556	0.485	0.433
6	0.648	0.527	0.447	0.391	0.627	0.515	0.44	0.387	0.607	0.504	0.434	0.383
7	0.603	0.48	0.402	0.348	0.583	0.47	0.396	0.345	0.565	0.46	0.391	0.342
8	0.562	0.439	0.364	0.313	0.545	0.431	0.359	0.31	0.528	0.422	0.355	0.307
9	0.526	0.404	0.331	0.283	0.51	0.397	0.327	0.281	0.495	0.389	0.324	0.278
10	0.493	0.374	0.304	0.258	0.479	0.367	0.3	0.256	0.465	0.361	0.297	0.254

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	0.947	0.947	0.947	0.947	0.895	0.895	0.895	0.846	0.846	0.846	0.824
1	0.86	0.829	0.802	0.776	0.785	0.763	0.742	0.745	0.727	0.711	0.688
2	0.785	0.733	0.689	0.651	0.696	0.66	0.628	0.662	0.632	0.606	0.585
3	0.72	0.654	0.6	0.556	0.622	0.577	0.54	0.593	0.556	0.524	0.503
4	0.663	0.587	0.529	0.482	0.56	0.51	0.47	0.535	0.493	0.458	0.438
5	0.614	0.531	0.47	0.423	0.508	0.455	0.414	0.486	0.441	0.404	0.385
6	0.57	0.483	0.421	0.375	0.463	0.409	0.367	0.444	0.397	0.36	0.341
7	0.532	0.442	0.38	0.335	0.425	0.37	0.329	0.408	0.36	0.323	0.306
8	0.498	0.406	0.346	0.302	0.391	0.337	0.297	0.377	0.328	0.292	0.275
9	0.467	0.375	0.316	0.274	0.362	0.308	0.27	0.35	0.301	0.266	0.25
10	0.44	0.348	0.29	0.25	0.337	0.284	0.247	0.325	0.278	0.243	0.228

Average Luminance Table (cd/m²)

	0	45	90
0	6204	6204	6204
45	4602	4154	3806
55	3087	2965	2723
65	2091	2417	2280
75	2041	2391	2719
85	2205	2959	3961

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.

