



# 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: 19584

DATE: 06-09-2010

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-KCN4-MN-232-UNV-12L-FRL

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, FORMED WHITE ENAMEL ALUMINUM ENCLOSURE WITH FROSTED LINEAR PRISMATIC PLASTIC DIFFUSERS BELOW EACH LAMP.

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: RECESSED

ELECTRICAL VALUES: 120.0VAC, 0.4081A, 48.84W

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	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	
5	2258	2257	2254	2255	2250	2255	2254	2257	2258	2257	2254	2255	2250	2255	2254	2257	213.5
15	2135	2127	2105	2085	2073	2085	2105	2127	2135	2127	2105	2085	2073	2085	2105	2127	592.2
25	1893	1879	1837	1795	1774	1795	1837	1879	1893	1879	1837	1795	1774	1795	1837	1879	844.2
35	1561	1550	1503	1455	1434	1455	1503	1550	1561	1550	1503	1455	1434	1455	1503	1550	937.9
45	1178	1180	1149	1109	1092	1109	1149	1180	1178	1180	1149	1109	1092	1109	1149	1180	881.5
55	797	815	807	776	759	776	807	815	797	815	807	776	759	776	807	815	710.5
65	470	495	503	439	401	439	503	495	470	495	503	439	401	439	503	495	464.9
75	216	241	214	162	143	162	214	241	216	241	214	162	143	162	214	241	214.7
85	48	49	39	30	28	30	39	49	48	49	39	30	28	30	39	49	47.4
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1649.8	28.9%	33.6%
0-40	2587.7	45.4%	52.7%
0-60	4179.8	73.3%	85.2%
0-90	4906.9	86.1%	100.0%
90-180	0.0	0.0%	0.0%
0-180	4906.9	86.1%	100.0%

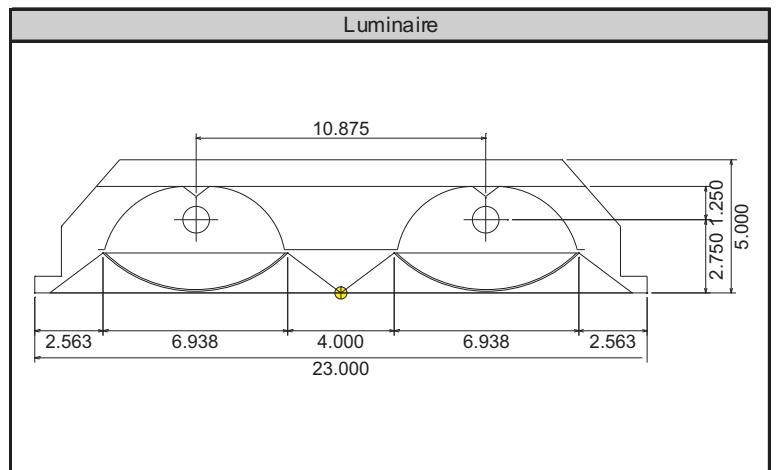
Total luminaire efficiency: 86.1%

CIE Type:

Direct

Spacing Criterion:

0 deg: 1.15    90 deg: 1.07  
180 deg: 1.15    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	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275	2275
5	2258	2257	2254	2255	2250	2255	2254	2257	2258	2257	2254	2255	2250	2255	2254	2257
10	2213	2209	2197	2189	2179	2189	2197	2209	2213	2209	2197	2189	2179	2189	2197	2209
15	2135	2127	2105	2085	2073	2085	2105	2127	2135	2127	2105	2085	2073	2085	2105	2127
20	2027	2015	1982	1952	1934	1952	1982	2015	2027	2015	1982	1952	1934	1952	1982	2015
25	1893	1879	1837	1795	1774	1795	1837	1879	1893	1879	1837	1795	1774	1795	1837	1879
30	1737	1722	1675	1628	1605	1628	1675	1722	1737	1722	1675	1628	1605	1628	1675	1722
35	1561	1550	1503	1455	1434	1455	1503	1550	1561	1550	1503	1455	1434	1455	1503	1550
40	1372	1367	1325	1280	1261	1280	1325	1367	1372	1367	1325	1280	1261	1280	1325	1367
45	1178	1180	1149	1109	1092	1109	1149	1180	1178	1180	1149	1109	1092	1109	1149	1180
50	983	994	975	941	923	941	975	994	983	994	975	941	923	941	975	994
55	797	815	807	776	759	776	807	815	797	815	807	776	759	776	807	815
60	623	647	648	618	587	618	647	647	623	647	648	618	587	618	647	647
65	470	495	503	439	401	439	503	495	470	495	503	439	401	439	503	495
70	334	359	351	280	250	280	351	359	334	359	351	280	250	280	351	359
75	216	241	214	162	143	162	214	241	216	241	214	162	143	162	214	241
80	122	136	111	82	74	82	111	136	122	136	111	82	74	82	111	136
85	48	49	39	30	28	30	39	49	48	49	39	30	28	30	39	49
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	54.2	45-50	425.3	90-95	0.0	135-140	0.0
5-10	159.3	50-55	382.1	95-100	0.0	140-145	0.0
10-15	255.3	55-60	328.5	100-105	0.0	145-150	0.0
15-20	336.9	60-65	266.3	105-110	0.0	150-155	0.0
20-25	400.3	65-70	198.7	110-115	0.0	155-160	0.0
25-30	443.9	70-75	134.2	115-120	0.0	160-165	0.0
30-35	467.2	75-80	80.5	120-125	0.0	165-170	0.0
35-40	470.7	80-85	38.5	125-130	0.0	170-175	0.0
40-45	456.2	85-90	9.0	130-135	0.0	175-180	0.0



Coefficients of Utilization - Zonal Cavity Method												
Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.05	1.05	1.05	1.05	1.025	1.025	1.025	1.025	1.001	1.001	1.001	1.001
1	0.971	0.93	0.894	0.862	0.947	0.91	0.877	0.848	0.924	0.891	0.861	0.834
2	0.892	0.821	0.763	0.715	0.869	0.805	0.751	0.706	0.847	0.789	0.74	0.698
3	0.82	0.729	0.659	0.604	0.798	0.715	0.65	0.599	0.778	0.701	0.641	0.593
4	0.755	0.651	0.576	0.519	0.735	0.639	0.569	0.515	0.716	0.628	0.562	0.512
5	0.698	0.585	0.508	0.452	0.68	0.576	0.503	0.45	0.662	0.566	0.498	0.447
6	0.647	0.53	0.453	0.399	0.63	0.522	0.449	0.397	0.614	0.514	0.445	0.395
7	0.602	0.483	0.408	0.355	0.586	0.476	0.404	0.354	0.572	0.469	0.401	0.353
8	0.561	0.442	0.369	0.32	0.547	0.436	0.367	0.319	0.534	0.431	0.364	0.318
9	0.525	0.407	0.337	0.29	0.513	0.402	0.335	0.289	0.501	0.397	0.333	0.288
10	0.493	0.377	0.309	0.264	0.482	0.373	0.307	0.264	0.471	0.368	0.305	0.263

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.957	0.957	0.957	0.957	0.916	0.916	0.916	0.878	0.878	0.878	0.861
1	0.881	0.855	0.83	0.808	0.821	0.801	0.783	0.791	0.775	0.76	0.743
2	0.807	0.759	0.717	0.682	0.731	0.697	0.667	0.705	0.677	0.652	0.634
3	0.74	0.676	0.625	0.583	0.653	0.61	0.573	0.632	0.595	0.563	0.546
4	0.681	0.607	0.55	0.505	0.587	0.538	0.498	0.569	0.527	0.492	0.474
5	0.63	0.549	0.489	0.443	0.532	0.479	0.438	0.516	0.47	0.433	0.416
6	0.585	0.499	0.438	0.392	0.485	0.43	0.389	0.471	0.423	0.385	0.369
7	0.545	0.456	0.395	0.35	0.444	0.389	0.348	0.433	0.383	0.346	0.329
8	0.51	0.419	0.359	0.316	0.409	0.354	0.314	0.399	0.349	0.312	0.297
9	0.479	0.388	0.328	0.287	0.379	0.324	0.285	0.37	0.32	0.284	0.269
10	0.451	0.36	0.302	0.262	0.352	0.299	0.261	0.345	0.295	0.26	0.245

Average Luminance Table (cd/m<sup>2</sup>)

	0	45	90
0	3585	3585	3585
45	2624	2560	2433
55	2190	2218	2085
65	1752	1874	1496
75	1315	1303	868
85	869	703	507

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.

