



# 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: 17530

DATE: 12-10-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-KCN4-WN-232-UNV-12L-SBL

LUMINAIRE: FORMED STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, 12 CELL, 1-5/8" DEEP FORMED WHITE ENAMEL STEEL LOUVER.

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

LAMP CATALOG NUMBER:

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

MOUNTING: RECESSED

ELECTRICAL VALUES: 120.0VAC, 0.4186A, 50.16W

**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	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	
5	1940	1938	1942	1951	1947	1951	1942	1938	1940	1938	1942	1951	1947	1951	1942	1938	184.3
15	1846	1845	1843	1851	1854	1851	1843	1845	1846	1845	1843	1851	1854	1851	1843	1845	520.9
25	1686	1677	1678	1716	1739	1716	1678	1677	1686	1677	1678	1716	1739	1716	1678	1677	781.5
35	1473	1447	1484	1557	1604	1557	1484	1447	1473	1447	1484	1557	1604	1557	1484	1447	942.6
45	1216	1178	1250	1336	1380	1336	1250	1178	1216	1178	1250	1336	1380	1336	1250	1178	973.3
55	922	872	940	950	930	950	940	872	922	872	940	950	930	950	940	872	812.2
65	603	555	479	283	261	283	479	555	603	555	479	283	261	283	479	555	442.3
75	245	217	142	110	92	110	142	217	245	217	142	110	92	110	142	217	173.4
85	51	48	36	19	8	19	36	48	51	48	36	19	8	19	36	48	38.6
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

**Zonal Lumen Summary**

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1486.8	26.1%	30.5%
0-40	2429.3	42.6%	49.9%
0-60	4214.9	73.9%	86.6%
0-90	4869.2	85.4%	100.0%
90-180	0.0	0.0%	0.0%
0-180	4869.2	85.4%	100.0%

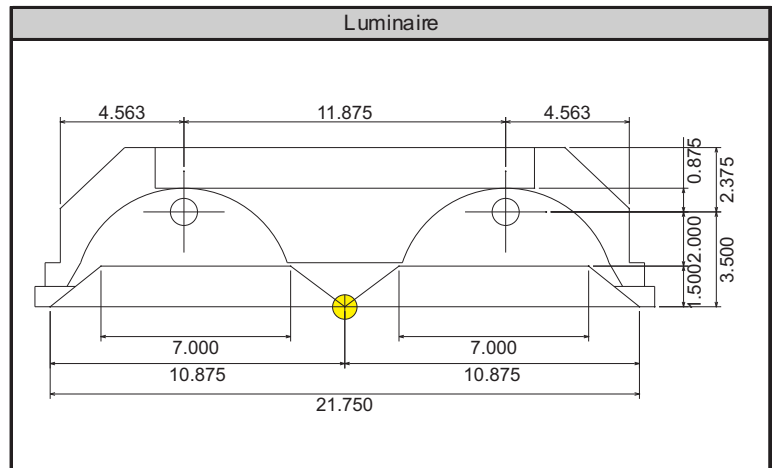
Total luminaire efficiency: 85.4%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.21 90 deg: 1.28  
180 deg: 1.21 270 deg: 1.28

Shielding angle: 0 deg: 14 90 deg: 29

Total reflectance of paint: 91.0



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	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957	1957
5	1940	1938	1942	1951	1947	1951	1942	1938	1940	1938	1942	1951	1947	1951	1942	1938
10	1902	1901	1904	1912	1911	1912	1904	1901	1902	1901	1904	1912	1911	1912	1904	1901
15	1846	1845	1843	1851	1854	1851	1843	1845	1846	1845	1843	1851	1854	1851	1843	1845
20	1773	1769	1764	1783	1797	1783	1764	1769	1773	1769	1764	1783	1797	1783	1764	1769
25	1686	1677	1678	1716	1739	1716	1678	1677	1686	1677	1678	1716	1739	1716	1678	1677
30	1586	1568	1586	1640	1673	1640	1586	1568	1586	1568	1586	1640	1673	1640	1586	1568
35	1473	1447	1484	1557	1604	1557	1484	1447	1473	1447	1484	1557	1604	1557	1484	1447
40	1350	1316	1371	1461	1514	1461	1371	1316	1350	1316	1371	1461	1514	1461	1371	1316
45	1216	1178	1250	1336	1380	1336	1250	1178	1216	1178	1250	1336	1380	1336	1250	1178
50	1073	1029	1110	1165	1201	1165	1110	1029	1073	1029	1110	1165	1201	1165	1110	1029
55	922	872	940	950	930	950	940	872	922	872	940	950	930	950	940	872
60	768	714	742	590	491	590	742	714	768	714	742	590	491	590	742	714
65	603	555	479	283	261	283	479	555	603	555	479	283	261	283	479	555
70	421	386	227	183	166	183	227	386	421	386	227	183	166	183	227	386
75	245	217	142	110	92	110	142	217	245	217	142	110	92	110	142	217
80	114	109	84	56	40	56	84	109	114	109	84	56	40	56	84	109
85	51	48	36	19	8	19	36	48	51	48	36	19	8	19	36	48
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	46.6	45-50	480.2	90-95	0.0	135-140	0.0
5-10	137.7	50-55	443.2	95-100	0.0	140-145	0.0
10-15	222.6	55-60	369.0	100-105	0.0	145-150	0.0
15-20	298.4	60-65	265.4	105-110	0.0	150-155	0.0
20-25	363.9	65-70	176.9	110-115	0.0	155-160	0.0
25-30	417.7	70-75	111.7	115-120	0.0	160-165	0.0
30-35	458.3	75-80	61.7	120-125	0.0	165-170	0.0
35-40	484.2	80-85	30.3	125-130	0.0	170-175	0.0
40-45	493.1	85-90	8.4	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	1.042	1.042	1.042	1.042	1.017	1.017	1.017	1.017	0.993	0.993	0.993	0.993
1	0.964	0.924	0.888	0.856	0.94	0.904	0.871	0.842	0.917	0.885	0.855	0.828
2	0.885	0.814	0.756	0.708	0.862	0.798	0.745	0.7	0.84	0.782	0.733	0.692
3	0.812	0.72	0.651	0.596	0.79	0.706	0.642	0.59	0.77	0.693	0.633	0.585
4	0.746	0.641	0.565	0.508	0.726	0.629	0.559	0.505	0.707	0.618	0.552	0.501
5	0.687	0.574	0.497	0.44	0.669	0.564	0.491	0.438	0.651	0.555	0.486	0.435
6	0.635	0.518	0.44	0.385	0.619	0.509	0.436	0.384	0.603	0.501	0.432	0.382
7	0.589	0.47	0.394	0.341	0.574	0.463	0.39	0.34	0.559	0.456	0.387	0.339
8	0.548	0.429	0.355	0.305	0.535	0.423	0.352	0.304	0.521	0.417	0.35	0.303
9	0.512	0.393	0.322	0.274	0.5	0.388	0.32	0.274	0.488	0.383	0.318	0.273
10	0.48	0.363	0.294	0.249	0.468	0.358	0.292	0.248	0.458	0.354	0.29	0.248

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.949	0.949	0.949	0.949	0.909	0.909	0.909	0.872	0.872	0.872	0.854
1	0.875	0.849	0.825	0.802	0.816	0.796	0.778	0.785	0.77	0.755	0.738
2	0.8	0.752	0.711	0.676	0.725	0.691	0.661	0.699	0.671	0.646	0.628
3	0.732	0.668	0.617	0.575	0.645	0.602	0.565	0.624	0.587	0.556	0.538
4	0.672	0.597	0.54	0.495	0.578	0.528	0.488	0.56	0.517	0.482	0.464
5	0.619	0.537	0.477	0.431	0.521	0.468	0.426	0.505	0.459	0.422	0.404
6	0.573	0.486	0.425	0.379	0.472	0.417	0.375	0.459	0.41	0.372	0.355
7	0.533	0.443	0.381	0.336	0.431	0.375	0.334	0.419	0.369	0.331	0.315
8	0.497	0.406	0.344	0.301	0.395	0.34	0.299	0.385	0.335	0.297	0.282
9	0.466	0.373	0.313	0.272	0.364	0.309	0.27	0.356	0.306	0.269	0.254
10	0.438	0.345	0.287	0.247	0.337	0.284	0.246	0.33	0.28	0.245	0.23

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

	0	45	90
0	3074	3074	3074
45	2701	2778	3067
55	2526	2574	2546
65	2242	1781	969
75	1488	864	557
85	925	656	150

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.

