



# 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: 17301

DATE: 11-20-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

CATALOG NUMBER: ECS-SRW4-MN-232-UNV-12L

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR 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, 0.3922A, 47.02W

Candela Distribution

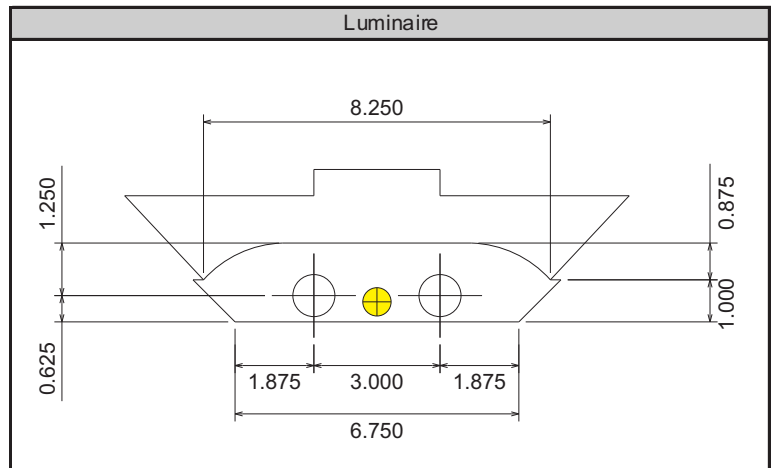
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	
5	1512	1514	1527	1528	1531	1528	1527	1514	1512	1514	1527	1528	1531	1528	1527	1514	145.9
15	1477	1499	1573	1639	1665	1639	1573	1499	1477	1499	1573	1639	1665	1639	1573	1499	445.8
25	1402	1463	1619	1700	1722	1700	1619	1463	1402	1463	1619	1700	1722	1700	1619	1463	730.5
35	1277	1365	1508	1548	1545	1548	1508	1365	1277	1365	1508	1548	1545	1548	1508	1365	909.4
45	1070	1136	1239	1254	1277	1254	1239	1136	1070	1136	1239	1254	1277	1254	1239	1136	922.0
55	667	750	862	900	881	900	862	750	667	750	862	900	881	900	862	750	738.2
65	332	427	548	574	571	574	548	427	332	427	548	574	571	574	548	427	499.7
75	180	224	320	368	399	368	320	224	180	224	320	368	399	368	320	224	319.2
85	60	92	158	226	260	226	158	92	60	92	158	226	260	226	158	92	174.0
90	2	41	103	158	182	158	103	41	2	41	103	158	182	158	103	41	
95	0	33	83	130	150	130	83	33	0	33	83	130	150	130	83	33	87.8
105	0	19	53	82	93	82	53	19	0	19	53	82	93	82	53	19	53.3
115	0	1	34	50	57	50	34	1	0	1	34	50	57	50	34	1	29.0
125	0	0	17	35	41	35	17	0	0	0	17	35	41	35	17	0	15.9
135	0	0	0	13	21	13	0	0	0	0	0	13	21	13	0	0	4.4
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	1322.2	23.2%	26.1%
0-40	2231.5	39.1%	44.0%
0-60	3891.7	68.3%	76.7%
0-90	4884.6	85.7%	96.2%
90-180	190.5	3.3%	3.8%
0-180	5075.1	89.0%	100.0%

Total luminaire efficiency: 89.0%

CIE Type: Direct  
Spacing Criterion: 0 deg: 1.32 90 deg: 1.50  
180 deg: 1.32 270 deg: 1.50



Approved By: \_\_\_\_\_

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	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519
5	1512	1514	1527	1528	1531	1528	1527	1514	1512	1514	1527	1528	1531	1528	1527	1514
10	1500	1509	1542	1568	1580	1568	1542	1509	1500	1509	1542	1568	1580	1568	1542	1509
15	1477	1499	1573	1639	1665	1639	1573	1499	1477	1499	1573	1639	1665	1639	1573	1499
20	1445	1484	1609	1696	1727	1696	1609	1484	1445	1484	1609	1696	1727	1696	1609	1484
25	1402	1463	1619	1700	1722	1700	1619	1463	1402	1463	1619	1700	1722	1700	1619	1463
30	1348	1427	1586	1647	1662	1647	1586	1427	1348	1427	1586	1647	1662	1647	1586	1427
35	1277	1365	1508	1548	1545	1548	1508	1365	1277	1365	1508	1548	1545	1548	1508	1365
40	1188	1269	1390	1401	1402	1401	1390	1269	1188	1269	1390	1401	1402	1401	1390	1269
45	1070	1136	1239	1254	1277	1254	1239	1136	1070	1136	1239	1254	1277	1254	1239	1136
50	907	954	1053	1097	1111	1097	1053	954	907	954	1053	1097	1111	1097	1053	954
55	667	750	862	900	881	900	862	750	667	750	862	900	881	900	862	750
60	456	574	697	719	696	719	697	574	456	574	697	719	696	719	697	574
65	332	427	548	574	571	574	548	427	332	427	548	574	571	574	548	427
70	247	312	423	459	471	459	423	312	247	312	423	459	471	459	423	312
75	180	224	320	368	399	368	320	224	180	224	320	368	399	368	320	224
80	123	152	230	293	336	293	230	152	123	152	230	293	336	293	230	152
85	60	92	158	226	260	226	158	92	60	92	158	226	260	226	158	92
90	2	41	103	158	182	158	103	41	2	41	103	158	182	158	103	41
95	0	33	83	130	150	130	83	33	0	33	83	130	150	130	83	33
100	0	26	67	103	118	103	67	26	0	26	67	103	118	103	67	26
105	0	19	53	82	93	82	53	19	0	19	53	82	93	82	53	19
110	0	11	41	63	71	63	41	11	0	11	41	63	71	63	41	11
115	0	1	34	50	57	50	34	1	0	1	34	50	57	50	34	1
120	0	0	26	42	48	42	26	0	0	0	26	42	48	42	26	0
125	0	0	17	35	41	35	17	0	0	0	17	35	41	35	17	0
130	0	0	2	26	32	26	2	0	0	0	2	26	32	26	2	0
135	0	0	0	13	21	13	0	0	0	0	0	13	21	13	0	0
140	0	0	0	1	1	1	0	0	0	0	0	1	1	1	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	36.4	45-50	45.13	90-95	48.8	135-140	1.0
5-10	109.5	50-55	402.2	95-100	39.0	140-145	0.0
10-15	184.5	55-60	335.9	100-105	30.4	145-150	0.0
15-20	261.2	60-65	276.0	105-110	22.9	150-155	0.0
20-25	334.2	65-70	223.7	110-115	16.7	155-160	0.0
25-30	396.4	70-75	179.0	115-120	12.4	160-165	0.0
30-35	442.5	75-80	140.2	120-125	9.5	165-170	0.0
35-40	466.9	80-85	104.9	125-130	6.4	170-175	0.0
40-45	470.7	85-90	69.2	130-135	3.5	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	1.082	1.082	1.082	1.082	1.052	1.052	1.052	1.052	1.024	1.024	1.024	1.024
1	0.987	0.938	0.895	0.856	0.957	0.913	0.874	0.839	0.929	0.89	0.854	0.822
2	0.9	0.818	0.751	0.696	0.871	0.797	0.736	0.685	0.845	0.778	0.722	0.674
3	0.822	0.719	0.64	0.578	0.795	0.701	0.629	0.571	0.77	0.685	0.618	0.564
4	0.753	0.637	0.553	0.49	0.729	0.622	0.544	0.485	0.706	0.608	0.536	0.479
5	0.693	0.569	0.483	0.421	0.67	0.556	0.476	0.418	0.649	0.544	0.47	0.414
6	0.639	0.511	0.427	0.367	0.619	0.501	0.421	0.364	0.6	0.49	0.416	0.361
7	0.592	0.463	0.38	0.324	0.573	0.453	0.376	0.321	0.556	0.445	0.371	0.319
8	0.55	0.421	0.342	0.288	0.533	0.413	0.338	0.286	0.518	0.406	0.334	0.284
9	0.513	0.386	0.309	0.258	0.498	0.379	0.306	0.256	0.483	0.372	0.302	0.255
10	0.48	0.355	0.281	0.233	0.466	0.349	0.279	0.232	0.453	0.343	0.276	0.23

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	0.971	0.971	0.971	0.971	0.922	0.922	0.922	0.878	0.878	0.878	0.857
1	0.878	0.846	0.816	0.79	0.805	0.781	0.759	0.768	0.749	0.731	0.71
2	0.796	0.741	0.694	0.653	0.706	0.667	0.633	0.675	0.643	0.614	0.593
3	0.724	0.654	0.596	0.549	0.625	0.576	0.536	0.598	0.557	0.522	0.501
4	0.663	0.582	0.519	0.469	0.557	0.503	0.459	0.534	0.488	0.45	0.429
5	0.61	0.522	0.456	0.406	0.5	0.443	0.399	0.481	0.431	0.391	0.372
6	0.564	0.471	0.405	0.355	0.453	0.394	0.35	0.436	0.384	0.344	0.325
7	0.524	0.428	0.362	0.314	0.412	0.353	0.31	0.397	0.345	0.305	0.287
8	0.488	0.391	0.326	0.28	0.377	0.319	0.276	0.365	0.312	0.273	0.255
9	0.457	0.359	0.296	0.252	0.347	0.29	0.249	0.336	0.284	0.246	0.229
10	0.429	0.332	0.27	0.228	0.321	0.265	0.225	0.311	0.26	0.223	0.207

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

	0	45	90
0	6147	6147	6147
45	6125	7021	6989
55	4707	5806	5652
65	3179	4719	4598
75	2808	3992	4489
85	2796	3804	5132

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.

