



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: 16737

DATE: 10-05-2009

PREPARED FOR: RENOVA LIGHTING SYSTEMS

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

LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE 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, 0.4040A, 48.40W

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	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	
5	1697	1700	1704	1704	1703	1704	1704	1700	1697	1700	1704	1704	1703	1704	1704	1700	162.0
15	1644	1653	1665	1670	1673	1670	1665	1653	1644	1653	1665	1670	1673	1670	1665	1653	469.6
25	1539	1554	1581	1601	1610	1601	1581	1554	1539	1554	1581	1601	1610	1601	1581	1554	728.0
35	1377	1400	1455	1497	1512	1497	1455	1400	1377	1400	1455	1497	1512	1497	1455	1400	906.2
45	1100	1150	1234	1286	1298	1286	1234	1150	1100	1150	1234	1286	1298	1286	1234	1150	928.0
55	610	702	821	826	791	826	821	702	610	702	821	826	791	826	821	702	686.2
65	365	375	404	454	468	454	404	375	365	375	404	454	468	454	404	375	413.2
75	182	198	185	256	276	256	185	198	182	198	185	256	276	256	185	198	232.6
85	56	77	89	156	168	156	89	77	56	77	89	156	168	156	89	77	120.0
90	3	18	63	124	150	124	63	18	3	18	63	124	150	124	63	18	
95	1	20	81	146	170	146	81	20	1	20	81	146	170	146	81	20	87.9
105	2	30	81	108	115	108	81	30	2	30	81	108	115	108	81	30	73.0
115	2	25	51	63	66	63	51	25	2	25	51	63	66	63	51	25	43.3
125	3	17	34	44	49	44	34	17	3	17	34	44	49	44	34	17	27.3
135	4	12	22	29	33	29	22	12	4	12	22	29	33	29	22	12	15.8
145	4	9	15	20	22	20	15	9	4	9	15	20	22	20	15	9	9.1
155	4	7	11	14	16	14	11	7	4	7	11	14	16	14	11	7	4.8
165	4	5	7	8	9	8	7	5	4	5	7	8	9	8	7	5	2.0
175	4	4	5	5	5	5	5	4	4	4	5	5	5	5	5	4	0.5
180	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	

Zonal Lumen Summary

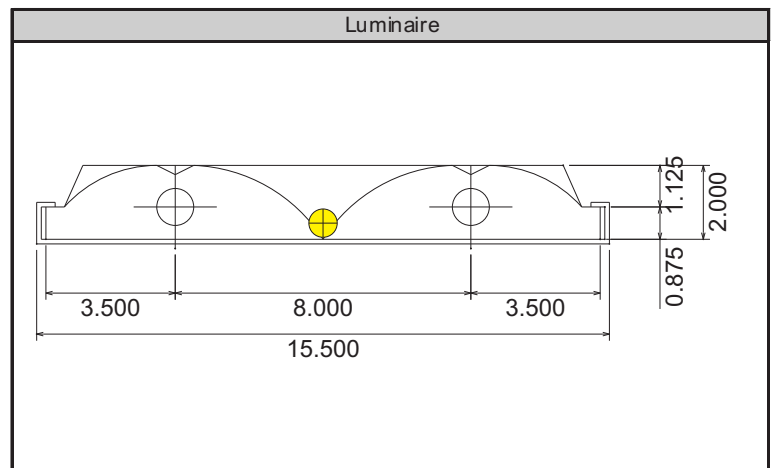
Zone	Lumens	% of Lamp	% of Luminaire
0-30	1359.5	23.9%	27.7%
0-40	2265.7	39.7%	46.2%
0-60	3879.9	68.1%	79.0%
0-90	4645.8	81.5%	94.6%
90-180	263.5	4.6%	5.4%
0-180	4909.4	86.1%	100.0%

Total luminaire efficiency: 86.1%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.28 90 deg: 1.37
180 deg: 1.28 270 deg: 1.37

Total reflectance of paint: 91.5



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	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707
5	1697	1700	1704	1704	1703	1704	1704	1700	1697	1700	1704	1704	1703	1704	1704	1700
10	1677	1683	1689	1692	1691	1692	1689	1683	1677	1683	1689	1692	1691	1692	1689	1683
15	1644	1653	1665	1670	1673	1670	1665	1653	1644	1653	1665	1670	1673	1670	1665	1653
20	1599	1611	1628	1640	1645	1640	1628	1611	1599	1611	1628	1640	1645	1640	1628	1611
25	1539	1554	1581	1601	1610	1601	1581	1554	1539	1554	1581	1601	1610	1601	1581	1554
30	1466	1484	1524	1555	1567	1555	1524	1484	1466	1484	1524	1555	1567	1555	1524	1484
35	1377	1400	1455	1497	1512	1497	1455	1400	1377	1400	1455	1497	1512	1497	1455	1400
40	1266	1296	1367	1416	1433	1416	1367	1296	1266	1296	1367	1416	1433	1416	1367	1296
45	1100	1150	1234	1286	1298	1286	1234	1150	1100	1150	1234	1286	1298	1286	1234	1150
50	849	939	1036	1073	1060	1073	1036	939	849	939	1036	1073	1060	1073	1036	939
55	610	702	821	826	791	826	821	702	610	702	821	826	791	826	821	702
60	470	509	599	613	603	613	599	509	470	509	599	613	603	613	599	509
65	365	375	404	454	468	454	404	375	365	375	404	454	468	454	404	375
70	261	276	265	340	351	340	265	276	261	276	265	340	351	340	265	276
75	182	198	185	256	276	256	185	198	182	198	185	256	276	256	185	198
80	116	136	133	198	215	198	133	136	116	136	133	198	215	198	133	136
85	56	77	89	156	168	156	89	77	56	77	89	156	168	156	89	77
90	3	18	63	124	150	124	63	18	3	18	63	124	150	124	63	18
95	1	20	81	146	170	146	81	20	1	20	81	146	170	146	81	20
100	1	24	92	140	154	140	92	24	1	24	92	140	154	140	92	24
105	2	30	81	108	115	108	81	30	2	30	81	108	115	108	81	30
110	2	28	63	77	81	77	63	28	2	28	63	77	81	77	63	28
115	2	25	51	63	66	63	51	25	2	25	51	63	66	63	51	25
120	3	21	43	54	58	54	43	21	3	21	43	54	58	54	43	21
125	3	17	34	44	49	44	34	17	3	17	34	44	49	44	34	17
130	3	14	27	36	40	36	27	14	3	14	27	36	40	36	27	14
135	4	12	22	29	33	29	22	12	4	12	22	29	33	29	22	12
140	4	10	18	24	27	24	18	10	4	10	18	24	27	24	18	10
145	4	9	15	20	22	20	15	9	4	9	15	20	22	20	15	9
150	4	7	13	17	19	17	13	7	4	7	13	17	19	17	13	7
155	4	7	11	14	16	14	11	7	4	7	11	14	16	14	11	7
160	4	6	8	11	12	11	8	6	4	6	8	11	12	11	8	6
165	4	5	7	8	9	8	7	5	4	5	7	8	9	8	7	5
170	4	5	5	6	7	6	5	5	4	5	5	6	7	6	5	5
175	4	4	5	5	5	5	5	4	4	4	5	5	5	5	5	4
180	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Zonal Lumen Tabulation (5 degree zones)

Zone	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	40.8	45-50	449.4	90-95	41.8	135-140	6.8
5-10	121.3	50-55	382.1	95-100	46.1	140-145	5.2
10-15	198.7	55-60	304.2	100-105	41.3	145-150	3.9
15-20	270.9	60-65	235.6	105-110	31.6	150-155	2.8
20-25	335.9	65-70	177.6	110-115	23.9	155-160	2.0
25-30	392.1	70-75	133.0	115-120	19.4	160-165	1.2
30-35	437.4	75-80	99.6	120-125	15.5	165-170	0.7
35-40	468.8	80-85	72.5	125-130	11.9	170-175	0.4
40-45	478.6	85-90	47.6	130-135	9.0	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	1.045	1.045	1.045	1.045	1.014	1.014	1.014	1.014	0.985	0.985	0.985	0.985
1	0.959	0.915	0.876	0.841	0.93	0.89	0.855	0.823	0.902	0.866	0.834	0.805
2	0.878	0.804	0.742	0.692	0.85	0.783	0.727	0.68	0.824	0.763	0.711	0.668
3	0.805	0.71	0.637	0.58	0.778	0.692	0.625	0.572	0.754	0.675	0.613	0.564
4	0.739	0.631	0.553	0.494	0.715	0.616	0.544	0.488	0.692	0.602	0.534	0.482
5	0.681	0.565	0.485	0.427	0.659	0.552	0.478	0.423	0.638	0.54	0.47	0.418
6	0.629	0.509	0.43	0.374	0.609	0.498	0.424	0.37	0.59	0.488	0.418	0.367
7	0.583	0.461	0.384	0.33	0.565	0.452	0.379	0.327	0.547	0.443	0.374	0.325
8	0.543	0.421	0.345	0.294	0.526	0.412	0.341	0.292	0.51	0.405	0.337	0.29
9	0.506	0.386	0.313	0.265	0.491	0.378	0.309	0.263	0.477	0.371	0.306	0.261
10	0.474	0.355	0.285	0.24	0.46	0.349	0.282	0.238	0.447	0.343	0.279	0.236

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	0.931	0.931	0.931	0.931	0.882	0.882	0.882	0.836	0.836	0.836	0.815
1	0.85	0.821	0.795	0.771	0.78	0.759	0.74	0.742	0.725	0.71	0.689
2	0.775	0.725	0.682	0.646	0.69	0.655	0.624	0.658	0.629	0.604	0.583
3	0.708	0.643	0.591	0.548	0.614	0.57	0.533	0.586	0.55	0.518	0.498
4	0.65	0.575	0.517	0.471	0.549	0.5	0.46	0.526	0.484	0.449	0.429
5	0.599	0.517	0.456	0.41	0.495	0.442	0.401	0.475	0.429	0.393	0.374
6	0.555	0.468	0.406	0.36	0.449	0.395	0.353	0.431	0.384	0.347	0.329
7	0.515	0.426	0.364	0.319	0.409	0.355	0.314	0.394	0.346	0.309	0.291
8	0.481	0.39	0.329	0.286	0.375	0.321	0.281	0.362	0.313	0.277	0.26
9	0.45	0.358	0.299	0.257	0.346	0.292	0.254	0.334	0.286	0.25	0.234
10	0.423	0.331	0.273	0.233	0.32	0.267	0.23	0.31	0.262	0.227	0.212

Average Luminance Table (cd/m²)

	0	45	90
0	3556	3556	3556
45	3240	3442	3542
55	2215	2758	2578
65	1798	1773	1968
75	1463	1228	1707
85	1348	1290	2089

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.

