



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: 17227 DATE: 11-12-2009
 PREPARED FOR: RENOVA LIGHTING SYSTEMS
 CATALOG NUMBER: ECS-WBW4-WN-232-UNV-12L
 LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL 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, 0.4024A, 48.22W

Candela Distribution

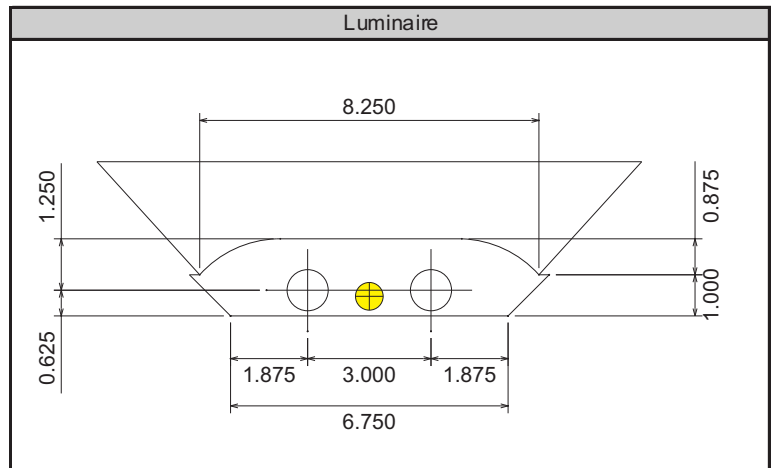
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	
5	1535	1536	1546	1542	1545	1542	1546	1536	1535	1536	1546	1542	1545	1542	1546	1536	146.8
15	1485	1493	1522	1540	1550	1540	1522	1493	1485	1493	1522	1540	1550	1540	1522	1493	429.7
25	1385	1408	1478	1521	1535	1521	1478	1408	1385	1408	1478	1521	1535	1521	1478	1408	676.6
35	1232	1281	1377	1435	1460	1435	1377	1281	1232	1281	1377	1435	1460	1435	1377	1281	850.8
45	1017	1088	1196	1263	1288	1263	1196	1088	1017	1088	1196	1263	1288	1263	1196	1088	901.3
55	651	737	865	892	881	892	865	737	651	737	865	892	881	892	865	737	731.6
65	328	427	542	574	587	574	542	427	328	427	542	574	587	574	542	427	498.9
75	181	224	299	378	420	378	299	224	181	224	299	378	420	378	299	224	319.6
85	60	91	153	231	264	231	153	91	60	91	153	231	264	231	153	91	173.5
90	1	38	101	158	182	158	101	38	1	38	101	158	182	158	101	38	
95	0	29	81	129	149	129	81	29	0	29	81	129	149	129	81	29	85.7
105	0	16	50	80	92	80	50	16	0	16	50	80	92	80	50	16	50.6
115	0	0	31	48	55	48	31	0	0	0	31	48	55	48	31	0	27.3
125	0	0	13	33	40	33	13	0	0	0	13	33	40	33	13	0	14.5
135	0	0	0	2	16	2	0	0	0	0	0	2	16	2	0	0	3.1
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	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1253.1	22.0%	25.5%
0-40	2103.9	36.9%	42.8%
0-60	3736.8	65.6%	76.1%
0-90	4728.7	83.0%	96.3%
90-180	181.2	3.2%	3.7%
0-180	4909.9	86.1%	100.0%

Total luminaire efficiency: 86.1%

CIE Type: Direct
 Spacing Criterion: 0 deg: 1.26 90 deg: 1.45
 180 deg: 1.26 270 deg: 1.45



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	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546	1546
5	1535	1536	1546	1542	1545	1542	1546	1536	1535	1536	1546	1542	1545	1542	1546	1536
10	1517	1520	1536	1540	1545	1540	1536	1520	1517	1520	1536	1540	1545	1540	1536	1520
15	1485	1493	1522	1540	1550	1540	1522	1493	1485	1493	1522	1540	1550	1540	1522	1493
20	1443	1457	1503	1539	1555	1539	1503	1457	1443	1457	1503	1539	1555	1539	1503	1457
25	1385	1408	1478	1521	1535	1521	1478	1408	1385	1408	1478	1521	1535	1521	1478	1408
30	1315	1350	1438	1481	1501	1481	1438	1350	1315	1350	1438	1481	1501	1481	1438	1350
35	1232	1281	1377	1435	1460	1435	1377	1281	1232	1281	1377	1435	1460	1435	1377	1281
40	1133	1197	1301	1370	1397	1370	1301	1197	1133	1197	1301	1370	1397	1370	1301	1197
45	1017	1088	1196	1263	1288	1263	1196	1088	1017	1088	1196	1263	1288	1263	1196	1088
50	871	932	1046	1105	1108	1105	1046	932	871	932	1046	1105	1108	1105	1046	932
55	651	737	865	892	881	892	865	737	651	737	865	892	881	892	865	737
60	451	568	699	712	705	712	699	568	451	568	699	712	705	712	699	568
65	328	427	542	574	587	574	542	427	328	427	542	574	587	574	542	427
70	245	311	404	464	491	464	404	311	245	311	404	464	491	464	404	311
75	181	224	299	378	420	378	299	224	181	224	299	378	420	378	299	224
80	125	151	218	302	351	302	218	151	125	151	218	302	351	302	218	151
85	60	91	153	231	264	231	153	91	60	91	153	231	264	231	153	91
90	1	38	101	158	182	158	101	38	1	38	101	158	182	158	101	38
95	0	29	81	129	149	129	81	29	0	29	81	129	149	129	81	29
100	0	22	64	101	116	101	64	22	0	22	64	101	116	101	64	22
105	0	16	50	80	92	80	50	16	0	16	50	80	92	80	50	16
110	0	9	38	60	70	60	38	9	0	9	38	60	70	60	38	9
115	0	0	31	48	55	48	31	0	0	0	31	48	55	48	31	0
120	0	0	23	41	47	41	23	0	0	0	23	41	47	41	23	0
125	0	0	13	33	40	33	13	0	0	0	13	33	40	33	13	0
130	0	0	0	24	30	24	0	0	0	0	0	24	30	24	0	0
135	0	0	0	2	16	2	0	0	0	0	0	2	16	2	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	36.9	45-50	444.8	90-95	47.9	135-140	0.3
5-10	109.9	50-55	397.9	95-100	37.7	140-145	0.0
10-15	180.9	55-60	333.8	100-105	28.9	145-150	0.0
15-20	248.7	60-65	275.7	105-110	21.6	150-155	0.0
20-25	311.2	65-70	223.2	110-115	15.5	155-160	0.0
25-30	365.4	70-75	178.8	115-120	11.8	160-165	0.0
30-35	409.4	75-80	140.8	120-125	9.0	165-170	0.0
35-40	441.4	80-85	105.2	125-130	5.5	170-175	0.0
40-45	456.4	85-90	68.3	130-135	2.8	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	1.047	1.047	1.047	1.047	1.018	1.018	1.018	1.018	0.991	0.991	0.991	0.991
1	0.954	0.906	0.864	0.826	0.925	0.882	0.844	0.809	0.898	0.859	0.824	0.793
2	0.869	0.789	0.724	0.67	0.841	0.769	0.709	0.659	0.816	0.75	0.695	0.649
3	0.793	0.692	0.616	0.556	0.767	0.676	0.605	0.548	0.743	0.66	0.594	0.541
4	0.726	0.613	0.531	0.47	0.703	0.599	0.523	0.465	0.68	0.585	0.514	0.46
5	0.668	0.547	0.464	0.404	0.646	0.535	0.457	0.4	0.625	0.523	0.451	0.396
6	0.616	0.491	0.409	0.351	0.596	0.481	0.404	0.349	0.578	0.471	0.399	0.346
7	0.57	0.445	0.365	0.309	0.552	0.436	0.36	0.307	0.535	0.427	0.356	0.305
8	0.53	0.405	0.327	0.275	0.514	0.397	0.324	0.273	0.498	0.39	0.32	0.271
9	0.494	0.37	0.296	0.247	0.48	0.364	0.293	0.245	0.466	0.357	0.29	0.244
10	0.462	0.341	0.27	0.223	0.449	0.335	0.267	0.222	0.436	0.33	0.264	0.22

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	0.939	0.939	0.939	0.939	0.893	0.893	0.893	0.85	0.85	0.85	0.83
1	0.848	0.817	0.788	0.762	0.778	0.754	0.733	0.741	0.723	0.706	0.685
2	0.768	0.714	0.668	0.629	0.681	0.643	0.61	0.651	0.619	0.591	0.571
3	0.698	0.629	0.574	0.528	0.601	0.554	0.514	0.575	0.536	0.502	0.481
4	0.639	0.559	0.498	0.45	0.536	0.483	0.44	0.513	0.468	0.431	0.411
5	0.588	0.501	0.438	0.389	0.481	0.425	0.382	0.462	0.414	0.375	0.356
6	0.543	0.452	0.388	0.34	0.435	0.378	0.335	0.418	0.368	0.329	0.311
7	0.504	0.411	0.347	0.3	0.396	0.339	0.296	0.382	0.331	0.292	0.274
8	0.47	0.376	0.313	0.268	0.362	0.306	0.264	0.35	0.299	0.261	0.244
9	0.44	0.345	0.284	0.241	0.334	0.278	0.238	0.323	0.272	0.235	0.219
10	0.413	0.319	0.259	0.218	0.309	0.254	0.215	0.299	0.249	0.213	0.198

Average Luminance Table (cd/m²)

	0	45	90
0	6239	6239	6239
45	5804	6620	6824
55	4582	5640	5417
65	3130	4465	4460
75	2824	3495	4349
85	2760	3244	4522

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.

