LTL 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: 21382 DATE: 12/16/2010
PREPARED FOR: RENOVA LIGHTING SYSTEMS
CATALOG NUMBER: ECS-SBW4-MN-232-UNV-12L
LUMINAIRE: FORMED STEEL HOUSING, FORMED "MIRO 4" SPECULAR ALUMINUM REFLECTOR, CLEAR PRISMATIC ACRYLIC ENCLOSURE WITH CLEAR LINEAR PRISMATIC SIDES.
LAMP: TWO 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS EACH
LAMP CATALOG NUMBER: PHILIPS F32T8/TL835/ALTO
BALLAST: ONE SYLVANIA QHE2X32T8/UNV-ISL-SC
MOUNTING: SURFACE
ELECTRICAL VALUES: 120.0VAC, 0.4041A, 48.35W

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	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	
5	1454	1461	1471	1467	1473	1467	1471	1461	1454	1461	1471	1467	1473	1467	1471	1461	139.5
15	1403	1418	1433	1431	1435	1431	1433	1418	1403	1418	1433	1431	1435	1431	1433	1418	401.8
25	1290	1307	1317	1314	1318	1314	1317	1307	1290	1307	1317	1314	1318	1314	1317	1307	603.2
35	1097	1114	1134	1131	1131	1131	1134	1114	1097	1114	1134	1131	1131	1131	1134	1114	700.0
45	781	829	863	863	859	863	863	829	781	829	863	863	859	863	863	829	649.5
55	428	508	584	613	616	613	584	508	428	508	584	613	616	613	584	508	501.8
65	239	299	391	470	497	470	391	299	239	299	391	470	497	470	391	299	382.6
75	141	187	296	426	478	426	296	187	141	187	296	426	478	426	296	187	322.6
85	39	111	259	383	420	383	259	111	39	111	259	383	420	383	259	111	268.1
90	0	82	244	357	388	357	244	82	0	82	244	357	388	357	244	82	
95	0	88	253	356	384	356	253	88	0	88	253	356	384	356	253	88	241.2
105	0	102	249	335	362	335	249	102	0	102	249	335	362	335	249	102	229.5
115	0	104	234	317	344	317	234	104	0	104	234	317	344	317	234	104	203.9
125	0	87	192	262	286	262	192	87	0	87	192	262	286	262	192	87	153.4
135	0	60	134	187	206	187	134	60	0	60	134	187	206	187	134	60	94.6
145	0	37	83	116	128	116	83	37	0	37	83	116	128	116	83	37	48.0
155	0	23	46	64	71	64	46	23	0	23	46	64	71	64	46	23	20.2
165	0	14	24	31	35	31	24	14	0	14	24	31	35	31	24	14	6.4
175	0	2	10	11	12	11	10	2	0	2	10	11	12	11	10	2	0.9
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

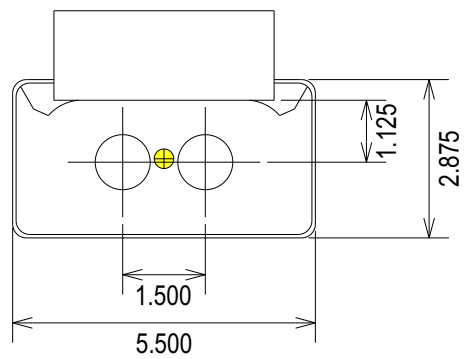
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1144.5	20.1%	23.0%
0-40	1844.5	32.4%	37.1%
0-60	2995.9	52.6%	60.3%
0-90	3969.2	69.6%	79.9%
90-180	998.2	17.5%	20.1%
0-180	4967.3	87.1%	100.0%

Total luminaire efficiency: 87.1%

CIE Type: Semi-Direct
Spacing Criterion: 0 deg: 1.22 90 deg: 1.25
180 deg: 1.22 270 deg: 1.25

Luminaire



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	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467	1467
5	1454	1461	1471	1467	1473	1467	1471	1461	1454	1461	1471	1467	1473	1467	1471	1461
10	1436	1446	1460	1458	1464	1458	1460	1446	1436	1446	1460	1458	1464	1458	1460	1446
15	1403	1418	1433	1431	1435	1431	1433	1418	1403	1418	1433	1431	1435	1431	1433	1418
20	1354	1373	1383	1379	1384	1379	1383	1373	1354	1373	1383	1379	1384	1379	1383	1373
25	1290	1307	1317	1314	1318	1314	1317	1307	1290	1307	1317	1314	1318	1314	1317	1307
30	1206	1221	1235	1234	1237	1234	1235	1221	1206	1221	1235	1234	1237	1234	1235	1221
35	1097	1114	1134	1131	1131	1131	1134	1114	1097	1114	1134	1131	1131	1131	1134	1114
40	957	983	1008	1003	1001	1003	1008	983	957	983	1008	1003	1001	1003	1008	983
45	781	829	863	863	859	863	863	829	781	829	863	863	859	863	863	829
50	591	662	717	728	727	728	717	662	591	662	717	728	727	728	717	662
55	428	508	584	613	616	613	584	508	428	508	584	613	616	613	584	508
60	312	386	473	525	537	525	473	386	312	386	473	525	537	525	473	386
65	239	299	391	470	497	470	391	299	239	299	391	470	497	470	391	299
70	188	236	333	440	484	440	333	236	188	236	333	440	484	440	333	236
75	141	187	296	426	478	426	296	187	141	187	296	426	478	426	296	187
80	91	148	275	410	458	410	275	148	91	148	275	410	458	410	275	148
85	39	111	259	383	420	383	259	111	39	111	259	383	420	383	259	111
90	0	82	244	357	388	357	244	82	0	82	244	357	388	357	244	82
95	0	88	253	356	384	356	253	88	0	88	253	356	384	356	253	88
100	0	95	254	345	370	345	254	95	0	95	254	345	370	345	254	95
105	0	102	249	335	362	335	249	102	0	102	249	335	362	335	249	102
110	0	105	243	329	357	329	243	105	0	105	243	329	357	329	243	105
115	0	104	234	317	344	317	234	104	0	104	234	317	344	317	234	104
120	0	98	217	293	319	293	217	98	0	98	217	293	319	293	217	98
125	0	87	192	262	286	262	192	87	0	87	192	262	286	262	192	87
130	0	73	164	226	248	226	164	73	0	73	164	226	248	226	164	73
135	0	60	134	187	206	187	134	60	0	60	134	187	206	187	134	60
140	0	48	107	149	165	149	107	48	0	48	107	149	165	149	107	48
145	0	37	83	116	128	116	83	37	0	37	83	116	128	116	83	37
150	0	29	62	88	97	88	62	29	0	29	62	88	97	88	62	29
155	0	23	46	64	71	64	46	23	0	23	46	64	71	64	46	23
160	0	19	33	46	51	46	33	19	0	19	33	46	51	46	33	19
165	0	14	24	31	35	31	24	14	0	14	24	31	35	31	24	14
170	0	10	16	20	23	20	16	10	0	10	16	20	23	20	16	10
175	0	2	10	11	12	11	10	2	0	2	10	11	12	11	10	2
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	35.1		45-50	309.2		90-95	120.9		135-140	40.3
5-10	104.5		50-55	270.1		95-100	120.3		140-145	28.7
10-15	170.9		55-60	231.7		100-105	116.8		145-150	19.3
15-20	230.9		60-65	201.5		105-110	112.7		150-155	12.5
20-25	281.9		65-70	181.1		110-115	106.8		155-160	7.7
25-30	321.3		70-75	167.1		115-120	97.1		160-165	4.3
30-35	346.5		75-80	155.5		120-125	84.2		165-170	2.1
35-40	353.5		80-85	141.9		125-130	69.3		170-175	0.8
40-45	340.3		85-90	126.2		130-135	54.2		175-180	0.1

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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	1.041	1.041	1.041	1.041	0.996	0.996	0.996	0.996	0.952	0.952	0.952	0.952
1	0.941	0.89	0.845	0.805	0.897	0.852	0.811	0.775	0.855	0.815	0.778	0.745
2	0.857	0.775	0.708	0.652	0.816	0.742	0.682	0.631	0.776	0.711	0.656	0.61
3	0.784	0.682	0.604	0.543	0.745	0.654	0.583	0.527	0.709	0.627	0.563	0.511
4	0.719	0.605	0.523	0.462	0.684	0.581	0.506	0.449	0.65	0.558	0.489	0.436
5	0.662	0.542	0.459	0.398	0.63	0.521	0.445	0.388	0.6	0.501	0.431	0.378
6	0.612	0.488	0.406	0.348	0.583	0.47	0.394	0.34	0.555	0.453	0.383	0.332
7	0.568	0.443	0.363	0.308	0.541	0.427	0.353	0.301	0.515	0.411	0.343	0.294
8	0.528	0.404	0.327	0.275	0.504	0.39	0.318	0.269	0.48	0.376	0.309	0.263
9	0.493	0.37	0.296	0.247	0.471	0.358	0.289	0.242	0.449	0.346	0.281	0.237
10	0.462	0.341	0.27	0.224	0.441	0.33	0.263	0.219	0.422	0.319	0.257	0.215

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	0.871	0.871	0.871	0.871	0.797	0.797	0.797	0.728	0.728	0.728	0.696
1	0.777	0.745	0.717	0.69	0.682	0.659	0.638	0.623	0.606	0.589	0.559
2	0.704	0.652	0.607	0.569	0.597	0.562	0.53	0.547	0.519	0.493	0.465
3	0.642	0.576	0.523	0.48	0.529	0.486	0.45	0.486	0.451	0.421	0.395
4	0.589	0.514	0.457	0.412	0.474	0.426	0.388	0.436	0.397	0.365	0.34
5	0.543	0.463	0.404	0.358	0.428	0.378	0.339	0.395	0.353	0.32	0.297
6	0.504	0.419	0.36	0.315	0.389	0.338	0.299	0.36	0.317	0.283	0.262
7	0.469	0.382	0.323	0.28	0.355	0.304	0.266	0.33	0.286	0.253	0.233
8	0.438	0.351	0.292	0.251	0.326	0.276	0.239	0.304	0.26	0.228	0.21
9	0.41	0.323	0.266	0.227	0.302	0.252	0.217	0.281	0.238	0.207	0.189
10	0.386	0.299	0.244	0.206	0.28	0.231	0.197	0.262	0.219	0.188	0.172

Average Luminance Table (cd/m²)

	0	45	90
0	8614	8614	8614
45	6487	5236	4692
55	1296	3911	3613
65	3322	3027	3254
75	3193	2817	3676
85	2645	3337	4057

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.

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