



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: 17538 DATE: 02-04-2010
 PREPARED FOR: RENOVA LIGHTING SYSTEMS
 CATALOG NUMBER: ECS-ECO4-WN-354-UNV-22H-00W
 LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, NO ENCLOSURE.
 LAMP: THREE 54 WATT HIGH OUTPUT T5 LINEAR FLUORESCENT LAMPS RATED AT 4400 LUMENS EACH.
 LAMP CATALOG NUMBER: PHILIPS F54T5/841/HO/ALTO
 BALLAST: TWO SYLVANIA "QUICKTRONIC" QTP2X54T5HO/UNV-PSN-HT
 MOUNTING: PENDANT
 ELECTRICAL VALUES: 120.0VAC, 1.4236A, 170.5W

Candela Distribution

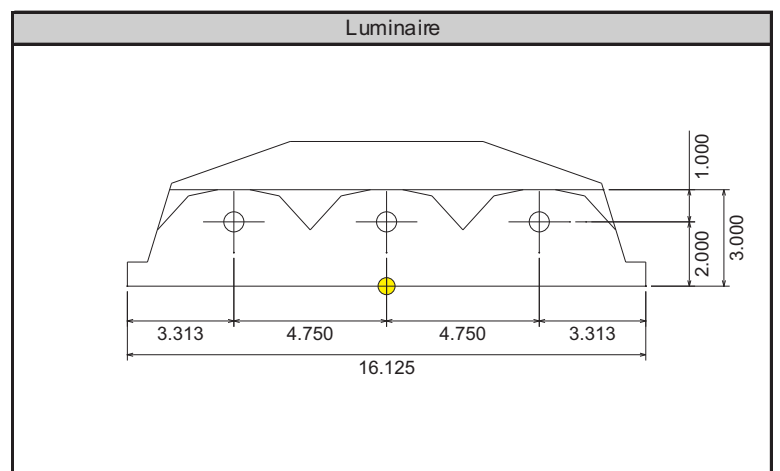
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	
5	3916	3910	3930	3941	3939	3941	3930	3910	3916	3910	3930	3941	3939	3941	3930	3910	373.5
15	3797	3805	3832	3848	3849	3848	3832	3805	3797	3805	3832	3848	3849	3848	3832	3805	1080.8
25	3555	3573	3619	3658	3669	3658	3619	3573	3555	3573	3619	3658	3669	3658	3619	3573	1667.5
35	3204	3235	3316	3402	3438	3402	3316	3235	3204	3235	3316	3402	3438	3402	3316	3235	2077.5
45	2761	2790	2938	3085	3136	3085	2938	2790	2761	2790	2938	3085	3136	3085	2938	2790	2267.5
55	2216	2251	2482	2639	2682	2639	2482	2251	2216	2251	2482	2639	2682	2639	2482	2251	2184.1
65	1584	1618	1876	1754	1760	1754	1876	1618	1584	1618	1876	1754	1760	1754	1876	1618	1719.1
75	851	944	1035	1243	1228	1243	1035	944	851	944	1035	1243	1228	1243	1035	944	1079.7
85	101	202	123	110	108	110	123	202	101	202	123	110	108	110	123	202	212.2
90	1	2	6	9	10	9	6	2	1	2	6	9	10	9	6	2	
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	3121.9	23.7%	24.7%
0-40	5199.4	39.4%	41.1%
0-60	9651.0	73.1%	76.2%
0-90	12662.0	95.9%	100.0%
90-180	0.0	0.0%	0.0%
0-180	12662.0	95.9%	100.0%

Total luminaire efficiency: 95.9%

CIE Type: Direct
 Spacing Criterion: 0 deg: 1.28 90 deg: 1.35
 180 deg: 1.28 270 deg: 1.35



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	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929	3929
5	3916	3910	3930	3941	3939	3941	3930	3910	3916	3910	3930	3941	3939	3941	3930	3910
10	3872	3872	3895	3903	3904	3903	3895	3872	3872	3872	3895	3903	3904	3903	3895	3872
15	3797	3805	3832	3848	3849	3848	3832	3805	3797	3805	3832	3848	3849	3848	3832	3805
20	3690	3702	3741	3761	3769	3761	3741	3702	3690	3702	3741	3761	3769	3761	3741	3702
25	3555	3573	3619	3658	3669	3658	3619	3573	3555	3573	3619	3658	3669	3658	3619	3573
30	3391	3415	3476	3534	3555	3534	3476	3415	3391	3415	3476	3534	3555	3534	3476	3415
35	3204	3235	3316	3402	3438	3402	3316	3235	3204	3235	3316	3402	3438	3402	3316	3235
40	2992	3023	3130	3253	3297	3253	3130	3023	2992	3023	3130	3253	3297	3253	3130	3023
45	2761	2790	2938	3085	3136	3085	2938	2790	2761	2790	2938	3085	3136	3085	2938	2790
50	2498	2535	2717	2885	2925	2885	2717	2535	2498	2535	2717	2885	2925	2885	2717	2535
55	2216	2251	2482	2639	2682	2639	2482	2251	2216	2251	2482	2639	2682	2639	2482	2251
60	1913	1945	2203	2264	2194	2264	2203	1945	1913	1945	2203	2264	2194	2264	2203	1945
65	1584	1618	1876	1754	1760	1754	1876	1618	1584	1618	1876	1754	1760	1754	1876	1618
70	1233	1287	1357	1479	1532	1479	1357	1287	1233	1287	1357	1479	1532	1479	1357	1287
75	851	944	1035	1243	1228	1243	1035	944	851	944	1035	1243	1228	1243	1035	944
80	455	509	670	611	584	611	670	509	455	509	670	611	584	611	670	509
85	101	202	123	110	108	110	123	202	101	202	123	110	108	110	123	202
90	1	2	6	9	10	9	6	2	1	2	6	9	10	9	6	2
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	94.0	45-50	1142.3	90-95	0.0	135-140	0.0
5-10	279.6	50-55	1123.4	95-100	0.0	140-145	0.0
10-15	457.8	55-60	1060.7	100-105	0.0	145-150	0.0
15-20	623.1	60-65	934.9	105-110	0.0	150-155	0.0
20-25	770.6	65-70	784.2	110-115	0.0	155-160	0.0
25-30	896.9	70-75	638.8	115-120	0.0	160-165	0.0
30-35	1000.1	75-80	441.0	120-125	0.0	165-170	0.0
35-40	1077.4	80-85	181.1	125-130	0.0	170-175	0.0
40-45	1125.3	85-90	31.1	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			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	1.17	1.17	1.17	1.17	1.142	1.142	1.142	1.142	1.115	1.115	1.115	1.115
1	1.067	1.014	0.967	0.925	1.039	0.991	0.948	0.909	1.012	0.969	0.93	0.895
2	0.967	0.876	0.802	0.74	0.939	0.857	0.788	0.731	0.914	0.838	0.775	0.722
3	0.878	0.763	0.675	0.606	0.853	0.747	0.665	0.6	0.828	0.732	0.656	0.595
4	0.802	0.672	0.578	0.507	0.778	0.658	0.571	0.504	0.755	0.645	0.563	0.5
5	0.735	0.597	0.502	0.433	0.713	0.585	0.496	0.43	0.692	0.574	0.49	0.427
6	0.677	0.535	0.441	0.374	0.657	0.525	0.436	0.373	0.638	0.516	0.432	0.371
7	0.626	0.483	0.391	0.328	0.608	0.474	0.388	0.327	0.591	0.466	0.384	0.326
8	0.581	0.439	0.351	0.291	0.565	0.432	0.348	0.29	0.55	0.425	0.345	0.289
9	0.542	0.401	0.317	0.261	0.527	0.395	0.315	0.26	0.513	0.389	0.312	0.259
10	0.507	0.369	0.289	0.235	0.494	0.364	0.286	0.235	0.481	0.359	0.284	0.234

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	1.066	1.066	1.066	1.066	1.02	1.02	1.02	0.979	0.979	0.979	0.959
1	0.963	0.928	0.896	0.866	0.89	0.864	0.839	0.855	0.834	0.814	0.794
2	0.866	0.804	0.751	0.705	0.772	0.728	0.689	0.743	0.706	0.673	0.652
3	0.783	0.703	0.638	0.584	0.676	0.62	0.574	0.651	0.604	0.564	0.542
4	0.713	0.621	0.549	0.493	0.598	0.536	0.486	0.577	0.523	0.479	0.458
5	0.654	0.554	0.479	0.423	0.534	0.469	0.418	0.516	0.459	0.413	0.392
6	0.604	0.498	0.423	0.367	0.481	0.415	0.364	0.466	0.407	0.361	0.34
7	0.56	0.451	0.377	0.323	0.437	0.37	0.321	0.424	0.364	0.318	0.299
8	0.521	0.412	0.339	0.287	0.4	0.334	0.285	0.388	0.328	0.284	0.265
9	0.488	0.378	0.307	0.258	0.368	0.303	0.256	0.358	0.298	0.255	0.237
10	0.458	0.349	0.281	0.233	0.34	0.277	0.232	0.331	0.273	0.231	0.214

Average Luminance Table (cd/m²)

	0	45	90
0	8078	8078	8078
45	8027	8543	9120
55	7945	8897	9613
65	7706	9126	8563
75	6760	8223	9757
85	2387	2904	2541

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.

