



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: 17539 DATE: 01-27-2010
 PREPARED FOR: RENOVA LIGHTING SYSTEMS
 CATALOG NUMBER: ECS-ECO4-MN-454-UNV-22H-00W
 LUMINAIRE: FORMED WHITE ENAMEL STEEL HOUSING, FORMED SPECULAR ALUMINUM REFLECTOR, NO ENCLOSURE.
 LAMP: FOUR 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, 1.8433A, 220.6W

Candela Distribution

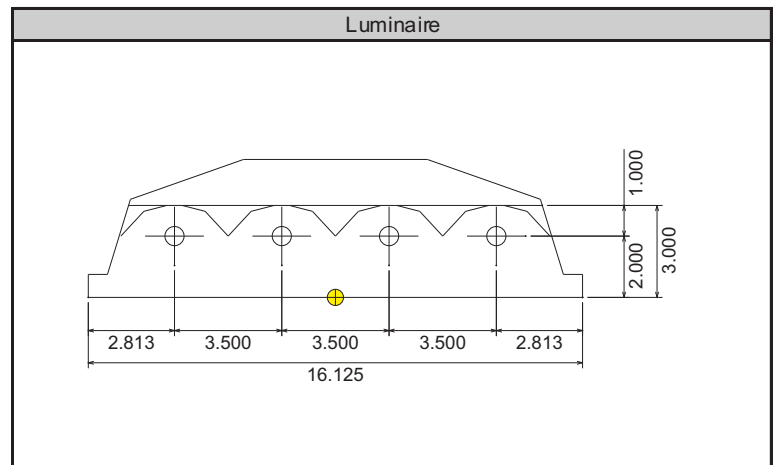
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	
5	5848	5925	6068	6178	6211	6178	6068	5925	5848	5925	6068	6178	6211	6178	6068	5925	585.1
15	5633	6107	6492	6580	6582	6580	6492	6107	5633	6107	6492	6580	6582	6580	6492	6107	1779.9
25	5205	5966	6068	6049	6015	6049	6068	5966	5205	5966	6068	6049	6015	6049	6068	5966	2723.9
35	4577	5360	5290	4957	4850	4957	5290	5360	4577	5360	5290	4957	4850	4957	5290	5360	3165.7
45	3757	4404	4028	3555	3512	3555	4028	4404	3757	4404	4028	3555	3512	3555	4028	4404	3017.3
55	2797	3197	2708	2377	2132	2377	2708	3197	2797	3197	2708	2377	2132	2377	2708	3197	2417.7
65	1788	1845	1442	1622	1739	1622	1442	1845	1788	1845	1442	1622	1739	1622	1442	1845	1682.9
75	815	761	1147	1234	1244	1234	1147	761	815	761	1147	1234	1244	1234	1147	761	1103.6
85	104	247	164	141	135	141	164	247	104	247	164	141	135	141	164	247	246.2
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	5089.0	28.9%	30.4%
0-40	8254.7	46.9%	49.4%
0-60	13689.7	77.8%	81.9%
0-90	16722.4	95.0%	100.0%
90-180	0.0	0.0%	0.0%
0-180	16722.4	95.0%	100.0%

Total luminaire efficiency: 95.0%

CIE Type: Direct
 Spacing Criterion: 0 deg: 1.24 90 deg: 1.32
 180 deg: 1.24 270 deg: 1.32



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	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869	5869
5	5848	5925	6068	6178	6211	6178	6068	5925	5848	5925	6068	6178	6211	6178	6068	5925
10	5769	6030	6364	6529	6574	6529	6364	6030	5769	6030	6364	6529	6574	6529	6364	6030
15	5633	6107	6492	6580	6582	6580	6492	6107	5633	6107	6492	6580	6582	6580	6492	6107
20	5442	6078	6378	6333	6322	6333	6378	6078	5442	6078	6378	6333	6322	6333	6378	6078
25	5205	5966	6068	6049	6015	6049	6068	5966	5205	5966	6068	6049	6015	6049	6068	5966
30	4915	5720	5734	5584	5436	5584	5734	5720	4915	5720	5734	5584	5436	5584	5734	5720
35	4577	5360	5290	4957	4850	4957	5290	5360	4577	5360	5290	4957	4850	4957	5290	5360
40	4191	4892	4640	4302	4089	4302	4640	4892	4191	4892	4640	4302	4089	4302	4640	4892
45	3757	4404	4028	3555	3512	3555	4028	4404	3757	4404	4028	3555	3512	3555	4028	4404
50	3294	3860	3273	3115	3029	3115	3273	3860	3294	3860	3273	3115	3029	3115	3273	3860
55	2797	3197	2708	2377	2132	2377	2708	3197	2797	3197	2708	2377	2132	2377	2708	3197
60	2293	2528	2161	1743	1767	1743	2161	2528	2293	2528	2161	1743	1767	1743	2161	2528
65	1788	1845	1442	1622	1739	1622	1442	1845	1788	1845	1442	1622	1739	1622	1442	1845
70	1281	1308	1229	1601	1702	1601	1229	1308	1281	1308	1229	1601	1702	1601	1229	1308
75	815	761	1147	1234	1244	1234	1147	761	815	761	1147	1234	1244	1234	1147	761
80	430	524	746	709	672	709	746	524	430	524	746	709	672	709	746	524
85	104	247	164	141	135	141	164	247	104	247	164	141	135	141	164	247
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	142.6	45-50	1466.8	90-95	0.0	135-140	0.0
5-10	442.5	50-55	1316.9	95-100	0.0	140-145	0.0
10-15	749.4	55-60	1100.8	100-105	0.0	145-150	0.0
15-20	1030.5	60-65	910.8	105-110	0.0	150-155	0.0
20-25	1269.5	65-70	772.1	110-115	0.0	155-160	0.0
25-30	1454.5	70-75	648.8	115-120	0.0	160-165	0.0
30-35	1565.5	75-80	454.8	120-125	0.0	165-170	0.0
35-40	1600.3	80-85	208.6	125-130	0.0	170-175	0.0
40-45	1550.5	85-90	37.6	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	1.159	1.159	1.159	1.159	1.131	1.131	1.131	1.131	1.105	1.105	1.105	1.105
1	1.065	1.017	0.974	0.936	1.038	0.994	0.956	0.92	1.012	0.973	0.938	0.905
2	0.974	0.891	0.823	0.767	0.948	0.872	0.81	0.757	0.923	0.854	0.797	0.748
3	0.892	0.786	0.705	0.642	0.867	0.77	0.696	0.636	0.844	0.756	0.686	0.63
4	0.819	0.699	0.613	0.547	0.797	0.686	0.605	0.543	0.775	0.674	0.598	0.54
5	0.755	0.627	0.538	0.474	0.735	0.616	0.533	0.471	0.715	0.605	0.527	0.469
6	0.699	0.566	0.478	0.416	0.68	0.556	0.473	0.414	0.662	0.547	0.469	0.412
7	0.649	0.514	0.428	0.369	0.631	0.506	0.424	0.367	0.615	0.498	0.421	0.366
8	0.604	0.469	0.386	0.33	0.588	0.463	0.383	0.329	0.574	0.456	0.381	0.328
9	0.564	0.431	0.351	0.298	0.55	0.425	0.349	0.297	0.537	0.42	0.346	0.296
10	0.529	0.398	0.321	0.27	0.516	0.393	0.319	0.27	0.504	0.388	0.317	0.269

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	1.056	1.056	1.056	1.056	1.011	1.011	1.011	0.97	0.97	0.97	0.95
1	0.965	0.933	0.904	0.877	0.896	0.872	0.85	0.862	0.843	0.825	0.805
2	0.877	0.821	0.773	0.731	0.79	0.75	0.714	0.761	0.728	0.698	0.678
3	0.801	0.727	0.668	0.619	0.701	0.651	0.608	0.677	0.635	0.598	0.578
4	0.736	0.65	0.584	0.532	0.628	0.571	0.525	0.608	0.559	0.518	0.498
5	0.679	0.585	0.516	0.464	0.567	0.506	0.459	0.549	0.496	0.454	0.434
6	0.629	0.53	0.461	0.409	0.515	0.452	0.405	0.5	0.445	0.401	0.382
7	0.585	0.484	0.414	0.363	0.47	0.407	0.361	0.457	0.401	0.358	0.34
8	0.547	0.444	0.375	0.326	0.432	0.37	0.324	0.421	0.364	0.322	0.304
9	0.512	0.409	0.342	0.295	0.399	0.337	0.293	0.389	0.333	0.292	0.275
10	0.482	0.379	0.313	0.268	0.37	0.309	0.267	0.361	0.306	0.266	0.249

Average Luminance Table (cd/m²)

	0	45	90
0	12067	12067	12067
45	10925	11713	10213
55	10025	9706	7643
65	8697	7015	8459
75	6473	9114	9885
85	2462	3860	3194

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.

