



# 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: 21372 DATE: 11/15/2010  
 PREPARED FOR: RENOVA LIGHTING  
 CATALOG NUMBER: ECS-WVT4-MN-432-UNV-14L-CAL  
 LUMINAIRE: MOLDED PLASTIC AND FORMED STEEL HOUSING, FORMED "MIRO 4"  
 SPECULAR ALUMINUM REFLECTOR, CLEAR ACRYLIC ENCLOSURE WITH  
 CLEAR LINEAR PRISMATIC SIDES AND FROSTED ENDS.  
 LAMP: FOUR 32 WATT T8 LINEAR FLUORESCENT LAMPS RATED AT 2850 LUMENS  
 EACH.  
 LAMP CATALOG NUMBER: PHILIPS F32T8/TL841/ALTO  
 BALLAST: ONE SYLVANIA "QUICKTRONIC" QHE4X32T8/UNV-ISL-SC  
 MOUNTING: PENDANT  
 ELECTRICAL VALUES: 120.0VAC, 0.7973A, 95.45W

### Candela Distribution

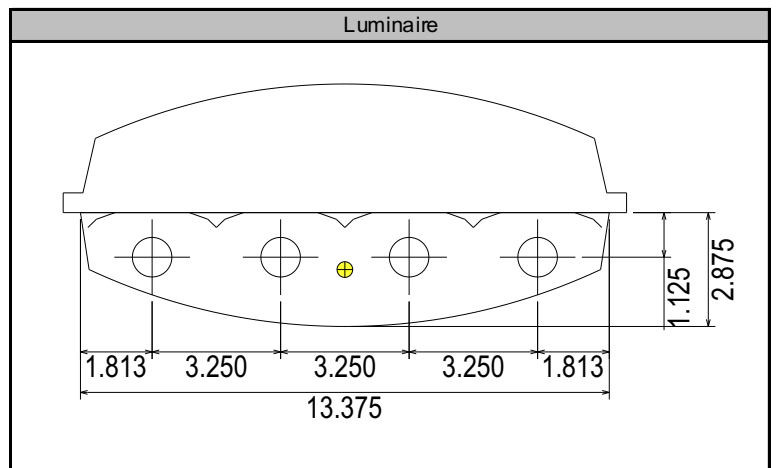
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	
5	4348	4331	4316	4284	4276	4284	4316	4331	4348	4331	4316	4284	4276	4284	4316	4331	406.1
15	4188	4077	3858	3615	3523	3615	3858	4077	4188	4077	3858	3615	3523	3615	3858	4077	1077.8
25	3874	3575	2972	2601	2552	2601	2972	3575	3874	3575	2972	2601	2552	2601	2972	3575	1424.7
35	3396	2807	2208	2175	2195	2175	2208	2807	3396	2807	2208	2175	2195	2175	2208	2807	1561.7
45	2788	1952	1792	1658	1644	1658	1792	1952	2788	1952	1792	1658	1644	1658	1792	1952	1467.1
55	2066	1320	1258	1320	1393	1320	1258	1320	2066	1320	1258	1320	1393	1320	1258	1320	1263.7
65	1287	800	964	1303	1385	1303	964	800	1287	800	964	1303	1385	1303	964	800	1088.0
75	521	430	815	933	975	933	815	430	521	430	815	933	975	933	815	430	771.3
85	81	210	370	477	515	477	370	210	81	210	370	477	515	477	370	210	396.6
90	36	157	322	436	472	436	322	157	36	157	322	436	472	436	322	157	
95	37	136	233	308	337	308	233	136	37	136	233	308	337	308	233	136	247.7
105	44	75	158	227	255	227	158	75	44	75	158	227	255	227	158	75	162.8
115	25	47	113	163	183	163	113	47	25	47	113	163	183	163	113	47	105.1
125	12	18	59	98	111	98	59	18	12	18	59	98	111	98	59	18	54.3
135	7	7	26	44	49	44	26	7	7	7	26	44	49	44	26	7	21.2
145	0	2	8	17	21	17	8	2	0	2	8	17	21	17	8	2	6.5
155	0	0	0	5	7	5	0	0	0	0	0	5	7	5	0	0	1.0
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	2908.6	25.5%	28.9%
0-40	4470.3	39.2%	44.5%
0-60	7201.0	63.2%	71.6%
0-90	9457.0	83.0%	94.0%
90-180	598.6	5.3%	6.0%
0-180	10055.6	88.2%	100.0%

Total luminaire efficiency: 88.2%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 1.24 90 deg: 0.81  
 180 deg: 1.24 270 deg: 0.81



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	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373	4373
5	4348	4331	4316	4284	4276	4284	4316	4331	4348	4331	4316	4284	4276	4284	4316	4331
10	4290	4236	4139	4038	4001	4038	4139	4236	4290	4236	4139	4038	4001	4038	4139	4236
15	4188	4077	3858	3615	3523	3615	3858	4077	4188	4077	3858	3615	3523	3615	3858	4077
20	4050	3858	3434	3099	2965	3099	3434	3858	4050	3858	3434	3099	2965	3099	3434	3858
25	3874	3575	2972	2601	2552	2601	2972	3575	3874	3575	2972	2601	2552	2601	2972	3575
30	3652	3218	2498	2374	2366	2374	2498	3218	3652	3218	2498	2374	2366	2374	2498	3218
35	3396	2807	2208	2175	2195	2175	2208	2807	3396	2807	2208	2175	2195	2175	2208	2807
40	3113	2392	2016	1936	1877	1936	2016	2392	3113	2392	2016	1936	1877	1936	2016	2392
45	2788	1952	1792	1658	1644	1658	1792	1952	2788	1952	1792	1658	1644	1658	1792	1952
50	2440	1598	1481	1440	1457	1440	1481	1598	2440	1598	1481	1440	1457	1440	1481	1598
55	2066	1320	1258	1320	1393	1320	1258	1320	2066	1320	1258	1320	1393	1320	1258	1320
60	1678	1076	1052	1265	1369	1265	1052	1076	1678	1076	1052	1265	1369	1265	1052	1076
65	1287	800	964	1303	1385	1303	964	800	1287	800	964	1303	1385	1303	964	800
70	893	582	925	1218	1284	1218	925	582	893	582	925	1218	1284	1218	925	582
75	521	430	815	933	975	933	815	430	521	430	815	933	975	933	815	430
80	244	329	540	676	720	676	540	329	244	329	540	676	720	676	540	329
85	81	210	370	477	515	477	370	210	81	210	370	477	515	477	370	210
90	36	157	322	436	472	436	322	157	36	157	322	436	472	436	322	157
95	37	136	233	308	337	308	233	136	37	136	233	308	337	308	233	136
100	47	102	196	270	298	270	196	102	47	102	196	270	298	270	196	102
105	44	75	158	227	255	227	158	75	44	75	158	227	255	227	158	75
110	34	57	134	190	211	190	134	57	34	57	134	190	211	190	134	57
115	25	47	113	163	183	163	113	47	25	47	113	163	183	163	113	47
120	17	30	88	130	151	130	88	30	17	30	88	130	151	130	88	30
125	12	18	59	98	111	98	59	18	12	18	59	98	111	98	59	18
130	9	11	41	64	77	64	41	11	9	11	41	64	77	64	41	11
135	7	7	26	44	49	44	26	7	7	7	26	44	49	44	26	7
140	5	6	15	29	35	29	15	6	5	6	15	29	35	29	15	6
145	0	2	8	17	21	17	8	2	0	2	8	17	21	17	8	2
150	0	0	1	9	11	9	1	0	0	0	1	9	11	9	1	0
155	0	0	0	5	7	5	0	0	0	0	0	5	7	5	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	103.8	45-50	708.9	90-95	138.6	135-140	8.2
5-10	302.3	50-55	654.8	95-100	109.1	140-145	4.5
10-15	474.3	55-60	608.9	100-105	90.6	145-150	2.0
15-20	603.5	60-65	569.4	105-110	72.2	150-155	0.8
20-25	685.4	65-70	518.6	110-115	59.0	155-160	0.1
25-30	739.2	70-75	441.2	115-120	46.1	160-165	0.0
30-35	774.3	75-80	330.2	120-125	32.9	165-170	0.0
35-40	787.4	80-85	226.4	125-130	21.4	170-175	0.0
40-45	758.1	85-90	170.2	130-135	13.0	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	1.069	1.069	1.069	1.069	1.038	1.038	1.038	1.038	1.007	1.007	1.007	1.007
1	0.972	0.922	0.878	0.839	0.941	0.896	0.856	0.82	0.911	0.871	0.834	0.801
2	0.886	0.804	0.737	0.681	0.856	0.782	0.72	0.668	0.828	0.76	0.704	0.656
3	0.81	0.708	0.629	0.568	0.782	0.689	0.617	0.559	0.756	0.671	0.604	0.551
4	0.744	0.629	0.546	0.484	0.718	0.613	0.536	0.478	0.694	0.598	0.527	0.471
5	0.687	0.564	0.481	0.42	0.663	0.551	0.473	0.415	0.641	0.538	0.465	0.41
6	0.636	0.51	0.428	0.369	0.614	0.499	0.421	0.366	0.594	0.488	0.415	0.362
7	0.591	0.465	0.384	0.329	0.572	0.455	0.379	0.326	0.553	0.445	0.374	0.323
8	0.551	0.426	0.348	0.295	0.534	0.417	0.343	0.293	0.517	0.409	0.339	0.291
9	0.516	0.392	0.317	0.268	0.5	0.384	0.314	0.266	0.485	0.377	0.31	0.264
10	0.485	0.363	0.291	0.244	0.47	0.356	0.288	0.243	0.456	0.35	0.285	0.241

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	0.951	0.951	0.951	0.951	0.899	0.899	0.899	0.852	0.852	0.852	0.83
1	0.856	0.823	0.794	0.766	0.78	0.756	0.734	0.74	0.721	0.703	0.68
2	0.775	0.72	0.673	0.633	0.684	0.645	0.611	0.649	0.618	0.59	0.567
3	0.707	0.637	0.581	0.534	0.606	0.558	0.518	0.577	0.537	0.503	0.481
4	0.649	0.569	0.508	0.459	0.543	0.49	0.448	0.518	0.473	0.436	0.415
5	0.6	0.513	0.45	0.401	0.491	0.435	0.392	0.469	0.421	0.383	0.363
6	0.557	0.467	0.402	0.355	0.447	0.39	0.347	0.428	0.379	0.34	0.321
7	0.52	0.427	0.363	0.317	0.41	0.353	0.311	0.394	0.344	0.305	0.287
8	0.487	0.393	0.33	0.286	0.378	0.322	0.281	0.364	0.314	0.276	0.259
9	0.457	0.363	0.302	0.26	0.35	0.295	0.256	0.338	0.288	0.252	0.235
10	0.431	0.338	0.278	0.238	0.326	0.272	0.234	0.315	0.266	0.231	0.215

Average Luminance Table (cd/m<sup>2</sup>)

	0	45	90
0	10180	10180	10180
45	8720	5083	4564
55	7786	4105	4417
65	6346	3838	5313
75	3883	4339	4925
85	1325	3110	3983

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.

