



# 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: 19147 DATE: 05-11-2010  
 PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING  
 CATALOG NUMBER: MLRWW-4-X-120-T5  
 LUMINAIRE: EXTRUDED ALUMINUM HOUSING, EXTRUDED SPECULAR ALUMINUM WALL  
 WASH REFLECTOR WITH BLACK ENAMEL SECTION, NO ENCLOSURE.  
 LAMP: ONE 28 WATT T5 LINEAR FLUORESCENT LAMP RATED AT 2610 LUMENS.  
 LAMP CATALOG NUMBER: PHILIPS F28T5/835/ALTO  
 BALLAST: ONE ADVANCE "CENTIUM" ICN-2S28  
 MOUNTING: PENDANT  
 ELECTRICAL VALUES: 120.0VAC, 0.2523A, 30.11W

### Candela Distribution

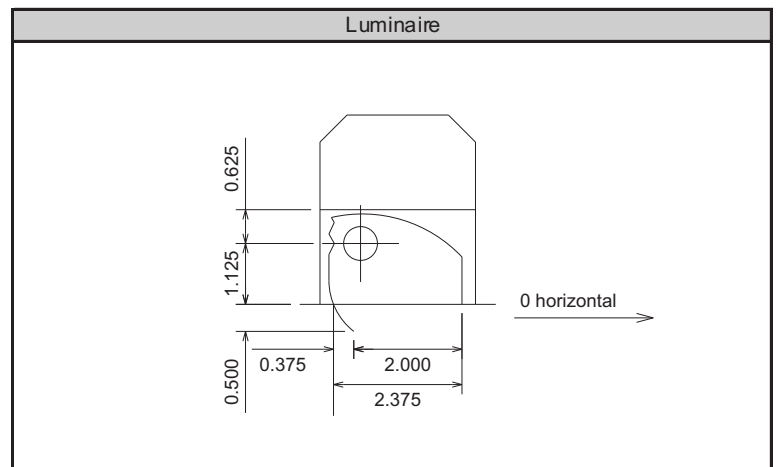
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	557	557	557	557	557	557	557	557	557	557	557	557	557	557	557	557	
5	775	771	719	633	554	489	422	368	335	368	422	489	554	633	719	771	53.0
15	907	897	865	782	531	308	150	93	71	93	150	308	531	782	865	897	144.8
25	899	890	865	782	486	154	33	15	11	15	33	154	486	782	865	890	212.2
35	789	784	792	724	422	70	11	6	5	6	11	70	422	724	792	784	250.6
45	658	658	647	623	342	19	6	4	3	4	6	19	342	623	647	658	253.3
55	532	515	494	487	251	9	4	4	4	4	4	9	251	487	494	515	225.1
65	355	350	351	322	156	5	3	2	2	2	3	5	156	322	351	350	168.5
75	279	253	183	171	71	3	1	0	0	0	1	3	71	171	183	253	108.4
85	98	88	73	60	12	1	0	0	0	0	0	1	12	60	73	88	42.6
90	62	54	36	13	1	0	0	0	0	0	0	0	1	13	36	54	
95	0	2	4	0	1	0	0	0	0	0	0	0	1	0	4	2	2.9
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	0.0

### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	409.9	15.7%	28.1%
0-40	660.5	25.3%	45.2%
0-60	1138.9	43.6%	77.9%
0-90	1458.3	55.9%	99.8%
90-180	2.9	0.1%	0.2%
0-180	1461.2	56.0%	100.0%

Total luminaire efficiency: 56.0%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 1.84 90 deg: 1.22  
 180 deg: 0.22 270 deg: 1.22



Approved By: \_\_\_\_\_

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	557	557	557	557	557	557	557	557	557	557	557	557	557	557	557	557
5	775	771	719	633	554	489	422	368	335	368	422	489	554	633	719	771
10	870	859	835	724	545	401	258	184	158	184	258	401	545	724	835	859
15	907	897	865	782	531	308	150	93	71	93	150	308	531	782	865	897
20	918	906	875	794	511	219	84	29	19	29	84	219	511	794	875	906
25	899	890	865	782	486	154	33	15	11	15	33	154	486	782	865	890
30	853	851	838	760	456	109	17	8	7	8	17	109	456	760	838	851
35	789	784	792	724	422	70	11	6	5	6	11	70	422	724	792	784
40	738	725	722	677	383	36	7	5	4	5	7	36	383	677	722	725
45	658	658	647	623	342	19	6	4	3	4	6	19	342	623	647	658
50	566	563	582	558	297	14	5	4	3	4	5	14	297	558	582	563
55	532	515	494	487	251	9	4	4	4	4	4	9	251	487	494	515
60	451	443	409	399	203	6	4	3	3	3	4	6	203	399	409	443
65	355	350	351	322	156	5	3	2	2	2	3	5	156	322	351	350
70	287	266	260	237	111	4	2	1	1	1	2	4	111	237	260	266
75	279	253	183	171	71	3	1	0	0	0	1	3	71	171	183	253
80	203	194	166	95	37	2	0	0	0	0	0	2	37	95	166	194
85	98	88	73	60	12	1	0	0	0	0	0	1	12	60	73	88
90	62	54	36	13	1	0	0	0	0	0	0	0	1	13	36	54
95	0	2	4	0	1	0	0	0	0	0	0	0	1	0	4	2
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	13.4	45-50	124.6	90-95	2.4	135-140	0.0
5-10	39.6	50-55	117.7	95-100	0.5	140-145	0.0
10-15	62.5	55-60	107.4	100-105	0.0	145-150	0.0
15-20	82.3	60-65	93.3	105-110	0.0	150-155	0.0
20-25	99.1	65-70	75.2	110-115	0.0	155-160	0.0
25-30	113.1	70-75	59.8	115-120	0.0	160-165	0.0
30-35	122.8	75-80	48.6	120-125	0.0	165-170	0.0
35-40	127.8	80-85	29.0	125-130	0.0	170-175	0.0
40-45	128.7	85-90	13.6	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			
	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	0.683	0.683	0.683	0.683	0.666	0.666	0.666	0.666	0.651	0.651	0.651	0.651
1	0.623	0.592	0.565	0.54	0.606	0.579	0.554	0.531	0.591	0.566	0.543	0.523
2	0.567	0.515	0.473	0.438	0.551	0.504	0.465	0.432	0.536	0.493	0.458	0.427
3	0.518	0.452	0.403	0.363	0.503	0.443	0.397	0.36	0.489	0.434	0.391	0.357
4	0.475	0.401	0.348	0.308	0.461	0.393	0.343	0.306	0.448	0.385	0.339	0.303
5	0.437	0.358	0.305	0.265	0.424	0.352	0.301	0.264	0.412	0.345	0.298	0.262
6	0.403	0.323	0.27	0.232	0.392	0.317	0.267	0.231	0.381	0.312	0.264	0.23
7	0.374	0.293	0.241	0.205	0.364	0.288	0.239	0.204	0.354	0.283	0.237	0.204
8	0.348	0.267	0.217	0.183	0.339	0.263	0.215	0.183	0.33	0.259	0.214	0.182
9	0.325	0.245	0.197	0.165	0.317	0.242	0.196	0.165	0.309	0.238	0.194	0.164
10	0.305	0.226	0.18	0.15	0.297	0.223	0.179	0.15	0.29	0.22	0.178	0.149

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.621	0.621	0.621	0.621	0.595	0.595	0.595	0.57	0.57	0.57	0.559
1	0.562	0.542	0.523	0.506	0.519	0.504	0.49	0.499	0.487	0.475	0.463
2	0.509	0.473	0.443	0.417	0.455	0.429	0.407	0.437	0.417	0.398	0.386
3	0.463	0.417	0.38	0.35	0.401	0.37	0.344	0.387	0.36	0.338	0.325
4	0.424	0.371	0.331	0.299	0.358	0.323	0.295	0.346	0.316	0.291	0.278
5	0.39	0.333	0.291	0.259	0.322	0.285	0.256	0.312	0.279	0.253	0.241
6	0.361	0.301	0.259	0.228	0.292	0.254	0.225	0.283	0.249	0.223	0.212
7	0.336	0.275	0.233	0.202	0.266	0.229	0.2	0.259	0.225	0.199	0.188
8	0.314	0.252	0.21	0.181	0.245	0.207	0.18	0.238	0.204	0.178	0.168
9	0.294	0.232	0.192	0.163	0.226	0.189	0.162	0.22	0.186	0.161	0.151
10	0.277	0.215	0.176	0.149	0.209	0.173	0.148	0.204	0.171	0.147	0.137

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

	0	45	90
0	8760	8760	8760
45	11853	12340	7603
55	10922	10942	6883
65	8781	9641	5792
75	9017	6878	4293
85	4774	4562	2099

Note: The zonal cavity calculation technique is accurate when luminaires with symmetric candela distributions are employed and when the luminaires are located symmetrically throughout the room. This unit has special characteristics and therefore these values should be used with caution.

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.

