



# 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: 18438 DATE: 03-30-2010  
 PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING  
 CATALOG NUMBER: MLR-1-4-X-FC-120-T5  
 LUMINAIRE: EXTRUDED ALUMINUM HOUSING WITH STEEL END CAPS, FORMED  
 WHITE ENAMEL ALUMINUM REFLECTOR, FROSTED PLASTIC ENCLOSURE.  
 LAMP: ONE 28 WATT T5 LINEAR FLUORESCENT LAMP RATED AT 2610 LUMENS.  
 LAMP CATALOG NUMBER: PHILIPS F28T5/841  
 BALLAST: ONE UNIVERSAL LIGHTING TECHNOLOGIES "ACCU START" B228PUNV-C  
 MOUNTING: RECESSED  
 ELECTRICAL VALUES: 120.0VAC, 0.2558A, 30.60W

### Candela Distribution

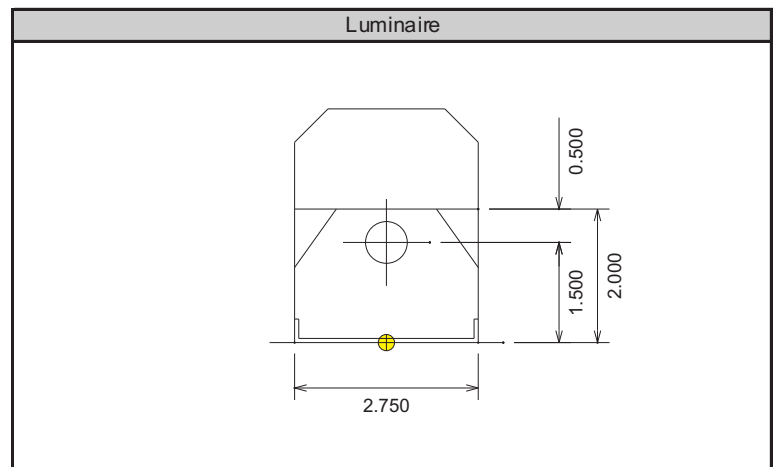
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	
5	744	745	744	744	745	744	744	745	744	745	744	744	745	744	744	745	70.6
15	709	709	706	705	705	705	706	709	709	709	706	705	705	705	706	709	199.1
25	640	640	634	628	625	628	634	640	640	640	634	628	625	628	634	640	291.3
35	543	541	531	521	516	521	531	541	543	541	531	521	516	521	531	541	331.4
45	427	425	413	400	394	400	413	425	427	425	413	400	394	400	413	425	317.8
55	308	306	294	281	276	281	294	306	308	306	294	281	276	281	294	306	262.5
65	197	195	185	177	173	177	185	195	197	195	185	177	173	177	185	195	184.4
75	103	101	96	91	89	91	96	101	103	101	96	91	89	91	96	101	101.9
85	28	27	26	25	25	25	26	27	28	27	26	25	25	25	26	27	29.2
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	0

### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	561.1	21.5%	31.4%
0-40	892.5	34.2%	49.9%
0-60	1472.8	56.4%	82.4%
0-90	1788.2	68.5%	100.0%
90-180	0.0	0.0%	0.0%
0-180	1788.2	68.5%	100.0%

Total luminaire efficiency: 68.5%

CIE Type: Direct  
 Spacing Criterion: 0 deg: 1.18    90 deg: 1.15  
 180 deg: 1.18    270 deg: 1.15



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	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749	749
5	744	745	744	744	745	744	744	745	744	745	744	744	745	744	744	745
10	731	732	729	730	730	730	729	732	731	732	729	730	730	730	729	732
15	709	709	706	705	705	705	706	709	709	709	706	705	705	705	706	709
20	678	679	674	671	670	671	674	679	678	679	674	671	670	671	674	679
25	640	640	634	628	625	628	634	640	640	640	634	628	625	628	634	640
30	594	593	585	577	573	577	585	593	594	593	585	577	573	577	585	593
35	543	541	531	521	516	521	531	541	543	541	531	521	516	521	531	541
40	486	484	473	461	455	461	473	484	486	484	473	461	455	461	473	484
45	427	425	413	400	394	400	413	425	427	425	413	400	394	400	413	425
50	367	365	353	340	334	340	353	365	367	365	353	340	334	340	353	365
55	308	306	294	281	276	281	294	306	308	306	294	281	276	281	294	306
60	251	249	238	227	222	227	238	249	251	249	238	227	222	227	238	249
65	197	195	185	177	173	177	185	195	197	195	185	177	173	177	185	195
70	147	145	138	132	129	132	138	145	147	145	138	132	129	132	138	145
75	103	101	96	91	89	91	96	101	103	101	96	91	89	91	96	101
80	63	61	58	56	55	56	58	61	63	61	58	56	55	56	58	61
85	28	27	26	25	25	25	26	27	28	27	26	25	25	25	26	27
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	17.9	45-50	154.2	90-95	0.0	135-140	0.0
5-10	52.8	50-55	140.1	95-100	0.0	140-145	0.0
10-15	85.3	55-60	122.4	100-105	0.0	145-150	0.0
15-20	113.9	60-65	102.6	105-110	0.0	150-155	0.0
20-25	137.2	65-70	81.8	110-115	0.0	155-160	0.0
25-30	154.2	70-75	60.9	115-120	0.0	160-165	0.0
30-35	164.2	75-80	41.0	120-125	0.0	165-170	0.0
35-40	167.2	80-85	22.7	125-130	0.0	170-175	0.0
40-45	163.6	85-90	6.5	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	0.836	0.836	0.836	0.836	0.816	0.816	0.816	0.816	0.797	0.797	0.797	0.797
1	0.769	0.734	0.704	0.677	0.749	0.718	0.69	0.665	0.731	0.703	0.677	0.655
2	0.704	0.645	0.596	0.556	0.685	0.631	0.587	0.549	0.667	0.618	0.577	0.543
3	0.645	0.57	0.512	0.466	0.627	0.558	0.505	0.462	0.611	0.548	0.498	0.458
4	0.593	0.507	0.445	0.399	0.577	0.498	0.44	0.396	0.561	0.489	0.435	0.393
5	0.547	0.455	0.392	0.346	0.532	0.447	0.388	0.344	0.518	0.44	0.384	0.342
6	0.506	0.411	0.348	0.304	0.493	0.404	0.345	0.303	0.48	0.398	0.342	0.301
7	0.47	0.374	0.313	0.27	0.458	0.368	0.31	0.269	0.446	0.363	0.307	0.268
8	0.438	0.342	0.283	0.242	0.427	0.337	0.28	0.242	0.417	0.332	0.278	0.241
9	0.41	0.315	0.257	0.219	0.4	0.31	0.255	0.218	0.39	0.306	0.254	0.218
10	0.385	0.291	0.236	0.199	0.376	0.287	0.234	0.199	0.367	0.284	0.233	0.199

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.761	0.761	0.761	0.761	0.729	0.729	0.729	0.699	0.699	0.699	0.685
1	0.697	0.674	0.653	0.634	0.647	0.63	0.615	0.623	0.609	0.596	0.582
2	0.635	0.594	0.56	0.53	0.572	0.543	0.518	0.551	0.528	0.507	0.492
3	0.58	0.527	0.485	0.45	0.509	0.473	0.442	0.491	0.461	0.435	0.42
4	0.533	0.472	0.425	0.388	0.456	0.415	0.382	0.441	0.406	0.377	0.363
5	0.492	0.425	0.376	0.338	0.412	0.369	0.335	0.399	0.362	0.331	0.317
6	0.456	0.386	0.336	0.299	0.374	0.33	0.296	0.364	0.324	0.294	0.28
7	0.425	0.352	0.302	0.266	0.343	0.298	0.264	0.333	0.293	0.262	0.249
8	0.397	0.323	0.274	0.239	0.315	0.27	0.238	0.307	0.267	0.236	0.224
9	0.373	0.299	0.25	0.217	0.291	0.247	0.216	0.284	0.244	0.215	0.202
10	0.351	0.277	0.23	0.198	0.271	0.227	0.197	0.265	0.225	0.196	0.184

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

	0	45	90
0	8616	8616	8616
45	6948	6712	6412
55	6173	5891	5538
65	5359	5048	4716
75	4560	4246	3971
85	3724	3391	3267

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.

