



# 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: 18440

DATE: 03-31-2010

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: MLR-2-4-X-PBW-120-T5

LUMINAIRE: EXTRUDED ALUMINUM HOUSING WITH STEEL END CAPS, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, FORMED 31 CELL, 3/4" DEEP WHITE ENAMEL ALUMINUM LOUVER.

LAMP: TWO 28 WATT T5 LINEAR FLUORESCENT LAMPS RATED AT 2610 LUMENS EACH.

LAMP CATALOG NUMBER: PHILIPS F28T5/841

BALLAST: ONE UNIVERSAL LIGHTING TECHNOLOGIES "ACCU START" B228PUNV-C

MOUNTING: RECESSED

ELECTRICAL VALUES: 120.0VAC, 0.4501A, 53.94W

### 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	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	
5	1370	1373	1369	1370	1372	1370	1369	1373	1370	1373	1369	1370	1372	1370	1369	1373	129.5
15	1254	1255	1254	1262	1262	1262	1254	1255	1254	1255	1254	1262	1262	1262	1254	1255	352.8
25	1081	1073	1051	1058	1069	1058	1051	1073	1081	1073	1051	1058	1069	1058	1051	1073	489.3
35	877	856	824	848	879	848	824	856	877	856	824	848	879	848	824	856	531.5
45	642	613	604	599	604	599	604	613	642	613	604	599	604	599	604	613	470.0
55	388	377	363	340	348	340	363	377	388	377	363	340	348	340	363	377	325.8
65	167	169	187	196	204	196	187	169	167	169	187	196	204	196	187	169	186.5
75	89	88	90	96	99	96	90	88	89	88	90	96	99	96	90	88	97.8
85	19	19	20	21	22	21	20	19	19	19	20	21	22	21	20	19	24.1
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

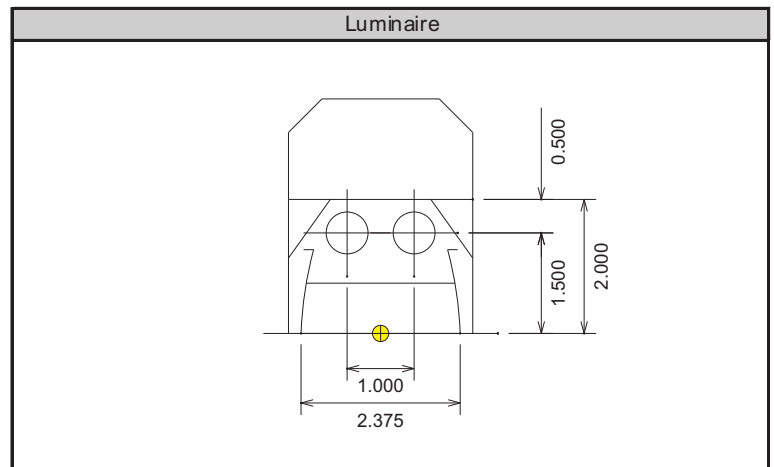
Zone	Lumens	% of Lamp	% of Luminaire
0-30	971.6	18.6%	37.3%
0-40	1503.1	28.8%	57.7%
0-60	2299.0	44.0%	88.2%
0-90	2607.3	49.9%	100.0%
90-180	0.0	0.0%	0.0%
0-180	2607.3	49.9%	100.0%

Total luminaire efficiency: 49.9%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.08 90 deg: 1.07  
180 deg: 1.08 270 deg: 1.07

Shielding angle: 0 deg: 32 90 deg: 39



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	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385	1385
5	1370	1373	1369	1370	1372	1370	1369	1373	1370	1373	1369	1370	1372	1370	1369	1373
10	1324	1328	1326	1328	1330	1328	1326	1328	1324	1328	1326	1328	1330	1328	1326	1328
15	1254	1255	1254	1262	1262	1262	1254	1255	1254	1255	1254	1262	1262	1262	1254	1255
20	1172	1169	1160	1164	1168	1164	1160	1169	1172	1169	1160	1164	1168	1164	1160	1169
25	1081	1073	1051	1058	1069	1058	1051	1073	1081	1073	1051	1058	1069	1058	1051	1073
30	983	969	937	951	975	951	937	969	983	969	937	951	975	951	937	969
35	877	856	824	848	879	848	824	856	877	856	824	848	879	848	824	856
40	763	736	714	739	767	739	714	736	763	736	714	739	767	739	714	736
45	642	613	604	599	604	599	604	613	642	613	604	599	604	599	604	613
50	519	494	489	458	461	458	489	494	519	494	489	458	461	458	489	494
55	388	377	363	340	348	340	363	377	388	377	363	340	348	340	363	377
60	255	264	261	258	265	258	261	264	255	264	261	258	265	258	261	264
65	167	169	187	196	204	196	187	169	167	169	187	196	204	196	187	169
70	127	126	131	142	148	142	131	126	127	126	131	142	148	142	131	126
75	89	88	90	96	99	96	90	88	89	88	90	96	99	96	90	88
80	53	52	53	56	58	56	53	52	53	52	53	56	58	56	53	52
85	19	19	20	21	22	21	20	19	19	19	20	21	22	21	20	19
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	32.9	45-50	220.2	90-95	0.0	135-140	0.0
5-10	96.5	50-55	182.6	95-100	0.0	140-145	0.0
10-15	153.3	55-60	143.2	100-105	0.0	145-150	0.0
15-20	199.5	60-65	106.4	105-110	0.0	150-155	0.0
20-25	233.6	65-70	80.1	110-115	0.0	155-160	0.0
25-30	255.7	70-75	58.8	115-120	0.0	160-165	0.0
30-35	266.4	75-80	38.9	120-125	0.0	165-170	0.0
35-40	265.1	80-85	20.0	125-130	0.0	170-175	0.0
40-45	249.8	85-90	4.1	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	0.609	0.609	0.609	0.609	0.595	0.595	0.595	0.595	0.581	0.581	0.581	0.581
1	0.566	0.543	0.523	0.505	0.552	0.532	0.513	0.497	0.539	0.52	0.504	0.489
2	0.522	0.483	0.451	0.424	0.509	0.474	0.444	0.419	0.497	0.464	0.437	0.415
3	0.482	0.432	0.393	0.363	0.47	0.424	0.388	0.36	0.458	0.416	0.383	0.356
4	0.446	0.388	0.346	0.315	0.435	0.381	0.342	0.313	0.424	0.375	0.339	0.311
5	0.414	0.351	0.308	0.277	0.403	0.345	0.305	0.275	0.393	0.34	0.302	0.274
6	0.384	0.319	0.276	0.246	0.375	0.315	0.274	0.245	0.366	0.31	0.272	0.244
7	0.358	0.292	0.25	0.22	0.35	0.288	0.248	0.22	0.342	0.284	0.246	0.219
8	0.335	0.268	0.227	0.199	0.327	0.265	0.226	0.199	0.32	0.262	0.224	0.198
9	0.314	0.248	0.208	0.181	0.307	0.245	0.207	0.181	0.3	0.242	0.205	0.181
10	0.295	0.23	0.191	0.166	0.289	0.227	0.19	0.166	0.283	0.225	0.189	0.165

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	0.555	0.555	0.555	0.555	0.531	0.531	0.531	0.51	0.51	0.51	0.499
1	0.514	0.5	0.486	0.474	0.48	0.469	0.459	0.463	0.454	0.446	0.436
2	0.474	0.447	0.425	0.405	0.431	0.413	0.396	0.417	0.401	0.387	0.377
3	0.437	0.402	0.374	0.35	0.389	0.365	0.344	0.376	0.356	0.339	0.329
4	0.404	0.363	0.332	0.307	0.352	0.325	0.303	0.342	0.318	0.299	0.289
5	0.375	0.33	0.297	0.271	0.32	0.291	0.268	0.312	0.286	0.266	0.256
6	0.35	0.301	0.267	0.242	0.293	0.263	0.24	0.286	0.259	0.238	0.228
7	0.327	0.277	0.242	0.218	0.27	0.239	0.216	0.263	0.236	0.215	0.205
8	0.306	0.255	0.221	0.197	0.249	0.218	0.196	0.244	0.216	0.195	0.186
9	0.288	0.236	0.203	0.18	0.231	0.201	0.179	0.226	0.199	0.178	0.17
10	0.272	0.22	0.187	0.165	0.215	0.185	0.164	0.211	0.184	0.164	0.155

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

	0	45	90
0	15925	15925	15925
45	10441	9832	9830
55	7783	7271	6977
65	4545	5081	5554
75	3957	4000	4412
85	2443	2677	2923

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.

