



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: 18441

DATE: 03-31-2010

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

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

LUMINAIRE: EXTRUDED ALUMINUM HOUSING WITH STEEL END CAPS, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, CLEAR LINEAR PRISMATIC PLASTIC ENCLOSURE.

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, 0.4395A, 52.66W

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	1376	1380	1376	1376	1376	1376	1376	1380	1376	1380	1376	1376	1376	1376	1376	1380	130.7
15	1327	1326	1318	1313	1310	1313	1318	1326	1327	1326	1318	1313	1310	1313	1318	1326	37.16
25	1228	1225	1193	1142	1119	1142	1193	1225	1228	1225	1193	1142	1119	1142	1193	1225	542.8
35	1079	1062	936	850	822	850	936	1062	1079	1062	936	850	822	850	936	1062	592.4
45	877	790	652	564	536	564	652	790	877	790	652	564	536	564	652	790	522.1
55	594	496	385	309	285	309	385	496	594	496	385	309	285	309	385	496	366.5
65	271	266	200	169	160	169	200	266	271	266	200	169	160	169	200	266	214.1
75	97	117	113	105	103	105	113	117	97	117	113	105	103	105	113	117	115.3
85	14	31	35	35	36	35	35	31	14	31	35	35	36	35	35	31	35.6
90	0	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

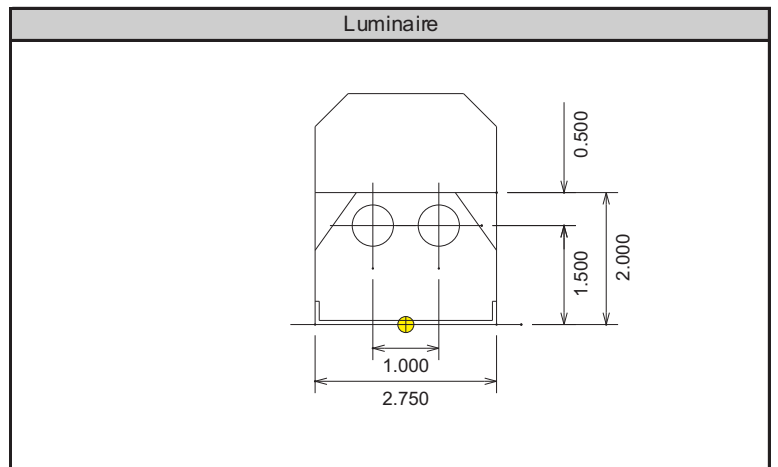
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	1045.1	20.0%	36.1%
0-40	1637.5	31.4%	56.6%
0-60	2526.1	48.4%	87.4%
0-90	2891.1	55.4%	100.0%
90-180	0.0	0.0%	0.0%
0-180	2891.1	55.4%	100.0%

Total luminaire efficiency: 55.4%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.24 90 deg: 1.08
180 deg: 1.24 270 deg: 1.08



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	1376	1380	1376	1376	1376	1376	1376	1380	1376	1380	1376	1376	1376	1376	1376	1380
10	1357	1360	1352	1351	1352	1351	1352	1360	1357	1360	1352	1351	1352	1351	1352	1360
15	1327	1326	1318	1313	1310	1313	1318	1326	1327	1326	1318	1313	1310	1313	1318	1326
20	1284	1281	1268	1248	1236	1248	1268	1281	1284	1281	1268	1248	1236	1248	1268	1281
25	1228	1225	1193	1142	1119	1142	1193	1225	1228	1225	1193	1142	1119	1142	1193	1225
30	1160	1155	1081	997	966	997	1081	1155	1160	1155	1081	997	966	997	1081	1155
35	1079	1062	936	850	822	850	936	1062	1079	1062	936	850	822	850	936	1062
40	985	937	794	707	674	707	794	937	985	937	794	707	674	707	794	937
45	877	790	652	564	536	564	652	790	877	790	652	564	536	564	652	790
50	748	641	515	431	401	431	515	641	748	641	515	431	401	431	515	641
55	594	496	385	309	285	309	385	496	594	496	385	309	285	309	385	496
60	425	369	277	222	208	222	277	369	425	369	277	222	208	222	277	369
65	271	266	200	169	160	169	200	266	271	266	200	169	160	169	200	266
70	164	183	149	134	131	134	149	183	164	183	149	134	131	134	149	183
75	97	117	113	105	103	105	113	117	97	117	113	105	103	105	113	117
80	49	69	77	69	67	69	77	69	49	69	77	69	67	69	77	69
85	14	31	35	35	36	35	35	31	14	31	35	35	36	35	35	31
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	33.0	45-50	245.7	90-95	0.0	135-140	0.0
5-10	97.7	50-55	205.1	95-100	0.0	140-145	0.0
10-15	158.6	55-60	161.4	100-105	0.0	145-150	0.0
15-20	213.0	60-65	122.5	105-110	0.0	150-155	0.0
20-25	257.0	65-70	91.6	110-115	0.0	155-160	0.0
25-30	285.8	70-75	68.2	115-120	0.0	160-165	0.0
30-35	297.8	75-80	47.1	120-125	0.0	165-170	0.0
35-40	294.6	80-85	26.8	125-130	0.0	170-175	0.0
40-45	276.3	85-90	8.8	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	0.675	0.675	0.675	0.675	0.659	0.659	0.659	0.659	0.644	0.644	0.644	0.644
1	0.626	0.601	0.578	0.558	0.611	0.588	0.567	0.548	0.596	0.575	0.557	0.54
2	0.577	0.533	0.497	0.467	0.563	0.522	0.489	0.461	0.549	0.512	0.482	0.456
3	0.533	0.476	0.432	0.398	0.519	0.467	0.427	0.394	0.506	0.458	0.421	0.391
4	0.492	0.427	0.38	0.345	0.479	0.419	0.376	0.342	0.467	0.412	0.372	0.34
5	0.456	0.385	0.337	0.302	0.444	0.379	0.334	0.301	0.433	0.373	0.331	0.299
6	0.423	0.35	0.302	0.268	0.413	0.345	0.299	0.267	0.403	0.34	0.297	0.266
7	0.394	0.32	0.272	0.24	0.385	0.315	0.27	0.239	0.375	0.311	0.268	0.238
8	0.368	0.293	0.247	0.216	0.36	0.29	0.246	0.216	0.351	0.286	0.244	0.215
9	0.345	0.271	0.226	0.196	0.337	0.267	0.225	0.196	0.33	0.264	0.223	0.195
10	0.324	0.251	0.208	0.18	0.317	0.248	0.207	0.179	0.31	0.245	0.205	0.179

Ceiling Cavity Reflectance	50				30			10			0
	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)											
0	0.615	0.615	0.615	0.615	0.589	0.589	0.589	0.565	0.565	0.565	0.554
1	0.569	0.552	0.537	0.523	0.531	0.518	0.507	0.511	0.501	0.492	0.481
2	0.523	0.493	0.468	0.445	0.475	0.454	0.436	0.459	0.442	0.426	0.415
3	0.482	0.442	0.41	0.384	0.428	0.4	0.378	0.414	0.391	0.372	0.36
4	0.445	0.399	0.364	0.335	0.387	0.356	0.331	0.375	0.349	0.327	0.316
5	0.413	0.362	0.325	0.296	0.351	0.319	0.293	0.342	0.313	0.29	0.279
6	0.384	0.33	0.292	0.263	0.321	0.287	0.261	0.313	0.283	0.259	0.249
7	0.359	0.303	0.264	0.236	0.295	0.261	0.235	0.288	0.257	0.233	0.223
8	0.336	0.279	0.241	0.214	0.272	0.238	0.213	0.266	0.235	0.211	0.201
9	0.316	0.258	0.221	0.195	0.252	0.218	0.194	0.247	0.216	0.193	0.183
10	0.298	0.24	0.203	0.178	0.235	0.201	0.177	0.23	0.199	0.177	0.167

Average Luminance Table (cd/m²)

	0	45	90
0	15930	15930	15930
45	14265	10601	8717
55	11904	7717	5714
65	7374	5441	4361
75	4312	5036	4555
85	1816	4659	4771

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.

