



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: 18443

DATE: 03-31-2010

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

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

LUMINAIRE: EXTRUDED ALUMINUM HOUSING WITH STEEL END CAPS, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, FROSTED 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, 0.4385A, 52.53W

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	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	
5	1203	1206	1203	1203	1204	1203	1203	1206	1203	1206	1203	1203	1204	1203	1203	1206	114.1
15	1145	1145	1137	1132	1130	1132	1137	1145	1145	1145	1137	1132	1130	1132	1137	1145	320.3
25	1031	1029	1012	997	991	997	1012	1029	1031	1029	1012	997	991	997	1012	1029	465.5
35	872	866	842	820	811	820	842	866	872	866	842	820	811	820	842	866	526.4
45	685	678	651	628	618	628	651	678	685	678	651	628	618	628	651	678	502.8
55	492	486	462	441	432	441	462	486	492	486	462	441	432	441	462	486	414.3
65	314	309	292	277	271	277	292	309	314	309	292	277	271	277	292	309	290.5
75	163	159	150	142	139	142	150	159	163	159	150	142	139	142	150	159	160.2
85	45	42	39	37	37	37	39	42	45	42	39	37	37	37	39	42	44.9
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	

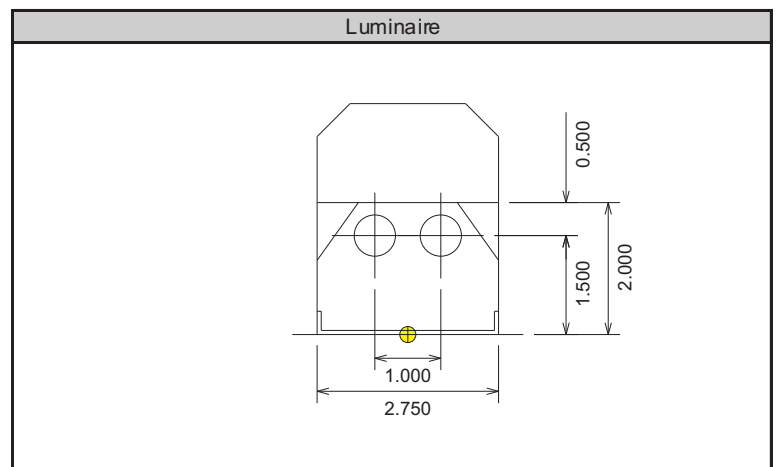
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	900.0	17.2%	31.7%
0-40	1426.4	27.3%	50.2%
0-60	2343.4	44.9%	82.5%
0-90	2839.1	54.4%	100.0%
90-180	0.0	0.0%	0.0%
0-180	2839.1	54.4%	100.0%

Total luminaire efficiency: 54.4%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.18 90 deg: 1.13
180 deg: 1.18 270 deg: 1.13



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	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212	1212
5	1203	1206	1203	1203	1204	1203	1203	1206	1203	1206	1203	1203	1204	1203	1203	1206
10	1181	1183	1177	1176	1175	1176	1177	1183	1181	1183	1177	1176	1175	1176	1177	1183
15	1145	1145	1137	1132	1130	1132	1137	1145	1145	1145	1137	1132	1130	1132	1137	1145
20	1095	1094	1081	1072	1068	1072	1081	1094	1095	1094	1081	1072	1068	1072	1081	1094
25	1031	1029	1012	997	991	997	1012	1029	1031	1029	1012	997	991	997	1012	1029
30	956	952	931	912	904	912	931	952	956	952	931	912	904	912	931	952
35	872	866	842	820	811	820	842	866	872	866	842	820	811	820	842	866
40	781	774	747	724	715	724	747	774	781	774	747	724	715	724	747	774
45	685	678	651	628	618	628	651	678	685	678	651	628	618	628	651	678
50	588	581	555	532	523	532	555	581	588	581	555	532	523	532	555	581
55	492	486	462	441	432	441	462	486	492	486	462	441	432	441	462	486
60	401	395	374	355	348	355	374	395	401	395	374	355	348	355	374	395
65	314	309	292	277	271	277	292	309	314	309	292	277	271	277	292	309
70	235	230	217	206	201	206	217	230	235	230	217	206	201	206	217	230
75	163	159	150	142	139	142	150	159	163	159	150	142	139	142	150	159
80	100	97	91	86	84	86	91	97	100	97	91	86	84	86	91	97
85	45	42	39	37	37	37	39	42	45	42	39	37	37	37	39	42
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	28.9	45-50	243.8	90-95	0.0	135-140	0.0
5-10	85.2	50-55	221.1	95-100	0.0	140-145	0.0
10-15	137.4	55-60	193.1	100-105	0.0	145-150	0.0
15-20	182.9	60-65	161.7	105-110	0.0	150-155	0.0
20-25	219.6	65-70	128.8	110-115	0.0	155-160	0.0
25-30	245.9	70-75	95.9	115-120	0.0	160-165	0.0
30-35	261.1	75-80	64.4	120-125	0.0	165-170	0.0
35-40	265.2	80-85	35.3	125-130	0.0	170-175	0.0
40-45	259.0	85-90	9.6	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			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)												
0	0.663	0.663	0.663	0.663	0.647	0.647	0.647	0.647	0.632	0.632	0.632	0.632
1	0.61	0.583	0.559	0.538	0.595	0.571	0.549	0.529	0.58	0.558	0.538	0.52
2	0.559	0.512	0.474	0.442	0.544	0.502	0.466	0.437	0.53	0.492	0.459	0.432
3	0.513	0.453	0.407	0.371	0.499	0.444	0.402	0.368	0.485	0.435	0.396	0.365
4	0.471	0.403	0.354	0.318	0.458	0.396	0.35	0.315	0.446	0.389	0.346	0.313
5	0.435	0.362	0.312	0.276	0.423	0.356	0.309	0.274	0.412	0.35	0.306	0.273
6	0.403	0.327	0.278	0.242	0.392	0.322	0.275	0.241	0.382	0.317	0.273	0.24
7	0.374	0.298	0.249	0.216	0.364	0.293	0.247	0.215	0.355	0.289	0.245	0.214
8	0.349	0.272	0.225	0.193	0.34	0.269	0.224	0.193	0.332	0.265	0.222	0.192
9	0.326	0.251	0.205	0.175	0.318	0.247	0.204	0.175	0.311	0.244	0.203	0.174
10	0.306	0.232	0.188	0.159	0.299	0.229	0.187	0.159	0.292	0.226	0.186	0.159

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	0.604	0.604	0.604	0.604	0.579	0.579	0.579	0.555	0.555	0.555	0.544
1	0.553	0.535	0.519	0.504	0.514	0.501	0.488	0.495	0.484	0.474	0.463
2	0.504	0.472	0.445	0.422	0.455	0.432	0.412	0.438	0.42	0.403	0.392
3	0.461	0.419	0.386	0.358	0.405	0.376	0.352	0.391	0.367	0.346	0.335
4	0.424	0.375	0.338	0.309	0.363	0.331	0.305	0.351	0.324	0.301	0.289
5	0.391	0.339	0.3	0.27	0.328	0.294	0.267	0.318	0.288	0.264	0.253
6	0.363	0.307	0.268	0.238	0.298	0.263	0.236	0.29	0.259	0.234	0.223
7	0.338	0.281	0.241	0.212	0.273	0.237	0.211	0.266	0.234	0.209	0.199
8	0.316	0.258	0.219	0.191	0.251	0.216	0.19	0.245	0.213	0.189	0.179
9	0.297	0.238	0.2	0.173	0.232	0.197	0.172	0.227	0.195	0.171	0.162
10	0.279	0.221	0.184	0.158	0.216	0.182	0.157	0.211	0.179	0.157	0.147

Average Luminance Table (cd/m²)

	0	45	90
0	13942	13942	13942
45	11143	10589	10049
55	9871	9269	8663
65	8552	7942	7367
75	7246	6663	6187
85	5884	5187	4822

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.

