



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: 18442

DATE: 03-31-2010

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

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

LUMINAIRE: EXTRUDED ALUMINUM HOUSING WITH STEEL END CAPS, FORMED WHITE ENAMEL ALUMINUM REFLECTOR, TRANSLUCENT WHITE 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, 0.4338A, 51.98W

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	854	854	854	854	854	854	854	854	854	854	854	854	854	854	854	854	
5	849	852	850	850	851	850	850	852	849	852	850	850	851	850	850	852	80.8
15	816	819	816	816	816	816	816	819	816	819	816	816	816	816	816	819	230.4
25	753	755	751	750	750	750	751	755	753	755	751	750	750	750	751	755	346.4
35	664	665	661	659	658	659	661	665	664	665	661	659	658	659	661	665	413.6
45	555	554	549	547	545	547	549	554	555	554	549	547	545	547	549	554	424.2
55	430	428	423	420	419	420	423	428	430	428	423	420	419	420	423	428	378.9
65	292	291	287	286	285	286	287	291	292	291	287	286	285	286	287	291	285.1
75	149	149	150	152	153	152	150	149	149	149	150	152	153	152	150	149	159.6
85	25	29	35	38	39	38	35	29	25	29	35	38	39	38	35	29	40.2
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	

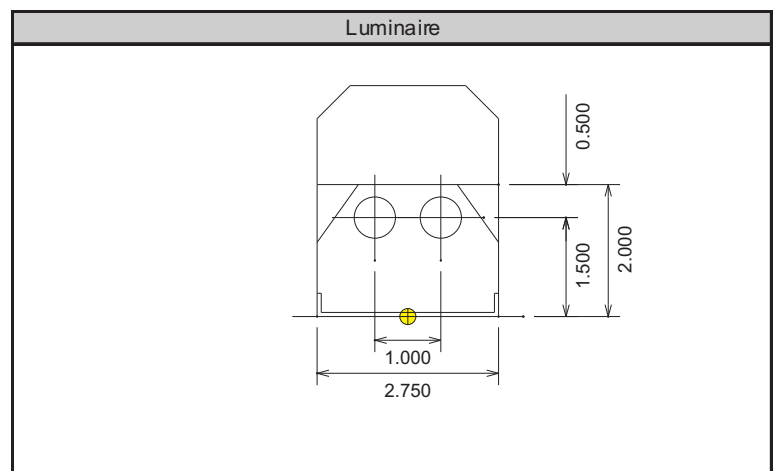
Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	657.6	12.6%	27.9%
0-40	1071.2	20.5%	45.4%
0-60	1874.2	35.9%	79.4%
0-90	2359.2	45.2%	100.0%
90-180	0.0	0.0%	0.0%
0-180	2359.2	45.2%	100.0%

Total luminaire efficiency: 45.2%

CIE Type: Direct

Spacing Criterion: 0 deg: 1.24 90 deg: 1.23
180 deg: 1.24 270 deg: 1.23



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	854	854	854	854	854	854	854	854	854	854	854	854	854	854	854	854
5	849	852	850	850	851	850	850	852	849	852	850	850	851	850	850	852
10	837	839	837	837	838	837	837	839	837	839	837	837	838	837	837	839
15	816	819	816	816	816	816	816	819	816	819	816	816	816	816	816	819
20	788	790	788	787	787	787	788	790	788	790	788	787	787	787	788	790
25	753	755	751	750	750	750	751	755	753	755	751	750	750	750	751	755
30	711	713	709	707	707	707	709	713	711	713	709	707	707	707	709	713
35	664	665	661	659	658	659	661	665	664	665	661	659	658	659	661	665
40	611	612	607	605	603	605	607	612	611	612	607	605	603	605	607	612
45	555	554	549	547	545	547	549	554	555	554	549	547	545	547	549	554
50	494	493	488	485	483	485	488	493	494	493	488	485	483	485	488	493
55	430	428	423	420	419	420	423	428	430	428	423	420	419	420	423	428
60	362	361	356	354	352	354	356	361	362	361	356	354	352	354	356	361
65	292	291	287	286	285	286	287	291	292	291	287	286	285	286	287	291
70	221	219	218	218	218	218	218	219	221	219	218	218	218	218	218	219
75	149	149	150	152	153	152	150	149	149	149	150	152	153	152	150	149
80	81	83	88	91	92	91	88	83	81	83	88	91	92	91	88	83
85	25	29	35	38	39	38	35	29	25	29	35	38	39	38	35	29
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	20.4	45-50	209.8	90-95	0.0	135-140	0.0
5-10	60.4	50-55	198.4	95-100	0.0	140-145	0.0
10-15	98.2	55-60	180.5	100-105	0.0	145-150	0.0
15-20	132.3	60-65	156.8	105-110	0.0	150-155	0.0
20-25	161.5	65-70	128.3	110-115	0.0	155-160	0.0
25-30	184.9	70-75	96.4	115-120	0.0	160-165	0.0
30-35	201.8	75-80	63.3	120-125	0.0	165-170	0.0
35-40	211.7	80-85	32.2	125-130	0.0	170-175	0.0
40-45	214.4	85-90	8.1	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	0.551	0.551	0.551	0.551	0.538	0.538	0.538	0.538	0.526	0.526	0.526	0.526
1	0.505	0.481	0.46	0.441	0.492	0.47	0.451	0.434	0.48	0.46	0.443	0.427
2	0.46	0.419	0.386	0.358	0.447	0.41	0.38	0.354	0.436	0.402	0.373	0.349
3	0.42	0.368	0.328	0.297	0.408	0.36	0.324	0.294	0.397	0.353	0.319	0.291
4	0.385	0.326	0.283	0.251	0.374	0.319	0.28	0.249	0.363	0.313	0.276	0.248
5	0.354	0.291	0.247	0.216	0.344	0.285	0.245	0.215	0.334	0.28	0.242	0.214
6	0.326	0.261	0.219	0.188	0.317	0.257	0.217	0.188	0.309	0.253	0.214	0.187
7	0.303	0.237	0.195	0.166	0.294	0.233	0.193	0.166	0.286	0.229	0.192	0.165
8	0.281	0.216	0.176	0.148	0.274	0.213	0.174	0.148	0.267	0.21	0.173	0.147
9	0.263	0.198	0.159	0.133	0.256	0.195	0.158	0.133	0.25	0.193	0.157	0.133
10	0.246	0.183	0.145	0.121	0.24	0.18	0.145	0.121	0.234	0.178	0.144	0.12

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	0.502	0.502	0.502	0.502	0.481	0.481	0.481	0.461	0.461	0.461	0.452
1	0.457	0.441	0.427	0.413	0.423	0.412	0.401	0.407	0.398	0.389	0.379
2	0.414	0.386	0.362	0.341	0.371	0.351	0.333	0.357	0.341	0.326	0.316
3	0.376	0.34	0.31	0.286	0.327	0.302	0.281	0.316	0.294	0.276	0.267
4	0.344	0.302	0.27	0.244	0.291	0.263	0.241	0.282	0.257	0.238	0.228
5	0.316	0.271	0.237	0.211	0.262	0.232	0.209	0.253	0.227	0.207	0.197
6	0.293	0.245	0.21	0.185	0.237	0.207	0.183	0.23	0.203	0.182	0.172
7	0.272	0.222	0.189	0.164	0.216	0.185	0.163	0.21	0.182	0.161	0.152
8	0.254	0.204	0.17	0.146	0.198	0.168	0.146	0.193	0.165	0.145	0.136
9	0.238	0.187	0.155	0.132	0.183	0.153	0.131	0.178	0.151	0.131	0.122
10	0.223	0.173	0.142	0.12	0.169	0.14	0.119	0.165	0.138	0.119	0.111

Average Luminance Table (cd/m²)

	0	45	90
0	9828	9828	9828
45	9024	8937	8865
55	8616	8491	8398
65	7957	7817	7761
75	6622	6673	6783
85	3351	4598	5190

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.

