LTL 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

Photometric Indoor Test Report

Relevant Standards
IES LM-9-2009, IES LM-41-1998 (Withdrawn)
ANSI C78.81-2010, ANSI C82.1-2004, ANSI C82.11, ANSI C82.2, ANSI C82.77
IEC 60081, IEC 60901, IEC 61347-2-3

Prepared For
Adam Metal Products
Fred Ravo
7 Orben Drive
Ledgewood, NJ 07852

Catalog Number
980 (2 T8 Lamps)

LTL Test Number
29439

Test Date

2012-04-03

Prepared By

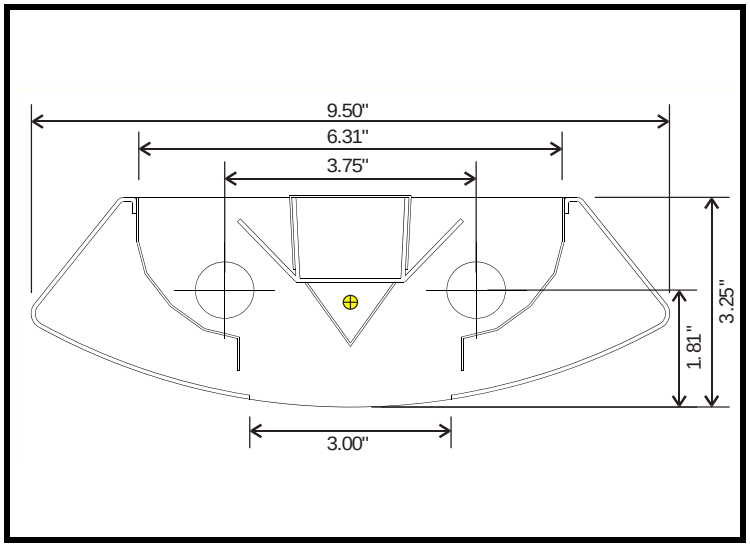
Kyle Spaziani, Technician III

Approved By

Eric Gaudreau, Technician III

Luminaire Description:	Formed white enamel steel and aluminum housing, formed specular aluminum reflectors, open top, open bottom
Catalog Number:	980 (2 T8 Lamps)
Lamp:	Two horizontal 32 watt T8 linear fluorescent lamps rated at 2850 lumens each
Lamp Catalog Number:	Philips F32T8/TL841/ALTO
Mounting:	Pendant
Ballast/Driver:	One Robertson ISS232T8MVW

Luminaire



Zonal Lumen Summary

Zone (Degrees)	Lumens	% of Lamp	% of Luminaire
0-30	423	7.4%	8.7%
0-40	666	11.7%	13.8%
0-60	1179	20.7%	24.4%
0-90	1419	24.9%	29.3%
90-180	3422	60.0%	70.7%
0-180	4842	84.9%	100.0%

Test Conditions

Test Temperature:	25.2	°C
Voltage:	277.0	VAC
Current:	0.2155	A
Power:	59.23	W
Power Factor:	0.994	
Frequency:	60	Hz
Current THD:	6.61	%

Summary of Results

Luminaire Efficiency: 84.9 %

Spacing Criterion: 0 Degree: 1.23 90 Degree: 1.02
180 Degree: 1.21 270 Degree: 1.02

CIE Type: Semi-Indirect

LTL 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

Candela Tabulation

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	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	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578	578
5	570	576	578	576	579	577	578	575	570	575	578	577	579	576	578	576
10	561	567	571	563	563	563	569	566	562	566	569	563	563	563	571	567
15	548	556	548	534	531	533	548	555	548	555	548	533	531	534	548	556
20	530	534	515	490	479	489	514	532	527	532	514	489	479	490	515	534
25	506	505	473	435	431	434	470	502	501	502	470	434	431	435	473	505
30	476	469	417	391	381	388	413	465	470	465	413	388	381	391	417	469
35	443	428	372	349	360	351	369	423	435	423	369	351	360	349	372	428
40	404	380	325	351	372	352	322	374	397	374	322	352	372	351	325	380
45	364	323	305	360	373	357	302	317	356	317	302	357	373	360	305	323
50	320	277	301	350	364	348	301	272	312	272	301	348	364	350	301	277
55	274	229	291	322	324	320	286	224	266	224	286	320	324	322	291	229
60	229	189	267	271	264	267	265	190	218	190	265	267	264	271	267	189
65	183	171	220	177	147	172	214	171	171	171	214	172	147	177	220	171
70	136	152	137	59	30	56	130	148	126	148	130	56	30	59	137	152
75	88	113	29	9	8	9	22	108	79	108	22	9	8	9	29	113
80	47	40	7	8	7	7	6	34	39	34	6	7	7	8	7	40
85	14	5	6	7	7	7	6	5	9	5	6	7	7	7	6	5
90	0	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1
95	26	31	21	19	19	20	24	31	40	31	24	20	19	19	21	31
100	108	111	95	77	74	78	96	113	129	113	96	78	74	77	95	111
105	209	204	182	181	181	184	185	207	233	207	185	184	181	181	182	204
110	316	304	315	273	266	275	321	310	340	310	321	275	266	273	315	304
115	426	408	416	418	402	422	415	412	449	412	415	422	402	418	416	408
120	536	520	510	524	532	526	517	524	554	524	517	526	532	524	510	520
125	642	625	615	602	607	605	622	625	656	625	622	605	607	602	615	625
130	742	729	709	708	712	712	713	740	752	740	713	712	712	708	709	729
135	832	831	806	799	804	800	811	847	842	847	811	800	804	799	806	831
140	916	926	895	881	880	883	896	930	924	930	896	883	880	881	895	926
145	990	999	973	967	968	970	980	998	999	998	980	970	968	967	973	999
150	1057	1052	1055	1032	1030	1037	1074	1052	1065	1052	1074	1037	1030	1032	1055	1052
155	1117	1108	1130	1108	1106	1116	1134	1111	1123	1111	1134	1116	1106	1108	1130	1108
160	1167	1157	1174	1180	1179	1180	1172	1162	1173	1162	1172	1180	1179	1180	1174	1157
165	1208	1203	1201	1207	1214	1205	1203	1202	1211	1202	1203	1205	1214	1207	1201	1203
170	1240	1236	1231	1225	1227	1227	1232	1233	1241	1233	1232	1227	1227	1225	1231	1236
175	1260	1255	1255	1248	1248	1248	1254	1251	1258	1251	1254	1248	1248	1248	1255	1255
180	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258	1258

Zonal Lumen Tabulation (5 degree zones)

Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens
0-5	13.8	45-50	131.8	90-95	5.7	135-140	318.3
5-10	40.9	50-55	130.9	95-100	30.6	140-145	314.1
10-15	65.9	55-60	121.7	100-105	77.5	145-150	299.0
15-20	87.0	60-65	103.7	105-110	127.5	150-155	273.9
20-25	102.4	65-70	72.8	110-115	181.1	155-160	240.3
25-30	113.0	70-75	38.1	115-120	228.8	160-165	196.0
30-35	119.0	75-80	17.4	120-125	263.9	165-170	144.5
35-40	124.3	80-85	5.6	125-130	291.4	170-175	88.8
40-45	128.8	85-90	2.6	130-135	310.8	175-180	30.0

LTL 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

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	0.9627	0.9627	0.9627	0.9627	0.8683	0.8683	0.8683	0.8683	0.7783	0.7783	0.7783	0.7783
1	0.8810	0.8392	0.8019	0.7686	0.7932	0.7584	0.7271	0.6990	0.7100	0.6812	0.6552	0.6316
2	0.8036	0.7323	0.6740	0.6254	0.7225	0.6626	0.6131	0.5715	0.6458	0.5959	0.5542	0.5189
3	0.7334	0.6425	0.5732	0.5186	0.6587	0.5821	0.5227	0.4754	0.5883	0.5241	0.4737	0.4330
4	0.6702	0.5667	0.4922	0.4361	0.6018	0.5140	0.4498	0.4007	0.5373	0.4634	0.4084	0.3658
5	0.6139	0.5027	0.4265	0.3709	0.5513	0.4565	0.3904	0.3415	0.4922	0.4121	0.3551	0.3124
6	0.5641	0.4489	0.3730	0.3193	0.5067	0.4081	0.3420	0.2945	0.4526	0.3689	0.3115	0.2699
7	0.5202	0.4034	0.3292	0.2778	0.4676	0.3672	0.3022	0.2566	0.4179	0.3323	0.2757	0.2355
8	0.4811	0.3644	0.2924	0.2436	0.4329	0.3321	0.2688	0.2253	0.3873	0.3010	0.2456	0.2071
9	0.4466	0.3310	0.2617	0.2154	0.4022	0.3021	0.2408	0.1995	0.3602	0.2741	0.2204	0.1836
10	0.4158	0.3021	0.2354	0.1916	0.3748	0.2760	0.2169	0.1776	0.3360	0.2508	0.1988	0.1637

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	0.6103	0.6103	0.6103	0.6103	0.4565	0.4565	0.4565	0.3154	0.3154	0.3154	0.2490
1	0.5556	0.5366	0.5192	0.5033	0.4038	0.3929	0.3829	0.2813	0.2753	0.2696	0.2136
2	0.5041	0.4707	0.4421	0.4174	0.3552	0.3367	0.3205	0.2483	0.2376	0.2280	0.1801
3	0.4586	0.4148	0.3796	0.3505	0.3138	0.2905	0.2709	0.2200	0.2060	0.1941	0.1527
4	0.4186	0.3677	0.3286	0.2976	0.2789	0.2526	0.2313	0.1962	0.1801	0.1668	0.1308
5	0.3837	0.3279	0.2868	0.2553	0.2495	0.2214	0.1994	0.1763	0.1588	0.1448	0.1134
6	0.3532	0.2943	0.2525	0.2214	0.2247	0.1958	0.1738	0.1595	0.1413	0.1270	0.0994
7	0.3267	0.2659	0.2242	0.1938	0.2037	0.1746	0.1528	0.1453	0.1267	0.1125	0.0880
8	0.3033	0.2415	0.2004	0.1711	0.1857	0.1567	0.1355	0.1331	0.1144	0.1005	0.0787
9	0.2827	0.2206	0.1804	0.1522	0.1702	0.1416	0.1211	0.1226	0.1041	0.0904	0.0709
10	0.2643	0.2024	0.1632	0.1362	0.1567	0.1287	0.1089	0.1136	0.0952	0.0819	0.0644

Average Luminance Table (cd/m²)

Horizontal Angle (Degrees)

Vertical Angle (Degree)	0	45	90
0	6848	6848	6848
45	6094	5101	6243
55	5666	5999	6696
65	5113	6168	4123
75	4028	1324	382
85	1881	820	989

Note: The zonal cavity calculation technique is accurate when luminaires with symmetric candela distributions are employed and when the luminaires are located symmetrically throughout the room. This unit has special characteristics and therefore these values should be used with caution.

This test was conduted using photometry techniques according to standard IES procedures. The user must therefore use caution in the following situations: 1) This test was performed using a specific ballast/lamp combination. Extrapolation of this 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. This test was conducted in a controlled laboratory environment where the ambient temperature was held at 25^{0}C ±1^{0}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.

Polar Plot (Candela)