

itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL78300

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ISSUE DATE: 08/28/13

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: MLP5-I1/D2-4-TWA-120-T5

LUMINAIRE: EXTRUDED 2-PIECE METAL HOUSING WITH WHITE PAINTED GENERAL INTERIOR FINISH, FABRICATED WHITE PAINTED METAL END CAPS AND 2 DISTINCT OPTICAL COMPARTMENTS, TOP OPTICAL COMPARTMENT CONSISTS OF: FORMED MULTI-FACETED SPECULAR METAL REFLECTOR, FORMED SPECULAR METAL SOCKET MOUNTING BRACKETS. BOTTOM OPTICAL COMPARTMENT CONSISTS OF: FORMED WHITE PAINTED METAL REFLECTOR AND SOCKET MOUNTING BRACKETS, EXTRUDED TRANSLUCENT WHITE FROSTED ACRYLIC DIFFUSER. DIFFUSER FROSTED BOTH SIDES. OPEN TOP.

LAMPS: THREE 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENTS.

BALLAST: UNIVERSAL B228PUNV-C, UNIVERSAL B228PUNV-N

THE 0 DEGREE PLANE IS PERPENDICULAR TO THE LAMPS.

TOTAL REFLECTANCE OF PAINT = 89.4 %

MOUNTING: WALL

TOTAL INPUT WATTS = 88.1 AT 120.0 VOLTS

NOTE: DIFFUSER MATERIAL INFORMATION PROVIDED BY CLIENT.

REPORT IS BASED ON 2600 LUMENS PER LAMP. *

CANDELA DISTRIBUTION

FLUX

	0.0	45.0	90.0	135.0	180.0	
0	1028	1028	1028	1028	1028	
5	1022	1024	1025	1024	1021	97
15	987	988	989	988	985	278
25	916	917	914	915	913	421
35	811	813	808	809	807	506
45	679	681	681	676	672	522
55	528	531	528	524	519	470
65	365	366	365	359	355	358
75	203	201	198	194	193	210
85	60	58	55	54	54	63
90	0	0	0	0	0	
95	67	87	14	8	11	47
105	360	338	81	11	12	170
115	495	624	166	13	14	278
125	907	922	252	38	14	376
135	1197	1068	331	107	49	412
145	1298	1037	405	189	130	369
155	1113	961	465	275	223	271
165	896	740	504	372	322	159
175	596	570	521	488	464	51
180	523	523	523	523	523	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	797	10.2	15.7
0- 40	1302	16.7	25.7
0- 60	2295	29.4	45.4
0- 90	2926	37.5	57.8
90-120	494	6.3	9.8
90-130	871	11.2	17.2
90-150	1653	21.2	32.7
90-180	2133	27.3	42.2
0-180	5058	64.9	100.0

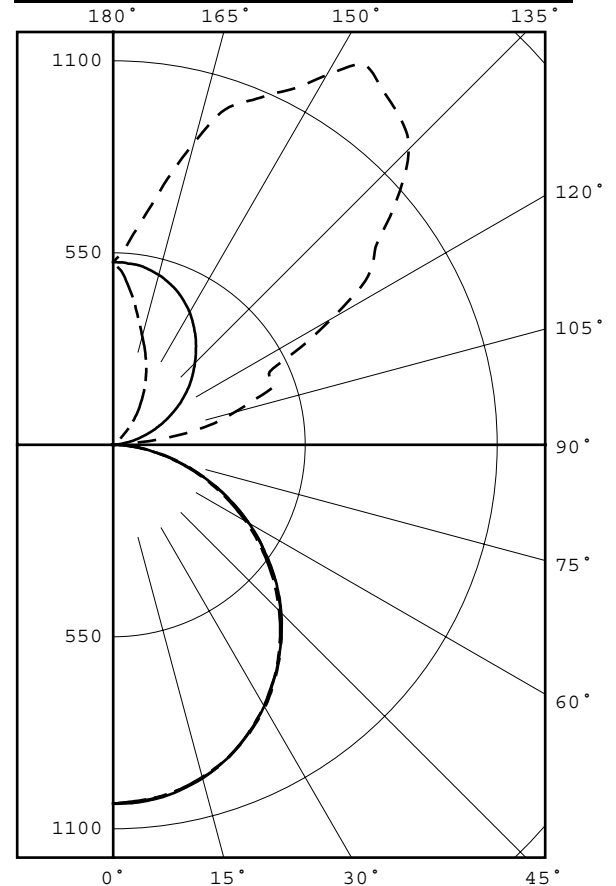
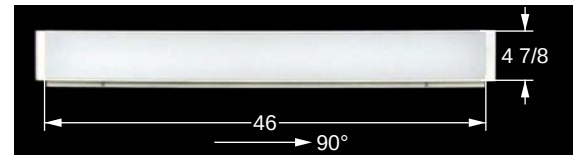
TOTAL LUMINAIRE EFFICIENCY = 64.9 % *

CIE TYPE - GENERAL DIFFUSE

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.25 1.25 1.25

SHIELDING ANGLES : 90 90



LEGEND:

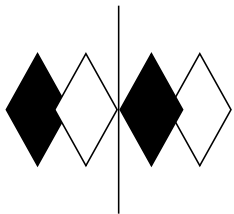
0-deg - - - - -
90-deg - - - - -
180-deg - - - - -

Checked B. HYRE

Approved R. BEATTIE
Lighting Engineer

* SEE ADDENDUM FOR FURTHER INFORMATION

THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.



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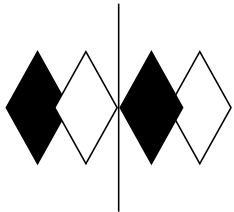
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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 4.875 46.000

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE	AVERAGE	AVERAGE	AVERAGE
IN DEG	0-DEG	90-DEG	180-DEG
45	6637.	6657.	6569.
55	6363.	6363.	6254.
65	5970.	5970.	5806.
75	5421.	5288.	5154.
85	4758.	4362.	4283.



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CANDELA DISTRIBUTION

LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	1028	1028	1028	1028	1028	1028	1028	1028	1028
5.0	1022	1025	1024	1017	1025	1018	1024	1025	1021
10.0	1009	1013	1011	1004	1012	1004	1011	1012	1009
15.0	987	989	988	982	989	982	988	989	985
20.0	956	958	956	951	956	949	955	956	955
25.0	916	918	917	910	914	909	915	915	913
30.0	869	870	868	862	865	861	866	865	864
35.0	811	812	813	807	808	806	809	806	807
40.0	748	748	750	745	746	743	745	743	742
45.0	679	679	681	677	681	675	676	675	672
50.0	606	606	609	605	608	602	603	601	598
55.0	528	528	531	527	528	525	524	522	519
60.0	448	447	450	446	449	443	442	441	438
65.0	365	364	366	363	365	360	359	358	355
70.0	283	281	283	279	281	276	275	275	273
75.0	203	201	201	197	198	195	194	195	193
80.0	128	126	125	123	121	121	121	120	121
85.0	60	58	58	58	55	55	54	53	54
90.0	0	0	0	0	0	0	0	0	0
95.0	67	77	87	81	14	6	8	10	11
100.0	240	237	222	153	44	8	10	11	12
105.0	360	356	338	318	81	9	11	12	12
110.0	487	464	408	464	123	18	12	13	13
115.0	495	533	624	566	166	45	13	14	14
120.0	724	766	766	655	209	76	14	14	14
125.0	907	898	922	666	252	111	38	14	14
130.0	1045	1068	995	702	293	148	71	29	18
135.0	1197	1176	1068	749	331	184	107	63	49
140.0	1256	1229	1083	770	369	223	147	103	88
145.0	1298	1262	1037	730	405	262	189	146	130
150.0	1223	1150	1006	689	438	304	231	191	175
155.0	1113	1077	961	654	465	350	275	237	223
160.0	1039	1009	850	623	487	398	320	284	271
165.0	896	860	740	595	504	440	372	334	322
170.0	724	705	645	565	516	477	433	401	387
175.0	596	593	570	538	521	510	488	472	464
180.0	523	523	523	523	523	523	523	523	523



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5-DEGREE

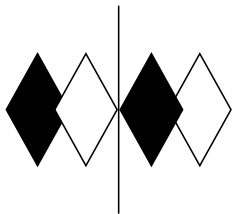
ZONAL LUMEN SUMMARY

0- 5	24
5- 10	73
10- 15	118
15- 20	160
20- 25	196
25- 30	225
30- 35	246
35- 40	259
40- 45	264
45- 50	259
50- 55	246
55- 60	224
60- 65	196
65- 70	162
70- 75	124
75- 80	85
80- 85	48
85- 90	15
90- 95	7
95-100	39
100-105	71
105-110	99
110-115	124
115-120	154
120-125	181
125-130	195
130-135	206
135-140	207
140-145	195
145-150	174
150-155	149
155-160	122
160-165	94
165-170	65
170-175	38
175-180	13

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	97
0- 20	376
0- 30	797
0- 40	1302
0- 50	1825
0- 60	2295
0- 70	2653
0- 80	2863
0- 90	2926
0-100	2972
0-110	3142
0-120	3420
0-130	3797
0-140	4209
0-150	4578
0-160	4849
0-170	5008
0-180	5058



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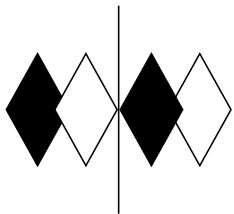
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	71	71	71	71	66	66	66	66	57	57	57	49	49	49	41	41	41	38
1	64	61	59	57	60	57	55	53	50	48	46	43	41	40	36	35	34	31
2	59	54	49	46	54	50	46	43	43	41	38	37	35	33	32	30	29	26
3	53	47	42	38	49	44	40	36	38	35	32	33	30	28	28	26	24	22
4	49	42	36	32	45	39	34	30	34	30	27	29	26	24	25	23	21	19
5	45	37	32	28	41	35	30	26	30	26	23	26	23	21	22	20	18	16
6	41	33	28	24	38	31	26	23	27	23	20	24	20	18	20	18	16	14
7	38	30	25	21	35	28	23	20	25	21	18	21	18	16	18	16	14	12
8	35	27	22	18	33	26	21	18	22	19	16	20	16	14	17	14	13	11
9	33	25	20	16	31	23	19	16	21	17	14	18	15	13	16	13	11	10
10	31	23	18	15	29	21	17	14	19	15	13	17	14	12	14	12	10	9

ALL CANDELA, LUMENS, LUMINANCE, COEFFICIENT OF UTILIZATION AND VCP VALUES IN THIS REPORT ARE BASED ON RELATIVE PHOTOMETRY WHICH ASSUMES A BALLAST FACTOR OF 1.000. ANY CALCULATIONS PREPARED FROM THESE DATA SHOULD INCLUDE AN APPROPRIATE BALLAST FACTOR.

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 COEFFICIENTS SHOULD BE USED WITH CAUTION.



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ADDENDUM

SPECIAL TEST PROCEDURES FOR T-5 LAMPS INCLUDING EXPLANATION OF THE IMPORTANCE OF LAMP LUMEN RATINGS.

This test was performed using standard relative photometric practices in accordance with recommendations of the Illuminating Engineering Society of North America. Fluorescent testing using the guidelines of relative photometric practice presupposes that the lamps will be operated at their nominal electrical characteristics (e.g., a 40 watt lamp will operate very nearly at 40 watts, and at the voltage and current required for 40-watt operation). Fluorescent lamps in general are temperature sensitive, the lumen output varies with ambient temperature and follows a characteristic curve. The T-5 fluorescent lamps used in this test produce maximum light output in an ambient temperature other than 25 degrees C. A critical step in relative photometric testing involves measurement of the total flux output from the lamp(s) suspended in free air at a 25 degree C ambient temperature per IES LM41-1998. This measurement process is a separate step from the photometric exploration of the luminaire itself. This "bare lamp" measurement is made with the lamp(s) operated by the same ballast(s) which are to be used in the luminaire. Since the test procedure involves measuring the bare lamp flux output at 25 degrees C and this lamp type peaks at a temperature other than 25 degrees C, the flux measured for this lamp type will be less than the maximum output the lamp is designed to produce.

As a result, the measurement of the "bare lamp" total flux output is lower than it would be if the lamps were operated at their optimum operating temperature and at nominal electrical characteristics. When this "bare lamp" measurement is incorporated into the luminaire test report, the net effect is that total luminaire efficiency on the report is higher than what the lighting industry would expect this luminaire to produce. These lighting industry expectations are based on comparisons to the total luminaire efficiency of the same luminaire with T-12 or T-8 lamps.

On this particular test, the lamp lumen rating shown is for a 25 degree C ambient temperature. Since this report was based on the lamp lumen rating at 25 degrees C, the candela values in this report should be accurate, as long as the lamp(s) used for this test follow the manufacturer's light output vs. temperature curve.

T5TEMP3.DIS