



# 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: ITL80568  
ISSUE DATE: 02/06/14  
PREPARED FOR: OXYGEN LIGHTING  
CATALOG NUMBER: 2-5170-224

PAGE: 1 OF 5

LUMINAIRE: FABRICATED SEMI-DIFFUSE METAL HOUSING, FABRICATED WHITE PAINTED METAL REFLECTOR AND SOCKET MOUNTING BRACKETS, TRANSLUCENT WHITE ACRYLIC DIFFUSER WITH FABRICATED SEMI-DIFFUSE METAL END CAPS.

LAMP: ONE 14-WATT T-5 SYLVANIA FP14/841/ECO LINEAR FLUORESCENT.

BALLAST: ANTRON ELECTRONICS ESD-A21T5  
THE 0 DEGREE PLANE IS PERPENDICULAR TO THE LAMP.

MOUNTING: WALL

TOTAL INPUT WATTS = 17.3 AT 120.0 VOLTS

NOTE: DIFFUSER MATERIAL INFORMATION PROVIDED BY CLIENT.

REPORT IS BASED ON 1200 LUMENS PER LAMP. \*

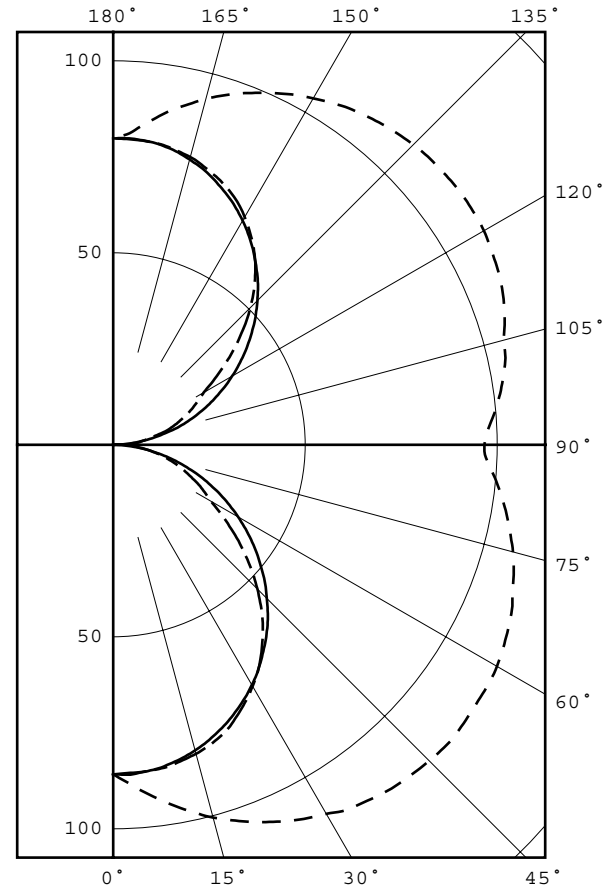


CANDELA DISTRIBUTION						FLUX
	0.0	45.0	90.0	135.0	180.0	
0	86	86	86	86	86	8
5	91	89	86	85	86	25
15	101	94	82	83	83	40
25	108	97	76	77	77	51
35	114	98	68	68	67	57
45	116	96	57	56	53	57
55	116	91	44	42	37	53
65	114	84	31	25	25	45
75	108	76	17	14	15	36
85	100	67	5	5	6	44
90	97	63	0	2	3	51
95	100	66	5	5	6	55
105	105	75	17	14	15	54
115	110	82	30	24	23	48
125	112	87	42	40	35	37
135	111	91	53	54	51	23
145	107	92	63	65	64	8
155	101	91	71	72	73	
165	93	87	77	77	78	
175	83	82	80	80	80	
180	80	80	80	80	80	

ZONAL ZONE	LUMEN LUMENS	%LAMP	%FIXT
0- 30	73	6.1	10.0
0- 40	124	10.3	17.0
0- 60	238	19.9	32.7
0- 90	373	31.1	51.1
90-120	132	11.0	18.0
90-130	186	15.5	25.6
90-150	288	24.0	39.5
90-180	356	29.7	48.9
0-180	729	60.8	100.0

TOTAL LUMINAIRE EFFICIENCY = 60.8 % \*

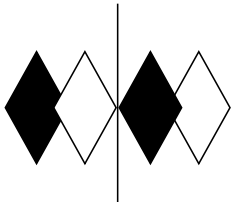
CIE TYPE - GENERAL DIFFUSE  
PLANE : 0-DEG 90-DEG 180-DEG  
SPACING CRITERIA : 1.94 1.25 1.25  
SHIELDING ANGLES : 90 90



LEGEND:  
0-deg -----  
90-deg =====  
180-deg -----

Checked B. HYRE  
Approved N. WHITE  
Lighting Engineer

\* SEE ADDENDUM FOR FURTHER INFORMATION



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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	86	86	86	86	86	86	86	86	86
5.0	91	90	89	87	86	85	85	86	86
10.0	96	95	92	88	84	84	84	85	85
15.0	101	99	94	88	82	82	83	83	83
20.0	105	102	96	88	80	80	80	81	81
25.0	108	105	97	86	76	77	77	78	77
30.0	111	107	98	85	72	73	73	73	73
35.0	114	109	98	82	68	68	68	68	67
40.0	115	110	97	79	62	63	63	62	61
45.0	116	110	96	76	57	58	56	54	53
50.0	117	110	94	71	51	51	49	46	45
55.0	116	109	91	67	44	45	42	38	37
60.0	115	107	88	62	38	38	34	30	29
65.0	114	105	84	56	31	30	25	24	25
70.0	111	103	80	51	24	22	19	20	20
75.0	108	99	76	45	17	15	14	15	15
80.0	104	95	71	40	11	9	10	11	11
85.0	100	91	67	34	5	5	5	6	6
90.0	97	88	63	30	0	1	2	2	3
95.0	100	91	66	34	5	4	5	5	6
100.0	103	94	70	39	11	9	9	9	10
105.0	105	97	75	45	17	15	14	14	15
110.0	108	101	79	50	24	22	18	19	19
115.0	110	103	82	54	30	30	24	23	23
120.0	112	105	85	59	36	36	32	28	27
125.0	112	106	87	63	42	43	40	36	35
130.0	111	106	89	67	48	49	47	44	43
135.0	111	105	91	71	53	54	54	52	51
140.0	109	105	92	74	58	59	59	58	58
145.0	107	103	92	77	63	64	65	64	64
150.0	104	101	92	79	67	68	69	69	69
155.0	101	99	91	80	71	72	72	72	73
160.0	97	95	89	81	74	75	75	75	75
165.0	93	92	87	82	77	77	77	78	78
170.0	89	88	85	81	79	79	79	79	79
175.0	83	83	82	80	80	80	80	80	80
180.0	80	80	80	80	80	80	80	80	80



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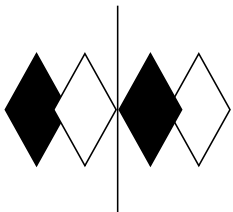
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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	2
5- 10	6
10- 15	10
15- 20	14
20- 25	18
25- 30	22
30- 35	24
35- 40	27
40- 45	28
45- 50	29
50- 55	29
55- 60	28
60- 65	27
65- 70	26
70- 75	24
75- 80	22
80- 85	19
85- 90	17
90- 95	17
95-100	19
100-105	21
105-110	23
110-115	25
115-120	26
120-125	27
125-130	28
130-135	27
135-140	27
140-145	25
145-150	23
150-155	20
155-160	17
160-165	13
165-170	10
170-175	6
175-180	2

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	8
0- 20	33
0- 30	73
0- 40	124
0- 50	181
0- 60	238
0- 70	291
0- 80	336
0- 90	373
0-100	409
0-110	453
0-120	504
0-130	559
0-140	613
0-150	661
0-160	698
0-170	721
0-180	729



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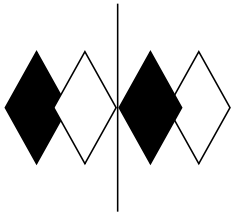
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	65	65	65	65	60	60	60	60	51	51	51	43	43	43	35	35	35	31	
1	58	55	52	49	53	51	48	46	43	41	39	35	34	33	28	27	27	23	
2	52	47	43	39	48	44	40	37	37	34	31	30	28	26	24	23	21	18	
3	47	41	36	32	43	38	33	30	32	28	26	26	24	21	21	19	18	15	
4	43	36	31	27	40	33	29	25	28	24	21	23	20	18	19	16	15	12	
5	40	32	27	23	36	29	25	21	25	21	18	21	18	15	17	14	13	11	
6	36	28	23	19	33	26	22	18	22	18	16	18	16	13	15	13	11	9	
7	34	26	20	17	31	24	19	16	20	16	14	17	14	12	14	11	10	8	
8	31	23	18	15	28	21	17	14	18	15	12	15	12	10	12	10	8	7	
9	29	21	16	13	26	20	15	12	17	13	11	14	11	9	11	9	8	6	
10	27	19	15	12	25	18	14	11	15	12	10	13	10	8	11	8	7	6	

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

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

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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