



# 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

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ISSUE DATE: 05/30/13  
PREPARED FOR: OXYGEN LIGHTING  
CATALOG NUMBER: 2-5140-24

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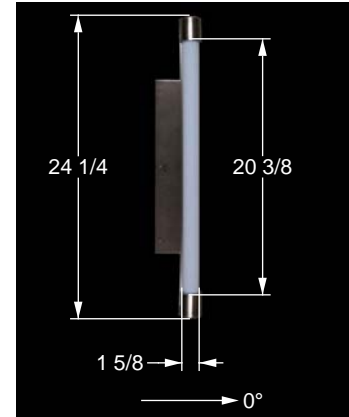
LUMINAIRE: FABRICATED SEMI-SPECULAR METAL HOUSING, FABRICATED SEMI-SPECULAR METAL LAMP MOUNTING BRACKET, TRANSLUCENT WHITE CYLINDRICAL ACRYLIC DIFFUSER WITH FABRICATED SEMI-SPECULAR METAL END CAPS.

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 = 17.9 AT 120.0 VOLTS  
NOTE: ACRYLIC MATERIAL INFORMATION PROVIDED BY CLIENT.

REPORT IS BASED ON 1200 LUMENS PER LAMP. \*

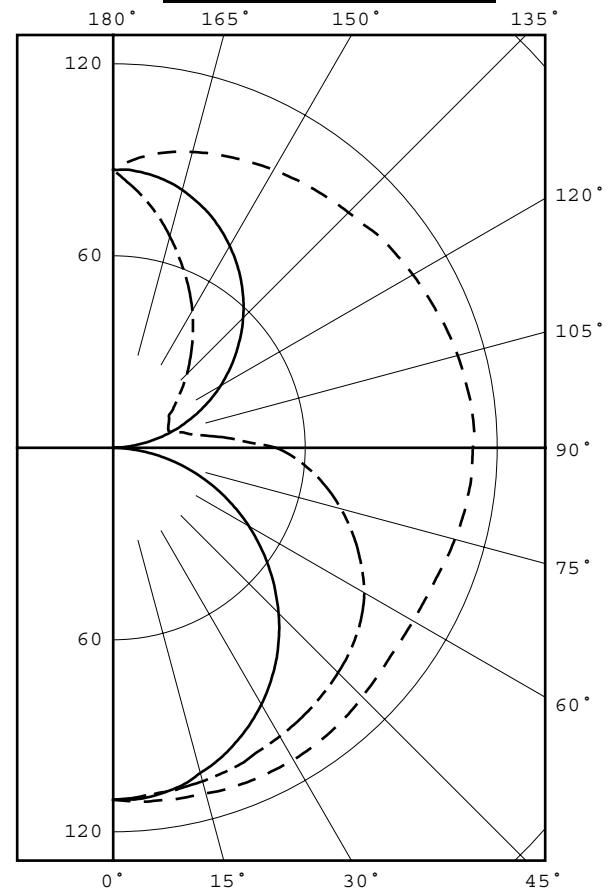


CANDELA DISTRIBUTION						FLUX
	0.0	45.0	90.0	135.0	180.0	
0	110	110	110	110	110	10
5	111	110	110	109	109	30
15	112	109	105	106	108	48
25	113	106	98	101	105	61
35	112	101	87	95	103	69
45	110	94	73	87	99	72
55	108	86	57	78	94	71
65	109	79	40	68	85	66
75	111	75	23	56	74	58
85	112	74	6	42	60	48
90	112	74	0	33	51	45
95	113	74	5	19	36	47
105	112	75	19	11	19	48
115	109	78	32	14	19	43
125	107	82	45	24	24	35
135	104	86	57	36	33	23
145	102	89	68	48	43	8
155	99	91	77	61	56	
165	96	92	83	73	68	
175	91	89	87	83	81	
180	87	87	87	87	87	

ZONAL ZONE	LUMEN LUMENS	%LAMP	%FIXT
0- 30	89	7.4	10.7
0- 40	150	12.5	18.0
0- 60	291	24.3	35.0
0- 90	486	40.5	58.4
90-120	140	11.6	16.8
90-130	188	15.7	22.6
90-150	279	23.3	33.6
90-180	346	28.8	41.6
0-180	832	69.3	100.0

TOTAL LUMINAIRE EFFICIENCY = 69.3 % \*

CIE TYPE - GENERAL DIFFUSE  
PLANE : 0-DEG 90-DEG 180-DEG  
SPACING CRITERIA : 1.55 1.25 1.44  
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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## CANDELA DISTRIBUTION LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	110	110	110	110	110	110	110	110	110
5.0	111	111	110	110	110	109	109	109	109
10.0	112	111	110	109	108	108	108	108	109
15.0	112	111	109	107	105	105	106	107	108
20.0	112	111	108	104	102	102	104	106	107
25.0	113	111	106	100	98	98	101	104	105
30.0	113	110	103	96	93	94	98	102	104
35.0	112	109	101	92	87	88	95	100	103
40.0	111	108	98	86	80	83	91	98	101
45.0	110	106	94	81	73	77	87	96	99
50.0	109	103	90	75	65	70	83	93	97
55.0	108	102	86	68	57	64	78	90	94
60.0	108	101	82	62	49	57	73	86	91
65.0	109	100	79	55	40	50	68	81	85
70.0	109	100	77	49	32	44	62	75	80
75.0	111	101	75	43	23	38	56	69	74
80.0	112	101	75	39	15	31	49	62	67
85.0	112	102	74	37	6	24	42	55	60
90.0	112	102	74	37	0	16	33	46	51
95.0	113	102	74	37	5	7	19	31	36
100.0	112	102	75	39	12	6	12	21	25
105.0	112	101	75	42	19	9	11	15	19
110.0	111	101	76	46	25	13	12	16	18
115.0	109	100	78	51	32	19	14	17	19
120.0	108	100	80	56	39	25	19	19	20
125.0	107	100	82	61	45	31	24	23	24
130.0	106	99	84	66	51	37	30	28	28
135.0	104	99	86	70	57	44	36	33	33
140.0	103	99	87	74	63	50	42	39	38
145.0	102	98	89	78	68	56	48	45	43
150.0	100	98	90	81	73	62	55	51	50
155.0	99	97	91	84	77	68	61	57	56
160.0	97	96	92	87	81	73	67	63	62
165.0	96	95	92	88	83	77	73	69	68
170.0	94	93	91	89	86	81	78	76	75
175.0	91	91	89	88	87	84	83	82	81
180.0	87	87	87	87	87	87	87	87	87



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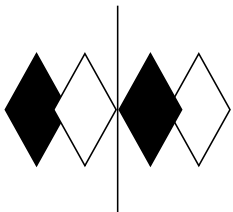
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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	3
5- 10	8
10- 15	13
15- 20	18
20- 25	22
25- 30	26
30- 35	29
35- 40	32
40- 45	34
45- 50	35
50- 55	36
55- 60	36
60- 65	36
65- 70	35
70- 75	34
75- 80	32
80- 85	30
85- 90	28
90- 95	25
95-100	23
100-105	22
105-110	23
110-115	23
115-120	24
120-125	24
125-130	24
130-135	24
135-140	24
140-145	23
145-150	21
150-155	19
155-160	16
160-165	13
165-170	10
170-175	6
175-180	2

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	10
0- 20	41
0- 30	89
0- 40	150
0- 50	219
0- 60	291
0- 70	362
0- 80	428
0- 90	486
0-100	534
0-110	579
0-120	625
0-130	674
0-140	721
0-150	765
0-160	800
0-170	823
0-180	832



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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	76	76	76	76	71	71	71	71	61	61	61	52	52	52	44	44	44	40
1	67	63	59	56	62	58	55	52	50	48	45	43	41	39	36	34	33	29
2	60	54	48	44	55	50	45	41	43	39	36	36	33	31	30	28	26	23
3	54	46	40	36	50	43	38	34	37	33	29	31	28	25	26	23	21	18
4	49	41	34	30	45	38	32	28	32	28	24	27	24	21	23	20	18	15
5	45	36	30	25	42	34	28	24	29	24	21	24	21	18	20	17	15	13
6	41	32	26	21	38	30	24	20	26	21	18	22	18	15	18	15	13	11
7	38	29	23	19	35	27	21	18	23	19	16	20	16	13	17	14	11	10
8	35	26	20	16	33	24	19	15	21	17	14	18	15	12	15	12	10	9
9	33	24	18	14	31	22	17	14	19	15	12	17	13	11	14	11	9	8
10	31	22	16	13	29	20	16	12	18	14	11	15	12	10	13	10	8	7

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