

itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL70252

PAGE: 1 OF 6

ISSUE DATE: 11/17/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CATALOG NUMBER: LTS-02-X-4-X-OC2/MPL-X-120-T5

LUMINAIRE: EXTRUDED SEMI-DIFFUSE METAL HOUSING WITH FABRICATED SEMI-DIFFUSE METAL END CAPS, TWO FORMED METAL SIDE REFLECTORS WITH PREMIUM SPECULAR FINISH, WHITE PAINTED METAL UPPER REFLECTOR WITH 62 UPLIGHT APERTURES OF VARIOUS SHAPES AND SIZES, CLEAR FLAT MICRO-PRISMATIC PLASTIC LENS. LENS PRISMS DOWN.

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

BALLAST: UNIVERSAL B228PUNV-C

MOUNTING: SUSPENDED

TOTAL REFLECTANCE OF PAINT = 89.7 %

THE 0 DEGREE PLANE IS PARALLEL WITH
THE LAMPS.

TOTAL INPUT WATTS = 64.2 AT 120.0 VOLTS

LUMEN TO CANDELA RATIO USED = 9.17

REPORT IS BASED ON 2600 LUMENS PER LAMP. *

CANDELA DISTRIBUTION

FLUX

	0.0	22.5	45.0	67.5	90.0	
0	1442	1442	1442	1442	1442	
5	1442	1443	1443	1437	1436	137
15	1402	1408	1421	1430	1435	401
25	1295	1315	1354	1384	1381	620
35	1126	1169	1209	1243	1257	753
45	757	812	869	878	869	639
55	351	349	345	353	364	320
65	166	186	181	178	183	181
75	104	116	108	104	105	114
85	50	52	51	53	46	52
90	0	0	0	0	0	
95	15	43	29	33	26	38
105	63	92	130	156	151	124
115	118	142	158	185	184	158
125	175	189	200	209	203	176
135	225	237	241	254	243	186
145	265	271	275	281	278	172
155	291	292	298	302	295	136
165	294	295	299	302	301	84
175	258	257	256	253	254	25
180	249	249	249	249	249	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1159	22.3	26.8
0- 40	1911	36.8	44.3
0- 60	2871	55.2	66.5
0- 90	3218	61.9	74.5
90-120	320	6.1	7.4
90-130	496	9.5	11.5
90-150	854	16.4	19.8
90-180	1100	21.2	25.5
0-180	4318	83.0	100.0

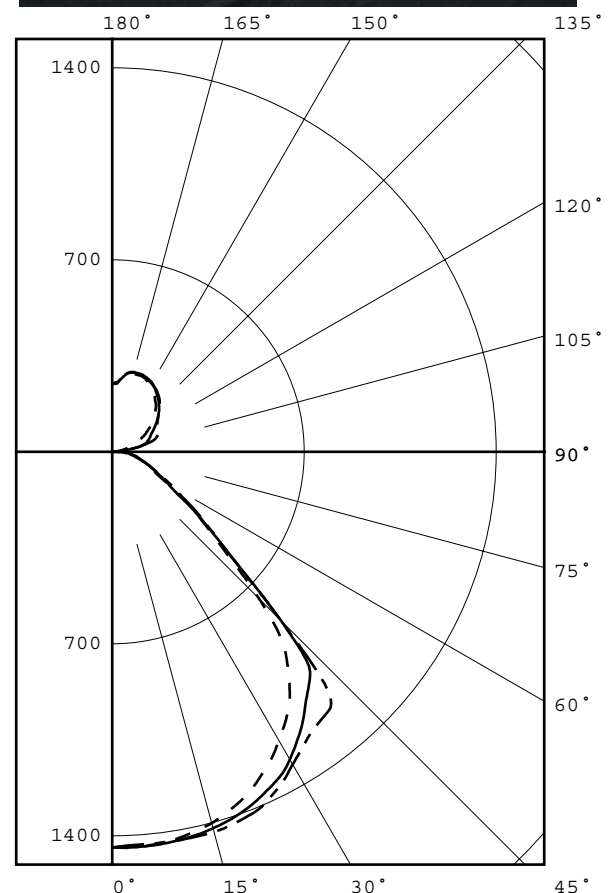
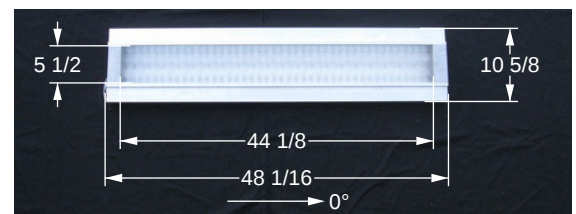
TOTAL LUMINAIRE EFFICIENCY = 83.0 % *

CIE TYPE - SEMI-DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.25 1.35

SHIELDING ANGLES : 90 90



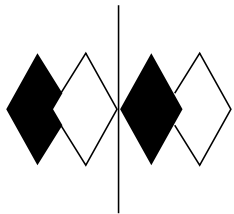
LEGEND:

0-deg: - - - - -
45-deg: = = = = =
90-deg: - - - - -

Checked M. KLOPF
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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL70252

PAGE: 2 OF 6

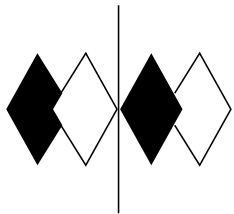
ISSUE DATE: 11/17/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 44.125 5.500

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	6838.	7849.	7849.
55	3908.	3842.	4053.
65	2509.	2735.	2766.
75	2566.	2665.	2591.
85	3664.	3737.	3371.



REPORT NUMBER: ITL70252

PAGE: 3 OF 6

ISSUE DATE: 11/17/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	1442	1442	1442	1442	1442
5.0	1442	1443	1443	1437	1436
10.0	1428	1431	1436	1435	1437
15.0	1402	1408	1421	1430	1435
20.0	1358	1368	1395	1415	1419
25.0	1295	1315	1354	1384	1381
30.0	1215	1247	1295	1316	1316
35.0	1126	1169	1209	1243	1257
40.0	990	1042	1114	1197	1230
45.0	757	812	869	878	869
50.0	493	499	516	537	517
55.0	351	349	345	353	364
60.0	233	246	238	235	258
65.0	166	186	181	178	183
70.0	130	142	139	132	142
75.0	104	116	108	104	105
80.0	86	81	81	80	78
85.0	50	52	51	53	46
90.0	0	0	0	0	0
95.0	15	43	29	33	26
100.0	39	73	92	94	91
105.0	63	92	130	156	151
110.0	90	114	145	177	176
115.0	118	142	158	185	184
120.0	146	166	179	192	191
125.0	175	189	200	209	203
130.0	198	212	222	231	222
135.0	225	237	241	254	243
140.0	244	258	259	270	264
145.0	265	271	275	281	278
150.0	277	283	290	293	287
155.0	291	292	298	302	295
160.0	296	296	302	306	301
165.0	294	295	299	302	301
170.0	283	283	286	283	286
175.0	258	257	256	253	254
180.0	249	249	249	249	249



INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL70252

PAGE: 4 OF 6

ISSUE DATE: 11/17/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	34.
5- 10	103.
10- 15	169.
15- 20	232.
20- 25	287.
25- 30	333.
30- 35	366.
35- 40	387.
40- 45	374.
45- 50	266.
50- 55	185.
55- 60	135.
60- 65	102.
65- 70	80.
70- 75	64.
75- 80	50.
80- 85	36.
85- 90	15.
90- 95	7.
95-100	30.
100-105	55.
105-110	69.
110-115	76.
115-120	82.
120-125	86.
125-130	90.
130-135	93.
135-140	93.
140-145	89.
145-150	83.
150-155	74.
155-160	63.
160-165	49.
165-170	35.
170-175	19.
175-180	6.

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	137.
0- 20	538.
0- 30	1159.
0- 40	1911.
0- 50	2551.
0- 60	2871.
0- 70	3052.
0- 80	3166.
0- 90	3218.
0-100	3256.
0-110	3379.
0-120	3537.
0-130	3714.
0-140	3900.
0-150	4072.
0-160	4208.
0-170	4292.
0-180	4318.



INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL70252

PAGE: 5 OF 6

ISSUE DATE: 11/17/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

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	94	94	94	94	89	89	89	89	81	81	81	73	73	73	65	65	65	62
1	87	83	80	78	82	79	77	74	72	70	68	65	64	62	59	58	57	54
2	80	74	69	65	76	71	66	63	64	61	58	59	56	54	53	51	50	47
3	74	66	60	56	70	63	58	54	58	54	50	53	50	47	48	46	43	41
4	68	59	53	48	64	57	51	47	52	47	44	48	44	41	44	41	38	36
5	63	53	47	42	60	51	45	41	47	42	39	43	39	36	40	37	34	32
6	58	48	42	37	55	47	41	36	43	38	34	40	36	32	37	33	30	29
7	54	44	38	33	51	42	36	32	39	34	31	36	32	29	34	30	27	26
8	50	40	34	30	48	39	33	29	36	31	28	33	29	26	31	27	25	23
9	47	37	31	27	45	36	30	26	33	28	25	31	27	24	29	25	23	21
10	44	34	28	24	42	33	27	24	31	26	23	29	25	22	27	23	21	19

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.



INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA

PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL70252

PAGE: 6 OF 6

ISSUE DATE: 11/17/11

PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

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 the lumen 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