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: ITL76157 PAGE: 1 OF 5
ISSUE DATE: 02/11/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING
CATALOG NUMBER: MLS5-D1-4-X-FC-120-T5
LUMINAIRE: EXTRUDED METAL HOUSING WITH WHITE PAINTED GENERAL INTERIOR FINISH AND FABRICATED WHITE PAINTED METAL END CAPS, FORMED WHITE PAINTED METAL REFLECTOR AND SOCKET MOUNTING BRACKETS, EXTRUDED FROSTED ACRYLIC DIFFUSER. DIFFUSER FROSTED BOTH SIDES.
LAMP: ONE 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENT.
BALLAST: UNIVERSAL B228PUNV-C
MOUNTING: RECESSED
TOTAL REFLECTANCE OF PAINT = 89.1 %
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMP.
TOTAL INPUT WATTS = 30.9 AT 120.0 VOLTS
LUMEN TO CANDELA RATIO USED = 9.17
REPORT IS BASED ON 2600 LUMENS PER LAMP. *

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	802	802	802	802	802	
5	797	799	796	793	794	76
15	760	765	767	770	770	216
25	690	700	707	719	717	326
35	593	602	615	626	627	383
45	471	482	494	501	500	379
55	344	353	359	361	356	318
65	220	226	226	225	221	223
75	114	118	115	116	112	123
85	30	31	31	32	33	36
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	617	23.7	29.7
0- 40	1001	38.5	48.1
0- 60	1697	65.3	81.6
0- 90	2080	80.0	100.0
90-180	0	0.0	0.0
0-180	2080	80.0	100.0

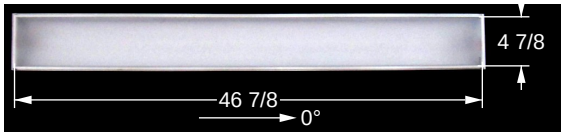
TOTAL LUMINAIRE EFFICIENCY = 80.0 % *

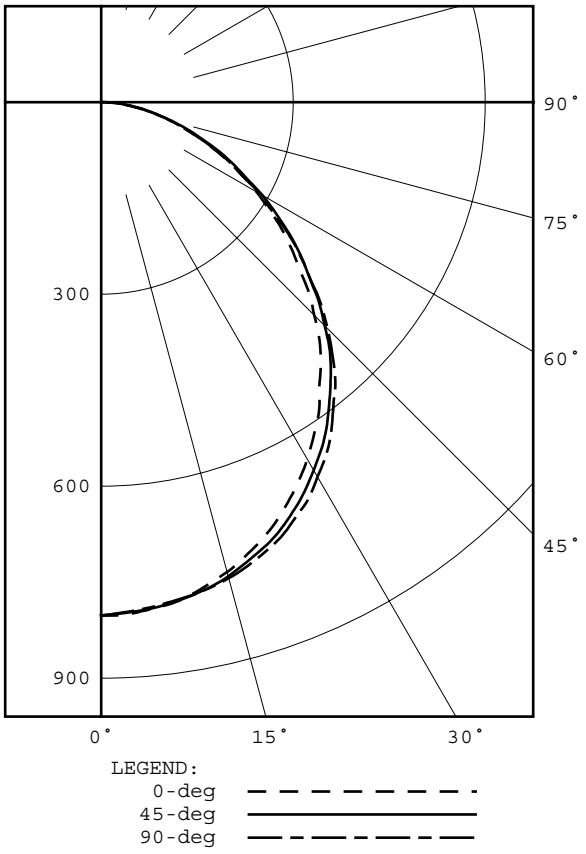
CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 1.20	1.25
SHIELDING ANGLES	: 90	90
LUMINOUS LENGTH	:46.875	4.875

LUMINANCE DATA IN CANDELA/SQ M

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	4518.	4739.	4796.
55	4068.	4245.	4210.
65	3531.	3627.	3547.
75	2988.	3014.	2935.
85	2335.	2413.	2568.





Checked *M KLOPF*
Approved *R BEATTIE*
Lighting Engineer

* SEE ADDENDUM FOR FURTHER INFORMATION

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

ISSUE DATE: 02/11/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	802	802	802	802	802
2.5	802	802	799	798	798
5.0	797	799	796	793	794
7.5	792	793	791	790	789
10.0	784	785	785	784	784
12.5	772	776	777	778	778
15.0	760	765	767	770	770
17.5	745	752	754	761	760
20.0	729	735	741	748	748
22.5	711	719	726	734	735
25.0	690	700	707	719	717
27.5	668	678	687	698	700
30.0	644	656	664	677	676
32.5	618	630	641	653	654
35.0	593	602	615	626	627
37.5	560	574	586	601	596
40.0	534	545	558	569	569
42.5	505	515	529	538	535
45.0	471	482	494	501	500
47.5	440	451	461	468	465
50.0	404	420	424	433	425
52.5	374	385	393	394	391
55.0	344	353	359	361	356
57.5	310	322	324	328	316
60.0	280	288	291	290	287
62.5	248	258	255	260	249
65.0	220	226	226	225	221
67.5	190	197	198	197	192
70.0	163	172	167	170	163
72.5	136	143	141	141	136
75.0	114	118	115	116	112
77.5	89	93	91	92	89
80.0	69	72	71	71	68
82.5	47	52	49	52	49
85.0	30	31	31	32	33
87.5	13	15	16	17	16
90.0	0	0	0	0	0

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: ITL76157
ISSUE DATE: 02/11/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING

5-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 5	19
5- 10	57
10- 15	92
15- 20	124
20- 25	152
25- 30	174
30- 35	188
35- 40	195
40- 45	194
45- 50	185
50- 55	169
55- 60	149
60- 65	124
65- 70	99
70- 75	74
75- 80	49
80- 85	27
85- 90	9

10-DEGREE ZONAL LUMEN SUMMARY

ZONAL	LUMEN SUMMARY
0- 10	76
0- 20	292
0- 30	617
0- 40	1001
0- 50	1379
0- 60	1697
0- 70	1920
0- 80	2043
0- 90	2080

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: ITL76157

ISSUE DATE: 02/11/13

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	95	95	95	95	93	93	93	93	89	89	89	85	85	85	82	82	82	80
1	87	84	80	77	85	82	79	76	78	76	74	75	73	71	72	71	69	68
2	80	73	68	64	78	72	67	63	69	65	61	66	63	60	64	61	59	57
3	73	65	58	53	71	63	58	53	61	56	52	59	55	51	57	53	50	48
4	67	58	51	45	65	56	50	45	54	49	44	53	48	44	51	47	43	42
5	62	52	45	39	60	51	44	39	49	43	39	47	42	38	46	41	38	36
6	57	47	40	34	55	46	39	34	44	38	34	43	38	34	42	37	33	32
7	53	42	35	31	52	42	35	30	40	35	30	39	34	30	38	33	30	28
8	49	39	32	27	48	38	32	27	37	31	27	36	31	27	35	30	27	25
9	46	36	29	25	45	35	29	25	34	28	24	33	28	24	32	28	24	23
10	43	33	27	22	42	32	26	22	32	26	22	31	26	22	30	25	22	21

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.

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

ISSUE DATE: 02/11/13
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