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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: ITL76163 PAGE: 1 OF 5
ISSUE DATE: 02/14/13
PREPARED FOR: PRECISION ARCHITECTURAL LIGHTING
CATALOG NUMBER: MLR5-2-4-X-LP-120-T5
LUMINAIRE: EXTRUDED 3-PIECE 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 CLEAR MICRO-LINEAR PRISMATIC ACRYLIC LENS. LENS PRISMS DOWN AND PARALLEL WITH LAMPS.
LAMPS: TWO 28-WATT T-5 SYLVANIA FP28/841/ECO LINEAR FLUORESCENTS.
BALLAST: UNIVERSAL B228PUNV-C
MOUNTING: RECESSED
TOTAL REFLECTANCE OF PAINT = 89.1 %
THE 0 DEGREE PLANE IS PARALLEL WITH THE LAMPS.
TOTAL INPUT WATTS = 56.2 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	1675	1675	1675	1675	1675	
5	1672	1671	1664	1654	1649	158
15	1609	1605	1589	1573	1566	447
25	1480	1464	1405	1360	1322	644
35	1268	1191	1048	947	903	663
45	921	814	644	537	489	525
55	576	504	347	331	363	377
65	323	274	269	389	425	324
75	151	142	258	363	392	267
85	28	63	114	134	132	106
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LAMP	%FIXT
0- 30	1248	24.0	35.6
0- 40	1912	36.8	54.5
0- 60	2814	54.1	80.2
0- 90	3511	67.5	100.0
90-180	0	0.0	0.0
0-180	3511	67.5	100.0

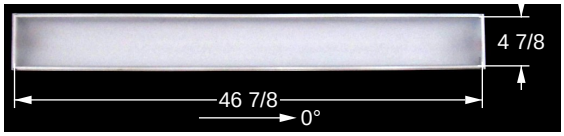
TOTAL LUMINAIRE EFFICIENCY = 67.5 % *

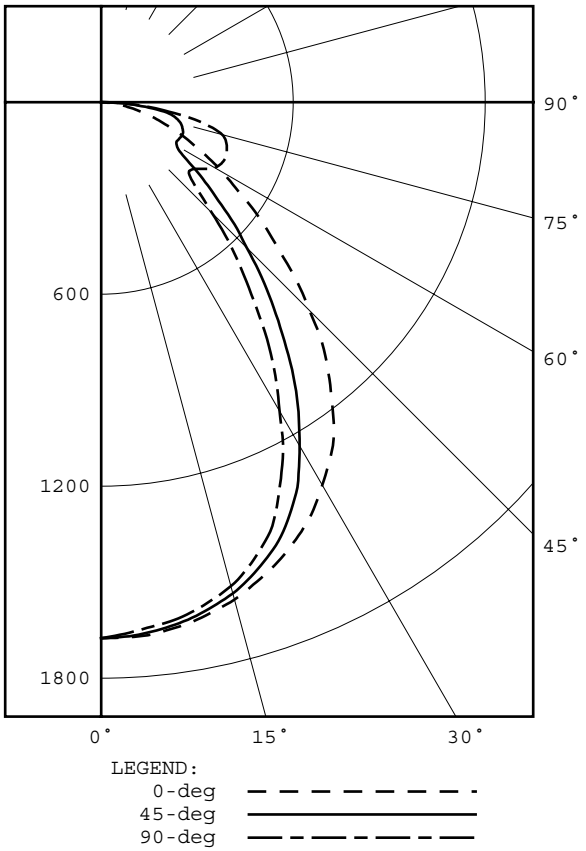
CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 1.23	1.06
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	8835.	6178.	4691.
55	6812.	4104.	4293.
65	5184.	4317.	6821.
75	3957.	6761.	10273.
85	2179.	8872.	10273.





Checked *M KLOPF*
Approved *R BEATTIE*
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
0.0	1675	1675	1675	1675	1675
2.5	1674	1674	1672	1664	1663
5.0	1672	1671	1664	1654	1649
7.5	1661	1660	1652	1641	1637
10.0	1648	1647	1636	1624	1619
12.5	1629	1626	1614	1600	1594
15.0	1609	1605	1589	1573	1566
17.5	1581	1578	1555	1538	1525
20.0	1552	1543	1515	1488	1475
22.5	1518	1505	1468	1431	1412
25.0	1480	1464	1405	1360	1322
27.5	1436	1409	1333	1264	1231
30.0	1382	1347	1240	1167	1115
32.5	1328	1270	1147	1055	1013
35.0	1268	1191	1048	947	903
37.5	1185	1103	940	838	784
40.0	1105	1003	839	728	682
42.5	1023	913	743	636	588
45.0	921	814	644	537	489
47.5	831	727	565	456	414
50.0	732	648	478	386	363
52.5	652	569	410	341	350
55.0	576	504	347	331	363
57.5	498	444	296	343	388
60.0	439	381	273	364	409
62.5	379	328	266	380	420
65.0	323	274	269	389	425
67.5	277	229	273	390	424
70.0	228	187	272	385	418
72.5	189	159	266	376	409
75.0	151	142	258	363	392
77.5	115	123	243	333	346
80.0	84	104	222	277	283
82.5	52	85	177	210	199
85.0	28	63	114	134	132
87.5	10	30	50	61	62
90.0	0	0	0	0	0

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	40
5- 10	118
10- 15	191
15- 20	256
20- 25	307
25- 30	337
30- 35	341
35- 40	322
40- 45	286
45- 50	240
50- 55	200
55- 60	177
60- 65	167
65- 70	157
70- 75	144
75- 80	123
80- 85	81
85- 90	25

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	158
0- 20	605
0- 30	1248
0- 40	1912
0- 50	2437
0- 60	2814
0- 70	3138
0- 80	3405
0- 90	3511

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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	80	80	80	80	79	79	79	79	75	75	75	72	72	72	69	69	69	68
1	73	70	67	65	72	69	66	64	66	64	62	63	61	60	61	59	58	57
2	67	62	57	54	66	61	57	53	58	55	52	56	53	51	54	52	50	48
3	62	55	50	46	60	54	49	45	52	48	44	50	47	44	48	45	43	41
4	57	49	44	40	56	49	43	39	47	42	39	45	41	38	44	40	38	36
5	53	45	39	35	52	44	39	35	43	38	34	41	37	34	40	36	33	32
6	49	41	35	31	48	40	35	31	39	34	30	38	34	30	37	33	30	29
7	46	37	32	28	45	37	31	28	36	31	27	35	30	27	34	30	27	26
8	43	34	29	25	42	34	29	25	33	28	25	32	28	25	31	28	25	23
9	40	32	26	23	39	31	26	23	31	26	23	30	26	23	29	25	23	21
10	38	30	24	21	37	29	24	21	29	24	21	28	24	21	27	23	21	20

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.

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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 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