

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: ITL62711 Page 1 of 1
DATE: 7/26/09
PREPARED FOR: LEDENGIN, INC.

CATALOG NUMBER: LS17-002W14 UJ3 2421 21DEG

LUMINAIRE: CAST BLACK PAINTED METAL UPPER HOUSING, CAST BLACK PAINTED FINNED METAL LOWER HOUSING, BLACK CIRCUIT BOARD WITH ONE LED CHIP, UNFINISHED GENERAL INTERIOR, TRANSLUCENT CONICAL PLASTIC LENS WITH CYLINDRICAL CENTER APERTURE AND HONEYCOMB PATTERN ON LOWER SURFACE.

LAMP: ONE CHIP WITH AN ARRAY OF FOUR WHITE LIGHT EMITTING DIODES (LEDS) AND ONE CLEAR HEMISPHERICAL INTEGRAL LENS, VERTICAL BASE-UP POSITION.

LED DRIVER: INTEGRATED

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT CUSTOMER SPECIFIED INPUT VOLTAGE (24VDC) TO THE LED DRIVER.

INSTRUMENTATION: Topward 3306D DC Power Supply
Yokogawa WT210 Digital Power Meter
Optronics OL770 Spectroradiometer
ITL 1.5 Meter Diameter Integrating Sphere

OBJECT OF TEST: Measure the Correlated Color Temperature (CCT), Color Rendering Index (CRI), Chromaticity Coordinates (x,y), ANSI C78.377 Duv, and input electrical parameters.

PROCEDURE: The luminaire was provided by customer and the LEDs had an unknown number of burn hours. The luminaire was mounted inside the integrating sphere with the luminaire in a base up position (LEDs aimed down). The luminaire was allowed to stabilize at 24 VDC input. After stabilization occurred, CCT, CRI, x/y chromaticity coordinates, ANSI C78.377 Duv, and input electrical data were measured with the luminaire operating in the integrating sphere. In order to measure the mean performance, twenty data sets were recorded and averaged within the OL770. Readings were taken with the luminaire operating at 24 VDC input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. All data are traceable to the National Institute of Standards and Technology.

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Correlated Color Temp CCT (K)	3091
Chromaticity Ordinate x	0.4303
Chromaticity Ordinate y	0.4011
Color Rendering Index (CRI)	80
ANSI C78.377-2008 Duv	0.000
ELECTRICAL	
Input Voltage (Volts DC)	24.0
Input Current (mA DC)	675
Input Power (Watts)	16.2

Checked:	<i>N Gully</i>
Approved:	<i>R Bergin</i>

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

REPORT NUMBER: ITL62708

DATE: 07/24/09

PREPARED FOR: LEDENGIN, INC.

CATALOG NUMBER: LS17-002W14 UJ3 2421 21DEG

LUMINAIRE: CAST BLACK PAINTED METAL UPPER HOUSING, CAST BLACK PAINTED FINNED METAL LOWER HOUSING, BLACK CIRCUIT BOARD WITH ONE LED CHIP, UNFINISHED GENERAL INTERIOR, TRANSLUCENT CONICAL PLASTIC LENS WITH CYLINDRICAL CENTER APERTURE AND HONEYCOMB PATTERN ON LOWER SURFACE.

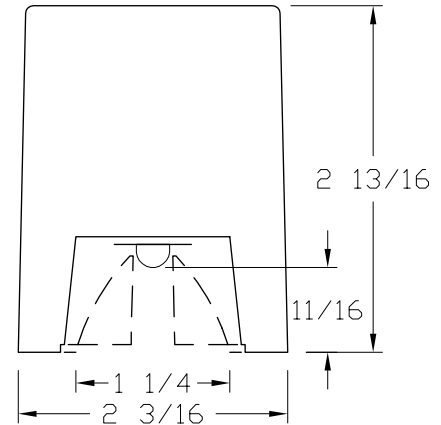
LAMP: ONE CHIP WITH AN ARRAY OF FOUR WHITE LIGHT EMITTING DIODES (LEDS) AND ONE CLEAR HEMISPHERICAL INTEGRAL LENS, VERTICAL BASE-UP POSITION.

TOTAL INPUT WATTS = 16.3 AT 24.0 VOLTS DC

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT CUSTOMER SPECIFIED INPUT VOLTAGE (24VDC) TO THE LED UNIT.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 25.25 FEET



DEG	CANDELA	LUMENS
0	1945	
5	1715	143
15	558	155
25	120	57
35	29	19
45	13	10
55	9	8
65	8	7
75	4	4
85	0	0
90	0	0

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	357	87.4
0- 40	377	92.2
0- 60	396	96.9
0- 90	409	100.0
90-180	0	0.0
0-180	409	100.0

EFFICACY = 25.1 Lm/W

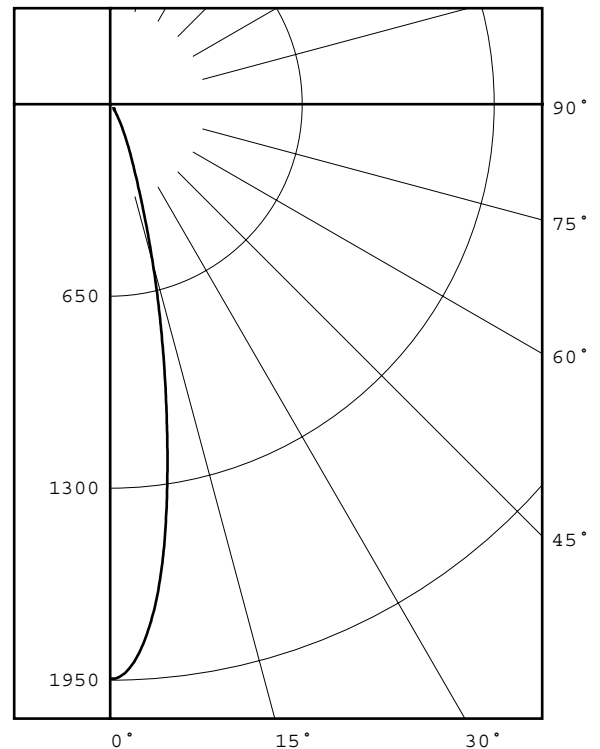
CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.4

LUMINOUS DIAMETER: 1.250

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE
IN DEG

45	23221.
55	19819.
65	23909.
75	19520.
85	0.



Checked *N. WHITE*

Approved *R. BEATTIE*



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: ITL62708
 PREPARED FOR: LEDENGIN, INC.

DATE: 07/24/09

CANDELA DISTRIBUTION

0.0	1945	82.5	1
0.5	1945	85.0	0
1.0	1938	87.5	0
1.5	1926	90.0	0
2.0	1909		
2.5	1888		
3.0	1861		
3.5	1831		
4.0	1795		
4.5	1758		
5.0	1715		
5.5	1669		
6.0	1617		
6.5	1562		
7.0	1502		
7.5	1439		
8.0	1373		
8.5	1307		
9.0	1240		
9.5	1173		
10.0	1107		
10.5	1044		
11.0	982		
11.5	923		
12.0	864		
12.5	809		
13.0	755		
13.5	703		
14.0	653		
14.5	605		
15.0	558		
15.5	514		
16.0	472		
16.5	434		
17.0	398		
17.5	365		
18.0	335		
18.5	309		
19.0	285		
19.5	264		
20.0	244		
22.5	170		
25.0	120		
27.5	82		
30.0	56		
32.5	39		
35.0	29		
37.5	23		
40.0	19		
42.5	16		
45.0	13		
47.5	12		
50.0	11		
52.5	10		
55.0	9		
57.5	9		
60.0	9		
62.5	9		
65.0	8		
67.5	7		
70.0	6		
72.5	5		
75.0	4		
77.5	3		
80.0	2		

ZONAL LUMEN SUMMARY

0- 5	44.
5- 10	100.
10- 15	95.
15- 20	61.
20- 25	36.
25- 30	21.
30- 35	12.
35- 40	8.
40- 45	6.
45- 50	5.
50- 55	4.
55- 60	4.
60- 65	4.
65- 70	4.
70- 75	3.
75- 80	2.
80- 85	1.
85- 90	0.
90- 95	0.
95-100	0.
100-105	0.
105-110	0.
110-115	0.
115-120	0.
120-125	0.
125-130	0.
130-135	0.
135-140	0.
140-145	0.
145-150	0.
150-155	0.
155-160	0.
160-165	0.
165-170	0.
170-175	0.
175-180	0.



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: ITL62708

DATE: 07/24/09

PREPARED FOR: LEDENGIN, INC.

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	120	120	120	120	117	117	117	117	112	112	112	107	107	107	103	103	103	101
1	115	113	111	109	113	111	109	107	107	105	104	103	102	101	99	99	98	96
2	111	107	103	100	109	105	102	99	102	99	97	99	97	95	96	94	93	91
3	107	101	97	94	105	100	96	93	97	94	92	95	93	90	93	91	89	88
4	103	97	92	89	101	96	92	88	94	90	87	92	89	86	90	88	86	84
5	100	93	88	85	98	92	88	85	90	87	84	89	86	83	87	85	82	81
6	96	89	85	81	95	89	84	81	87	84	81	86	83	80	85	82	80	79
7	93	86	82	79	92	86	81	78	85	81	78	84	80	78	83	79	77	76
8	91	84	79	76	90	83	79	76	82	78	75	81	78	75	80	77	75	74
9	88	81	77	74	87	81	76	73	80	76	73	79	76	73	78	75	73	72
10	86	79	74	71	85	78	74	71	78	74	71	77	74	71	76	73	71	70

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.