

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

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REPORT NUMBER: ITL68902

ISSUE DATE: 06/21/11

PREPARED FOR: BEGHELLI

CATALOG NUMBER: LED R1 12 LED

LUMINAIRE: MOLDED WHITE PLASTIC HOUSING, TWO MOLDED WHITE PLASTIC SWIVEL HEAD ASSEMBLIES, EACH HEAD ASSEMBLY CONSISTS OF: MOLDED WHITE PLASTIC HOUSING, ONE CIRCUIT BOARD WITH 12 LEDS, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND ONE APERTURE PER LED, CLEAR PRISMATIC PLASTIC LENS. ONLY ONE HEAD ASSEMBLY ENERGIZED FOR THIS TEST.

LAMPS: TWELVE WHITE LIGHT EMITTING DIODES (LEDs) EACH WITH CLEAR CYLINDRICAL INTEGRAL LENS WITH HEMISPHERICAL END, VERTICAL BASE-UP POSITION.

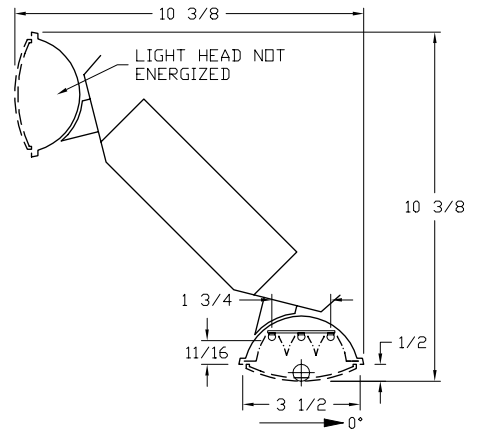
TOTAL INPUT WATTS = 0.788 AT 3.60 VOLTS DC

MOUNTING: SURFACE

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT CLIENT REQUESTED INPUT VOLTAGE (3.6VDC) TO THE LAMP ASSEMBLY.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 25.25 FEET



CANDELA DISTRIBUTION

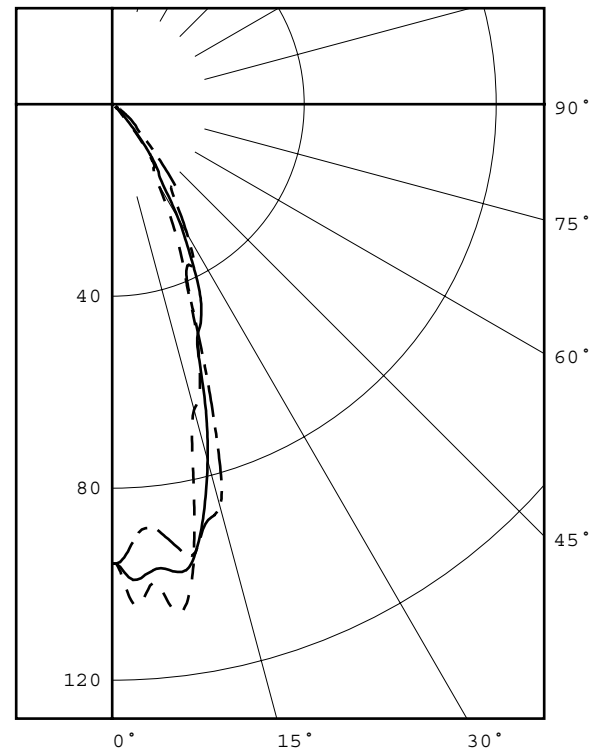
FLUX

| | | | | | | |
|-----|-------|------|------|------|------|------|
| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 | |
| 0 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | |
| 5 | 100.0 | 98.6 | 97.5 | 94.7 | 88.6 | 9.4 |
| 15 | 65.9 | 60.4 | 76.8 | 86.7 | 86.7 | 20.7 |
| 25 | 33.3 | 33.8 | 43.1 | 35.8 | 37.1 | 17.3 |
| 35 | 15.1 | 12.0 | 16.4 | 20.5 | 21.4 | 10.7 |
| 45 | 2.3 | 3.3 | 3.3 | 9.7 | 7.6 | 4.5 |
| 55 | 0.8 | 0.9 | 1.4 | 2.4 | 2.6 | 1.5 |
| 65 | 0.5 | 0.5 | 0.6 | 0.8 | 1.2 | 0.7 |
| 75 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.4 |
| 85 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| 90 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 |
| 95 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 |
| 105 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 175 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

ZONAL LUMEN SUMMARY

| ZONE | LUMENS | % FIXT |
|--------|--------|--------|
| 0- 30 | 47.4 | 72.5 |
| 0- 40 | 58.1 | 88.8 |
| 0- 60 | 64.1 | 98.0 |
| 0- 90 | 65.4 | 99.9 |
| 90-120 | 0.0 | 0.1 |
| 90-130 | 0.0 | 0.1 |
| 90-150 | 0.0 | 0.1 |
| 90-180 | 0.0 | 0.1 |
| 0-180 | 65.4 | 100.0 |

EFFICACY = 83.0 Lm/W
CIE TYPE - DIRECT



LEGEND:
0-deg: - - - - -
45-deg: = = = = =
90-deg: - . - . - .

Checked M. KLOPF
Approved R. BEATTIE
Lighting Engineer



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PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 0.68 0.71



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CANDELA DISTRIBUTION
LATERAL ANGLE

| | | | | | |
|-------|-------|-------|------|-------|------|
| 0.0 | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
| 0.0 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 |
| 0.5 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 |
| 1.0 | 97.4 | 97.1 | 96.4 | 95.7 | 95.4 |
| 1.5 | 100.1 | 99.5 | 97.6 | 95.4 | 94.5 |
| 2.0 | 102.8 | 101.7 | 98.6 | 94.9 | 93.3 |
| 2.5 | 104.4 | 103.0 | 99.2 | 94.4 | 91.8 |
| 3.0 | 104.6 | 103.2 | 99.2 | 94.0 | 90.7 |
| 3.5 | 103.7 | 102.3 | 98.9 | 93.8 | 89.5 |
| 4.0 | 102.1 | 101.0 | 98.3 | 93.6 | 88.8 |
| 4.5 | 100.6 | 99.5 | 97.9 | 93.9 | 88.6 |
| 5.0 | 100.0 | 98.6 | 97.5 | 94.7 | 88.6 |
| 5.5 | 100.8 | 98.6 | 97.2 | 95.5 | 88.8 |
| 6.0 | 102.5 | 99.8 | 97.2 | 96.4 | 89.1 |
| 6.5 | 104.8 | 101.8 | 97.4 | 97.2 | 89.9 |
| 7.0 | 106.4 | 103.3 | 97.8 | 98.3 | 90.8 |
| 7.5 | 106.9 | 103.8 | 98.2 | 99.3 | 91.6 |
| 8.0 | 106.4 | 103.4 | 98.4 | 99.7 | 92.6 |
| 8.5 | 105.1 | 102.0 | 98.5 | 100.0 | 93.5 |
| 9.0 | 103.1 | 99.8 | 98.3 | 100.0 | 94.6 |
| 9.5 | 100.6 | 97.1 | 97.7 | 99.7 | 95.1 |
| 10.0 | 97.5 | 93.9 | 96.6 | 99.0 | 95.5 |
| 11.0 | 89.7 | 86.6 | 93.5 | 96.0 | 93.7 |
| 12.0 | 81.7 | 78.8 | 89.9 | 92.8 | 90.7 |
| 13.0 | 74.2 | 71.3 | 85.7 | 89.9 | 88.9 |
| 14.0 | 68.8 | 64.7 | 81.4 | 87.7 | 88.2 |
| 15.0 | 65.9 | 60.4 | 76.8 | 86.7 | 86.7 |
| 16.0 | 64.6 | 58.3 | 72.0 | 85.2 | 82.8 |
| 17.0 | 62.5 | 56.7 | 66.8 | 81.5 | 75.8 |
| 18.0 | 59.1 | 54.7 | 60.8 | 76.4 | 68.2 |
| 19.0 | 55.5 | 52.5 | 55.2 | 69.6 | 61.1 |
| 20.0 | 51.7 | 49.6 | 51.8 | 61.9 | 54.4 |
| 22.5 | 40.6 | 41.7 | 48.4 | 45.0 | 41.4 |
| 25.0 | 33.3 | 33.8 | 43.1 | 35.8 | 37.1 |
| 27.5 | 26.0 | 27.1 | 34.9 | 32.1 | 37.2 |
| 30.0 | 18.9 | 20.3 | 27.6 | 30.7 | 31.2 |
| 32.5 | 16.0 | 14.6 | 19.2 | 25.7 | 25.4 |
| 35.0 | 15.1 | 12.0 | 16.4 | 20.5 | 21.4 |
| 37.5 | 11.0 | 10.3 | 12.3 | 16.8 | 22.0 |
| 40.0 | 7.0 | 7.7 | 8.0 | 16.2 | 16.2 |
| 42.5 | 3.1 | 6.4 | 5.2 | 13.9 | 11.5 |
| 45.0 | 2.3 | 3.3 | 3.3 | 9.7 | 7.6 |
| 47.5 | 1.5 | 2.3 | 2.4 | 5.8 | 6.6 |
| 50.0 | 1.2 | 1.4 | 1.8 | 4.0 | 5.3 |
| 52.5 | 1.0 | 1.1 | 1.4 | 3.1 | 3.8 |
| 55.0 | 0.8 | 0.9 | 1.4 | 2.4 | 2.6 |
| 57.5 | 0.7 | 0.8 | 1.1 | 1.6 | 1.9 |
| 60.0 | 0.6 | 0.7 | 0.8 | 1.2 | 1.6 |
| 62.5 | 0.5 | 0.6 | 0.7 | 1.0 | 1.3 |
| 65.0 | 0.5 | 0.5 | 0.6 | 0.8 | 1.2 |
| 67.5 | 0.4 | 0.4 | 0.5 | 0.7 | 1.1 |
| 70.0 | 0.4 | 0.4 | 0.5 | 0.6 | 1.0 |
| 72.5 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 |
| 75.0 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 |
| 77.5 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 |
| 80.0 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| 82.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |
| 85.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 |
| 87.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 |
| 90.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 |
| 92.5 | 0.0 | 0.0 | 0.1 | 0.1 | 0.2 |
| 95.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 97.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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CANDELA DISTRIBUTION
 LATERAL ANGLE

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 |
|-------|-----|------|------|------|------|
| 107.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 140.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 170.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 175.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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5-DEGREE
 ZONAL LUMEN SUMMARY

| | |
|---------|------|
| 0- 5 | 2.3 |
| 5- 10 | 7.1 |
| 10- 15 | 10.0 |
| 15- 20 | 10.7 |
| 20- 25 | 9.3 |
| 25- 30 | 7.9 |
| 30- 35 | 6.1 |
| 35- 40 | 4.6 |
| 40- 45 | 3.0 |
| 45- 50 | 1.5 |
| 50- 55 | 0.9 |
| 55- 60 | 0.6 |
| 60- 65 | 0.4 |
| 65- 70 | 0.3 |
| 70- 75 | 0.2 |
| 75- 80 | 0.2 |
| 80- 85 | 0.1 |
| 85- 90 | 0.1 |
| 90- 95 | 0.0 |
| 95-100 | 0.0 |
| 100-105 | 0.0 |
| 105-110 | 0.0 |
| 110-115 | 0.0 |
| 115-120 | 0.0 |
| 120-125 | 0.0 |
| 125-130 | 0.0 |
| 130-135 | 0.0 |
| 135-140 | 0.0 |
| 140-145 | 0.0 |
| 145-150 | 0.0 |
| 150-155 | 0.0 |
| 155-160 | 0.0 |
| 160-165 | 0.0 |
| 165-170 | 0.0 |
| 170-175 | 0.0 |
| 175-180 | 0.0 |

10-DEGREE
 ZONAL LUMEN SUMMARY

| | |
|-------|------|
| 0- 10 | 9.4 |
| 0- 20 | 30.1 |
| 0- 30 | 47.4 |
| 0- 40 | 58.1 |
| 0- 50 | 62.6 |
| 0- 60 | 64.1 |
| 0- 70 | 64.8 |
| 0- 80 | 65.2 |
| 0- 90 | 65.4 |
| 0-100 | 65.4 |
| 0-110 | 65.4 |
| 0-120 | 65.4 |
| 0-130 | 65.4 |
| 0-140 | 65.4 |
| 0-150 | 65.4 |
| 0-160 | 65.4 |
| 0-170 | 65.4 |
| 0-180 | 65.4 |



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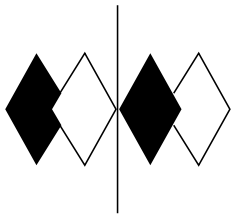
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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 113 | 111 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 103 | 101 | 101 | 101 | 99 | 98 | 97 | 96 | 95 | 93 |
| 2 | 108 | 103 | 99 | 95 | 106 | 101 | 98 | 94 | 98 | 95 | 92 | 95 | 93 | 90 | 92 | 90 | 88 | 87 | 87 |
| 3 | 103 | 96 | 91 | 87 | 101 | 95 | 90 | 87 | 92 | 88 | 85 | 90 | 86 | 84 | 87 | 85 | 82 | 81 | 81 |
| 4 | 98 | 90 | 85 | 80 | 96 | 89 | 84 | 80 | 87 | 82 | 79 | 85 | 81 | 78 | 83 | 80 | 77 | 76 | 76 |
| 5 | 93 | 85 | 79 | 75 | 91 | 84 | 78 | 74 | 82 | 77 | 74 | 80 | 76 | 73 | 79 | 75 | 72 | 71 | 71 |
| 6 | 88 | 80 | 74 | 70 | 87 | 79 | 73 | 69 | 77 | 73 | 69 | 76 | 72 | 68 | 75 | 71 | 68 | 67 | 67 |
| 7 | 84 | 75 | 69 | 65 | 83 | 75 | 69 | 65 | 73 | 68 | 65 | 72 | 68 | 64 | 71 | 67 | 64 | 63 | 63 |
| 8 | 81 | 71 | 65 | 62 | 79 | 71 | 65 | 61 | 70 | 65 | 61 | 69 | 64 | 61 | 68 | 64 | 61 | 59 | 59 |
| 9 | 77 | 68 | 62 | 58 | 76 | 67 | 62 | 58 | 66 | 61 | 58 | 65 | 61 | 58 | 65 | 60 | 57 | 56 | 56 |
| 10 | 74 | 64 | 59 | 55 | 73 | 64 | 59 | 55 | 63 | 58 | 55 | 62 | 58 | 55 | 62 | 58 | 55 | 53 | 53 |

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.



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