

Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: FAIL-SAFE

Report Number: P564024

Luminaire Tested: FSR-24-4-LD4-4STD-35-UNV-80-88-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P564024  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-5)  
Test Lab: INNOVATION CENTER  
Issue Date: 7/20/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: FSR-24-4-LD4-4STD-35-UNV-80-88-EDD-90  
Description: 2X4 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .500 CLEAR PC ENVIRON  
SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

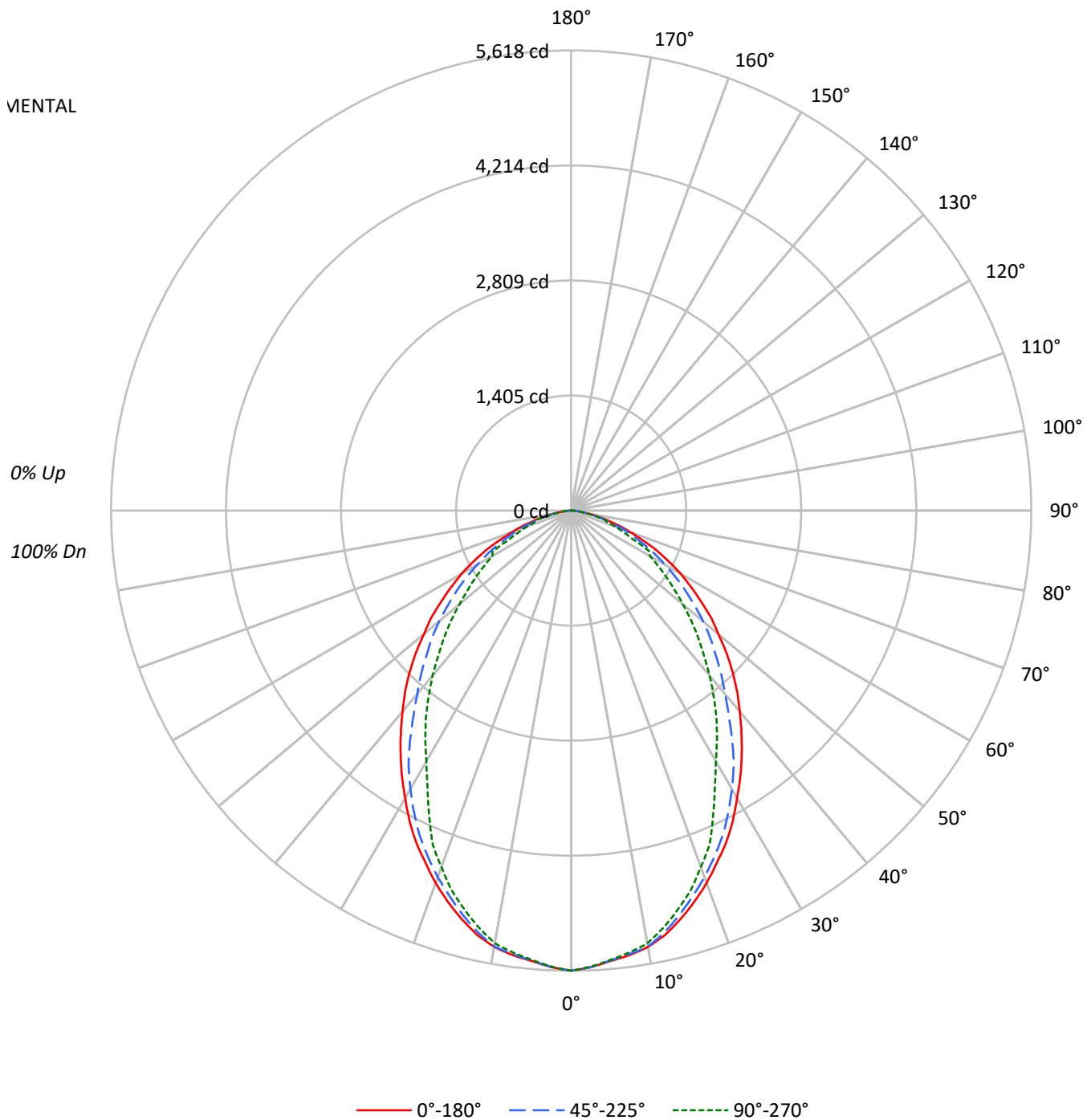
Lumens per Lamp: N/A  
Luminaire Lumens: 11028.0 lumens  
Efficiency: N/A  
Efficacy: 82.8 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 133.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Luminous Intensity Polar Plot





TEST NUMBER: P564024

CATALOG NUMBER: FSR-24-4-LD4-4STD-35-UNV-80-88-EDD-90

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |     |  |  |  |  |  |  |  |  |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|---|--|--|--|--|--|--|-----|--|--|--|--|--|--|--|--|---|
| RF  | 20  |     |     |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     | 20 |    |    |    |    |    |    |    |    | 20 |    |   |  |  |  |  |  |  | 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  | 50  | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |  |  |  |  |  |  |     |  |  |  |  |  |  |  |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  |     |  |  |  |  |  |  |  |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 100 |  |  |  |  |  |  |  |  |   |
| 1   | 110 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 87  |  |  |  |  |  |  |  |  |   |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 75  |  |  |  |  |  |  |  |  |   |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 65  |  |  |  |  |  |  |  |  |   |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 56  |  |  |  |  |  |  |  |  |   |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 50  |  |  |  |  |  |  |  |  |   |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 44  |  |  |  |  |  |  |  |  |   |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 40  |  |  |  |  |  |  |  |  |   |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 36  |  |  |  |  |  |  |  |  |   |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 33  |  |  |  |  |  |  |  |  |   |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |    |    |    |    |    |    |    |    |    |    |    |   |  |  |  |  |  |  | 30  |  |  |  |  |  |  |  |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 7558 | 7558 | 7558 |
| 5°  | 7456 | 7447 | 7438 |
| 10° | 7391 | 7382 | 7329 |
| 15° | 7192 | 7119 | 7020 |
| 20° | 6928 | 6816 | 6630 |
| 25° | 6643 | 6498 | 6093 |
| 30° | 6296 | 6094 | 5489 |
| 35° | 5963 | 5632 | 5078 |
| 40° | 5624 | 5133 | 4620 |
| 45° | 5301 | 4745 | 4177 |
| 50° | 4907 | 4404 | 3725 |
| 55° | 4540 | 3991 | 3336 |
| 60° | 4159 | 3565 | 2988 |
| 65° | 3660 | 3122 | 2647 |
| 70° | 3015 | 2734 | 2248 |
| 75° | 2397 | 2093 | 2194 |
| 80° | 1610 | 1509 | 1409 |
| 85° | 1002 | 1203 | 1403 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 5301 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 522.9   | 4.7       |
| 10°-20°   | 1435.1  | 13.0      |
| 20°-30°   | 1986.8  | 18.0      |
| 30°-40°   | 2118.5  | 19.2      |
| 40°-50°   | 1932.7  | 17.5      |
| 50°-60°   | 1514.1  | 13.7      |
| 60°-70°   | 986.8   | 8.9       |
| 70°-80°   | 437.2   | 4.0       |
| 80°-90°   | 93.9    | 0.9       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-30°    | 3944.8  | 35.8      |
| 0°-40°    | 6063.3  | 55.0      |
| 0°-60°    | 9510.1  | 86.2      |
| 0°-90°    | 11028.0 | 100.0     |
| 90°-120°  | 0.0     | 0.0       |
| 90°-150°  | 0.0     | 0.0       |
| 90°-180°  | 0.0     | 0.0       |
| 0°-180°   | 11028.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5618 | 5618  | 5618 | 5618  | 5618 |      |
| 5°  | 5520 | 5514  | 5514 | 5507  | 5507 | 524  |
| 15° | 5163 | 5163  | 5111 | 5059  | 5040 | 1451 |
| 25° | 4474 | 4449  | 4377 | 4221  | 4104 | 2054 |
| 35° | 3630 | 3604  | 3429 | 3169  | 3091 | 2270 |
| 45° | 2786 | 2728  | 2494 | 2286  | 2195 | 2146 |
| 55° | 1935 | 1877  | 1702 | 1500  | 1422 | 1736 |
| 65° | 1150 | 1084  | 981  | 1000  | 831  | 1133 |
| 75° | 461  | 429   | 403  | 383   | 422  | 494  |
| 85° | 65   | 71    | 78   | 84    | 91   | 90   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5617.5 | 5617.5 | 5617.5 | 5617.5 | 5617.5 |
| 2.5°  | 5578.6 | 5578.6 | 5578.6 | 5572.1 | 5572.1 |
| 5°    | 5520.1 | 5513.6 | 5513.6 | 5507.1 | 5507.1 |
| 7.5°  | 5474.6 | 5468.1 | 5461.7 | 5455.2 | 5442.2 |
| 10°   | 5409.7 | 5409.7 | 5403.2 | 5370.7 | 5364.2 |
| 12.5° | 5305.8 | 5299.3 | 5273.3 | 5227.9 | 5214.9 |
| 15°   | 5162.9 | 5162.9 | 5111.0 | 5059.0 | 5039.5 |
| 17.5° | 5007.1 | 5000.6 | 4935.6 | 4883.7 | 4857.7 |
| 20°   | 4838.2 | 4825.2 | 4760.3 | 4675.9 | 4630.4 |
| 22.5° | 4649.9 | 4649.9 | 4571.9 | 4461.5 | 4416.1 |
| 25°   | 4474.5 | 4448.6 | 4377.1 | 4221.3 | 4104.4 |
| 27.5° | 4273.2 | 4234.2 | 4156.3 | 3935.5 | 3799.1 |
| 30°   | 4052.4 | 4032.9 | 3922.5 | 3636.8 | 3532.9 |
| 32.5° | 3844.6 | 3812.1 | 3695.2 | 3396.5 | 3312.1 |
| 35°   | 3630.3 | 3604.3 | 3429.0 | 3169.2 | 3091.3 |
| 37.5° | 3416.0 | 3383.5 | 3162.7 | 2954.9 | 2857.5 |
| 40°   | 3201.7 | 3162.7 | 2922.4 | 2734.1 | 2630.2 |
| 42.5° | 3000.3 | 2948.4 | 2714.6 | 2513.3 | 2396.4 |
| 45°   | 2786.0 | 2727.6 | 2493.8 | 2286.0 | 2195.1 |
| 47.5° | 2571.7 | 2519.8 | 2305.5 | 2091.1 | 1987.2 |
| 50°   | 2344.4 | 2299.0 | 2104.1 | 1889.8 | 1779.4 |
| 52.5° | 2156.1 | 2084.7 | 1896.3 | 1682.0 | 1591.1 |
| 55°   | 1935.3 | 1876.8 | 1701.5 | 1500.2 | 1422.2 |
| 57.5° | 1734.0 | 1675.5 | 1513.2 | 1324.8 | 1259.9 |
| 60°   | 1545.6 | 1461.2 | 1324.8 | 1162.5 | 1110.5 |
| 62.5° | 1337.8 | 1272.9 | 1156.0 | 1019.6 | 1084.5 |
| 65°   | 1149.5 | 1084.5 | 980.6  | 1000.1 | 831.3  |
| 67.5° | 941.7  | 909.2  | 818.3  | 727.4  | 701.4  |
| 70°   | 766.3  | 727.4  | 694.9  | 597.5  | 571.5  |
| 72.5° | 610.5  | 571.5  | 526.0  | 474.1  | 454.6  |
| 75°   | 461.1  | 428.6  | 402.6  | 383.2  | 422.1  |
| 77.5° | 318.2  | 305.2  | 285.7  | 266.3  | 259.8  |
| 80°   | 207.8  | 201.3  | 194.8  | 188.3  | 181.8  |
| 82.5° | 123.4  | 123.4  | 123.4  | 123.4  | 123.4  |
| 85°   | 64.9   | 71.4   | 77.9   | 84.4   | 90.9   |
| 87.5° | 39.0   | 39.0   | 45.5   | 52.0   | 58.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)