

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: P562899

Luminaire Tested: FSR-24-4-LD4-2STD-35-UNV-82-85-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562899  
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-LD4-2STD-35-UNV-82-85-EDD  
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .187 CLEAR PC ENVIRONMENTAL SI  
LENSES WITH, 80 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

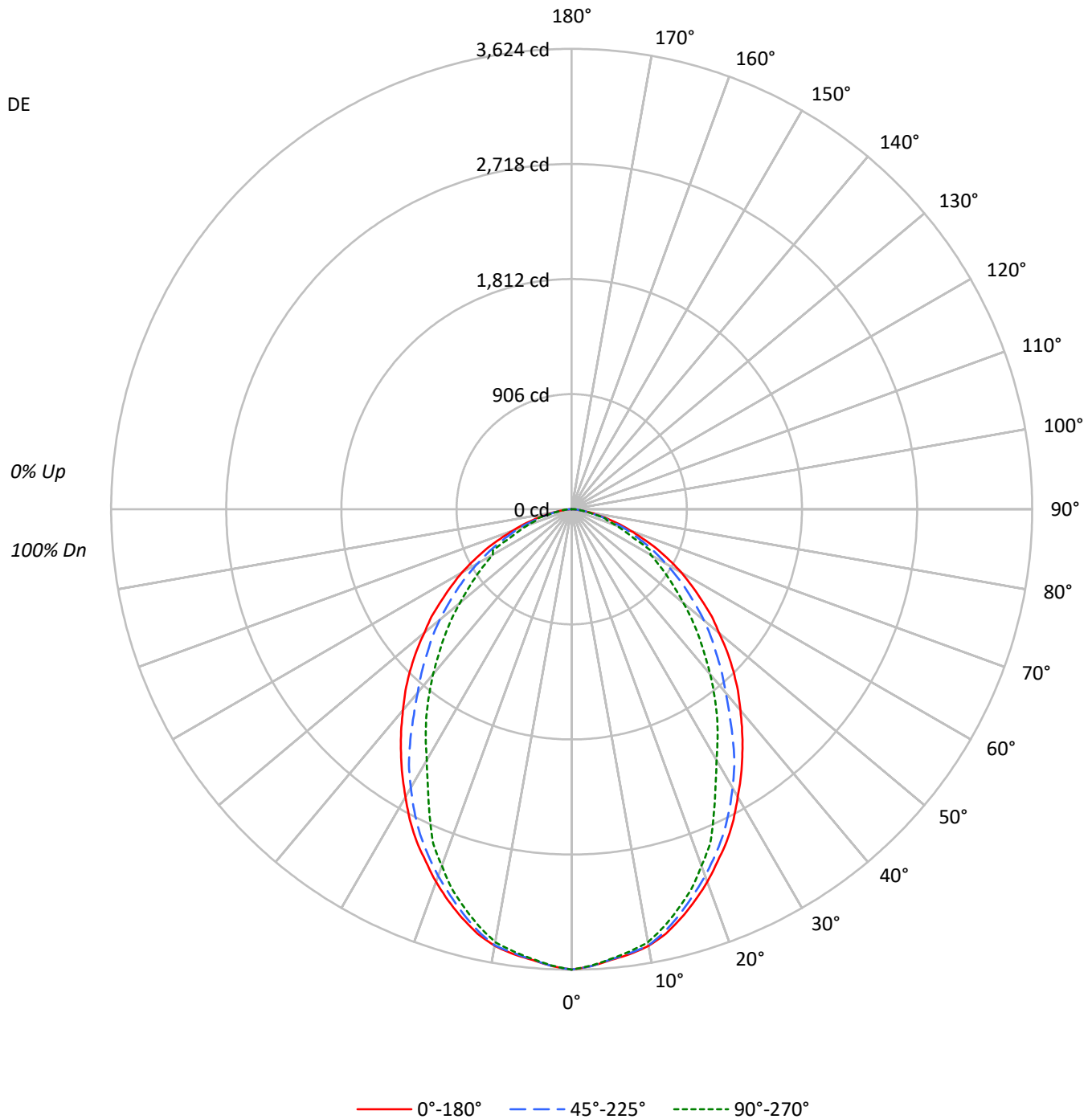
Lumens per Lamp: N/A  
Luminaire Lumens: 7114.0 lumens  
Efficiency: N/A  
Efficacy: 106.8 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 66.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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





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

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4876 | 4876 | 4876 |
| 5°  | 4809 | 4804 | 4798 |
| 10° | 4768 | 4762 | 4728 |
| 15° | 4639 | 4593 | 4528 |
| 20° | 4469 | 4397 | 4277 |
| 25° | 4285 | 4192 | 3931 |
| 30° | 4061 | 3931 | 3541 |
| 35° | 3846 | 3633 | 3275 |
| 40° | 3628 | 3311 | 2980 |
| 45° | 3420 | 3061 | 2694 |
| 50° | 3166 | 2841 | 2403 |
| 55° | 2928 | 2575 | 2152 |
| 60° | 2683 | 2300 | 1928 |
| 65° | 2361 | 2014 | 1707 |
| 70° | 1945 | 1764 | 1450 |
| 75° | 1546 | 1350 | 1416 |
| 80° | 1039 | 974  | 909  |
| 85° | 647  | 777  | 906  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 3420 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 337.3  | 4.7       |
| 10°-20°   | 925.8  | 13.0      |
| 20°-30°   | 1281.7 | 18.0      |
| 30°-40°   | 1366.6 | 19.2      |
| 40°-50°   | 1246.7 | 17.5      |
| 50°-60°   | 976.7  | 13.7      |
| 60°-70°   | 636.6  | 8.9       |
| 70°-80°   | 282.0  | 4.0       |
| 80°-90°   | 60.6   | 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°    | 2544.7 | 35.8      |
| 0°-40°    | 3911.3 | 55.0      |
| 0°-60°    | 6134.8 | 86.2      |
| 0°-90°    | 7114.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 7114.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3624 | 3624  | 3624 | 3624  | 3624 |      |
| 5°  | 3561 | 3557  | 3557 | 3553  | 3553 | 338  |
| 15° | 3330 | 3330  | 3297 | 3264  | 3251 | 936  |
| 25° | 2886 | 2870  | 2824 | 2723  | 2648 | 1325 |
| 35° | 2342 | 2325  | 2212 | 2044  | 1994 | 1464 |
| 45° | 1797 | 1760  | 1609 | 1475  | 1416 | 1384 |
| 55° | 1248 | 1211  | 1098 | 968   | 918  | 1120 |
| 65° | 742  | 700   | 633  | 645   | 536  | 731  |
| 75° | 297  | 276   | 260  | 247   | 272  | 319  |
| 85° | 42   | 46    | 50   | 54    | 59   | 58   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3623.8 | 3623.8 | 3623.8 | 3623.8 | 3623.8 |
| 2.5°  | 3598.6 | 3598.6 | 3598.6 | 3594.5 | 3594.5 |
| 5°    | 3560.9 | 3556.7 | 3556.7 | 3552.6 | 3552.6 |
| 7.5°  | 3531.6 | 3527.4 | 3523.2 | 3519.0 | 3510.7 |
| 10°   | 3489.7 | 3489.7 | 3485.5 | 3464.6 | 3460.4 |
| 12.5° | 3422.7 | 3418.5 | 3401.7 | 3372.4 | 3364.0 |
| 15°   | 3330.5 | 3330.5 | 3297.0 | 3263.5 | 3250.9 |
| 17.5° | 3230.0 | 3225.8 | 3183.9 | 3150.4 | 3133.6 |
| 20°   | 3121.1 | 3112.7 | 3070.8 | 3016.3 | 2987.0 |
| 22.5° | 2999.6 | 2999.6 | 2949.3 | 2878.1 | 2848.7 |
| 25°   | 2886.5 | 2869.7 | 2823.6 | 2723.1 | 2647.7 |
| 27.5° | 2756.6 | 2731.4 | 2681.2 | 2538.7 | 2450.8 |
| 30°   | 2614.1 | 2601.6 | 2530.4 | 2346.0 | 2279.0 |
| 32.5° | 2480.1 | 2459.1 | 2383.7 | 2191.0 | 2136.6 |
| 35°   | 2341.8 | 2325.1 | 2212.0 | 2044.4 | 1994.1 |
| 37.5° | 2203.6 | 2182.6 | 2040.2 | 1906.1 | 1843.3 |
| 40°   | 2065.3 | 2040.2 | 1885.2 | 1763.7 | 1696.7 |
| 42.5° | 1935.5 | 1902.0 | 1751.1 | 1621.3 | 1545.9 |
| 45°   | 1797.2 | 1759.5 | 1608.7 | 1474.6 | 1416.0 |
| 47.5° | 1659.0 | 1625.5 | 1487.2 | 1349.0 | 1281.9 |
| 50°   | 1512.4 | 1483.0 | 1357.3 | 1219.1 | 1147.9 |
| 52.5° | 1390.9 | 1344.8 | 1223.3 | 1085.0 | 1026.4 |
| 55°   | 1248.4 | 1210.7 | 1097.6 | 967.7  | 917.5  |
| 57.5° | 1118.6 | 1080.8 | 976.1  | 854.6  | 812.7  |
| 60°   | 997.1  | 942.6  | 854.6  | 749.9  | 716.4  |
| 62.5° | 863.0  | 821.1  | 745.7  | 657.7  | 699.6  |
| 65°   | 741.5  | 699.6  | 632.6  | 645.2  | 536.2  |
| 67.5° | 607.5  | 586.5  | 527.9  | 469.2  | 452.4  |
| 70°   | 494.3  | 469.2  | 448.3  | 385.4  | 368.7  |
| 72.5° | 393.8  | 368.7  | 339.3  | 305.8  | 293.3  |
| 75°   | 297.4  | 276.5  | 259.7  | 247.2  | 272.3  |
| 77.5° | 205.3  | 196.9  | 184.3  | 171.8  | 167.6  |
| 80°   | 134.1  | 129.9  | 125.7  | 121.5  | 117.3  |
| 82.5° | 79.6   | 79.6   | 79.6   | 79.6   | 79.6   |
| 85°   | 41.9   | 46.1   | 50.3   | 54.5   | 58.7   |
| 87.5° | 25.1   | 25.1   | 29.3   | 33.5   | 37.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)