

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: P590570

Luminaire Tested: FSR-24-2-LD4-3LO-40-UNV-82-94-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590570  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/8/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: FSR-24-2-LD4-3LO-40-UNV-82-94-EDD  
Description: 2X2 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .187 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

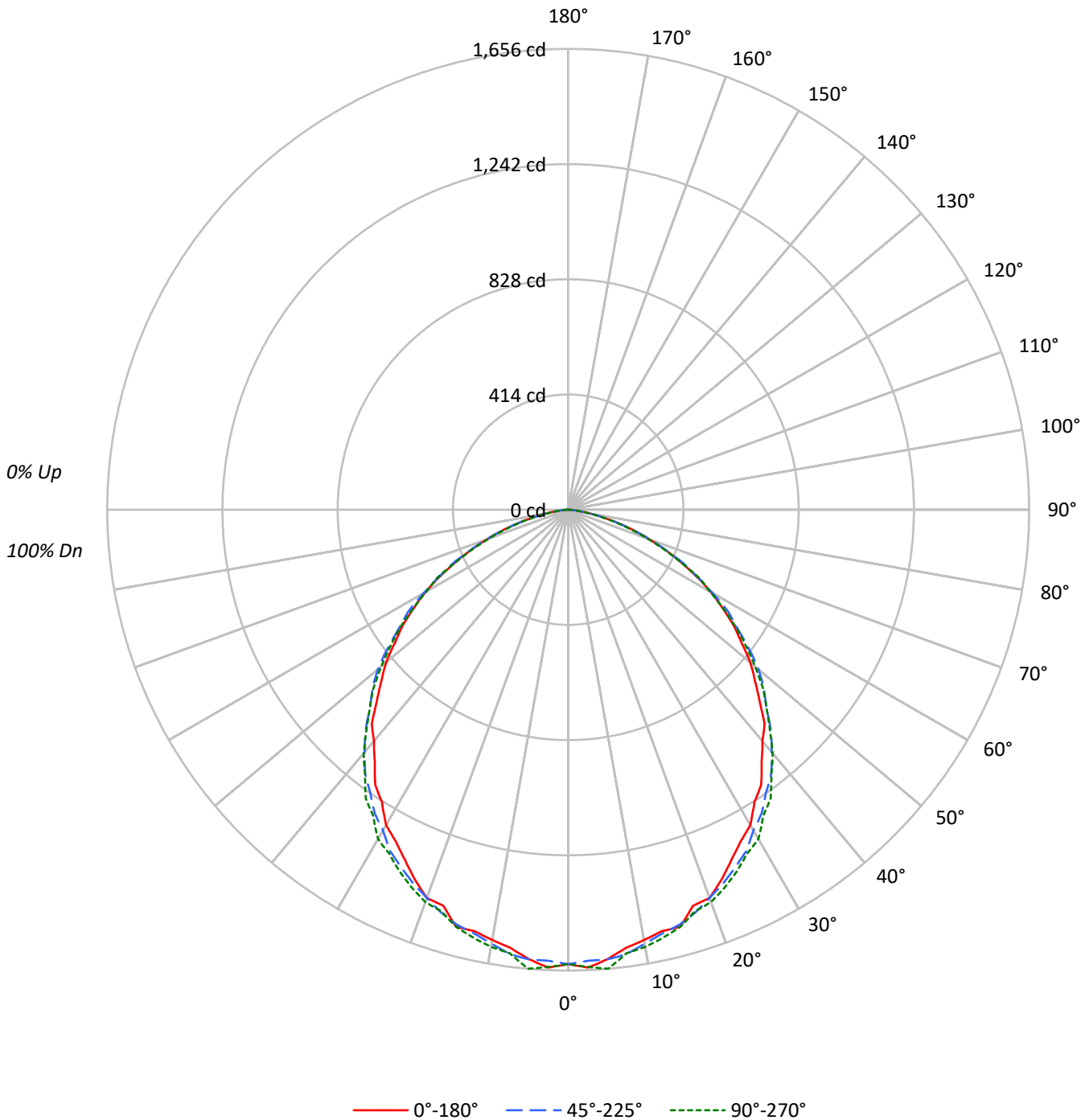
Lumens per Lamp: N/A  
Luminaire Lumens: 4115.0 lumens  
Efficiency: N/A  
Efficacy: 117.2 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 35.1  
Input Voltage (V):  
Input Current (Ain): NR  
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  | 0 |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |     |   |  |   |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    |    | 100 |   |  |   |
| 1   | 110 | 105 | 101 | 98  | 107 | 103 | 100 | 96  | 99  | 96  | 93  | 95  | 93  | 90  | 91  | 90  | 88  | 86  |    |    |    |    | 86  |   |  |   |
| 2   | 100 | 93  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 78  | 75  | 73  |    |    |    |    | 73  |   |  |   |
| 3   | 92  | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  | 62  |    |    |    |    | 62  |   |  |   |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 59  | 55  | 53  |    |    |    |    | 53  |   |  |   |
| 5   | 78  | 65  | 57  | 50  | 76  | 64  | 56  | 50  | 62  | 55  | 49  | 60  | 54  | 49  | 58  | 53  | 48  | 46  |    |    |    |    | 46  |   |  |   |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  | 54  | 48  | 43  | 53  | 47  | 43  | 41  |    |    |    |    | 41  |   |  |   |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  | 36  |    |    |    |    | 36  |   |  |   |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 39  | 34  | 32  |    |    |    |    | 32  |   |  |   |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 36  | 31  | 41  | 35  | 31  | 29  |    |    |    |    | 29  |   |  |   |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |    |    |    |    | 26  |   |  |   |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4394 | 4394 | 4394 |
| 5°  | 4379 | 4381 | 4473 |
| 10° | 4290 | 4328 | 4358 |
| 15° | 4324 | 4301 | 4325 |
| 20° | 4251 | 4251 | 4296 |
| 25° | 4121 | 4211 | 4257 |
| 30° | 4064 | 4135 | 4245 |
| 35° | 3968 | 4072 | 4164 |
| 40° | 3814 | 3998 | 4015 |
| 45° | 3698 | 3830 | 3836 |
| 50° | 3577 | 3738 | 3667 |
| 55° | 3408 | 3475 | 3450 |
| 60° | 3187 | 3219 | 3161 |
| 65° | 2842 | 2914 | 2821 |
| 70° | 2438 | 2446 | 2378 |
| 75° | 1931 | 1927 | 1852 |
| 80° | 1294 | 1258 | 1209 |
| 85° | 704  | 698  | 651  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 3929 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 153.6  | 3.7       |
| 10°-20°   | 435.3  | 10.6      |
| 20°-30°   | 652.1  | 15.8      |
| 30°-40°   | 772.9  | 18.8      |
| 40°-50°   | 774.3  | 18.8      |
| 50°-60°   | 657.3  | 16.0      |
| 60°-70°   | 443.2  | 10.8      |
| 70°-80°   | 194.7  | 4.7       |
| 80°-90°   | 31.6   | 0.8       |
| 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°    | 1241.0 | 30.2      |
| 0°-40°    | 2013.9 | 48.9      |
| 0°-60°    | 3445.5 | 83.7      |
| 0°-90°    | 4115.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4115.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1633 | 1633  | 1633 | 1633  | 1633 |      |
| 5°  | 1621 | 1617  | 1622 | 1617  | 1656 | 153  |
| 15° | 1552 | 1534  | 1544 | 1552  | 1552 | 432  |
| 25° | 1388 | 1395  | 1418 | 1437  | 1434 | 642  |
| 35° | 1208 | 1212  | 1240 | 1268  | 1267 | 750  |
| 45° | 972  | 990   | 1006 | 1032  | 1008 | 752  |
| 55° | 726  | 722   | 741  | 736   | 735  | 646  |
| 65° | 446  | 440   | 458  | 440   | 443  | 444  |
| 75° | 186  | 182   | 185  | 172   | 178  | 199  |
| 85° | 23   | 22    | 23   | 22    | 21   | 33   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1632.7 | 1632.7 | 1632.7 | 1632.7 | 1632.7 |
| 2.5°  | 1646.9 | 1634.4 | 1622.8 | 1636.3 | 1644.5 |
| 5°    | 1621.1 | 1617.3 | 1621.8 | 1616.9 | 1655.9 |
| 7.5°  | 1587.8 | 1602.4 | 1610.8 | 1605.5 | 1607.9 |
| 10°   | 1570.1 | 1565.1 | 1583.8 | 1596.9 | 1595.0 |
| 12.5° | 1551.1 | 1558.7 | 1559.8 | 1573.9 | 1575.2 |
| 15°   | 1552.2 | 1534.3 | 1543.8 | 1551.8 | 1552.4 |
| 17.5° | 1491.9 | 1511.3 | 1517.8 | 1536.2 | 1513.4 |
| 20°   | 1484.5 | 1470.4 | 1484.5 | 1503.3 | 1500.3 |
| 22.5° | 1439.2 | 1423.4 | 1453.7 | 1470.4 | 1469.3 |
| 25°   | 1387.8 | 1395.4 | 1418.1 | 1436.7 | 1433.7 |
| 27.5° | 1342.7 | 1351.5 | 1384.0 | 1409.5 | 1393.0 |
| 30°   | 1307.9 | 1303.4 | 1330.8 | 1353.6 | 1366.3 |
| 32.5° | 1245.7 | 1261.7 | 1293.7 | 1316.3 | 1304.3 |
| 35°   | 1207.9 | 1211.5 | 1239.6 | 1268.2 | 1267.4 |
| 37.5° | 1142.0 | 1158.6 | 1198.0 | 1206.0 | 1198.7 |
| 40°   | 1085.7 | 1102.3 | 1138.0 | 1146.6 | 1143.0 |
| 42.5° | 1044.1 | 1047.1 | 1077.7 | 1087.6 | 1071.8 |
| 45°   | 971.8  | 990.0  | 1006.4 | 1032.3 | 1007.9 |
| 47.5° | 910.3  | 918.7  | 954.1  | 961.1  | 948.2  |
| 50°   | 854.4  | 857.4  | 893.0  | 884.4  | 875.9  |
| 52.5° | 784.2  | 796.7  | 816.7  | 815.0  | 805.1  |
| 55°   | 726.5  | 721.6  | 740.6  | 735.5  | 735.3  |
| 57.5° | 657.1  | 665.5  | 681.1  | 673.1  | 660.3  |
| 60°   | 592.2  | 592.4  | 598.1  | 589.0  | 587.3  |
| 62.5° | 519.9  | 522.4  | 523.7  | 512.5  | 530.6  |
| 65°   | 446.3  | 440.4  | 457.7  | 440.2  | 443.1  |
| 67.5° | 378.6  | 381.6  | 379.9  | 368.9  | 373.1  |
| 70°   | 309.9  | 313.7  | 310.9  | 298.5  | 302.3  |
| 72.5° | 247.1  | 242.4  | 245.4  | 229.8  | 237.0  |
| 75°   | 185.7  | 181.9  | 185.3  | 172.2  | 178.1  |
| 77.5° | 126.5  | 129.4  | 127.3  | 120.4  | 124.4  |
| 80°   | 83.5   | 81.2   | 81.2   | 77.2   | 78.0   |
| 82.5° | 48.7   | 46.4   | 45.7   | 44.5   | 46.4   |
| 85°   | 22.8   | 22.1   | 22.6   | 21.9   | 21.1   |
| 87.5° | 8.2    | 8.4    | 8.4    | 8.0    | 7.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)