

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: P562323

Luminaire Tested: FSR-24-4-LD4-1STD-35-UNV-82-85-EDD

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P562323  
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-LD4-1STD-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**

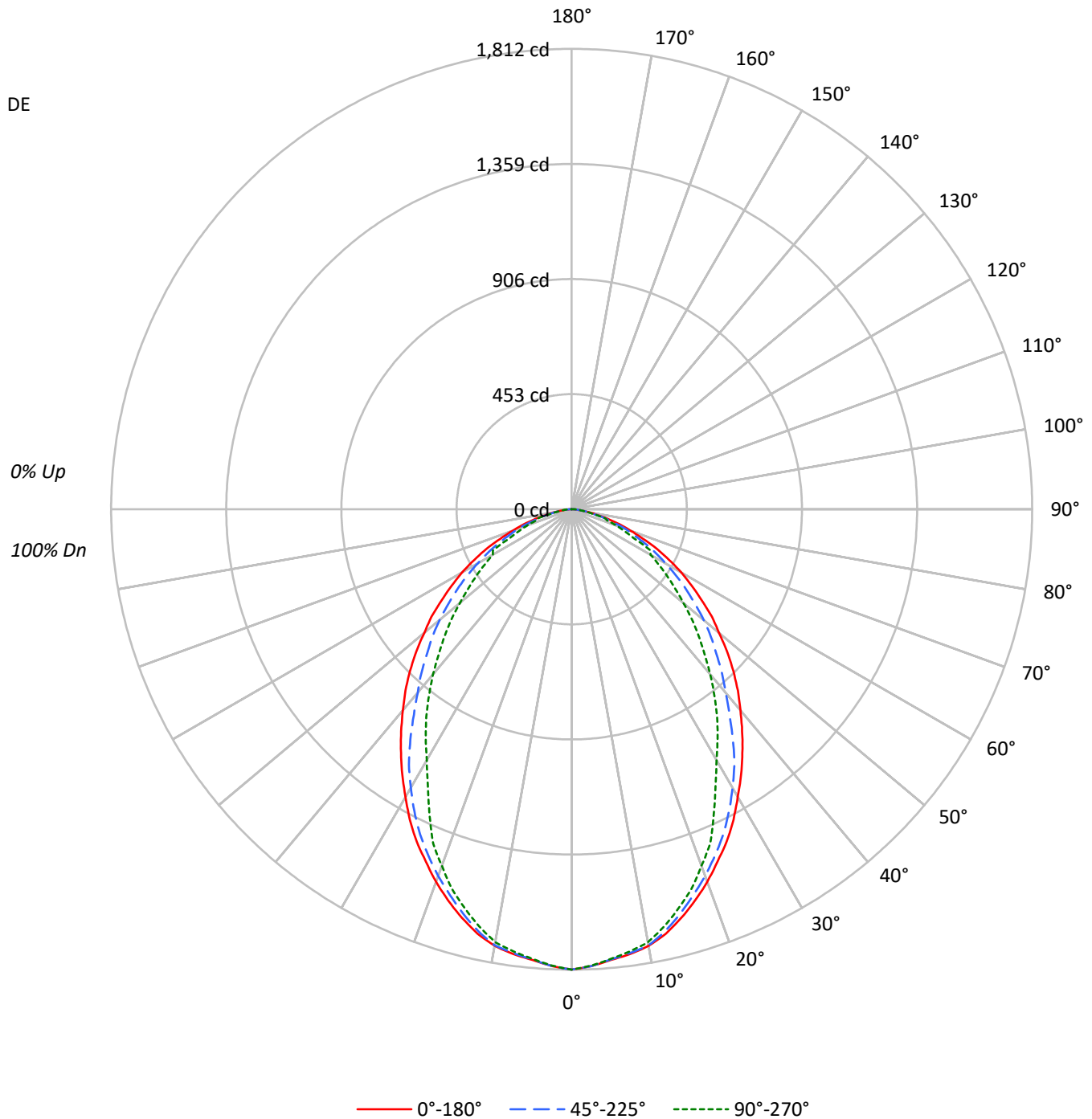
Lumens per Lamp: N/A  
Luminaire Lumens: 3557.0 lumens  
Efficiency: N/A  
Efficacy: 106.8 lumens/watt  
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 33.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage 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 | 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°  | 2438 | 2438 | 2438 |
| 5°  | 2405 | 2402 | 2399 |
| 10° | 2384 | 2381 | 2364 |
| 15° | 2320 | 2296 | 2264 |
| 20° | 2234 | 2198 | 2138 |
| 25° | 2143 | 2096 | 1965 |
| 30° | 2031 | 1966 | 1770 |
| 35° | 1923 | 1817 | 1638 |
| 40° | 1814 | 1656 | 1490 |
| 45° | 1710 | 1531 | 1347 |
| 50° | 1583 | 1421 | 1201 |
| 55° | 1464 | 1287 | 1076 |
| 60° | 1341 | 1150 | 964  |
| 65° | 1181 | 1007 | 854  |
| 70° | 972  | 882  | 725  |
| 75° | 773  | 675  | 708  |
| 80° | 519  | 487  | 455  |
| 85° | 323  | 387  | 452  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1710 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 168.7  | 4.7       |
| 10°-20°   | 462.9  | 13.0      |
| 20°-30°   | 640.8  | 18.0      |
| 30°-40°   | 683.3  | 19.2      |
| 40°-50°   | 623.4  | 17.5      |
| 50°-60°   | 488.4  | 13.7      |
| 60°-70°   | 318.3  | 8.9       |
| 70°-80°   | 141.0  | 4.0       |
| 80°-90°   | 30.3   | 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°    | 1272.4 | 35.8      |
| 0°-40°    | 1955.7 | 55.0      |
| 0°-60°    | 3067.4 | 86.2      |
| 0°-90°    | 3557.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3557.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1812 | 1812  | 1812 | 1812  | 1812 |      |
| 5°  | 1780 | 1778  | 1778 | 1776  | 1776 | 169  |
| 15° | 1665 | 1665  | 1648 | 1632  | 1626 | 468  |
| 25° | 1443 | 1435  | 1412 | 1362  | 1324 | 663  |
| 35° | 1171 | 1162  | 1106 | 1022  | 997  | 732  |
| 45° | 899  | 880   | 804  | 737   | 708  | 692  |
| 55° | 624  | 605   | 549  | 484   | 459  | 560  |
| 65° | 371  | 350   | 316  | 323   | 268  | 365  |
| 75° | 149  | 138   | 130  | 124   | 136  | 159  |
| 85° | 21   | 23    | 25   | 27    | 29   | 29   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1811.9 | 1811.9 | 1811.9 | 1811.9 | 1811.9 |
| 2.5°  | 1799.3 | 1799.3 | 1799.3 | 1797.2 | 1797.2 |
| 5°    | 1780.5 | 1778.4 | 1778.4 | 1776.3 | 1776.3 |
| 7.5°  | 1765.8 | 1763.7 | 1761.6 | 1759.5 | 1755.3 |
| 10°   | 1744.9 | 1744.9 | 1742.8 | 1732.3 | 1730.2 |
| 12.5° | 1711.3 | 1709.2 | 1700.9 | 1686.2 | 1682.0 |
| 15°   | 1665.3 | 1665.3 | 1648.5 | 1631.7 | 1625.5 |
| 17.5° | 1615.0 | 1612.9 | 1591.9 | 1575.2 | 1566.8 |
| 20°   | 1560.5 | 1556.3 | 1535.4 | 1508.2 | 1493.5 |
| 22.5° | 1499.8 | 1499.8 | 1474.6 | 1439.0 | 1424.4 |
| 25°   | 1443.2 | 1434.8 | 1411.8 | 1361.5 | 1323.8 |
| 27.5° | 1378.3 | 1365.7 | 1340.6 | 1269.4 | 1225.4 |
| 30°   | 1307.1 | 1300.8 | 1265.2 | 1173.0 | 1139.5 |
| 32.5° | 1240.0 | 1229.6 | 1191.9 | 1095.5 | 1068.3 |
| 35°   | 1170.9 | 1162.5 | 1106.0 | 1022.2 | 997.1  |
| 37.5° | 1101.8 | 1091.3 | 1020.1 | 953.1  | 921.7  |
| 40°   | 1032.7 | 1020.1 | 942.6  | 881.9  | 848.3  |
| 42.5° | 967.7  | 951.0  | 875.6  | 810.6  | 772.9  |
| 45°   | 898.6  | 879.8  | 804.4  | 737.3  | 708.0  |
| 47.5° | 829.5  | 812.7  | 743.6  | 674.5  | 641.0  |
| 50°   | 756.2  | 741.5  | 678.7  | 609.5  | 573.9  |
| 52.5° | 695.4  | 672.4  | 611.6  | 542.5  | 513.2  |
| 55°   | 624.2  | 605.4  | 548.8  | 483.9  | 458.7  |
| 57.5° | 559.3  | 540.4  | 488.1  | 427.3  | 406.4  |
| 60°   | 498.5  | 471.3  | 427.3  | 374.9  | 358.2  |
| 62.5° | 431.5  | 410.6  | 372.9  | 328.9  | 349.8  |
| 65°   | 370.8  | 349.8  | 316.3  | 322.6  | 268.1  |
| 67.5° | 303.7  | 293.3  | 263.9  | 234.6  | 226.2  |
| 70°   | 247.2  | 234.6  | 224.1  | 192.7  | 184.3  |
| 72.5° | 196.9  | 184.3  | 169.7  | 152.9  | 146.6  |
| 75°   | 148.7  | 138.2  | 129.9  | 123.6  | 136.2  |
| 77.5° | 102.6  | 98.4   | 92.2   | 85.9   | 83.8   |
| 80°   | 67.0   | 64.9   | 62.8   | 60.7   | 58.7   |
| 82.5° | 39.8   | 39.8   | 39.8   | 39.8   | 39.8   |
| 85°   | 20.9   | 23.0   | 25.1   | 27.2   | 29.3   |
| 87.5° | 12.6   | 12.6   | 14.7   | 16.8   | 18.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)