

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: P590195

Luminaire Tested: FSR-24-2-LD4-2HI-40-UNV-93-96-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590195  
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-LD4-2HI-40-UNV-93-96-EDD  
Description: 2X2 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .250 CLEAR TEMPER  
GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

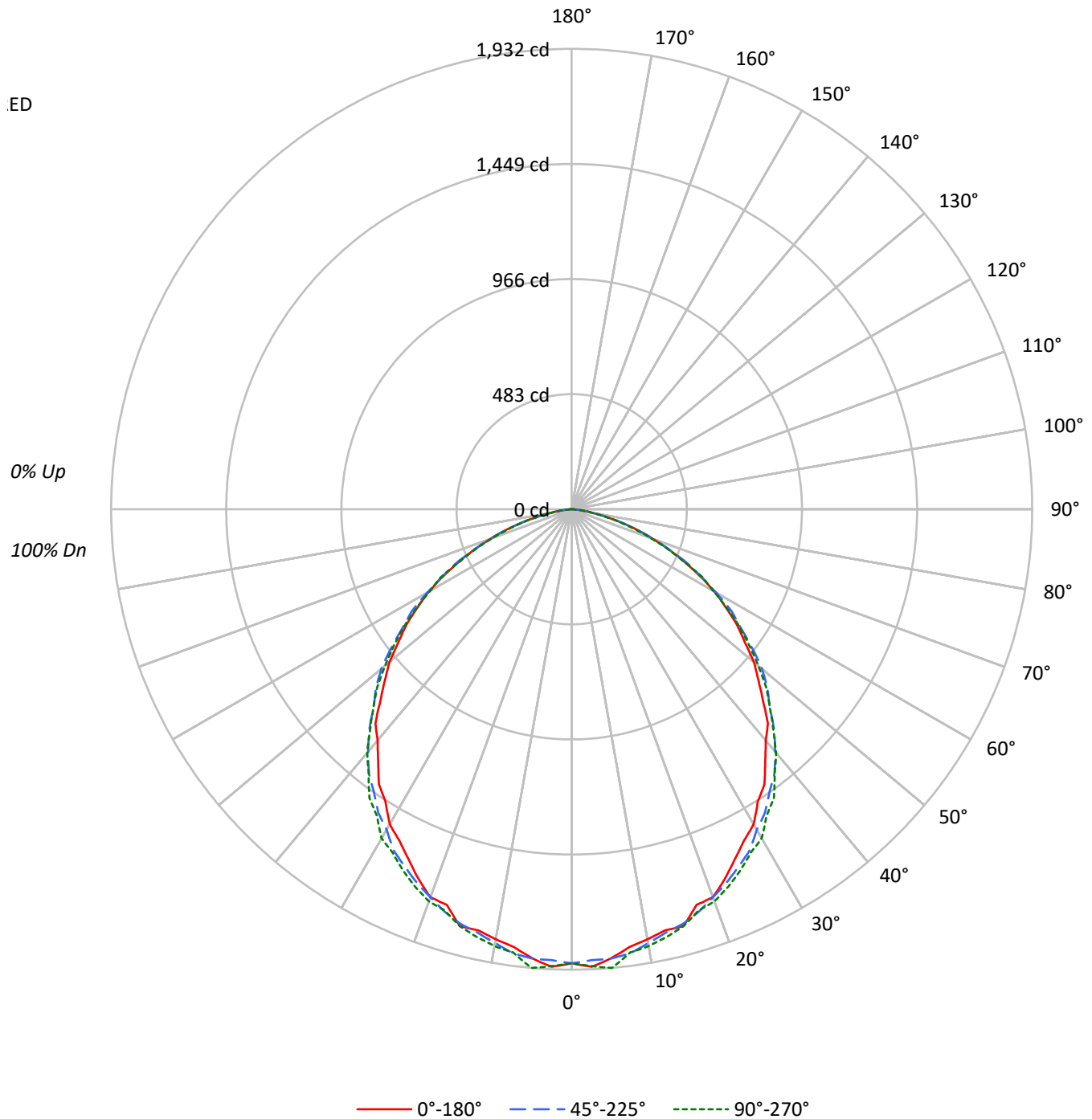
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4802.0 lumens  
Efficiency: N/A  
Efficacy: 111.2 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): 43.2  
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





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

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |     |  |  |  |    |  |  |  |  |  |  |  |  |   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|-----|--|--|--|----|--|--|--|--|--|--|--|--|---|
| RF  | 20  |     |     |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     | 20 |    |    |    |    |     |  |  |  | 20 |  |  |  |  |  |  |  |  |   |
| RC  | 80  |     |     |     |     |     |     |     |     | 70  |     |     |     |     |     |     |     |     | 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°  | 5127 | 5127 | 5127 |
| 5°  | 5110 | 5112 | 5220 |
| 10° | 5006 | 5050 | 5086 |
| 15° | 5046 | 5019 | 5047 |
| 20° | 4961 | 4961 | 5014 |
| 25° | 4809 | 4914 | 4968 |
| 30° | 4742 | 4826 | 4954 |
| 35° | 4631 | 4752 | 4859 |
| 40° | 4450 | 4665 | 4685 |
| 45° | 4316 | 4469 | 4476 |
| 50° | 4174 | 4363 | 4279 |
| 55° | 3977 | 4054 | 4026 |
| 60° | 3719 | 3756 | 3689 |
| 65° | 3316 | 3401 | 3293 |
| 70° | 2845 | 2855 | 2776 |
| 75° | 2253 | 2248 | 2162 |
| 80° | 1509 | 1468 | 1410 |
| 85° | 821  | 812  | 760  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 4585 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 179.2  | 3.7       |
| 10°-20°   | 507.9  | 10.6      |
| 20°-30°   | 761.0  | 15.8      |
| 30°-40°   | 901.9  | 18.8      |
| 40°-50°   | 903.6  | 18.8      |
| 50°-60°   | 767.0  | 16.0      |
| 60°-70°   | 517.1  | 10.8      |
| 70°-80°   | 227.2  | 4.7       |
| 80°-90°   | 36.9   | 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°    | 1448.2 | 30.2      |
| 0°-40°    | 2350.1 | 48.9      |
| 0°-60°    | 4020.7 | 83.7      |
| 0°-90°    | 4802.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4802.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1905 | 1905  | 1905 | 1905  | 1905 |      |
| 5°  | 1892 | 1887  | 1892 | 1887  | 1932 | 178  |
| 15° | 1811 | 1790  | 1802 | 1811  | 1812 | 505  |
| 25° | 1620 | 1628  | 1655 | 1676  | 1673 | 749  |
| 35° | 1410 | 1414  | 1446 | 1480  | 1479 | 875  |
| 45° | 1134 | 1155  | 1174 | 1205  | 1176 | 877  |
| 55° | 848  | 842   | 864  | 858   | 858  | 754  |
| 65° | 521  | 514   | 534  | 514   | 517  | 518  |
| 75° | 217  | 212   | 216  | 201   | 208  | 232  |
| 85° | 27   | 26    | 26   | 26    | 25   | 39   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1905.3 | 1905.3 | 1905.3 | 1905.3 | 1905.3 |
| 2.5°  | 1921.8 | 1907.3 | 1893.8 | 1909.5 | 1919.1 |
| 5°    | 1891.8 | 1887.4 | 1892.5 | 1886.9 | 1932.4 |
| 7.5°  | 1852.9 | 1869.9 | 1879.7 | 1873.6 | 1876.3 |
| 10°   | 1832.2 | 1826.3 | 1848.2 | 1863.5 | 1861.3 |
| 12.5° | 1810.1 | 1819.0 | 1820.2 | 1836.7 | 1838.2 |
| 15°   | 1811.3 | 1790.4 | 1801.5 | 1810.8 | 1811.6 |
| 17.5° | 1741.0 | 1763.6 | 1771.2 | 1792.6 | 1766.1 |
| 20°   | 1732.4 | 1715.9 | 1732.4 | 1754.3 | 1750.8 |
| 22.5° | 1679.5 | 1661.0 | 1696.5 | 1715.9 | 1714.7 |
| 25°   | 1619.5 | 1628.3 | 1654.9 | 1676.5 | 1673.1 |
| 27.5° | 1566.8 | 1577.1 | 1615.0 | 1644.8 | 1625.6 |
| 30°   | 1526.2 | 1521.1 | 1553.0 | 1579.6 | 1594.4 |
| 32.5° | 1453.6 | 1472.3 | 1509.7 | 1536.1 | 1522.0 |
| 35°   | 1409.6 | 1413.8 | 1446.5 | 1480.0 | 1479.0 |
| 37.5° | 1332.6 | 1352.0 | 1398.0 | 1407.4 | 1398.8 |
| 40°   | 1266.9 | 1286.4 | 1327.9 | 1338.0 | 1333.8 |
| 42.5° | 1218.5 | 1221.9 | 1257.6 | 1269.1 | 1250.7 |
| 45°   | 1134.1 | 1155.2 | 1174.4 | 1204.7 | 1176.2 |
| 47.5° | 1062.3 | 1072.1 | 1113.4 | 1121.5 | 1106.5 |
| 50°   | 997.1  | 1000.5 | 1042.1 | 1032.0 | 1022.2 |
| 52.5° | 915.1  | 929.7  | 953.0  | 951.1  | 939.5  |
| 55°   | 847.7  | 842.1  | 864.2  | 858.3  | 858.1  |
| 57.5° | 766.8  | 776.6  | 794.8  | 785.5  | 770.5  |
| 60°   | 691.0  | 691.3  | 697.9  | 687.3  | 685.4  |
| 62.5° | 606.6  | 609.6  | 611.1  | 598.0  | 619.2  |
| 65°   | 520.8  | 513.9  | 534.1  | 513.7  | 517.1  |
| 67.5° | 441.8  | 445.3  | 443.3  | 430.5  | 435.4  |
| 70°   | 361.6  | 366.1  | 362.9  | 348.3  | 352.8  |
| 72.5° | 288.3  | 282.9  | 286.4  | 268.1  | 276.5  |
| 75°   | 216.7  | 212.3  | 216.2  | 201.0  | 207.9  |
| 77.5° | 147.6  | 151.0  | 148.6  | 140.5  | 145.1  |
| 80°   | 97.4   | 94.7   | 94.7   | 90.0   | 91.0   |
| 82.5° | 56.8   | 54.1   | 53.4   | 51.9   | 54.1   |
| 85°   | 26.6   | 25.8   | 26.3   | 25.6   | 24.6   |
| 87.5° | 9.6    | 9.8    | 9.8    | 9.3    | 8.9    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)