

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: P590191

Luminaire Tested: FSR-24-2-LD4-2HI-40-UNV-93-86-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590191  
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-93-86-EDD  
Description: 2X2 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .250 CLEAR PC ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 4000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

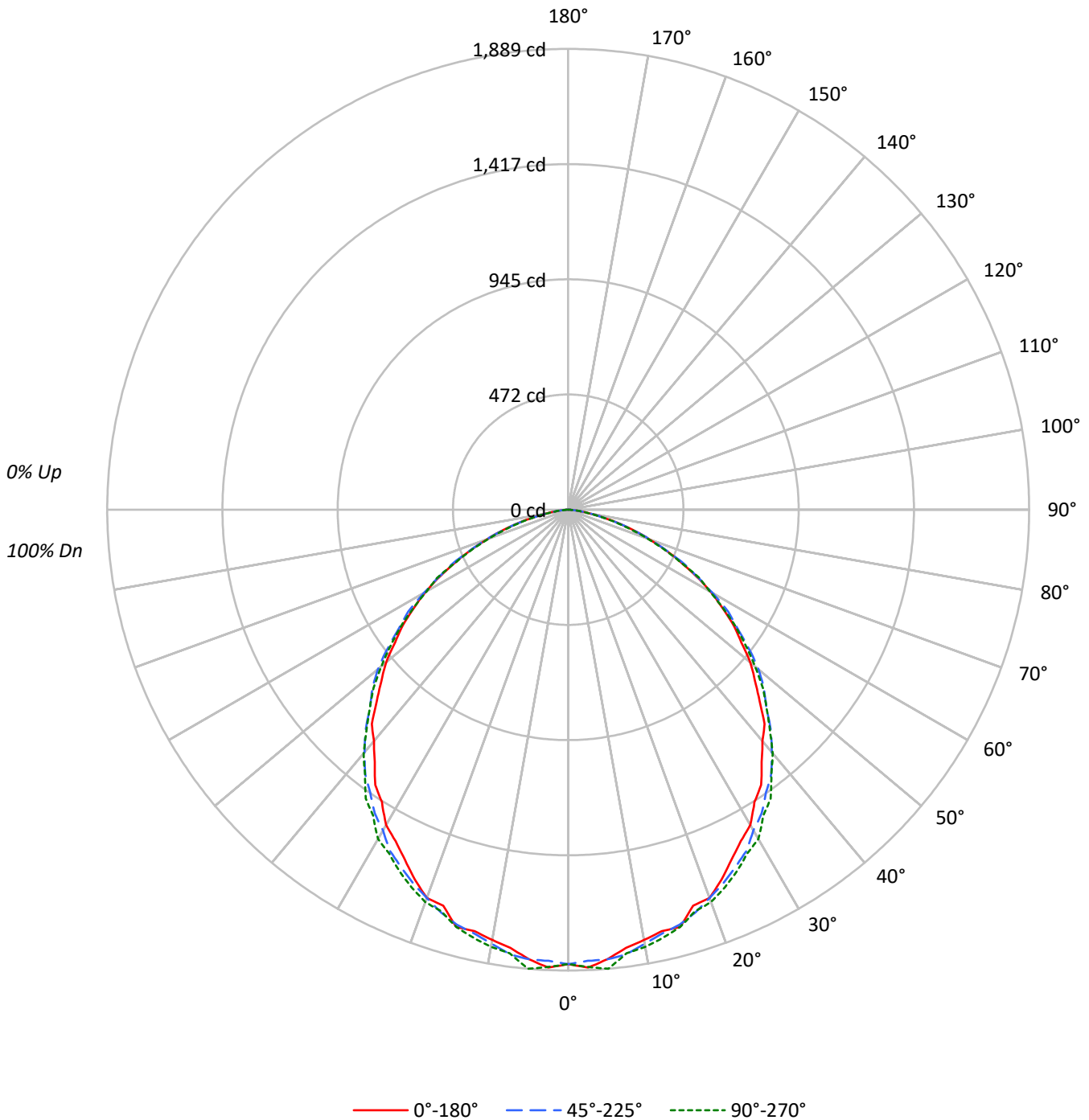
Lumens per Lamp: N/A  
Luminaire Lumens: 4694.0 lumens  
Efficiency: N/A  
Efficacy: 108.7 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 43.2  
Input Voltage (V):  
Input Current (Ain): NR  
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  |     |     |     | 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  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1   | 110 | 105 | 101 | 98  | 107 | 103 | 100 | 96  | 99  | 96  | 93  | 95  | 93  | 90  | 91  | 90  | 88  | 86  |
| 2   | 100 | 93  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 78  | 75  | 73  |
| 3   | 92  | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  | 62  |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 59  | 55  | 53  |
| 5   | 78  | 65  | 57  | 50  | 76  | 64  | 56  | 50  | 62  | 55  | 49  | 60  | 54  | 49  | 58  | 53  | 48  | 46  |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  | 54  | 48  | 43  | 53  | 47  | 43  | 41  |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  | 36  |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 34  | 46  | 39  | 34  | 44  | 39  | 34  | 32  |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  | 42  | 36  | 31  | 41  | 35  | 31  | 29  |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5012 | 5012 | 5012 |
| 5°  | 4995 | 4997 | 5102 |
| 10° | 4894 | 4937 | 4971 |
| 15° | 4933 | 4906 | 4933 |
| 20° | 4849 | 4849 | 4901 |
| 25° | 4700 | 4803 | 4856 |
| 30° | 4636 | 4717 | 4843 |
| 35° | 4527 | 4645 | 4749 |
| 40° | 4350 | 4560 | 4580 |
| 45° | 4219 | 4369 | 4375 |
| 50° | 4080 | 4264 | 4183 |
| 55° | 3888 | 3963 | 3935 |
| 60° | 3636 | 3672 | 3606 |
| 65° | 3242 | 3324 | 3219 |
| 70° | 2781 | 2791 | 2713 |
| 75° | 2203 | 2198 | 2113 |
| 80° | 1475 | 1435 | 1379 |
| 85° | 803  | 794  | 741  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 4481 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 175.2  | 3.7       |
| 10°-20°   | 496.5  | 10.6      |
| 20°-30°   | 743.9  | 15.8      |
| 30°-40°   | 881.6  | 18.8      |
| 40°-50°   | 883.3  | 18.8      |
| 50°-60°   | 749.8  | 16.0      |
| 60°-70°   | 505.5  | 10.8      |
| 70°-80°   | 222.1  | 4.7       |
| 80°-90°   | 36.1   | 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°    | 1415.6 | 30.2      |
| 0°-40°    | 2297.2 | 48.9      |
| 0°-60°    | 3930.3 | 83.7      |
| 0°-90°    | 4694.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4694.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1862 | 1862  | 1862 | 1862  | 1862 |      |
| 5°  | 1849 | 1845  | 1850 | 1844  | 1889 | 174  |
| 15° | 1771 | 1750  | 1761 | 1770  | 1771 | 493  |
| 25° | 1583 | 1592  | 1618 | 1639  | 1636 | 732  |
| 35° | 1378 | 1382  | 1414 | 1447  | 1446 | 856  |
| 45° | 1109 | 1129  | 1148 | 1178  | 1150 | 858  |
| 55° | 829  | 823   | 845  | 839   | 839  | 737  |
| 65° | 509  | 502   | 522  | 502   | 506  | 506  |
| 75° | 212  | 208   | 211  | 196   | 203  | 227  |
| 85° | 26   | 25    | 26   | 25    | 24   | 38   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1862.5 | 1862.5 | 1862.5 | 1862.5 | 1862.5 |
| 2.5°  | 1878.6 | 1864.4 | 1851.2 | 1866.5 | 1875.9 |
| 5°    | 1849.2 | 1844.9 | 1850.0 | 1844.4 | 1888.9 |
| 7.5°  | 1811.2 | 1827.8 | 1837.5 | 1831.4 | 1834.1 |
| 10°   | 1791.0 | 1785.3 | 1806.7 | 1821.6 | 1819.4 |
| 12.5° | 1769.4 | 1778.1 | 1779.3 | 1795.4 | 1796.8 |
| 15°   | 1770.6 | 1750.2 | 1761.0 | 1770.1 | 1770.8 |
| 17.5° | 1701.8 | 1723.9 | 1731.4 | 1752.3 | 1726.4 |
| 20°   | 1693.4 | 1677.3 | 1693.4 | 1714.8 | 1711.4 |
| 22.5° | 1641.7 | 1623.7 | 1658.3 | 1677.3 | 1676.1 |
| 25°   | 1583.0 | 1591.7 | 1617.7 | 1638.8 | 1635.5 |
| 27.5° | 1531.6 | 1541.7 | 1578.7 | 1607.8 | 1589.0 |
| 30°   | 1491.9 | 1486.8 | 1518.1 | 1544.1 | 1558.5 |
| 32.5° | 1421.0 | 1439.2 | 1475.8 | 1501.5 | 1487.8 |
| 35°   | 1377.9 | 1382.0 | 1414.0 | 1446.7 | 1445.7 |
| 37.5° | 1302.6 | 1321.6 | 1366.6 | 1375.7 | 1367.3 |
| 40°   | 1238.4 | 1257.4 | 1298.1 | 1307.9 | 1303.8 |
| 42.5° | 1191.1 | 1194.4 | 1229.3 | 1240.6 | 1222.6 |
| 45°   | 1108.6 | 1129.3 | 1148.0 | 1177.6 | 1149.7 |
| 47.5° | 1038.4 | 1048.0 | 1088.4 | 1096.3 | 1081.6 |
| 50°   | 974.6  | 978.0  | 1018.6 | 1008.8 | 999.2  |
| 52.5° | 894.6  | 908.7  | 931.6  | 929.7  | 918.4  |
| 55°   | 828.7  | 823.1  | 844.8  | 839.0  | 838.8  |
| 57.5° | 749.6  | 759.2  | 777.0  | 767.8  | 753.2  |
| 60°   | 675.5  | 675.7  | 682.2  | 671.9  | 670.0  |
| 62.5° | 593.0  | 595.9  | 597.3  | 584.6  | 605.3  |
| 65°   | 509.1  | 502.3  | 522.1  | 502.1  | 505.5  |
| 67.5° | 431.9  | 435.3  | 433.3  | 420.8  | 425.6  |
| 70°   | 353.5  | 357.8  | 354.7  | 340.5  | 344.8  |
| 72.5° | 281.8  | 276.5  | 279.9  | 262.1  | 270.3  |
| 75°   | 211.9  | 207.5  | 211.4  | 196.5  | 203.2  |
| 77.5° | 144.3  | 147.7  | 145.2  | 137.3  | 141.9  |
| 80°   | 95.2   | 92.6   | 92.6   | 88.0   | 89.0   |
| 82.5° | 55.5   | 52.9   | 52.2   | 50.7   | 52.9   |
| 85°   | 26.0   | 25.2   | 25.7   | 25.0   | 24.0   |
| 87.5° | 9.4    | 9.6    | 9.6    | 9.1    | 8.7    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)