

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: P590197

Luminaire Tested: FSR-24-2-LD4-2HI-50-UNV-80-84-EDD

Issue Date: 12/8/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P590197  
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-50-UNV-80-84-EDD  
Description: 2X2 FSR TROFFER WITH .125 PRISMATIC ACRYLIC FIXTURE SIDE AND .125 CLEAR PC ENVIRON  
SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS  
Light Source: -  
Ballast/Driver: -

**Summary**

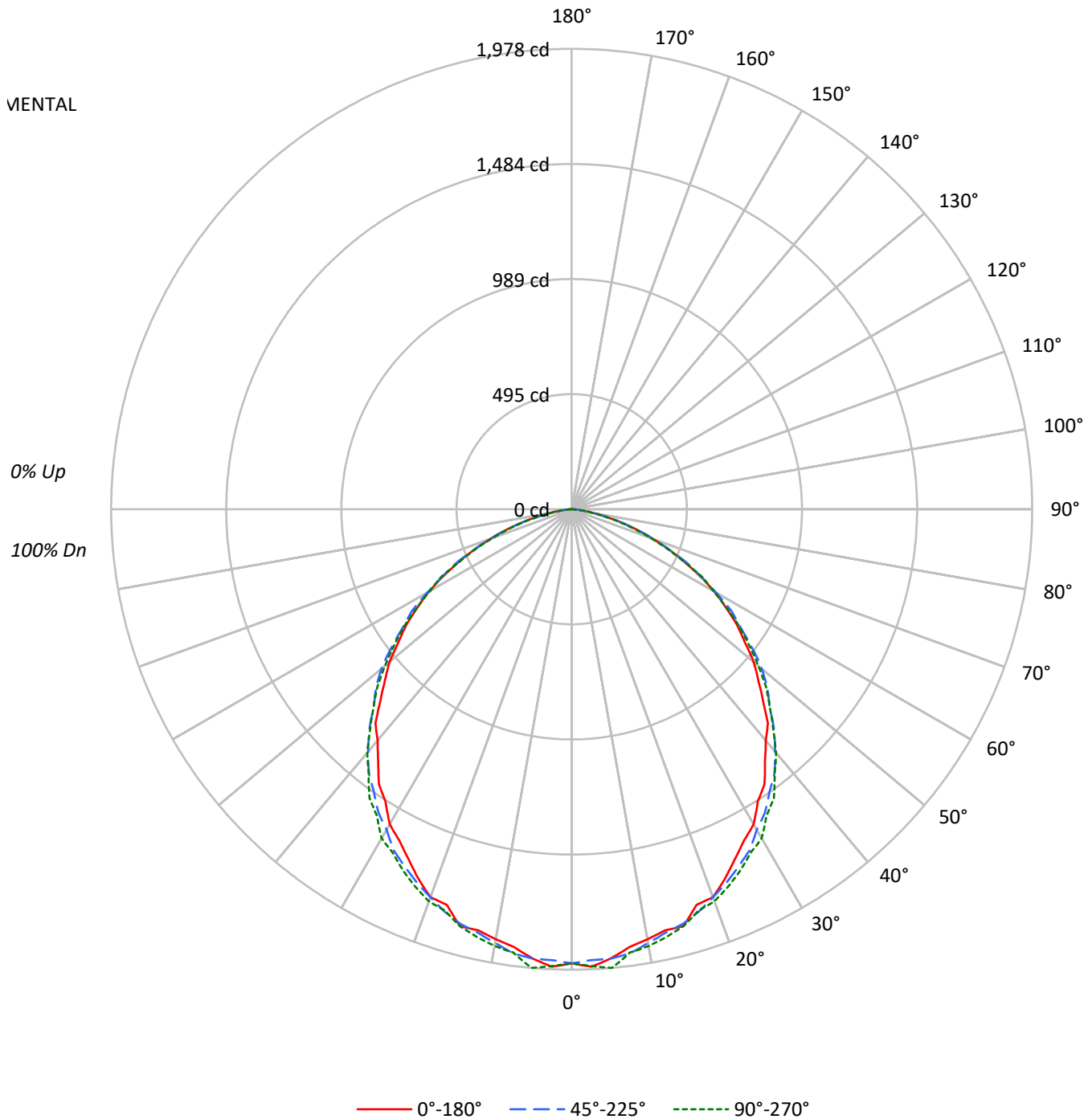
Lumens per Lamp: N/A  
Luminaire Lumens: 4916.0 lumens  
Efficiency: N/A  
Efficacy: 113.8 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 43.2  
Input Voltage (V):  
Input Current (Ain): NR  
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°  | 5249 | 5249 | 5249 |
| 5°  | 5232 | 5233 | 5344 |
| 10° | 5125 | 5170 | 5207 |
| 15° | 5166 | 5138 | 5167 |
| 20° | 5079 | 5079 | 5133 |
| 25° | 4923 | 5030 | 5086 |
| 30° | 4855 | 4940 | 5072 |
| 35° | 4741 | 4865 | 4974 |
| 40° | 4556 | 4776 | 4797 |
| 45° | 4418 | 4575 | 4582 |
| 50° | 4273 | 4466 | 4381 |
| 55° | 4072 | 4151 | 4121 |
| 60° | 3807 | 3845 | 3776 |
| 65° | 3395 | 3482 | 3371 |
| 70° | 2913 | 2923 | 2841 |
| 75° | 2307 | 2302 | 2213 |
| 80° | 1545 | 1503 | 1444 |
| 85° | 840  | 831  | 778  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 67.5°  
 Vertical Angle: 45°  
 Luminance: 4693 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 183.5  | 3.7       |
| 10°-20°   | 520.0  | 10.6      |
| 20°-30°   | 779.1  | 15.8      |
| 30°-40°   | 923.4  | 18.8      |
| 40°-50°   | 925.1  | 18.8      |
| 50°-60°   | 785.2  | 16.0      |
| 60°-70°   | 529.4  | 10.8      |
| 70°-80°   | 232.6  | 4.7       |
| 80°-90°   | 37.8   | 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°    | 1482.5 | 30.2      |
| 0°-40°    | 2405.9 | 48.9      |
| 0°-60°    | 4116.2 | 83.7      |
| 0°-90°    | 4916.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4916.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1950 | 1950  | 1950 | 1950  | 1950 |      |
| 5°  | 1937 | 1932  | 1937 | 1932  | 1978 | 183  |
| 15° | 1854 | 1833  | 1844 | 1854  | 1855 | 517  |
| 25° | 1658 | 1667  | 1694 | 1716  | 1713 | 766  |
| 35° | 1443 | 1447  | 1481 | 1515  | 1514 | 896  |
| 45° | 1161 | 1183  | 1202 | 1233  | 1204 | 898  |
| 55° | 868  | 862   | 885  | 879   | 878  | 772  |
| 65° | 533  | 526   | 547  | 526   | 529  | 530  |
| 75° | 222  | 217   | 221  | 206   | 213  | 238  |
| 85° | 27   | 26    | 27   | 26    | 25   | 39   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1950.5 | 1950.5 | 1950.5 | 1950.5 | 1950.5 |
| 2.5°  | 1967.4 | 1952.6 | 1938.7 | 1954.8 | 1964.6 |
| 5°    | 1936.7 | 1932.2 | 1937.4 | 1931.7 | 1978.2 |
| 7.5°  | 1896.9 | 1914.3 | 1924.4 | 1918.1 | 1920.8 |
| 10°   | 1875.7 | 1869.7 | 1892.1 | 1907.7 | 1905.5 |
| 12.5° | 1853.1 | 1862.1 | 1863.4 | 1880.3 | 1881.8 |
| 15°   | 1854.3 | 1832.9 | 1844.3 | 1853.8 | 1854.6 |
| 17.5° | 1782.3 | 1805.5 | 1813.3 | 1835.2 | 1808.0 |
| 20°   | 1773.5 | 1756.6 | 1773.5 | 1795.9 | 1792.4 |
| 22.5° | 1719.4 | 1700.5 | 1736.7 | 1756.6 | 1755.4 |
| 25°   | 1657.9 | 1667.0 | 1694.2 | 1716.3 | 1712.8 |
| 27.5° | 1604.0 | 1614.6 | 1653.4 | 1683.8 | 1664.2 |
| 30°   | 1562.5 | 1557.2 | 1589.9 | 1617.1 | 1632.2 |
| 32.5° | 1488.2 | 1507.3 | 1545.6 | 1572.5 | 1558.2 |
| 35°   | 1443.1 | 1447.4 | 1480.9 | 1515.1 | 1514.1 |
| 37.5° | 1364.2 | 1384.1 | 1431.2 | 1440.8 | 1432.0 |
| 40°   | 1297.0 | 1316.9 | 1359.5 | 1369.8 | 1365.5 |
| 42.5° | 1247.4 | 1250.9 | 1287.4 | 1299.3 | 1280.4 |
| 45°   | 1161.0 | 1182.7 | 1202.3 | 1233.3 | 1204.1 |
| 47.5° | 1087.5 | 1097.5 | 1139.9 | 1148.2 | 1132.8 |
| 50°   | 1020.7 | 1024.3 | 1066.8 | 1056.5 | 1046.4 |
| 52.5° | 936.9  | 951.7  | 975.7  | 973.6  | 961.8  |
| 55°   | 867.9  | 862.1  | 884.7  | 878.7  | 878.4  |
| 57.5° | 785.0  | 795.1  | 813.7  | 804.1  | 788.8  |
| 60°   | 707.4  | 707.7  | 714.5  | 703.7  | 701.6  |
| 62.5° | 621.1  | 624.1  | 625.6  | 612.2  | 633.9  |
| 65°   | 533.2  | 526.1  | 546.8  | 525.9  | 529.4  |
| 67.5° | 452.3  | 455.8  | 453.8  | 440.7  | 445.8  |
| 70°   | 370.2  | 374.7  | 371.5  | 356.6  | 361.1  |
| 72.5° | 295.2  | 289.6  | 293.1  | 274.5  | 283.1  |
| 75°   | 221.9  | 217.3  | 221.4  | 205.8  | 212.8  |
| 77.5° | 151.1  | 154.6  | 152.1  | 143.8  | 148.6  |
| 80°   | 99.7   | 97.0   | 97.0   | 92.2   | 93.2   |
| 82.5° | 58.2   | 55.4   | 54.7   | 53.1   | 55.4   |
| 85°   | 27.2   | 26.4   | 26.9   | 26.2   | 25.2   |
| 87.5° | 9.8    | 10.1   | 10.1   | 9.6    | 9.1    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)