

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: P561962

Luminaire Tested: FSR-24-2-LD4-1LO-35-UNV-93-94-EDD-90

Issue Date: 7/20/2021

**Test Information**

Test Method: LM-79-2019  
Report Number: P561962  
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-24-2-LD4-1LO-35-UNV-93-94-EDD-90  
Description: 2X4 FSR TROFFER WITH .156 CLEAR TEMPERED GLASS FIXTURE SIDE AND .187 CLEAR TEMPER  
GLASS ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 3500K CCT LEDS  
Light Source: -  
Ballast/Driver: -

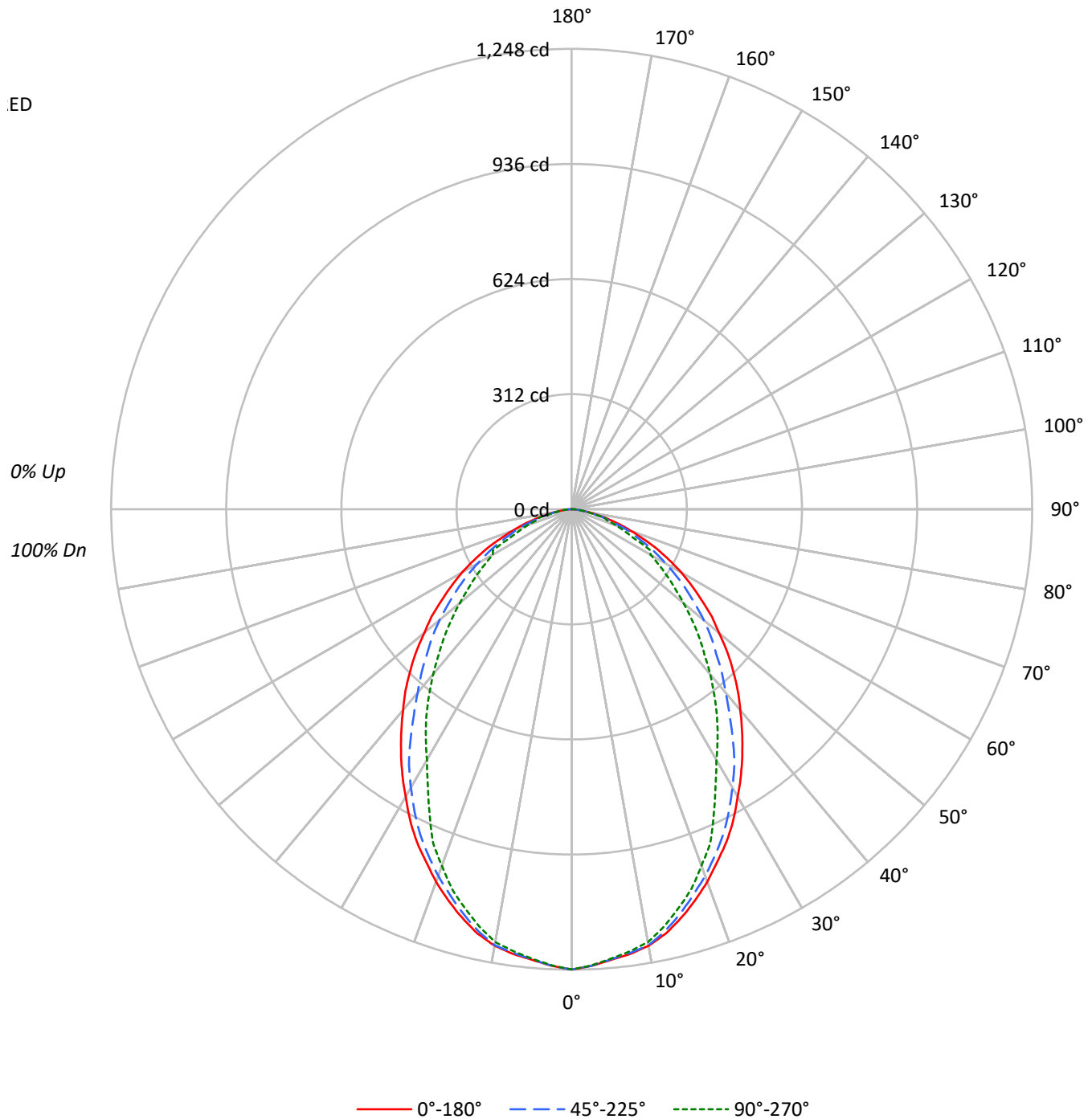
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2449.0 lumens  
Efficiency: N/A  
Efficacy: 104.7 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): 23.4  
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



TEST NUMBER: P561962  
CATALOG NUMBER: FSR-24-2-LD4-1LO-35-UNV-93-94-EDD-90

### Luminous Intensity Polar Plot





TEST NUMBER: P561962

CATALOG NUMBER: FSR-24-2-LD4-1LO-35-UNV-93-94-EDD-90

**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 | 106 | 102 | 99  | 108 | 104 | 100 | 97  | 100 | 97  | 94  | 96  | 94  | 91  | 92  | 90  | 89  | 87  |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 79  | 77  | 75  |
| 3   | 93  | 84  | 77  | 71  | 91  | 82  | 76  | 70  | 79  | 74  | 69  | 77  | 72  | 68  | 74  | 70  | 67  | 65  |
| 4   | 86  | 75  | 67  | 61  | 84  | 74  | 66  | 61  | 72  | 65  | 60  | 69  | 64  | 59  | 67  | 62  | 58  | 56  |
| 5   | 80  | 68  | 60  | 54  | 78  | 67  | 59  | 53  | 65  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 52  | 50  |
| 6   | 74  | 62  | 53  | 48  | 72  | 61  | 53  | 47  | 59  | 52  | 47  | 57  | 51  | 47  | 56  | 50  | 46  | 44  |
| 7   | 69  | 56  | 48  | 43  | 67  | 56  | 48  | 42  | 54  | 47  | 42  | 53  | 46  | 42  | 51  | 46  | 42  | 40  |
| 8   | 65  | 52  | 44  | 38  | 63  | 51  | 44  | 38  | 50  | 43  | 38  | 49  | 42  | 38  | 48  | 42  | 38  | 36  |
| 9   | 61  | 48  | 40  | 35  | 59  | 47  | 40  | 35  | 46  | 39  | 35  | 45  | 39  | 34  | 44  | 38  | 34  | 33  |
| 10  | 57  | 44  | 37  | 32  | 56  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 41  | 36  | 32  | 30  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1678 | 1678 | 1678 |
| 5°  | 1656 | 1654 | 1652 |
| 10° | 1641 | 1639 | 1627 |
| 15° | 1597 | 1581 | 1559 |
| 20° | 1538 | 1514 | 1472 |
| 25° | 1475 | 1443 | 1353 |
| 30° | 1398 | 1353 | 1219 |
| 35° | 1324 | 1251 | 1128 |
| 40° | 1249 | 1140 | 1026 |
| 45° | 1177 | 1054 | 928  |
| 50° | 1090 | 978  | 827  |
| 55° | 1008 | 886  | 741  |
| 60° | 924  | 792  | 664  |
| 65° | 813  | 693  | 588  |
| 70° | 670  | 607  | 499  |
| 75° | 532  | 465  | 487  |
| 80° | 357  | 336  | 313  |
| 85° | 222  | 267  | 312  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 1177 cd/sqm



TEST NUMBER: P561962

CATALOG NUMBER: FSR-24-2-LD4-1LO-35-UNV-93-94-EDD-90

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 116.1  | 4.7       |
| 10°-20°   | 318.7  | 13.0      |
| 20°-30°   | 441.2  | 18.0      |
| 30°-40°   | 470.5  | 19.2      |
| 40°-50°   | 429.2  | 17.5      |
| 50°-60°   | 336.2  | 13.7      |
| 60°-70°   | 219.1  | 8.9       |
| 70°-80°   | 97.1   | 4.0       |
| 80°-90°   | 20.8   | 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°    | 876.0  | 35.8      |
| 0°-40°    | 1346.5 | 55.0      |
| 0°-60°    | 2111.9 | 86.2      |
| 0°-90°    | 2449.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2449.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1248 | 1248  | 1248 | 1248  | 1248 |      |
| 5°  | 1226 | 1224  | 1224 | 1223  | 1223 | 116  |
| 15° | 1146 | 1146  | 1135 | 1124  | 1119 | 322  |
| 25° | 994  | 988   | 972  | 937   | 912  | 456  |
| 35° | 806  | 800   | 762  | 704   | 686  | 504  |
| 45° | 619  | 606   | 554  | 508   | 488  | 477  |
| 55° | 430  | 417   | 378  | 333   | 316  | 385  |
| 65° | 255  | 241   | 218  | 222   | 185  | 252  |
| 75° | 102  | 95    | 89   | 85    | 94   | 110  |
| 85° | 14   | 16    | 17   | 19    | 20   | 20   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



TEST NUMBER: P561962

CATALOG NUMBER: FSR-24-2-LD4-1LO-35-UNV-93-94-EDD-90

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1247.5 | 1247.5 | 1247.5 | 1247.5 | 1247.5 |
| 2.5°  | 1238.8 | 1238.8 | 1238.8 | 1237.4 | 1237.4 |
| 5°    | 1225.9 | 1224.4 | 1224.4 | 1223.0 | 1223.0 |
| 7.5°  | 1215.8 | 1214.3 | 1212.9 | 1211.4 | 1208.5 |
| 10°   | 1201.3 | 1201.3 | 1199.9 | 1192.7 | 1191.2 |
| 12.5° | 1178.3 | 1176.8 | 1171.1 | 1161.0 | 1158.1 |
| 15°   | 1146.5 | 1146.5 | 1135.0 | 1123.5 | 1119.1 |
| 17.5° | 1111.9 | 1110.5 | 1096.1 | 1084.5 | 1078.8 |
| 20°   | 1074.4 | 1071.5 | 1057.1 | 1038.4 | 1028.3 |
| 22.5° | 1032.6 | 1032.6 | 1015.3 | 990.8  | 980.7  |
| 25°   | 993.7  | 987.9  | 972.0  | 937.4  | 911.5  |
| 27.5° | 949.0  | 940.3  | 923.0  | 874.0  | 843.7  |
| 30°   | 899.9  | 895.6  | 871.1  | 807.6  | 784.5  |
| 32.5° | 853.8  | 846.6  | 820.6  | 754.3  | 735.5  |
| 35°   | 806.2  | 800.4  | 761.5  | 703.8  | 686.5  |
| 37.5° | 758.6  | 751.4  | 702.3  | 656.2  | 634.6  |
| 40°   | 711.0  | 702.3  | 649.0  | 607.2  | 584.1  |
| 42.5° | 666.3  | 654.8  | 602.8  | 558.1  | 532.2  |
| 45°   | 618.7  | 605.7  | 553.8  | 507.6  | 487.5  |
| 47.5° | 571.1  | 559.6  | 512.0  | 464.4  | 441.3  |
| 50°   | 520.6  | 510.5  | 467.3  | 419.7  | 395.2  |
| 52.5° | 478.8  | 462.9  | 421.1  | 373.5  | 353.3  |
| 55°   | 429.8  | 416.8  | 377.9  | 333.1  | 315.8  |
| 57.5° | 385.1  | 372.1  | 336.0  | 294.2  | 279.8  |
| 60°   | 343.2  | 324.5  | 294.2  | 258.2  | 246.6  |
| 62.5° | 297.1  | 282.7  | 256.7  | 226.4  | 240.8  |
| 65°   | 255.3  | 240.8  | 217.8  | 222.1  | 184.6  |
| 67.5° | 209.1  | 201.9  | 181.7  | 161.5  | 155.8  |
| 70°   | 170.2  | 161.5  | 154.3  | 132.7  | 126.9  |
| 72.5° | 135.6  | 126.9  | 116.8  | 105.3  | 101.0  |
| 75°   | 102.4  | 95.2   | 89.4   | 85.1   | 93.7   |
| 77.5° | 70.7   | 67.8   | 63.5   | 59.1   | 57.7   |
| 80°   | 46.1   | 44.7   | 43.3   | 41.8   | 40.4   |
| 82.5° | 27.4   | 27.4   | 27.4   | 27.4   | 27.4   |
| 85°   | 14.4   | 15.9   | 17.3   | 18.7   | 20.2   |
| 87.5° | 8.7    | 8.7    | 10.1   | 11.5   | 13.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)