

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: P562778

Luminaire Tested: FSR-24-4-LD4-2LO-40-UNV-82-94-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P562778
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-LD4-2LO-40-UNV-82-94-EDD-90
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .187 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 90 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4610.0 lumens
Efficiency: N/A
Efficacy: 98.5 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

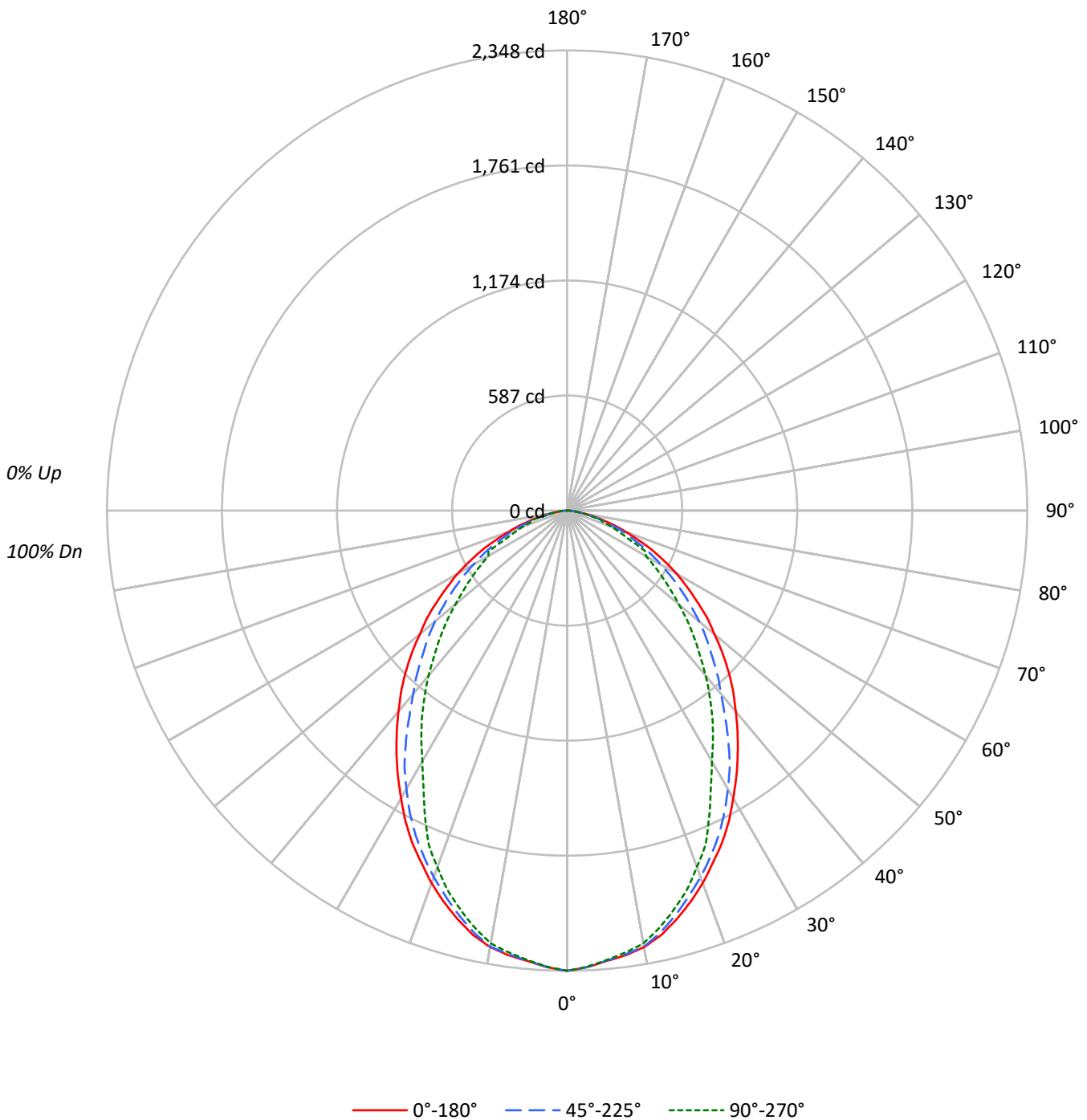
Input Watts (W): 46.8
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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 | 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° | 3160 | 3160 | 3160 |
| 5° | 3117 | 3113 | 3109 |
| 10° | 3090 | 3086 | 3064 |
| 15° | 3006 | 2976 | 2935 |
| 20° | 2896 | 2849 | 2771 |
| 25° | 2777 | 2716 | 2547 |
| 30° | 2632 | 2547 | 2294 |
| 35° | 2493 | 2354 | 2122 |
| 40° | 2351 | 2146 | 1931 |
| 45° | 2216 | 1984 | 1746 |
| 50° | 2051 | 1841 | 1557 |
| 55° | 1898 | 1669 | 1395 |
| 60° | 1739 | 1490 | 1249 |
| 65° | 1530 | 1305 | 1106 |
| 70° | 1260 | 1143 | 940 |
| 75° | 1002 | 875 | 918 |
| 80° | 673 | 631 | 589 |
| 85° | 418 | 503 | 587 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2216 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 218.6 | 4.7 |
| 10°-20° | 599.9 | 13.0 |
| 20°-30° | 830.5 | 18.0 |
| 30°-40° | 885.6 | 19.2 |
| 40°-50° | 807.9 | 17.5 |
| 50°-60° | 632.9 | 13.7 |
| 60°-70° | 412.5 | 8.9 |
| 70°-80° | 182.8 | 4.0 |
| 80°-90° | 39.2 | 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° | 1649.0 | 35.8 |
| 0°-40° | 2534.6 | 55.0 |
| 0°-60° | 3975.5 | 86.2 |
| 0°-90° | 4610.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 4610.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2348 | 2348 | 2348 | 2348 | 2348 | |
| 5° | 2308 | 2305 | 2305 | 2302 | 2302 | 219 |
| 15° | 2158 | 2158 | 2136 | 2115 | 2107 | 607 |
| 25° | 1870 | 1860 | 1830 | 1765 | 1716 | 859 |
| 35° | 1518 | 1507 | 1433 | 1325 | 1292 | 949 |
| 45° | 1165 | 1140 | 1042 | 956 | 918 | 897 |
| 55° | 809 | 785 | 711 | 627 | 594 | 726 |
| 65° | 480 | 453 | 410 | 418 | 348 | 474 |
| 75° | 193 | 179 | 168 | 160 | 176 | 207 |
| 85° | 27 | 30 | 33 | 35 | 38 | 38 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P562778

CATALOG NUMBER: FSR-24-4-LD4-2LO-40-UNV-82-94-EDD-90

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2348.3 | 2348.3 | 2348.3 | 2348.3 | 2348.3 |
| 2.5° | 2332.0 | 2332.0 | 2332.0 | 2329.3 | 2329.3 |
| 5° | 2307.6 | 2304.8 | 2304.8 | 2302.1 | 2302.1 |
| 7.5° | 2288.5 | 2285.8 | 2283.1 | 2280.4 | 2275.0 |
| 10° | 2261.4 | 2261.4 | 2258.7 | 2245.1 | 2242.4 |
| 12.5° | 2218.0 | 2215.2 | 2204.4 | 2185.4 | 2180.0 |
| 15° | 2158.2 | 2158.2 | 2136.5 | 2114.8 | 2106.7 |
| 17.5° | 2093.1 | 2090.4 | 2063.2 | 2041.5 | 2030.6 |
| 20° | 2022.5 | 2017.1 | 1989.9 | 1954.6 | 1935.6 |
| 22.5° | 1943.8 | 1943.8 | 1911.2 | 1865.0 | 1846.0 |
| 25° | 1870.5 | 1859.6 | 1829.8 | 1764.6 | 1715.7 |
| 27.5° | 1786.3 | 1770.0 | 1737.5 | 1645.1 | 1588.1 |
| 30° | 1694.0 | 1685.9 | 1639.7 | 1520.3 | 1476.8 |
| 32.5° | 1607.1 | 1593.6 | 1544.7 | 1419.8 | 1384.5 |
| 35° | 1517.6 | 1506.7 | 1433.4 | 1324.8 | 1292.2 |
| 37.5° | 1428.0 | 1414.4 | 1322.1 | 1235.2 | 1194.5 |
| 40° | 1338.4 | 1322.1 | 1221.6 | 1142.9 | 1099.5 |
| 42.5° | 1254.2 | 1232.5 | 1134.8 | 1050.6 | 1001.7 |
| 45° | 1164.6 | 1140.2 | 1042.5 | 955.6 | 917.6 |
| 47.5° | 1075.0 | 1053.3 | 963.7 | 874.2 | 830.7 |
| 50° | 980.0 | 961.0 | 879.6 | 790.0 | 743.8 |
| 52.5° | 901.3 | 871.4 | 792.7 | 703.1 | 665.1 |
| 55° | 809.0 | 784.6 | 711.3 | 627.1 | 594.5 |
| 57.5° | 724.8 | 700.4 | 632.5 | 553.8 | 526.7 |
| 60° | 646.1 | 610.8 | 553.8 | 485.9 | 464.2 |
| 62.5° | 559.2 | 532.1 | 483.2 | 426.2 | 453.4 |
| 65° | 480.5 | 453.4 | 409.9 | 418.1 | 347.5 |
| 67.5° | 393.6 | 380.1 | 342.1 | 304.1 | 293.2 |
| 70° | 320.3 | 304.1 | 290.5 | 249.8 | 238.9 |
| 72.5° | 255.2 | 238.9 | 219.9 | 198.2 | 190.0 |
| 75° | 192.7 | 179.2 | 168.3 | 160.2 | 176.5 |
| 77.5° | 133.0 | 127.6 | 119.4 | 111.3 | 108.6 |
| 80° | 86.9 | 84.2 | 81.4 | 78.7 | 76.0 |
| 82.5° | 51.6 | 51.6 | 51.6 | 51.6 | 51.6 |
| 85° | 27.1 | 29.9 | 32.6 | 35.3 | 38.0 |
| 87.5° | 16.3 | 16.3 | 19.0 | 21.7 | 24.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)