

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: P562176

Luminaire Tested: FSR-24-4-LD4-1LO-40-UNV-81-84-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P562176
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-LD4-1LO-40-UNV-81-84-EDD-90
Description: 2X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .125 CLEAR PC ENVIRONMENTAL SI
LENSES WITH, 90 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2349.0 lumens
Efficiency: N/A
Efficacy: 100.4 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

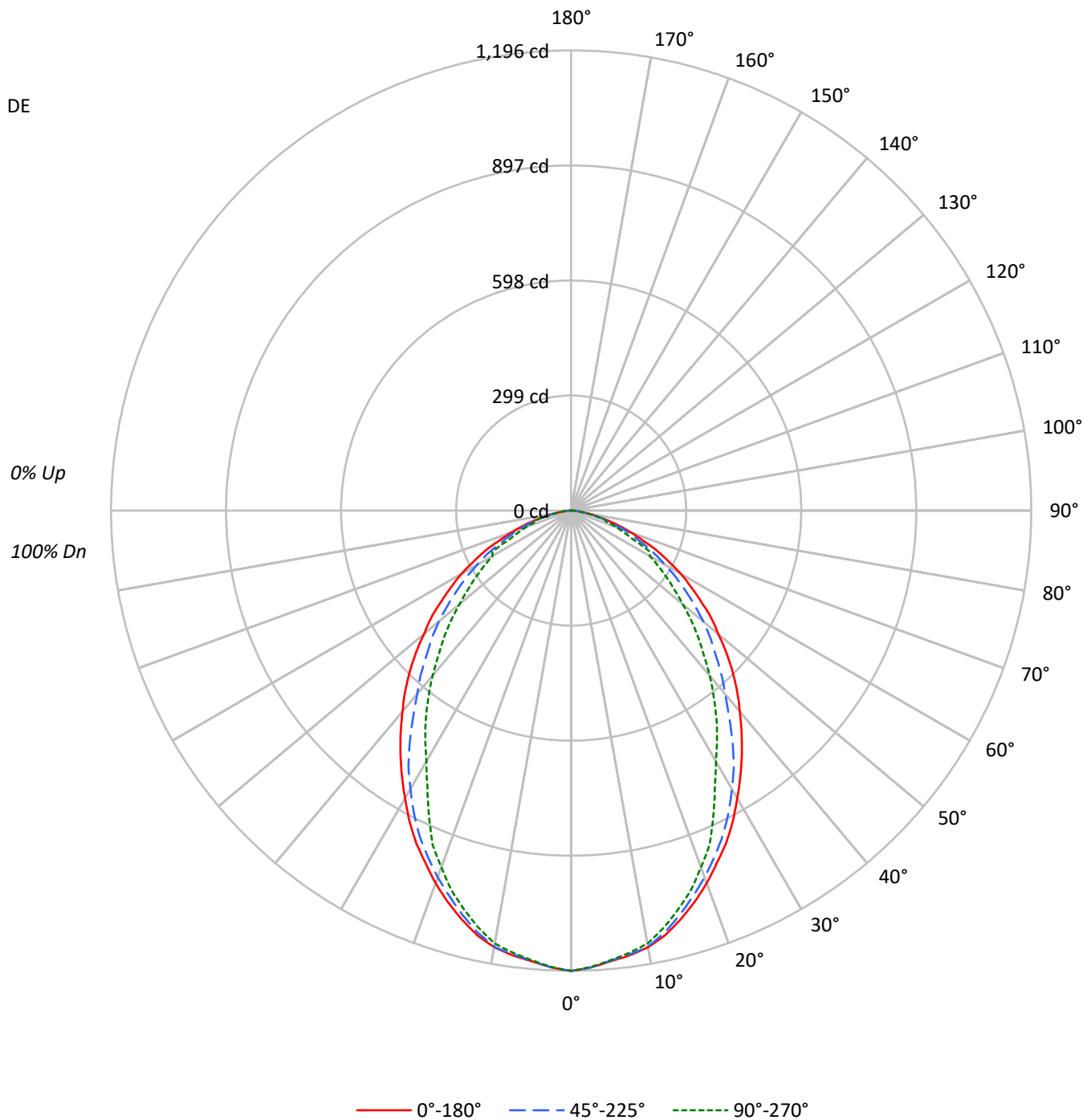
Input Watts (W): 23.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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 | 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° | 1610 | 1610 | 1610 |
| 5° | 1588 | 1586 | 1584 |
| 10° | 1574 | 1572 | 1561 |
| 15° | 1532 | 1517 | 1495 |
| 20° | 1476 | 1452 | 1412 |
| 25° | 1415 | 1384 | 1298 |
| 30° | 1341 | 1298 | 1169 |
| 35° | 1270 | 1200 | 1081 |
| 40° | 1198 | 1093 | 984 |
| 45° | 1129 | 1011 | 890 |
| 50° | 1045 | 938 | 793 |
| 55° | 967 | 850 | 711 |
| 60° | 886 | 759 | 636 |
| 65° | 779 | 665 | 564 |
| 70° | 642 | 582 | 479 |
| 75° | 510 | 446 | 467 |
| 80° | 343 | 322 | 300 |
| 85° | 213 | 256 | 299 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1129 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 111.4 | 4.7 |
| 10°-20° | 305.7 | 13.0 |
| 20°-30° | 423.2 | 18.0 |
| 30°-40° | 451.2 | 19.2 |
| 40°-50° | 411.7 | 17.5 |
| 50°-60° | 322.5 | 13.7 |
| 60°-70° | 210.2 | 8.9 |
| 70°-80° | 93.1 | 4.0 |
| 80°-90° | 20.0 | 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° | 840.3 | 35.8 |
| 0°-40° | 1291.5 | 55.0 |
| 0°-60° | 2025.7 | 86.2 |
| 0°-90° | 2349.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2349.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1196 | 1196 | 1196 | 1196 | 1196 | |
| 5° | 1176 | 1174 | 1174 | 1173 | 1173 | 112 |
| 15° | 1100 | 1100 | 1089 | 1078 | 1073 | 309 |
| 25° | 953 | 948 | 932 | 899 | 874 | 438 |
| 35° | 773 | 768 | 730 | 675 | 658 | 483 |
| 45° | 593 | 581 | 531 | 487 | 468 | 457 |
| 55° | 412 | 400 | 362 | 320 | 303 | 370 |
| 65° | 245 | 231 | 209 | 213 | 177 | 241 |
| 75° | 98 | 91 | 86 | 82 | 90 | 105 |
| 85° | 14 | 15 | 17 | 18 | 19 | 19 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P562176

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 1196.5 | 1196.5 | 1196.5 | 1196.5 | 1196.5 |
| 2.5° | 1188.2 | 1188.2 | 1188.2 | 1186.9 | 1186.9 |
| 5° | 1175.8 | 1174.4 | 1174.4 | 1173.0 | 1173.0 |
| 7.5° | 1166.1 | 1164.7 | 1163.4 | 1162.0 | 1159.2 |
| 10° | 1152.3 | 1152.3 | 1150.9 | 1144.0 | 1142.6 |
| 12.5° | 1130.2 | 1128.8 | 1123.2 | 1113.6 | 1110.8 |
| 15° | 1099.7 | 1099.7 | 1088.7 | 1077.6 | 1073.4 |
| 17.5° | 1066.5 | 1065.1 | 1051.3 | 1040.2 | 1034.7 |
| 20° | 1030.6 | 1027.8 | 1014.0 | 996.0 | 986.3 |
| 22.5° | 990.4 | 990.4 | 973.8 | 950.3 | 940.6 |
| 25° | 953.1 | 947.6 | 932.3 | 899.1 | 874.2 |
| 27.5° | 910.2 | 901.9 | 885.3 | 838.3 | 809.2 |
| 30° | 863.2 | 859.0 | 835.5 | 774.6 | 752.5 |
| 32.5° | 818.9 | 812.0 | 787.1 | 723.5 | 705.5 |
| 35° | 773.3 | 767.7 | 730.4 | 675.0 | 658.4 |
| 37.5° | 727.6 | 720.7 | 673.7 | 629.4 | 608.6 |
| 40° | 682.0 | 673.7 | 622.5 | 582.4 | 560.2 |
| 42.5° | 639.1 | 628.0 | 578.2 | 535.3 | 510.4 |
| 45° | 593.4 | 581.0 | 531.2 | 486.9 | 467.6 |
| 47.5° | 547.8 | 536.7 | 491.1 | 445.4 | 423.3 |
| 50° | 499.4 | 489.7 | 448.2 | 402.5 | 379.0 |
| 52.5° | 459.3 | 444.0 | 403.9 | 358.3 | 338.9 |
| 55° | 412.2 | 399.8 | 362.4 | 319.5 | 302.9 |
| 57.5° | 369.3 | 356.9 | 322.3 | 282.2 | 268.4 |
| 60° | 329.2 | 311.2 | 282.2 | 247.6 | 236.5 |
| 62.5° | 285.0 | 271.1 | 246.2 | 217.2 | 231.0 |
| 65° | 244.8 | 231.0 | 208.9 | 213.0 | 177.1 |
| 67.5° | 200.6 | 193.7 | 174.3 | 154.9 | 149.4 |
| 70° | 163.2 | 154.9 | 148.0 | 127.3 | 121.7 |
| 72.5° | 130.0 | 121.7 | 112.0 | 101.0 | 96.8 |
| 75° | 98.2 | 91.3 | 85.8 | 81.6 | 89.9 |
| 77.5° | 67.8 | 65.0 | 60.9 | 56.7 | 55.3 |
| 80° | 44.3 | 42.9 | 41.5 | 40.1 | 38.7 |
| 82.5° | 26.3 | 26.3 | 26.3 | 26.3 | 26.3 |
| 85° | 13.8 | 15.2 | 16.6 | 18.0 | 19.4 |
| 87.5° | 8.3 | 8.3 | 9.7 | 11.1 | 12.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)