

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: P561416

Luminaire Tested: FSR-12-4-LD4-2HI-40-UNV-81-88-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P561416
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-12-4-LD4-2HI-40-UNV-81-88-EDD-90
Description: 1X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI
LENSES WITH, 90 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5547.0 lumens
Efficiency: N/A
Efficacy: 64.2 lumens/watt
Spacing Criteria (0/90/45): 1.1 / 1 / 1.15
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')
CIE Type: Direct

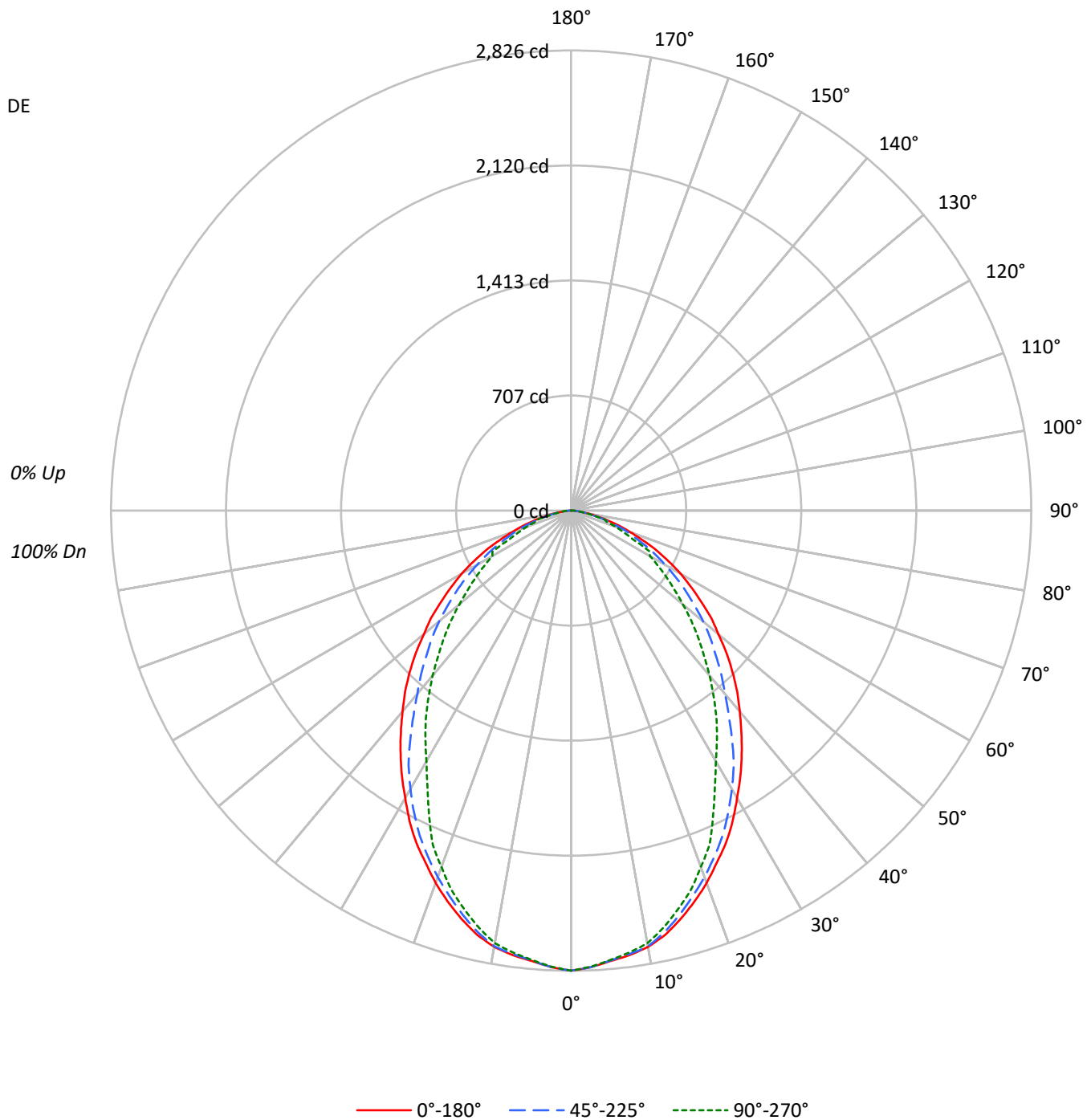
Input Watts (W): 86.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P561416

CATALOG NUMBER: FSR-12-4-LD4-2HI-40-UNV-81-88-EDD-90

Luminous Intensity Polar Plot





TEST NUMBER: P561416

CATALOG NUMBER: FSR-12-4-LD4-2HI-40-UNV-81-88-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 | 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 | | | | | | | | | 100 | | | | | | | | | | | | | | | | | | | |
| 1 | 110 | 106 | 102 | 99 | 108 | 104 | 100 | 97 | 100 | 97 | 94 | 96 | 94 | 91 | 92 | 90 | 89 | 87 | | | | | | | | | 87 | | | | | | | | | | | | | | | | | | | |
| 2 | 101 | 94 | 88 | 83 | 99 | 92 | 87 | 82 | 89 | 84 | 80 | 86 | 82 | 78 | 83 | 79 | 77 | 75 | | | | | | | | | 75 | | | | | | | | | | | | | | | | | | | |
| 3 | 93 | 84 | 77 | 71 | 91 | 82 | 76 | 70 | 79 | 74 | 69 | 77 | 72 | 68 | 74 | 70 | 67 | 65 | | | | | | | | | 65 | | | | | | | | | | | | | | | | | | | |
| 4 | 86 | 75 | 67 | 61 | 84 | 74 | 66 | 61 | 72 | 65 | 60 | 69 | 64 | 59 | 67 | 62 | 58 | 56 | | | | | | | | | 56 | | | | | | | | | | | | | | | | | | | |
| 5 | 80 | 68 | 60 | 54 | 78 | 67 | 59 | 53 | 65 | 58 | 53 | 63 | 57 | 52 | 61 | 56 | 52 | 50 | | | | | | | | | 50 | | | | | | | | | | | | | | | | | | | |
| 6 | 74 | 62 | 53 | 48 | 72 | 61 | 53 | 47 | 59 | 52 | 47 | 57 | 51 | 47 | 56 | 50 | 46 | 44 | | | | | | | | | 44 | | | | | | | | | | | | | | | | | | | |
| 7 | 69 | 56 | 48 | 43 | 67 | 56 | 48 | 42 | 54 | 47 | 42 | 53 | 46 | 42 | 51 | 46 | 42 | 40 | | | | | | | | | 40 | | | | | | | | | | | | | | | | | | | |
| 8 | 65 | 52 | 44 | 38 | 63 | 51 | 44 | 38 | 50 | 43 | 38 | 49 | 42 | 38 | 48 | 42 | 38 | 36 | | | | | | | | | 36 | | | | | | | | | | | | | | | | | | | |
| 9 | 61 | 48 | 40 | 35 | 59 | 47 | 40 | 35 | 46 | 39 | 35 | 45 | 39 | 34 | 44 | 38 | 34 | 33 | | | | | | | | | 33 | | | | | | | | | | | | | | | | | | | |
| 10 | 57 | 44 | 37 | 32 | 56 | 44 | 37 | 32 | 43 | 36 | 32 | 42 | 36 | 32 | 41 | 36 | 32 | 30 | | | | | | | | | 30 | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 7604 | 7604 | 7604 |
| 5° | 7500 | 7491 | 7482 |
| 10° | 7435 | 7426 | 7373 |
| 15° | 7235 | 7162 | 7062 |
| 20° | 6969 | 6857 | 6670 |
| 25° | 6683 | 6537 | 6130 |
| 30° | 6334 | 6131 | 5522 |
| 35° | 5999 | 5666 | 5108 |
| 40° | 5657 | 5163 | 4647 |
| 45° | 5333 | 4774 | 4202 |
| 50° | 4937 | 4431 | 3747 |
| 55° | 4567 | 4015 | 3356 |
| 60° | 4184 | 3587 | 3006 |
| 65° | 3682 | 3140 | 2662 |
| 70° | 3033 | 2750 | 2262 |
| 75° | 2411 | 2105 | 2207 |
| 80° | 1619 | 1519 | 1418 |
| 85° | 1010 | 1210 | 1411 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 5333 cd/sqm



TEST NUMBER: P561416

CATALOG NUMBER: FSR-12-4-LD4-2HI-40-UNV-81-88-EDD-90

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 263.0 | 4.7 |
| 10°-20° | 721.8 | 13.0 |
| 20°-30° | 999.3 | 18.0 |
| 30°-40° | 1065.6 | 19.2 |
| 40°-50° | 972.1 | 17.5 |
| 50°-60° | 761.6 | 13.7 |
| 60°-70° | 496.4 | 8.9 |
| 70°-80° | 219.9 | 4.0 |
| 80°-90° | 47.2 | 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° | 1984.2 | 35.8 |
| 0°-40° | 3049.8 | 55.0 |
| 0°-60° | 4783.5 | 86.2 |
| 0°-90° | 5547.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5547.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2826 | 2826 | 2826 | 2826 | 2826 | |
| 5° | 2777 | 2773 | 2773 | 2770 | 2770 | 264 |
| 15° | 2597 | 2597 | 2571 | 2545 | 2535 | 730 |
| 25° | 2251 | 2238 | 2202 | 2123 | 2064 | 1033 |
| 35° | 1826 | 1813 | 1725 | 1594 | 1555 | 1142 |
| 45° | 1401 | 1372 | 1254 | 1150 | 1104 | 1079 |
| 55° | 973 | 944 | 856 | 755 | 715 | 873 |
| 65° | 578 | 546 | 493 | 503 | 418 | 570 |
| 75° | 232 | 216 | 202 | 193 | 212 | 249 |
| 85° | 33 | 36 | 39 | 42 | 46 | 45 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P561416

CATALOG NUMBER: FSR-12-4-LD4-2HI-40-UNV-81-88-EDD-90

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2825.6 | 2825.6 | 2825.6 | 2825.6 | 2825.6 |
| 2.5° | 2806.0 | 2806.0 | 2806.0 | 2802.7 | 2802.7 |
| 5° | 2776.6 | 2773.3 | 2773.3 | 2770.0 | 2770.0 |
| 7.5° | 2753.7 | 2750.4 | 2747.2 | 2743.9 | 2737.4 |
| 10° | 2721.0 | 2721.0 | 2717.8 | 2701.4 | 2698.2 |
| 12.5° | 2668.8 | 2665.5 | 2652.4 | 2629.6 | 2623.0 |
| 15° | 2596.9 | 2596.9 | 2570.8 | 2544.6 | 2534.8 |
| 17.5° | 2518.5 | 2515.2 | 2482.6 | 2456.4 | 2443.4 |
| 20° | 2433.6 | 2427.0 | 2394.4 | 2351.9 | 2329.1 |
| 22.5° | 2338.9 | 2338.9 | 2299.7 | 2244.1 | 2221.3 |
| 25° | 2250.7 | 2237.6 | 2201.7 | 2123.3 | 2064.5 |
| 27.5° | 2149.4 | 2129.8 | 2090.6 | 1979.5 | 1910.9 |
| 30° | 2038.3 | 2028.5 | 1973.0 | 1829.3 | 1777.0 |
| 32.5° | 1933.8 | 1917.5 | 1858.7 | 1708.4 | 1665.9 |
| 35° | 1826.0 | 1812.9 | 1724.7 | 1594.1 | 1554.9 |
| 37.5° | 1718.2 | 1701.9 | 1590.8 | 1486.3 | 1437.3 |
| 40° | 1610.4 | 1590.8 | 1469.9 | 1375.2 | 1323.0 |
| 42.5° | 1509.1 | 1483.0 | 1365.4 | 1264.2 | 1205.4 |
| 45° | 1401.4 | 1372.0 | 1254.4 | 1149.8 | 1104.1 |
| 47.5° | 1293.6 | 1267.4 | 1159.6 | 1051.8 | 999.6 |
| 50° | 1179.2 | 1156.4 | 1058.4 | 950.6 | 895.0 |
| 52.5° | 1084.5 | 1048.6 | 953.8 | 846.0 | 800.3 |
| 55° | 973.4 | 944.0 | 855.8 | 754.6 | 715.4 |
| 57.5° | 872.2 | 842.8 | 761.1 | 666.4 | 633.7 |
| 60° | 777.4 | 735.0 | 666.4 | 584.7 | 558.6 |
| 62.5° | 672.9 | 640.2 | 581.4 | 512.8 | 545.5 |
| 65° | 578.2 | 545.5 | 493.2 | 503.0 | 418.1 |
| 67.5° | 473.7 | 457.3 | 411.6 | 365.9 | 352.8 |
| 70° | 385.5 | 365.9 | 349.5 | 300.5 | 287.5 |
| 72.5° | 307.1 | 287.5 | 264.6 | 238.5 | 228.7 |
| 75° | 231.9 | 215.6 | 202.5 | 192.7 | 212.3 |
| 77.5° | 160.1 | 153.5 | 143.7 | 133.9 | 130.7 |
| 80° | 104.5 | 101.3 | 98.0 | 94.7 | 91.5 |
| 82.5° | 62.1 | 62.1 | 62.1 | 62.1 | 62.1 |
| 85° | 32.7 | 35.9 | 39.2 | 42.5 | 45.7 |
| 87.5° | 19.6 | 19.6 | 22.9 | 26.1 | 29.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)