

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: P590281

Luminaire Tested: FSR-24-2-LD4-2LO-40-UNV-82-88-EDD

Issue Date: 12/8/2021

Test Information

Test Method: LM-79-2019
Report Number: P590281
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-LD4-2LO-40-UNV-82-88-EDD
Description: 2X2 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .500 CLEAR PC ENVIRONMENTAL SI
LENSES WITH, 80 CRI AND 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

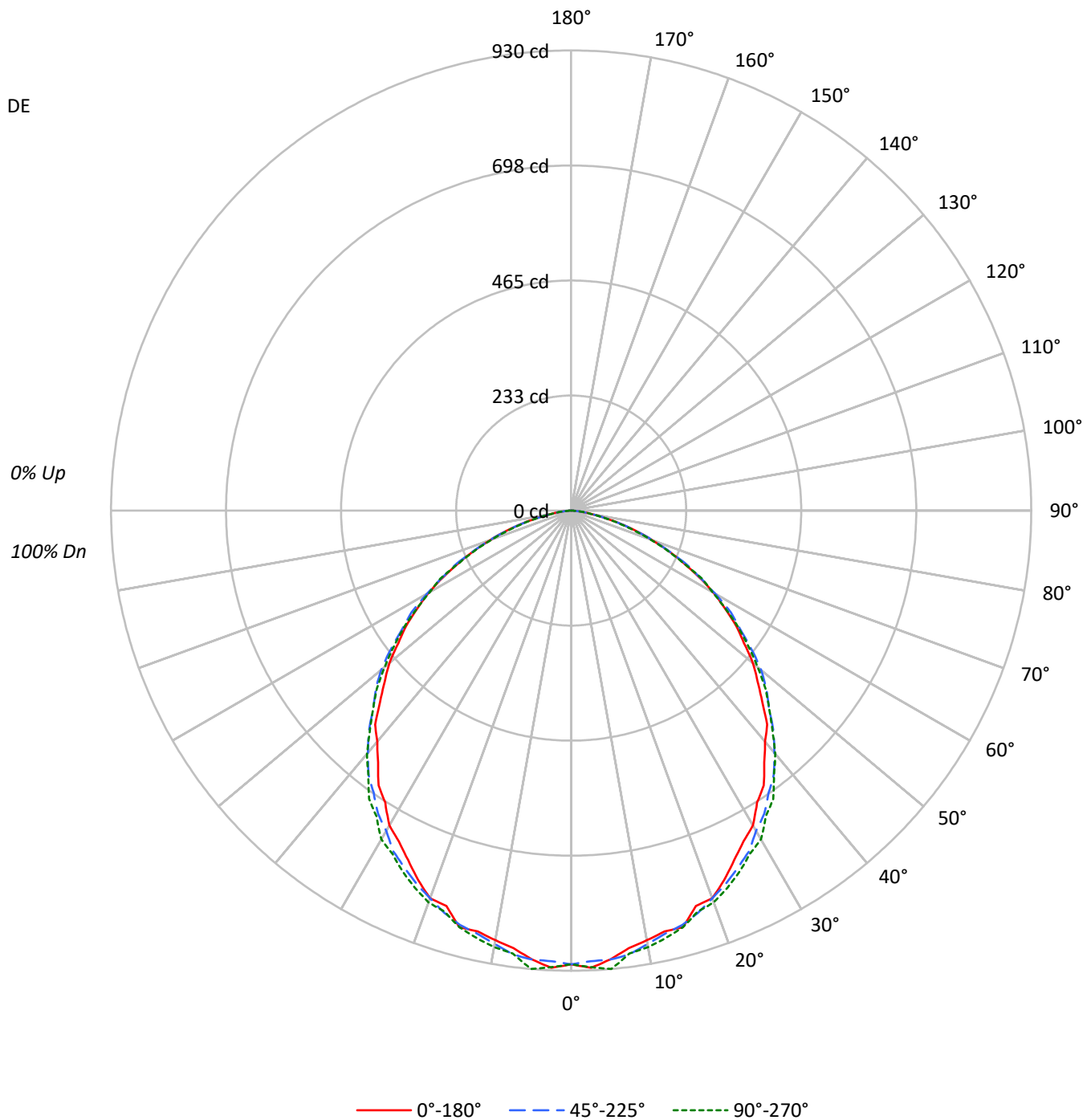
Lumens per Lamp: N/A
Luminaire Lumens: 2311.0 lumens
Efficiency: N/A
Efficacy: 98.8 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

Input Watts (W): 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 | 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° | 2467 | 2467 | 2467 |
| 5° | 2459 | 2460 | 2512 |
| 10° | 2410 | 2431 | 2448 |
| 15° | 2428 | 2415 | 2429 |
| 20° | 2387 | 2387 | 2413 |
| 25° | 2314 | 2365 | 2391 |
| 30° | 2282 | 2322 | 2384 |
| 35° | 2229 | 2287 | 2338 |
| 40° | 2142 | 2245 | 2255 |
| 45° | 2077 | 2151 | 2154 |
| 50° | 2009 | 2099 | 2059 |
| 55° | 1914 | 1951 | 1938 |
| 60° | 1790 | 1808 | 1775 |
| 65° | 1596 | 1636 | 1585 |
| 70° | 1369 | 1374 | 1336 |
| 75° | 1084 | 1082 | 1040 |
| 80° | 727 | 707 | 679 |
| 85° | 395 | 392 | 364 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 2206 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 86.3 | 3.7 |
| 10°-20° | 244.5 | 10.6 |
| 20°-30° | 366.2 | 15.8 |
| 30°-40° | 434.1 | 18.8 |
| 40°-50° | 434.9 | 18.8 |
| 50°-60° | 369.1 | 16.0 |
| 60°-70° | 248.9 | 10.8 |
| 70°-80° | 109.4 | 4.7 |
| 80°-90° | 17.8 | 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° | 696.9 | 30.2 |
| 0°-40° | 1131.0 | 48.9 |
| 0°-60° | 1935.0 | 83.7 |
| 0°-90° | 2311.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2311.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 917 | 917 | 917 | 917 | 917 | |
| 5° | 910 | 908 | 911 | 908 | 930 | 86 |
| 15° | 872 | 862 | 867 | 872 | 872 | 243 |
| 25° | 779 | 784 | 796 | 807 | 805 | 360 |
| 35° | 678 | 680 | 696 | 712 | 712 | 421 |
| 45° | 546 | 556 | 565 | 580 | 566 | 422 |
| 55° | 408 | 405 | 416 | 413 | 413 | 363 |
| 65° | 251 | 247 | 257 | 247 | 249 | 249 |
| 75° | 104 | 102 | 104 | 97 | 100 | 112 |
| 85° | 13 | 12 | 13 | 12 | 12 | 19 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P590281

CATALOG NUMBER: FSR-24-2-LD4-2LO-40-UNV-82-88-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|-------|-------|-------|-------|-------|
| 0° | 916.9 | 916.9 | 916.9 | 916.9 | 916.9 |
| 2.5° | 924.9 | 917.9 | 911.4 | 919.0 | 923.6 |
| 5° | 910.4 | 908.3 | 910.8 | 908.1 | 930.0 |
| 7.5° | 891.7 | 899.9 | 904.6 | 901.7 | 903.0 |
| 10° | 881.8 | 878.9 | 889.5 | 896.8 | 895.8 |
| 12.5° | 871.1 | 875.4 | 876.0 | 883.9 | 884.6 |
| 15° | 871.7 | 861.7 | 867.0 | 871.5 | 871.8 |
| 17.5° | 837.9 | 848.8 | 852.4 | 862.7 | 849.9 |
| 20° | 833.7 | 825.8 | 833.7 | 844.3 | 842.6 |
| 22.5° | 808.3 | 799.4 | 816.4 | 825.8 | 825.2 |
| 25° | 779.4 | 783.6 | 796.4 | 806.8 | 805.2 |
| 27.5° | 754.0 | 759.0 | 777.2 | 791.6 | 782.3 |
| 30° | 734.5 | 732.0 | 747.4 | 760.2 | 767.3 |
| 32.5° | 699.6 | 708.6 | 726.6 | 739.2 | 732.5 |
| 35° | 678.4 | 680.4 | 696.1 | 712.2 | 711.8 |
| 37.5° | 641.3 | 650.7 | 672.8 | 677.3 | 673.2 |
| 40° | 609.7 | 619.1 | 639.1 | 643.9 | 641.9 |
| 42.5° | 586.4 | 588.1 | 605.2 | 610.8 | 601.9 |
| 45° | 545.8 | 556.0 | 565.2 | 579.8 | 566.0 |
| 47.5° | 511.2 | 516.0 | 535.8 | 539.7 | 532.5 |
| 50° | 479.8 | 481.5 | 501.5 | 496.7 | 491.9 |
| 52.5° | 440.4 | 447.4 | 458.7 | 457.7 | 452.1 |
| 55° | 408.0 | 405.3 | 415.9 | 413.1 | 413.0 |
| 57.5° | 369.0 | 373.8 | 382.5 | 378.0 | 370.8 |
| 60° | 332.6 | 332.7 | 335.9 | 330.8 | 329.8 |
| 62.5° | 292.0 | 293.4 | 294.1 | 287.8 | 298.0 |
| 65° | 250.6 | 247.3 | 257.0 | 247.2 | 248.9 |
| 67.5° | 212.6 | 214.3 | 213.3 | 207.2 | 209.6 |
| 70° | 174.0 | 176.2 | 174.6 | 167.6 | 169.8 |
| 72.5° | 138.8 | 136.2 | 137.8 | 129.0 | 133.1 |
| 75° | 104.3 | 102.2 | 104.1 | 96.7 | 100.0 |
| 77.5° | 71.0 | 72.7 | 71.5 | 67.6 | 69.9 |
| 80° | 46.9 | 45.6 | 45.6 | 43.3 | 43.8 |
| 82.5° | 27.3 | 26.0 | 25.7 | 25.0 | 26.0 |
| 85° | 12.8 | 12.4 | 12.7 | 12.3 | 11.8 |
| 87.5° | 4.6 | 4.7 | 4.7 | 4.5 | 4.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)