

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: P561804

Luminaire Tested: FSR-12-4-LD4-2STD-40-UNV-81-96-EDD-90

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P561804
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-LD4-2STD-40-UNV-81-96-EDD-90
Description: 1X4 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .250 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: 5309.0 lumens
Efficiency: N/A
Efficacy: 79.7 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

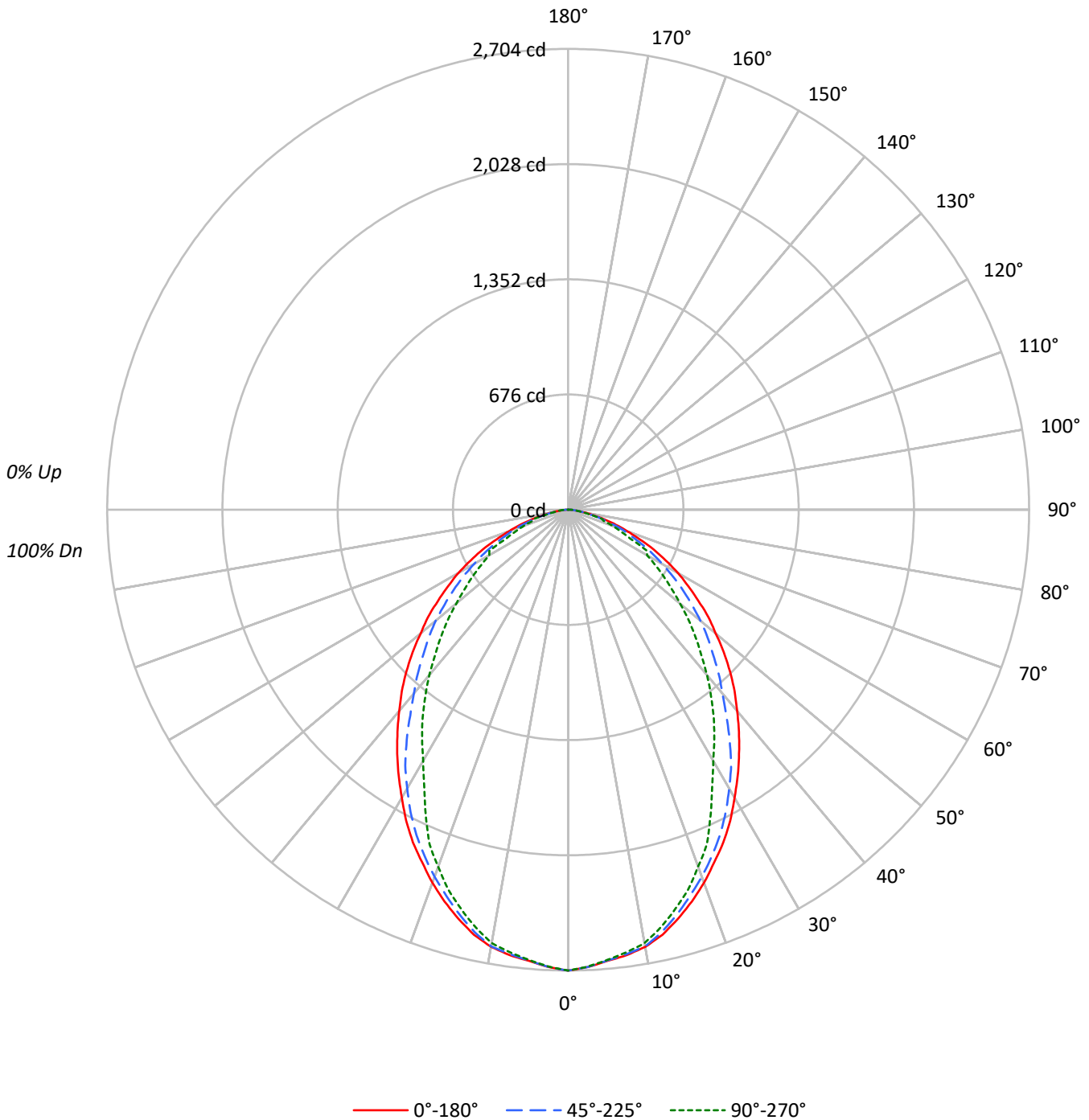
Input Watts (W): 66.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P561804

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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° | 7277 | 7277 | 7277 |
| 5° | 7178 | 7170 | 7162 |
| 10° | 7116 | 7108 | 7056 |
| 15° | 6924 | 6855 | 6759 |
| 20° | 6670 | 6562 | 6383 |
| 25° | 6396 | 6257 | 5867 |
| 30° | 6062 | 5867 | 5285 |
| 35° | 5741 | 5423 | 4889 |
| 40° | 5414 | 4942 | 4448 |
| 45° | 5104 | 4569 | 4021 |
| 50° | 4725 | 4241 | 3586 |
| 55° | 4371 | 3843 | 3212 |
| 60° | 4005 | 3433 | 2877 |
| 65° | 3524 | 3006 | 2548 |
| 70° | 2902 | 2632 | 2164 |
| 75° | 2308 | 2015 | 2113 |
| 80° | 1550 | 1454 | 1356 |
| 85° | 966 | 1158 | 1352 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 5104 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 251.7 | 4.7 |
| 10°-20° | 690.9 | 13.0 |
| 20°-30° | 956.5 | 18.0 |
| 30°-40° | 1019.9 | 19.2 |
| 40°-50° | 930.4 | 17.5 |
| 50°-60° | 728.9 | 13.7 |
| 60°-70° | 475.1 | 8.9 |
| 70°-80° | 210.5 | 4.0 |
| 80°-90° | 45.2 | 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° | 1899.1 | 35.8 |
| 0°-40° | 2919.0 | 55.0 |
| 0°-60° | 4578.3 | 86.2 |
| 0°-90° | 5309.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5309.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2704 | 2704 | 2704 | 2704 | 2704 | |
| 5° | 2657 | 2654 | 2654 | 2651 | 2651 | 252 |
| 15° | 2486 | 2486 | 2460 | 2436 | 2426 | 699 |
| 25° | 2154 | 2142 | 2107 | 2032 | 1976 | 989 |
| 35° | 1748 | 1735 | 1651 | 1526 | 1488 | 1093 |
| 45° | 1341 | 1313 | 1200 | 1100 | 1057 | 1033 |
| 55° | 932 | 904 | 819 | 722 | 685 | 836 |
| 65° | 553 | 522 | 472 | 482 | 400 | 545 |
| 75° | 222 | 206 | 194 | 184 | 203 | 238 |
| 85° | 31 | 34 | 38 | 41 | 44 | 43 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P561804

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2704.3 | 2704.3 | 2704.3 | 2704.3 | 2704.3 |
| 2.5° | 2685.6 | 2685.6 | 2685.6 | 2682.4 | 2682.4 |
| 5° | 2657.4 | 2654.3 | 2654.3 | 2651.2 | 2651.2 |
| 7.5° | 2635.6 | 2632.4 | 2629.3 | 2626.2 | 2619.9 |
| 10° | 2604.3 | 2604.3 | 2601.2 | 2585.5 | 2582.4 |
| 12.5° | 2554.3 | 2551.1 | 2538.6 | 2516.7 | 2510.5 |
| 15° | 2485.5 | 2485.5 | 2460.5 | 2435.5 | 2426.1 |
| 17.5° | 2410.5 | 2407.3 | 2376.1 | 2351.1 | 2338.5 |
| 20° | 2329.2 | 2322.9 | 2291.6 | 2251.0 | 2229.1 |
| 22.5° | 2238.5 | 2238.5 | 2201.0 | 2147.8 | 2126.0 |
| 25° | 2154.1 | 2141.6 | 2107.2 | 2032.2 | 1975.9 |
| 27.5° | 2057.2 | 2038.4 | 2000.9 | 1894.6 | 1828.9 |
| 30° | 1950.9 | 1941.5 | 1888.3 | 1750.8 | 1700.8 |
| 32.5° | 1850.8 | 1835.2 | 1778.9 | 1635.1 | 1594.5 |
| 35° | 1747.7 | 1735.2 | 1650.7 | 1525.7 | 1488.2 |
| 37.5° | 1644.5 | 1628.9 | 1522.6 | 1422.5 | 1375.6 |
| 40° | 1541.3 | 1522.6 | 1406.9 | 1316.2 | 1266.2 |
| 42.5° | 1444.4 | 1419.4 | 1306.8 | 1209.9 | 1153.6 |
| 45° | 1341.2 | 1313.1 | 1200.5 | 1100.5 | 1056.7 |
| 47.5° | 1238.1 | 1213.0 | 1109.9 | 1006.7 | 956.7 |
| 50° | 1128.6 | 1106.7 | 1013.0 | 909.8 | 856.6 |
| 52.5° | 1038.0 | 1003.6 | 912.9 | 809.7 | 766.0 |
| 55° | 931.7 | 903.5 | 819.1 | 722.2 | 684.7 |
| 57.5° | 834.7 | 806.6 | 728.5 | 637.8 | 606.5 |
| 60° | 744.1 | 703.4 | 637.8 | 559.6 | 534.6 |
| 62.5° | 644.0 | 612.8 | 556.5 | 490.8 | 522.1 |
| 65° | 553.4 | 522.1 | 472.1 | 481.5 | 400.2 |
| 67.5° | 453.3 | 437.7 | 393.9 | 350.2 | 337.7 |
| 70° | 368.9 | 350.2 | 334.5 | 287.6 | 275.1 |
| 72.5° | 293.9 | 275.1 | 253.2 | 228.2 | 218.8 |
| 75° | 222.0 | 206.3 | 193.8 | 184.5 | 203.2 |
| 77.5° | 153.2 | 146.9 | 137.6 | 128.2 | 125.1 |
| 80° | 100.0 | 96.9 | 93.8 | 90.7 | 87.5 |
| 82.5° | 59.4 | 59.4 | 59.4 | 59.4 | 59.4 |
| 85° | 31.3 | 34.4 | 37.5 | 40.6 | 43.8 |
| 87.5° | 18.8 | 18.8 | 21.9 | 25.0 | 28.1 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)