

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: P564061

Luminaire Tested: FSR-24-4-LD4-4STD-35-UNV-82-96-EDD

Issue Date: 7/20/2021

Test Information

Test Method: LM-79-2019
Report Number: P564061
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-LD4-4STD-35-UNV-82-96-EDD
Description: 2X4 FSR TROFFER WITH .187 CLEAR PC FIXTURE SIDE AND .250 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 3500K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 14390.0 lumens
Efficiency: N/A
Efficacy: 108.0 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

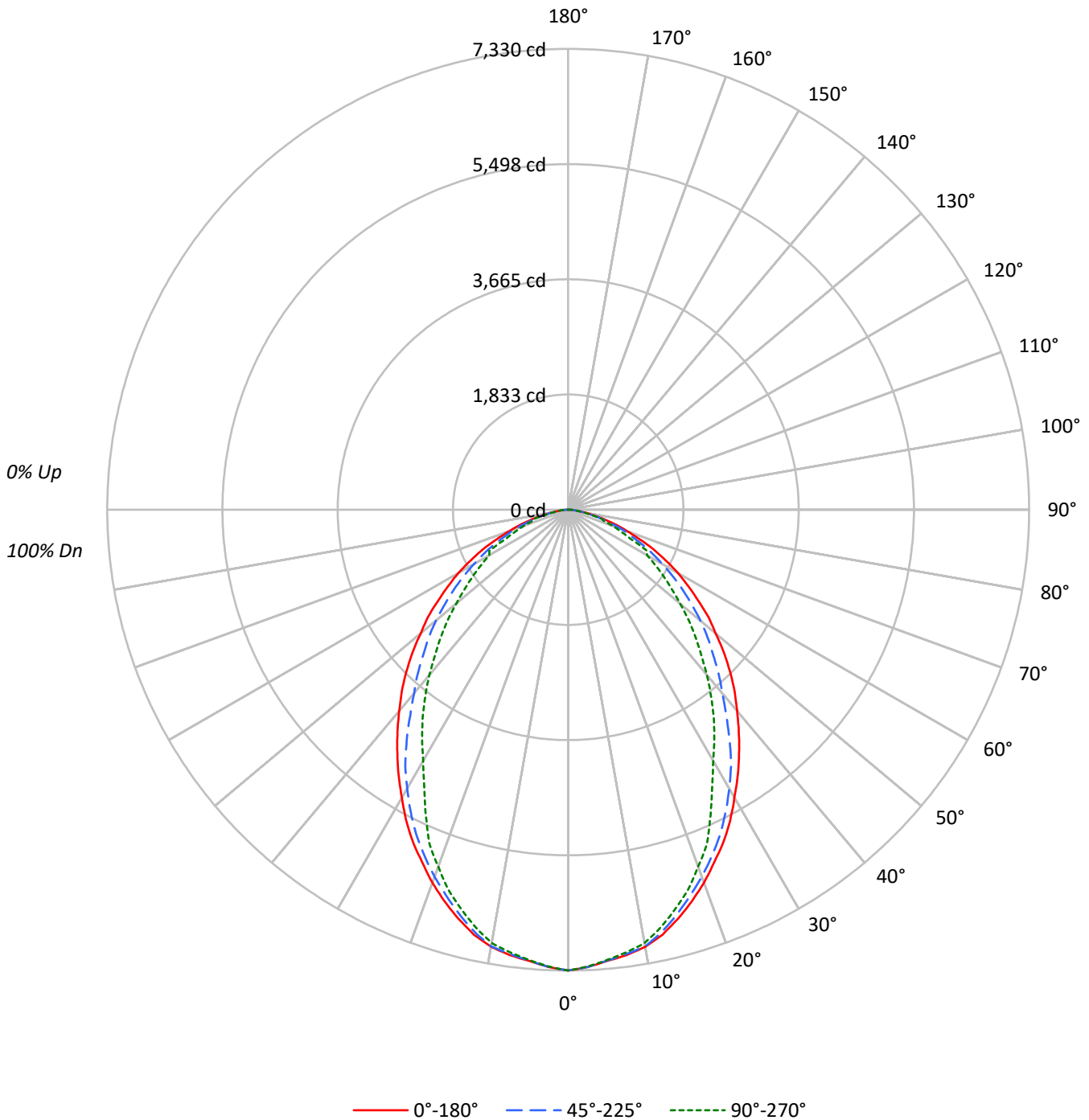
Input Watts (W): 133.2
Input Voltage (V):
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P564061

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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 | 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° | 9863 | 9863 | 9863 |
| 5° | 9729 | 9717 | 9706 |
| 10° | 9644 | 9633 | 9563 |
| 15° | 9384 | 9290 | 9160 |
| 20° | 9039 | 8894 | 8651 |
| 25° | 8668 | 8479 | 7951 |
| 30° | 8215 | 7952 | 7162 |
| 35° | 7781 | 7349 | 6626 |
| 40° | 7338 | 6698 | 6028 |
| 45° | 6917 | 6192 | 5450 |
| 50° | 6403 | 5747 | 4860 |
| 55° | 5924 | 5208 | 4353 |
| 60° | 5427 | 4652 | 3899 |
| 65° | 4775 | 4074 | 3453 |
| 70° | 3934 | 3567 | 2934 |
| 75° | 3128 | 2731 | 2863 |
| 80° | 2101 | 1970 | 1839 |
| 85° | 1308 | 1570 | 1831 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 6917 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 682.3 | 4.7 |
| 10°-20° | 1872.6 | 13.0 |
| 20°-30° | 2592.5 | 18.0 |
| 30°-40° | 2764.3 | 19.2 |
| 40°-50° | 2521.9 | 17.5 |
| 50°-60° | 1975.7 | 13.7 |
| 60°-70° | 1287.7 | 8.9 |
| 70°-80° | 570.5 | 4.0 |
| 80°-90° | 122.5 | 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° | 5147.4 | 35.8 |
| 0°-40° | 7911.8 | 55.0 |
| 0°-60° | 12409.3 | 86.2 |
| 0°-90° | 14390.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 14390.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 7330 | 7330 | 7330 | 7330 | 7330 | |
| 5° | 7203 | 7194 | 7194 | 7186 | 7186 | 684 |
| 15° | 6737 | 6737 | 6669 | 6601 | 6576 | 1894 |
| 25° | 5839 | 5805 | 5712 | 5508 | 5356 | 2680 |
| 35° | 4737 | 4703 | 4474 | 4135 | 4034 | 2961 |
| 45° | 3635 | 3559 | 3254 | 2983 | 2864 | 2800 |
| 55° | 2525 | 2449 | 2220 | 1958 | 1856 | 2265 |
| 65° | 1500 | 1415 | 1280 | 1305 | 1085 | 1478 |
| 75° | 602 | 559 | 525 | 500 | 551 | 645 |
| 85° | 85 | 93 | 102 | 110 | 119 | 118 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P564061

CATALOG NUMBER: FSR-24-4-LD4-4STD-35-UNV-82-96-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 7330.1 | 7330.1 | 7330.1 | 7330.1 | 7330.1 |
| 2.5° | 7279.2 | 7279.2 | 7279.2 | 7270.8 | 7270.8 |
| 5° | 7203.0 | 7194.5 | 7194.5 | 7186.0 | 7186.0 |
| 7.5° | 7143.6 | 7135.2 | 7126.7 | 7118.2 | 7101.3 |
| 10° | 7058.9 | 7058.9 | 7050.4 | 7008.1 | 6999.6 |
| 12.5° | 6923.3 | 6914.8 | 6880.9 | 6821.6 | 6804.7 |
| 15° | 6736.9 | 6736.9 | 6669.1 | 6601.3 | 6575.9 |
| 17.5° | 6533.5 | 6525.0 | 6440.3 | 6372.5 | 6338.6 |
| 20° | 6313.2 | 6296.2 | 6211.5 | 6101.3 | 6042.0 |
| 22.5° | 6067.4 | 6067.4 | 5965.7 | 5821.7 | 5762.4 |
| 25° | 5838.6 | 5804.7 | 5711.5 | 5508.1 | 5355.6 |
| 27.5° | 5575.9 | 5525.1 | 5423.4 | 5135.3 | 4957.3 |
| 30° | 5287.8 | 5262.4 | 5118.3 | 4745.5 | 4609.9 |
| 32.5° | 5016.7 | 4974.3 | 4821.7 | 4431.9 | 4321.8 |
| 35° | 4737.0 | 4703.1 | 4474.3 | 4135.3 | 4033.7 |
| 37.5° | 4457.4 | 4415.0 | 4126.9 | 3855.7 | 3728.6 |
| 40° | 4177.7 | 4126.9 | 3813.3 | 3567.6 | 3432.0 |
| 42.5° | 3915.0 | 3847.2 | 3542.2 | 3279.5 | 3126.9 |
| 45° | 3635.4 | 3559.1 | 3254.0 | 2982.9 | 2864.2 |
| 47.5° | 3355.7 | 3287.9 | 3008.3 | 2728.7 | 2593.1 |
| 50° | 3059.1 | 2999.8 | 2745.6 | 2466.0 | 2321.9 |
| 52.5° | 2813.4 | 2720.2 | 2474.4 | 2194.8 | 2076.1 |
| 55° | 2525.3 | 2449.0 | 2220.2 | 1957.5 | 1855.8 |
| 57.5° | 2262.6 | 2186.3 | 1974.5 | 1728.7 | 1644.0 |
| 60° | 2016.8 | 1906.7 | 1728.7 | 1516.9 | 1449.1 |
| 62.5° | 1745.7 | 1660.9 | 1508.4 | 1330.4 | 1415.2 |
| 65° | 1499.9 | 1415.2 | 1279.6 | 1305.0 | 1084.7 |
| 67.5° | 1228.7 | 1186.4 | 1067.7 | 949.1 | 915.2 |
| 70° | 999.9 | 949.1 | 906.7 | 779.6 | 745.7 |
| 72.5° | 796.6 | 745.7 | 686.4 | 618.6 | 593.2 |
| 75° | 601.7 | 559.3 | 525.4 | 500.0 | 550.8 |
| 77.5° | 415.2 | 398.3 | 372.9 | 347.4 | 339.0 |
| 80° | 271.2 | 262.7 | 254.2 | 245.7 | 237.3 |
| 82.5° | 161.0 | 161.0 | 161.0 | 161.0 | 161.0 |
| 85° | 84.7 | 93.2 | 101.7 | 110.2 | 118.6 |
| 87.5° | 50.8 | 50.8 | 59.3 | 67.8 | 76.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)