

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: P590404

Luminaire Tested: FSR-24-2-LD4-2STD-50-UNV-81-97-EDD

Issue Date: 12/8/2021

Test Information

Test Method: LM-79-2019
Report Number: P590404
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-LD4-2STD-50-UNV-81-97-EDD
Description: 2X2 FSR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .375 CLEAR TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3639.0 lumens
Efficiency: N/A
Efficacy: 109.3 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

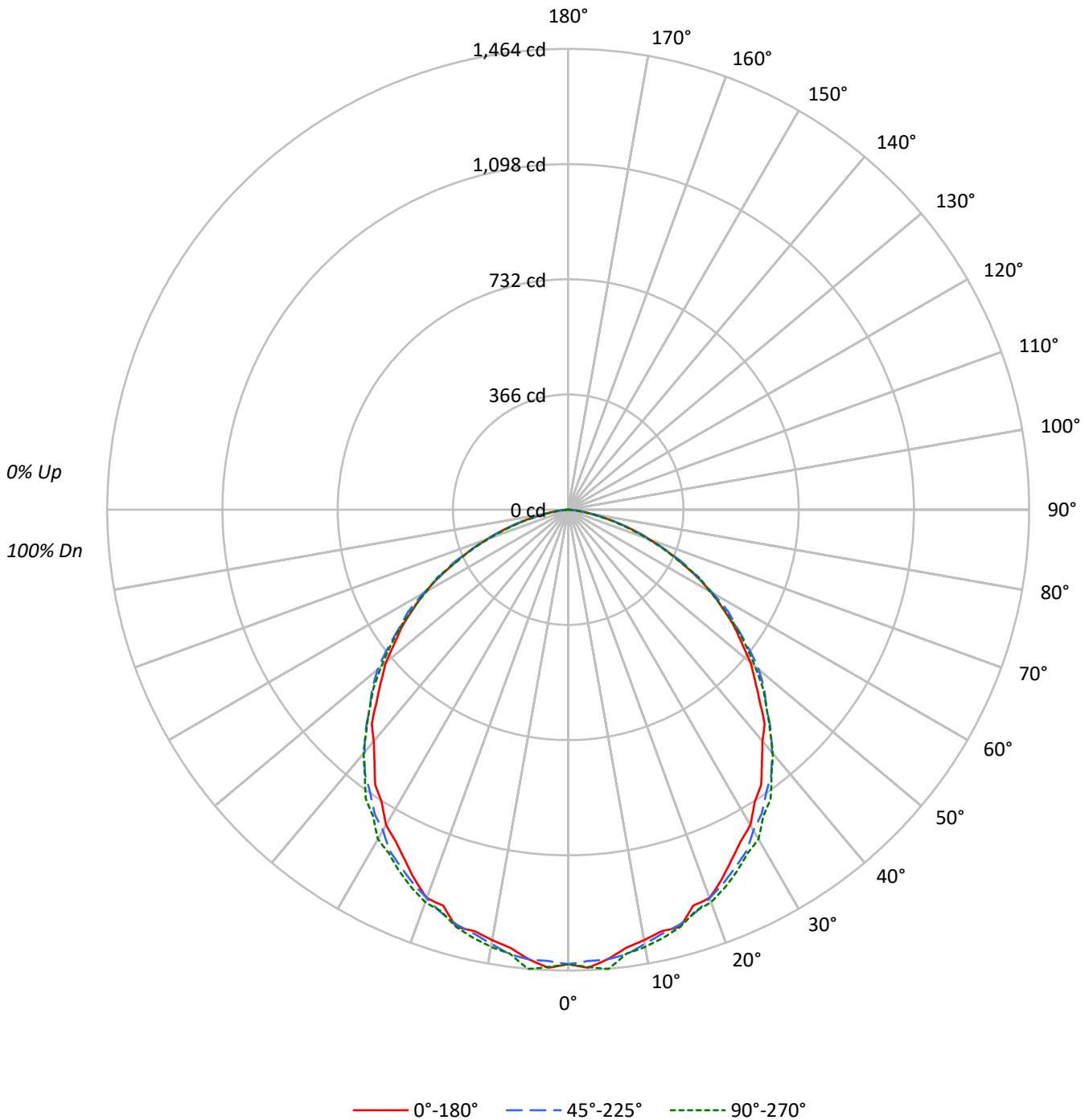
Input Watts (W): 33.3
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





TEST NUMBER: P590404

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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 | 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° | 3886 | 3886 | 3886 |
| 5° | 3873 | 3874 | 3956 |
| 10° | 3794 | 3827 | 3854 |
| 15° | 3824 | 3803 | 3824 |
| 20° | 3759 | 3759 | 3800 |
| 25° | 3644 | 3724 | 3765 |
| 30° | 3594 | 3657 | 3754 |
| 35° | 3509 | 3601 | 3682 |
| 40° | 3373 | 3535 | 3551 |
| 45° | 3271 | 3387 | 3392 |
| 50° | 3163 | 3306 | 3243 |
| 55° | 3014 | 3073 | 3051 |
| 60° | 2819 | 2847 | 2795 |
| 65° | 2513 | 2577 | 2495 |
| 70° | 2156 | 2164 | 2103 |
| 75° | 1707 | 1704 | 1638 |
| 80° | 1144 | 1113 | 1069 |
| 85° | 621 | 614 | 574 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 67.5°
 Vertical Angle: 45°
 Luminance: 3474 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 135.8 | 3.7 |
| 10°-20° | 384.9 | 10.6 |
| 20°-30° | 576.7 | 15.8 |
| 30°-40° | 683.5 | 18.8 |
| 40°-50° | 684.8 | 18.8 |
| 50°-60° | 581.2 | 16.0 |
| 60°-70° | 391.9 | 10.8 |
| 70°-80° | 172.2 | 4.7 |
| 80°-90° | 28.0 | 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° | 1097.4 | 30.2 |
| 0°-40° | 1780.9 | 48.9 |
| 0°-60° | 3047.0 | 83.7 |
| 0°-90° | 3639.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3639.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1444 | 1444 | 1444 | 1444 | 1444 | |
| 5° | 1434 | 1430 | 1434 | 1430 | 1464 | 135 |
| 15° | 1373 | 1357 | 1365 | 1372 | 1373 | 382 |
| 25° | 1227 | 1234 | 1254 | 1270 | 1268 | 567 |
| 35° | 1068 | 1071 | 1096 | 1122 | 1121 | 663 |
| 45° | 859 | 876 | 890 | 913 | 891 | 665 |
| 55° | 642 | 638 | 655 | 650 | 650 | 571 |
| 65° | 395 | 389 | 405 | 389 | 392 | 393 |
| 75° | 164 | 161 | 164 | 152 | 158 | 176 |
| 85° | 20 | 20 | 20 | 19 | 19 | 29 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P590404

CATALOG NUMBER: FSR-24-2-LD4-2STD-50-UNV-81-97-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 1443.9 | 1443.9 | 1443.9 | 1443.9 | 1443.9 |
| 2.5° | 1456.4 | 1445.4 | 1435.1 | 1447.0 | 1454.3 |
| 5° | 1433.6 | 1430.3 | 1434.2 | 1429.9 | 1464.4 |
| 7.5° | 1404.2 | 1417.0 | 1424.5 | 1419.8 | 1421.9 |
| 10° | 1388.5 | 1384.0 | 1400.6 | 1412.2 | 1410.5 |
| 12.5° | 1371.7 | 1378.4 | 1379.4 | 1391.9 | 1393.0 |
| 15° | 1372.6 | 1356.8 | 1365.2 | 1372.3 | 1372.8 |
| 17.5° | 1319.3 | 1336.5 | 1342.3 | 1358.5 | 1338.3 |
| 20° | 1312.8 | 1300.3 | 1312.8 | 1329.4 | 1326.8 |
| 22.5° | 1272.7 | 1258.7 | 1285.6 | 1300.3 | 1299.4 |
| 25° | 1227.2 | 1233.9 | 1254.1 | 1270.5 | 1267.9 |
| 27.5° | 1187.3 | 1195.2 | 1223.9 | 1246.4 | 1231.9 |
| 30° | 1156.6 | 1152.7 | 1176.9 | 1197.0 | 1208.2 |
| 32.5° | 1101.6 | 1115.8 | 1144.1 | 1164.0 | 1153.4 |
| 35° | 1068.2 | 1071.4 | 1096.2 | 1121.5 | 1120.8 |
| 37.5° | 1009.9 | 1024.6 | 1059.5 | 1066.5 | 1060.0 |
| 40° | 960.1 | 974.8 | 1006.3 | 1014.0 | 1010.8 |
| 42.5° | 923.4 | 926.0 | 953.0 | 961.8 | 947.8 |
| 45° | 859.4 | 875.5 | 890.0 | 912.9 | 891.3 |
| 47.5° | 805.0 | 812.4 | 843.8 | 849.9 | 838.5 |
| 50° | 755.6 | 758.2 | 789.7 | 782.1 | 774.6 |
| 52.5° | 693.5 | 704.5 | 722.2 | 720.7 | 712.0 |
| 55° | 642.4 | 638.1 | 654.9 | 650.4 | 650.3 |
| 57.5° | 581.1 | 588.5 | 602.3 | 595.3 | 583.9 |
| 60° | 523.7 | 523.9 | 528.9 | 520.9 | 519.4 |
| 62.5° | 459.7 | 462.0 | 463.1 | 453.2 | 469.2 |
| 65° | 394.7 | 389.4 | 404.7 | 389.3 | 391.9 |
| 67.5° | 334.8 | 337.4 | 335.9 | 326.2 | 330.0 |
| 70° | 274.0 | 277.4 | 275.0 | 264.0 | 267.3 |
| 72.5° | 218.5 | 214.4 | 217.0 | 203.2 | 209.5 |
| 75° | 164.2 | 160.9 | 163.9 | 152.3 | 157.5 |
| 77.5° | 111.9 | 114.5 | 112.6 | 106.4 | 110.0 |
| 80° | 73.8 | 71.8 | 71.8 | 68.2 | 69.0 |
| 82.5° | 43.1 | 41.0 | 40.5 | 39.3 | 41.0 |
| 85° | 20.1 | 19.6 | 19.9 | 19.4 | 18.6 |
| 87.5° | 7.3 | 7.5 | 7.5 | 7.1 | 6.7 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)