

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P#

Luminaire Tested: **FLDSQ4C90D010 FEU4C909027 F4LC-SQ-WLI**

Issue Date: 12/13/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P#  
 Test Lab: INNOVATION CENTER  
 Issue Date: 12/13/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: FAIL-SAFE  
 Catalog Number: FLDSQ4C90D010 FEU4C909027 F4LC-SQ-WLI  
 Description: 4 INCH 9000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

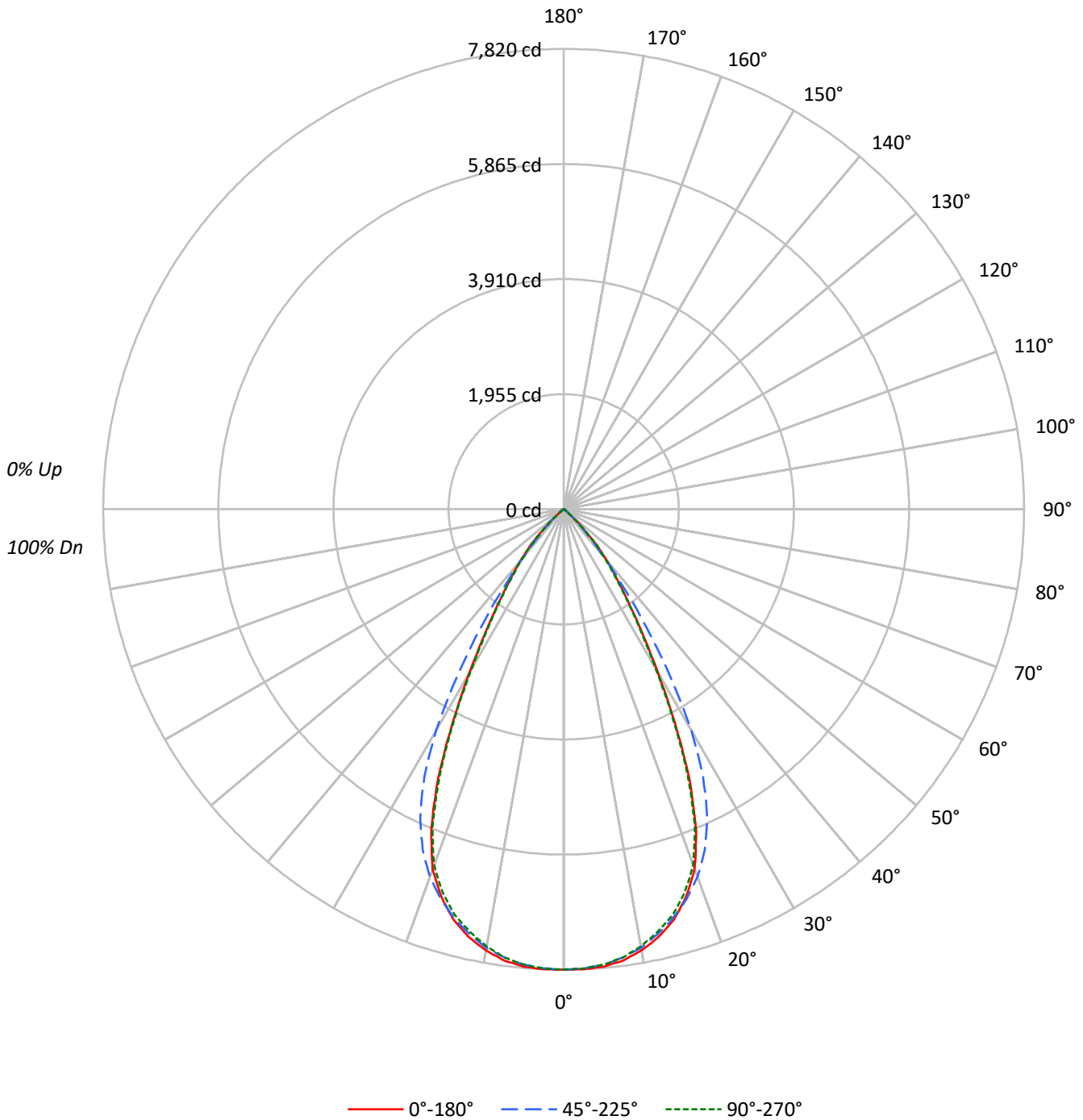
Lumens per Lamp: N/A  
 Luminaire Lumens: 6999.0 lumens  
 Efficiency: N/A  
 Efficacy: 72.1 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 97.1  
 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: 25 FT

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | GONIO 1 IN0055        | 4/22/2021        | 10/22/2021           |
| Power Meter                    | XITRON 2801 IN0197    | 12/1/2020        | 12/1/2021            |
| AC Power Source                | CHROMA 61505 IN0196   | 12/1/2020        | 12/1/2021            |
| DC Power Supply                | AGILENT E3634A IN0198 | 11/30/2020       | 11/30/2021           |
| Room Thermometer               | ONSET IN0143          | 12/1/2020        | 12/1/2021            |

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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  | 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 | 100 | 100 |   |
| 1   | 114 | 111 | 108 | 106 | 111 | 109 | 106 | 104 | 105 | 103 | 101 | 101 | 100 | 98  | 97  | 96  | 95  | 94  | 94  | 94  | 94  |   |
| 2   | 108 | 103 | 99  | 96  | 106 | 102 | 98  | 95  | 98  | 95  | 93  | 95  | 93  | 91  | 93  | 91  | 89  | 87  | 87  | 87  | 87  |   |
| 3   | 103 | 96  | 91  | 88  | 101 | 95  | 90  | 87  | 92  | 89  | 85  | 90  | 87  | 84  | 88  | 85  | 83  | 81  | 81  | 81  | 81  |   |
| 4   | 98  | 90  | 85  | 80  | 96  | 89  | 84  | 80  | 87  | 82  | 79  | 85  | 81  | 78  | 83  | 80  | 77  | 76  | 76  | 76  | 76  |   |
| 5   | 93  | 84  | 79  | 74  | 91  | 84  | 78  | 74  | 82  | 77  | 73  | 80  | 76  | 73  | 79  | 75  | 72  | 71  | 71  | 71  | 71  |   |
| 6   | 88  | 79  | 73  | 69  | 87  | 79  | 73  | 69  | 77  | 72  | 68  | 76  | 71  | 68  | 74  | 71  | 68  | 66  | 66  | 66  | 66  |   |
| 7   | 84  | 75  | 69  | 65  | 82  | 74  | 68  | 64  | 73  | 68  | 64  | 71  | 67  | 64  | 70  | 66  | 63  | 62  | 62  | 62  | 62  |   |
| 8   | 80  | 70  | 64  | 60  | 79  | 70  | 64  | 60  | 69  | 64  | 60  | 68  | 63  | 60  | 67  | 63  | 59  | 58  | 58  | 58  | 58  |   |
| 9   | 76  | 66  | 61  | 57  | 75  | 66  | 60  | 57  | 65  | 60  | 56  | 64  | 60  | 56  | 63  | 59  | 56  | 55  | 55  | 55  | 55  |   |
| 10  | 72  | 63  | 57  | 53  | 71  | 62  | 57  | 53  | 62  | 57  | 53  | 61  | 56  | 53  | 60  | 56  | 53  | 52  | 52  | 52  | 52  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°     | 45°    | 90°    |
|-----|--------|--------|--------|
| 0°  | 754350 | 754350 | 754350 |
| 5°  | 755149 | 751662 | 751662 |
| 10° | 745226 | 740827 | 738534 |
| 15° | 721035 | 717629 | 712784 |
| 20° | 667768 | 682338 | 660395 |
| 25° | 536918 | 613785 | 529838 |
| 30° | 354380 | 481249 | 345979 |
| 35° | 221495 | 288977 | 217478 |
| 40° | 144549 | 133918 | 138893 |
| 45° | 69606  | 53422  | 65676  |
| 50° | 17518  | 21301  | 16452  |
| 55° | 9673   | 8764   | 9370   |
| 60° | 6581   | 5538   | 6233   |
| 65° | 4521   | 4110   | 4521   |
| 70° | 3555   | 3047   | 3555   |
| 75° | 2684   | 2684   | 2684   |
| 80° | 2000   | 3001   | 3001   |
| 85° | 1993   | 3986   | 3986   |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 735.2  | 10.5      |
| 10°-20°   | 2007.9 | 28.7      |
| 20°-30°   | 2392.8 | 34.2      |
| 30°-40°   | 1354.9 | 19.4      |
| 40°-50°   | 418.9  | 6.0       |
| 50°-60°   | 58.2   | 0.8       |
| 60°-70°   | 19.9   | 0.3       |
| 70°-80°   | 7.9    | 0.1       |
| 80°-90°   | 3.3    | 0.0       |
| 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°    | 5135.9 | 73.4      |
| 0°-40°    | 6490.8 | 92.7      |
| 0°-60°    | 6967.9 | 99.6      |
| 0°-90°    | 6999.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 6999.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 7818 | 7818  | 7818 | 7818  | 7818 |      |
| 5°  | 7796 | 7778  | 7760 | 7755  | 7760 | 738  |
| 15° | 7218 | 7206  | 7184 | 7155  | 7136 | 2013 |
| 25° | 5043 | 5338  | 5765 | 5347  | 4977 | 2249 |
| 35° | 1880 | 2051  | 2453 | 2056  | 1846 | 1224 |
| 45° | 510  | 594   | 392  | 578   | 481  | 421  |
| 55° | 58   | 58    | 52   | 56    | 56   | 57   |
| 65° | 20   | 20    | 18   | 20    | 20   | 21   |
| 75° | 7    | 7     | 7    | 7     | 7    | 8    |
| 85° | 2    | 4     | 4    | 4     | 4    | 2    |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 7818.0 | 7818.0 | 7818.0 | 7818.0 | 7818.0 |
| 2.5°  | 7819.8 | 7807.2 | 7803.6 | 7800.1 | 7807.2 |
| 5°    | 7796.5 | 7778.5 | 7760.5 | 7755.2 | 7760.5 |
| 7.5°  | 7730.0 | 7712.0 | 7681.5 | 7674.3 | 7679.7 |
| 10°   | 7606.1 | 7589.9 | 7561.2 | 7545.0 | 7537.8 |
| 12.5° | 7442.6 | 7415.7 | 7388.8 | 7370.8 | 7352.8 |
| 15°   | 7218.1 | 7205.6 | 7184.0 | 7155.3 | 7135.5 |
| 17.5° | 6907.4 | 6925.4 | 6938.0 | 6880.5 | 6828.4 |
| 20°   | 6503.3 | 6569.8 | 6645.2 | 6528.5 | 6431.5 |
| 22.5° | 5872.9 | 6063.3 | 6255.5 | 6034.6 | 5819.1 |
| 25°   | 5043.2 | 5337.7 | 5765.2 | 5346.7 | 4976.7 |
| 27.5° | 4075.1 | 4448.7 | 5122.2 | 4450.5 | 4021.3 |
| 30°   | 3180.7 | 3565.1 | 4319.4 | 3514.8 | 3105.3 |
| 32.5° | 2442.6 | 2729.9 | 3374.7 | 2686.8 | 2390.5 |
| 35°   | 1880.4 | 2051.0 | 2453.3 | 2056.4 | 1846.3 |
| 37.5° | 1461.9 | 1548.2 | 1650.5 | 1517.6 | 1418.8 |
| 40°   | 1147.6 | 1151.2 | 1063.2 | 1133.3 | 1102.7 |
| 42.5° | 851.3  | 847.7  | 653.7  | 826.2  | 831.6  |
| 45°   | 510.1  | 594.5  | 391.5  | 578.3  | 481.3  |
| 47.5° | 242.5  | 335.9  | 235.3  | 317.9  | 224.5  |
| 50°   | 116.7  | 161.6  | 141.9  | 150.9  | 109.6  |
| 52.5° | 79.0   | 82.6   | 80.8   | 79.0   | 75.4   |
| 55°   | 57.5   | 57.5   | 52.1   | 55.7   | 55.7   |
| 57.5° | 43.1   | 43.1   | 37.7   | 41.3   | 41.3   |
| 60°   | 34.1   | 32.3   | 28.7   | 32.3   | 32.3   |
| 62.5° | 25.1   | 25.1   | 21.6   | 25.1   | 25.1   |
| 65°   | 19.8   | 19.8   | 18.0   | 19.8   | 19.8   |
| 67.5° | 16.2   | 16.2   | 12.6   | 16.2   | 14.4   |
| 70°   | 12.6   | 12.6   | 10.8   | 12.6   | 12.6   |
| 72.5° | 9.0    | 9.0    | 9.0    | 9.0    | 9.0    |
| 75°   | 7.2    | 7.2    | 7.2    | 7.2    | 7.2    |
| 77.5° | 5.4    | 5.4    | 5.4    | 5.4    | 5.4    |
| 80°   | 3.6    | 3.6    | 5.4    | 5.4    | 5.4    |
| 82.5° | 3.6    | 3.6    | 3.6    | 3.6    | 3.6    |
| 85°   | 1.8    | 3.6    | 3.6    | 3.6    | 3.6    |
| 87.5° | 1.8    | 1.8    | 3.6    | 3.6    | 3.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)