

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: **FLDSQ4C70D010 FEU4C709027 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: FLDSQ4C70D010 FEU4C709027 F4LC-SQ-WLI
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

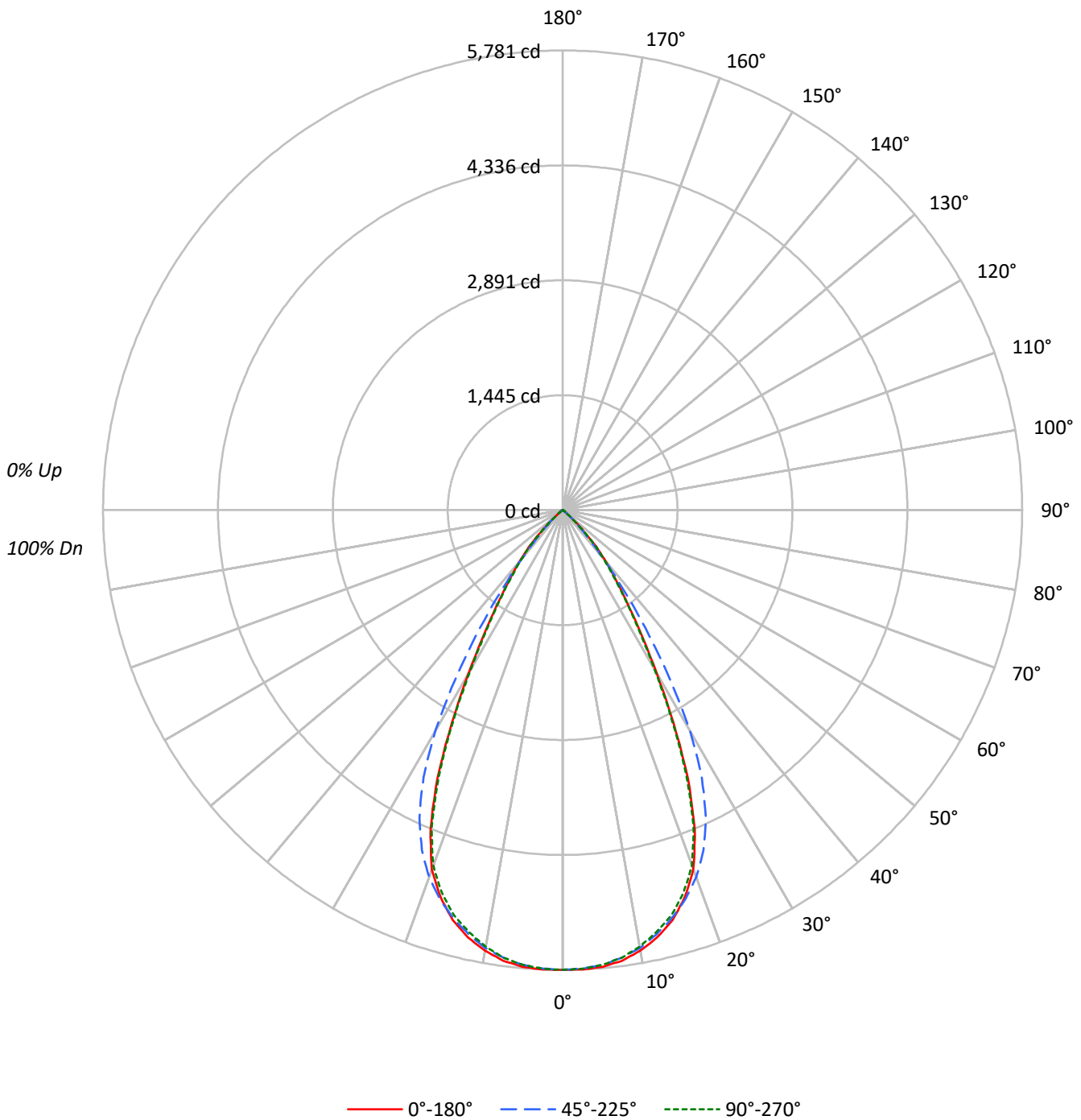
Lumens per Lamp: N/A
 Luminaire Lumens: 5174.0 lumens
 Efficiency: N/A
 Efficacy: 66.3 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 78
 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° | 557658 | 557658 | 557658 |
| 5° | 558238 | 555671 | 555671 |
| 10° | 550907 | 547654 | 545959 |
| 15° | 533027 | 530510 | 526924 |
| 20° | 493651 | 504422 | 488198 |
| 25° | 396918 | 453738 | 391680 |
| 30° | 261972 | 355762 | 255766 |
| 35° | 163742 | 213626 | 160773 |
| 40° | 106862 | 99002 | 102680 |
| 45° | 51458 | 39490 | 48551 |
| 50° | 12954 | 15747 | 12159 |
| 55° | 7149 | 6477 | 6931 |
| 60° | 4863 | 4091 | 4612 |
| 65° | 3333 | 3037 | 3333 |
| 70° | 2624 | 2257 | 2624 |
| 75° | 1976 | 1976 | 1976 |
| 80° | 1500 | 2223 | 2223 |
| 85° | 1439 | 2989 | 2989 |

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 543.5 | 10.5 |
| 10°-20° | 1484.3 | 28.7 |
| 20°-30° | 1768.9 | 34.2 |
| 30°-40° | 1001.6 | 19.4 |
| 40°-50° | 309.7 | 6.0 |
| 50°-60° | 43.0 | 0.8 |
| 60°-70° | 14.7 | 0.3 |
| 70°-80° | 5.8 | 0.1 |
| 80°-90° | 2.5 | 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° | 3796.7 | 73.4 |
| 0°-40° | 4798.3 | 92.7 |
| 0°-60° | 5151.0 | 99.6 |
| 0°-90° | 5174.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5174.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 5780 | 5780 | 5780 | 5780 | 5780 | |
| 5° | 5764 | 5750 | 5737 | 5733 | 5737 | 546 |
| 15° | 5336 | 5327 | 5311 | 5290 | 5275 | 1488 |
| 25° | 3728 | 3946 | 4262 | 3952 | 3679 | 1662 |
| 35° | 1390 | 1516 | 1814 | 1520 | 1365 | 905 |
| 45° | 377 | 440 | 289 | 428 | 356 | 311 |
| 55° | 42 | 42 | 38 | 41 | 41 | 42 |
| 65° | 15 | 15 | 13 | 15 | 15 | 15 |
| 75° | 5 | 5 | 5 | 5 | 5 | 6 |
| 85° | 1 | 3 | 3 | 3 | 3 | 2 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P#
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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 5779.5 | 5779.5 | 5779.5 | 5779.5 | 5779.5 |
| 2.5° | 5780.8 | 5771.5 | 5768.8 | 5766.2 | 5771.5 |
| 5° | 5763.5 | 5750.2 | 5737.0 | 5733.0 | 5737.0 |
| 7.5° | 5714.4 | 5701.1 | 5678.5 | 5673.2 | 5677.2 |
| 10° | 5622.8 | 5610.8 | 5589.6 | 5577.6 | 5572.3 |
| 12.5° | 5502.0 | 5482.0 | 5462.1 | 5448.9 | 5435.6 |
| 15° | 5336.0 | 5326.7 | 5310.8 | 5289.5 | 5274.9 |
| 17.5° | 5106.3 | 5119.6 | 5128.9 | 5086.4 | 5047.9 |
| 20° | 4807.6 | 4856.7 | 4912.5 | 4826.2 | 4754.5 |
| 22.5° | 4341.6 | 4482.3 | 4624.4 | 4461.1 | 4301.7 |
| 25° | 3728.2 | 3945.9 | 4261.9 | 3952.5 | 3679.0 |
| 27.5° | 3012.5 | 3288.7 | 3786.6 | 3290.0 | 2972.7 |
| 30° | 2351.3 | 2635.5 | 3193.1 | 2598.3 | 2295.6 |
| 32.5° | 1805.7 | 2018.1 | 2494.7 | 1986.2 | 1767.2 |
| 35° | 1390.1 | 1516.2 | 1813.6 | 1520.2 | 1364.9 |
| 37.5° | 1080.7 | 1144.5 | 1220.2 | 1121.9 | 1048.9 |
| 40° | 848.4 | 851.1 | 786.0 | 837.8 | 815.2 |
| 42.5° | 629.3 | 626.7 | 483.3 | 610.7 | 614.7 |
| 45° | 377.1 | 439.5 | 289.4 | 427.5 | 355.8 |
| 47.5° | 179.2 | 248.3 | 173.9 | 235.0 | 166.0 |
| 50° | 86.3 | 119.5 | 104.9 | 111.5 | 81.0 |
| 52.5° | 58.4 | 61.1 | 59.7 | 58.4 | 55.8 |
| 55° | 42.5 | 42.5 | 38.5 | 41.2 | 41.2 |
| 57.5° | 31.9 | 31.9 | 27.9 | 30.5 | 30.5 |
| 60° | 25.2 | 23.9 | 21.2 | 23.9 | 23.9 |
| 62.5° | 18.6 | 18.6 | 15.9 | 18.6 | 18.6 |
| 65° | 14.6 | 14.6 | 13.3 | 14.6 | 14.6 |
| 67.5° | 11.9 | 11.9 | 9.3 | 11.9 | 10.6 |
| 70° | 9.3 | 9.3 | 8.0 | 9.3 | 9.3 |
| 72.5° | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 |
| 75° | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 |
| 77.5° | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 80° | 2.7 | 2.7 | 4.0 | 4.0 | 4.0 |
| 82.5° | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| 85° | 1.3 | 2.7 | 2.7 | 2.7 | 2.7 |
| 87.5° | 1.3 | 1.3 | 2.7 | 2.7 | 2.7 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)