

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: **FLDSQ4C20D010 FEU4C209040 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: FLDSQ4C20D010 FEU4C209040 F4LC-SQ-WLI
 Description: 4 INCH 2000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 4000K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

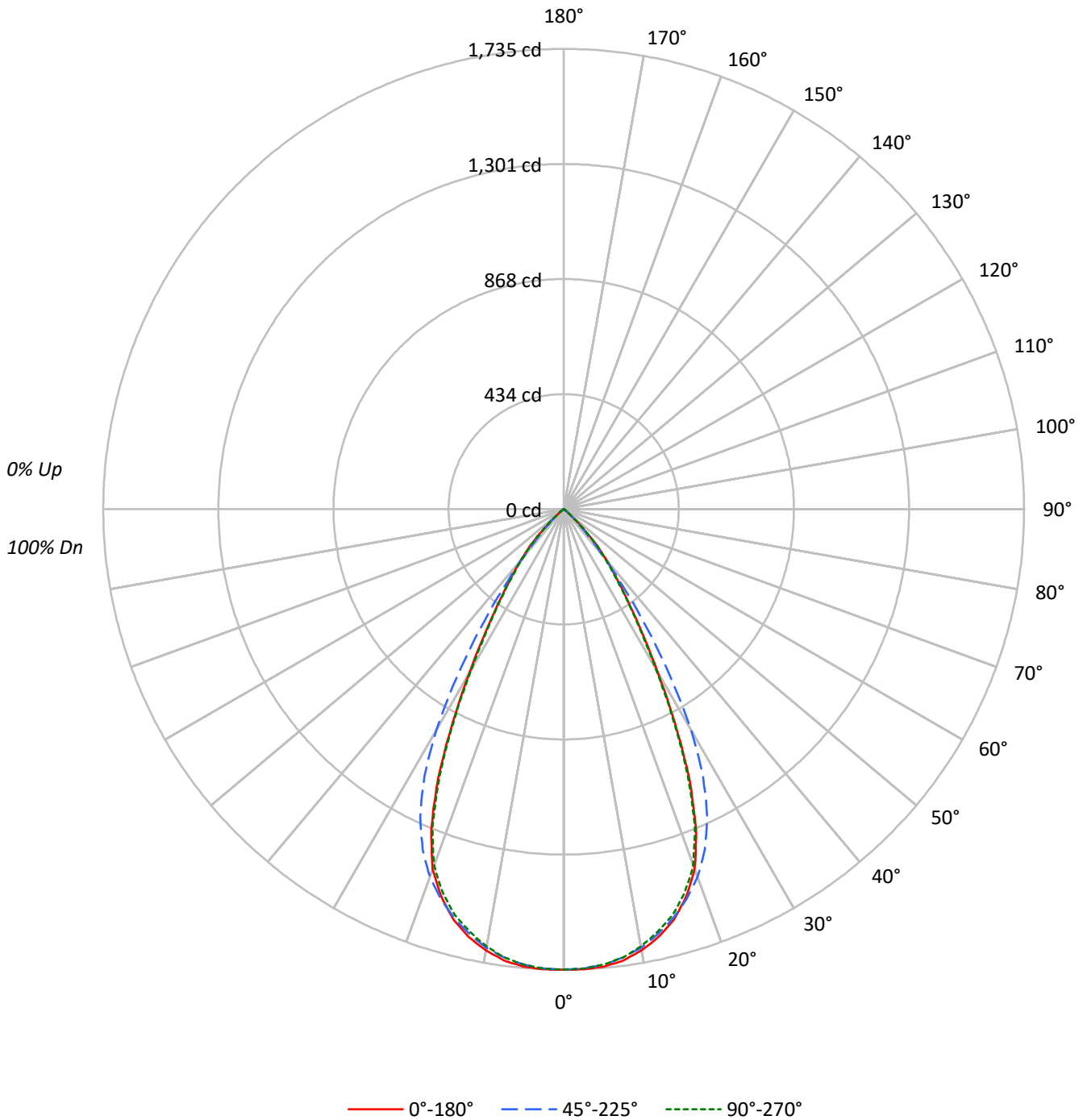
Lumens per Lamp: N/A
 Luminaire Lumens: 1553.0 lumens
 Efficiency: N/A
 Efficacy: 71.2 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 21.8
 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



TEST NUMBER: P#

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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° | 167379 | 167379 | 167379 |
| 5° | 167554 | 166789 | 166789 |
| 10° | 165356 | 164377 | 163877 |
| 15° | 159988 | 159239 | 158160 |
| 20° | 148169 | 151404 | 146537 |
| 25° | 119133 | 136188 | 117568 |
| 30° | 78637 | 106781 | 76765 |
| 35° | 49142 | 64126 | 48259 |
| 40° | 32081 | 29713 | 30822 |
| 45° | 15447 | 11858 | 14573 |
| 50° | 3888 | 4728 | 3648 |
| 55° | 2153 | 1951 | 2086 |
| 60° | 1467 | 1235 | 1389 |
| 65° | 1005 | 913 | 1005 |
| 70° | 790 | 677 | 790 |
| 75° | 596 | 596 | 596 |
| 80° | 445 | 667 | 667 |
| 85° | 443 | 886 | 886 |

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 163.1 | 10.5 |
| 10°-20° | 445.5 | 28.7 |
| 20°-30° | 530.9 | 34.2 |
| 30°-40° | 300.6 | 19.4 |
| 40°-50° | 92.9 | 6.0 |
| 50°-60° | 12.9 | 0.8 |
| 60°-70° | 4.4 | 0.3 |
| 70°-80° | 1.8 | 0.1 |
| 80°-90° | 0.7 | 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° | 1139.6 | 73.4 |
| 0°-40° | 1440.2 | 92.7 |
| 0°-60° | 1546.1 | 99.6 |
| 0°-90° | 1553.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1553.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1735 | 1735 | 1735 | 1735 | 1735 | |
| 5° | 1730 | 1726 | 1722 | 1721 | 1722 | 164 |
| 15° | 1602 | 1599 | 1594 | 1588 | 1583 | 447 |
| 25° | 1119 | 1184 | 1279 | 1186 | 1104 | 499 |
| 35° | 417 | 455 | 544 | 456 | 410 | 272 |
| 45° | 113 | 132 | 87 | 128 | 107 | 93 |
| 55° | 13 | 13 | 12 | 12 | 12 | 13 |
| 65° | 4 | 4 | 4 | 4 | 4 | 5 |
| 75° | 2 | 2 | 2 | 2 | 2 | 2 |
| 85° | 0 | 1 | 1 | 1 | 1 | 1 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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 CATALOG NUMBER: FLDSQ4C20D010 FEU4C209040 F4LC-SQ-WLI

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 1734.7 | 1734.7 | 1734.7 | 1734.7 | 1734.7 |
| 2.5° | 1735.1 | 1732.3 | 1731.5 | 1730.7 | 1732.3 |
| 5° | 1729.9 | 1726.0 | 1722.0 | 1720.8 | 1722.0 |
| 7.5° | 1715.2 | 1711.2 | 1704.4 | 1702.8 | 1704.0 |
| 10° | 1687.7 | 1684.1 | 1677.7 | 1674.2 | 1672.6 |
| 12.5° | 1651.4 | 1645.5 | 1639.5 | 1635.5 | 1631.5 |
| 15° | 1601.6 | 1598.8 | 1594.1 | 1587.7 | 1583.3 |
| 17.5° | 1532.7 | 1536.7 | 1539.5 | 1526.7 | 1515.1 |
| 20° | 1443.0 | 1457.8 | 1474.5 | 1448.6 | 1427.1 |
| 22.5° | 1303.1 | 1345.4 | 1388.0 | 1339.0 | 1291.2 |
| 25° | 1119.0 | 1184.4 | 1279.2 | 1186.4 | 1104.3 |
| 27.5° | 904.2 | 987.1 | 1136.6 | 987.5 | 892.3 |
| 30° | 705.8 | 791.0 | 958.4 | 779.9 | 689.0 |
| 32.5° | 542.0 | 605.7 | 748.8 | 596.2 | 530.4 |
| 35° | 417.2 | 455.1 | 544.4 | 456.3 | 409.7 |
| 37.5° | 324.4 | 343.5 | 366.2 | 336.7 | 314.8 |
| 40° | 254.7 | 255.4 | 235.9 | 251.5 | 244.7 |
| 42.5° | 188.9 | 188.1 | 145.1 | 183.3 | 184.5 |
| 45° | 113.2 | 131.9 | 86.9 | 128.3 | 106.8 |
| 47.5° | 53.8 | 74.5 | 52.2 | 70.5 | 49.8 |
| 50° | 25.9 | 35.9 | 31.5 | 33.5 | 24.3 |
| 52.5° | 17.5 | 18.3 | 17.9 | 17.5 | 16.7 |
| 55° | 12.8 | 12.8 | 11.6 | 12.4 | 12.4 |
| 57.5° | 9.6 | 9.6 | 8.4 | 9.2 | 9.2 |
| 60° | 7.6 | 7.2 | 6.4 | 7.2 | 7.2 |
| 62.5° | 5.6 | 5.6 | 4.8 | 5.6 | 5.6 |
| 65° | 4.4 | 4.4 | 4.0 | 4.4 | 4.4 |
| 67.5° | 3.6 | 3.6 | 2.8 | 3.6 | 3.2 |
| 70° | 2.8 | 2.8 | 2.4 | 2.8 | 2.8 |
| 72.5° | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 75° | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| 77.5° | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 80° | 0.8 | 0.8 | 1.2 | 1.2 | 1.2 |
| 82.5° | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| 85° | 0.4 | 0.8 | 0.8 | 0.8 | 0.8 |
| 87.5° | 0.4 | 0.4 | 0.8 | 0.8 | 0.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)