

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: **FLDSQ4C45D010 FEU4C459027 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: FLDSQ4C45D010 FEU4C459027 F4LC-SQ-WLI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 2700K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

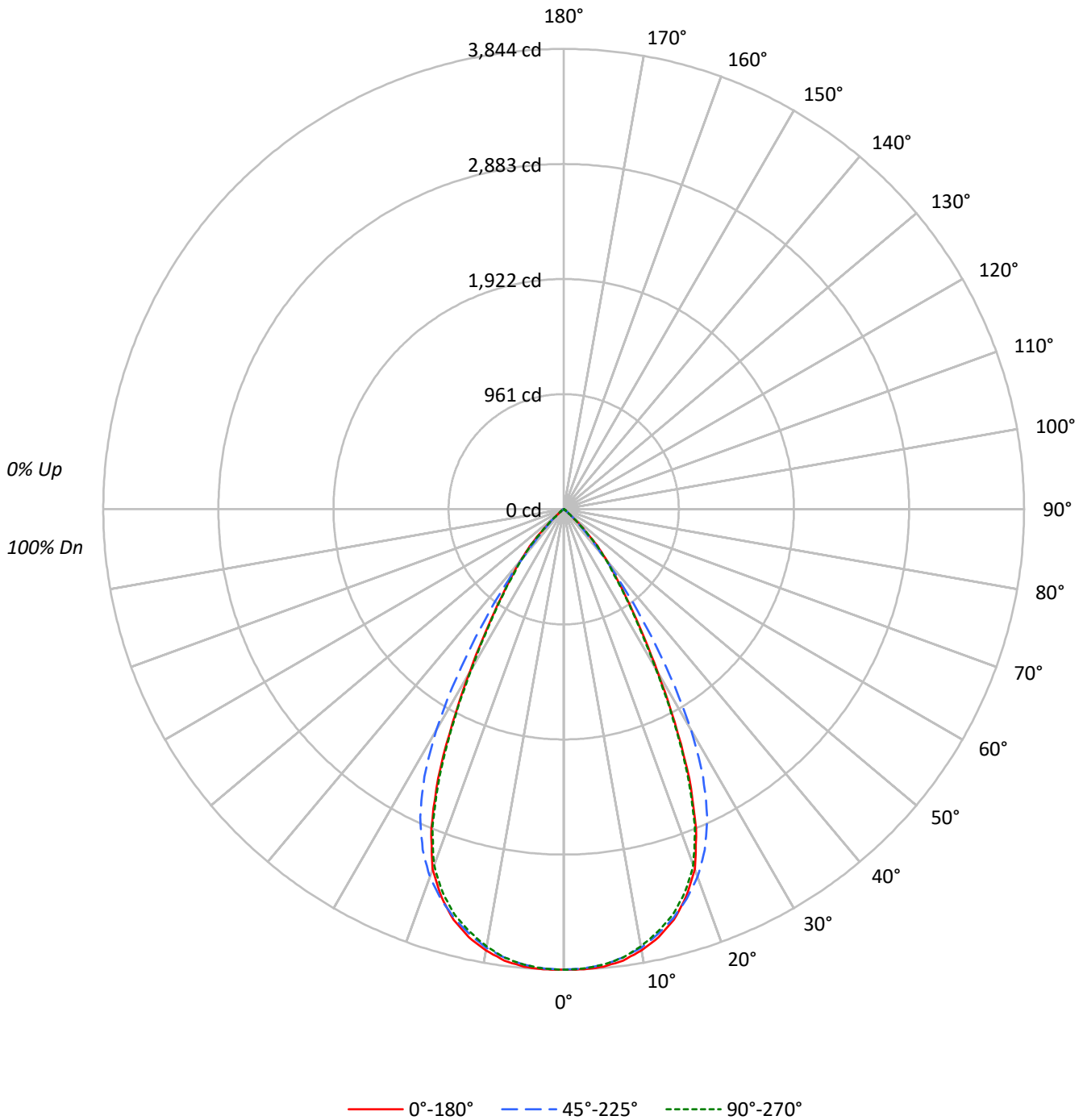
Lumens per Lamp: N/A
 Luminaire Lumens: 3441.0 lumens
 Efficiency: N/A
 Efficacy: 69.4 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 49.6
 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 | | | |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 | 100 | 100 |
| 1 | 114 | 111 | 108 | 106 | 111 | 109 | 106 | 104 | 105 | 103 | 101 | 101 | 100 | 98 | 97 | 96 | 95 | 94 | 94 | 94 |
| 2 | 108 | 103 | 99 | 96 | 106 | 102 | 98 | 95 | 98 | 95 | 93 | 95 | 93 | 91 | 93 | 91 | 89 | 87 | 87 | 87 |
| 3 | 103 | 96 | 91 | 88 | 101 | 95 | 90 | 87 | 92 | 89 | 85 | 90 | 87 | 84 | 88 | 85 | 83 | 81 | 81 | 81 |
| 4 | 98 | 90 | 85 | 80 | 96 | 89 | 84 | 80 | 87 | 82 | 79 | 85 | 81 | 78 | 83 | 80 | 77 | 76 | 76 | 76 |
| 5 | 93 | 84 | 79 | 74 | 91 | 84 | 78 | 74 | 82 | 77 | 73 | 80 | 76 | 73 | 79 | 75 | 72 | 71 | 71 | 71 |
| 6 | 88 | 79 | 73 | 69 | 87 | 79 | 73 | 69 | 77 | 72 | 68 | 76 | 71 | 68 | 74 | 71 | 68 | 66 | 66 | 66 |
| 7 | 84 | 75 | 69 | 65 | 82 | 74 | 68 | 64 | 73 | 68 | 64 | 71 | 67 | 64 | 70 | 66 | 63 | 62 | 62 | 62 |
| 8 | 80 | 70 | 64 | 60 | 79 | 70 | 64 | 60 | 69 | 64 | 60 | 68 | 63 | 60 | 67 | 63 | 59 | 58 | 58 | 58 |
| 9 | 76 | 66 | 61 | 57 | 75 | 66 | 60 | 57 | 65 | 60 | 56 | 64 | 60 | 56 | 63 | 59 | 56 | 55 | 55 | 55 |
| 10 | 72 | 63 | 57 | 53 | 71 | 62 | 57 | 53 | 62 | 57 | 53 | 61 | 56 | 53 | 60 | 56 | 53 | 52 | 52 | 52 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 370874 | 370874 | 370874 |
| 5° | 371264 | 369550 | 369550 |
| 10° | 366386 | 364221 | 363094 |
| 15° | 354489 | 352821 | 350433 |
| 20° | 328303 | 335470 | 324678 |
| 25° | 263966 | 301761 | 260495 |
| 30° | 174232 | 236603 | 170098 |
| 35° | 108898 | 142080 | 106919 |
| 40° | 71065 | 65838 | 68294 |
| 45° | 34223 | 26268 | 32285 |
| 50° | 8616 | 10478 | 8091 |
| 55° | 4761 | 4307 | 4609 |
| 60° | 3242 | 2721 | 3068 |
| 65° | 2215 | 2009 | 2215 |
| 70° | 1749 | 1495 | 1749 |
| 75° | 1305 | 1305 | 1305 |
| 80° | 1000 | 1445 | 1445 |
| 85° | 996 | 1993 | 1993 |

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 361.5 | 10.5 |
| 10°-20° | 987.1 | 28.7 |
| 20°-30° | 1176.4 | 34.2 |
| 30°-40° | 666.1 | 19.4 |
| 40°-50° | 205.9 | 6.0 |
| 50°-60° | 28.6 | 0.8 |
| 60°-70° | 9.8 | 0.3 |
| 70°-80° | 3.9 | 0.1 |
| 80°-90° | 1.7 | 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° | 2525.0 | 73.4 |
| 0°-40° | 3191.2 | 92.7 |
| 0°-60° | 3425.7 | 99.6 |
| 0°-90° | 3441.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3441.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3844 | 3844 | 3844 | 3844 | 3844 | |
| 5° | 3833 | 3824 | 3815 | 3813 | 3815 | 363 |
| 15° | 3549 | 3543 | 3532 | 3518 | 3508 | 990 |
| 25° | 2479 | 2624 | 2834 | 2629 | 2447 | 1105 |
| 35° | 924 | 1008 | 1206 | 1011 | 908 | 602 |
| 45° | 251 | 292 | 192 | 284 | 237 | 207 |
| 55° | 28 | 28 | 26 | 27 | 27 | 28 |
| 65° | 10 | 10 | 9 | 10 | 10 | 10 |
| 75° | 4 | 4 | 4 | 4 | 4 | 4 |
| 85° | 1 | 2 | 2 | 2 | 2 | 1 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3843.7 | 3843.7 | 3843.7 | 3843.7 | 3843.7 |
| 2.5° | 3844.5 | 3838.4 | 3836.6 | 3834.8 | 3838.4 |
| 5° | 3833.1 | 3824.2 | 3815.4 | 3812.8 | 3815.4 |
| 7.5° | 3800.4 | 3791.6 | 3776.6 | 3773.0 | 3775.7 |
| 10° | 3739.5 | 3731.5 | 3717.4 | 3709.4 | 3705.9 |
| 12.5° | 3659.1 | 3645.9 | 3632.6 | 3623.8 | 3615.0 |
| 15° | 3548.7 | 3542.6 | 3532.0 | 3517.8 | 3508.1 |
| 17.5° | 3396.0 | 3404.8 | 3411.0 | 3382.7 | 3357.1 |
| 20° | 3197.3 | 3230.0 | 3267.1 | 3209.7 | 3162.0 |
| 22.5° | 2887.4 | 2981.0 | 3075.5 | 2966.9 | 2860.9 |
| 25° | 2479.4 | 2624.2 | 2834.4 | 2628.7 | 2446.8 |
| 27.5° | 2003.5 | 2187.2 | 2518.3 | 2188.1 | 1977.0 |
| 30° | 1563.8 | 1752.7 | 2123.6 | 1728.0 | 1526.7 |
| 32.5° | 1200.9 | 1342.1 | 1659.1 | 1321.0 | 1175.3 |
| 35° | 924.5 | 1008.4 | 1206.2 | 1011.0 | 907.7 |
| 37.5° | 718.8 | 761.1 | 811.5 | 746.1 | 697.6 |
| 40° | 564.2 | 566.0 | 522.7 | 557.2 | 542.2 |
| 42.5° | 418.5 | 416.8 | 321.4 | 406.2 | 408.8 |
| 45° | 250.8 | 292.3 | 192.5 | 284.3 | 236.6 |
| 47.5° | 119.2 | 165.1 | 115.7 | 156.3 | 110.4 |
| 50° | 57.4 | 79.5 | 69.8 | 74.2 | 53.9 |
| 52.5° | 38.9 | 40.6 | 39.7 | 38.9 | 37.1 |
| 55° | 28.3 | 28.3 | 25.6 | 27.4 | 27.4 |
| 57.5° | 21.2 | 21.2 | 18.5 | 20.3 | 20.3 |
| 60° | 16.8 | 15.9 | 14.1 | 15.9 | 15.9 |
| 62.5° | 12.4 | 12.4 | 10.6 | 12.4 | 12.4 |
| 65° | 9.7 | 9.7 | 8.8 | 9.7 | 9.7 |
| 67.5° | 7.9 | 7.9 | 6.2 | 7.9 | 7.1 |
| 70° | 6.2 | 6.2 | 5.3 | 6.2 | 6.2 |
| 72.5° | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| 75° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 77.5° | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| 80° | 1.8 | 1.8 | 2.6 | 2.6 | 2.6 |
| 82.5° | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| 85° | 0.9 | 1.8 | 1.8 | 1.8 | 1.8 |
| 87.5° | 0.9 | 0.9 | 1.8 | 1.8 | 1.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)