

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 FEU4C709035 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 FEU4C709035 F4LC-SQ-WLI
 Description: 4 INCH 7000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3500K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

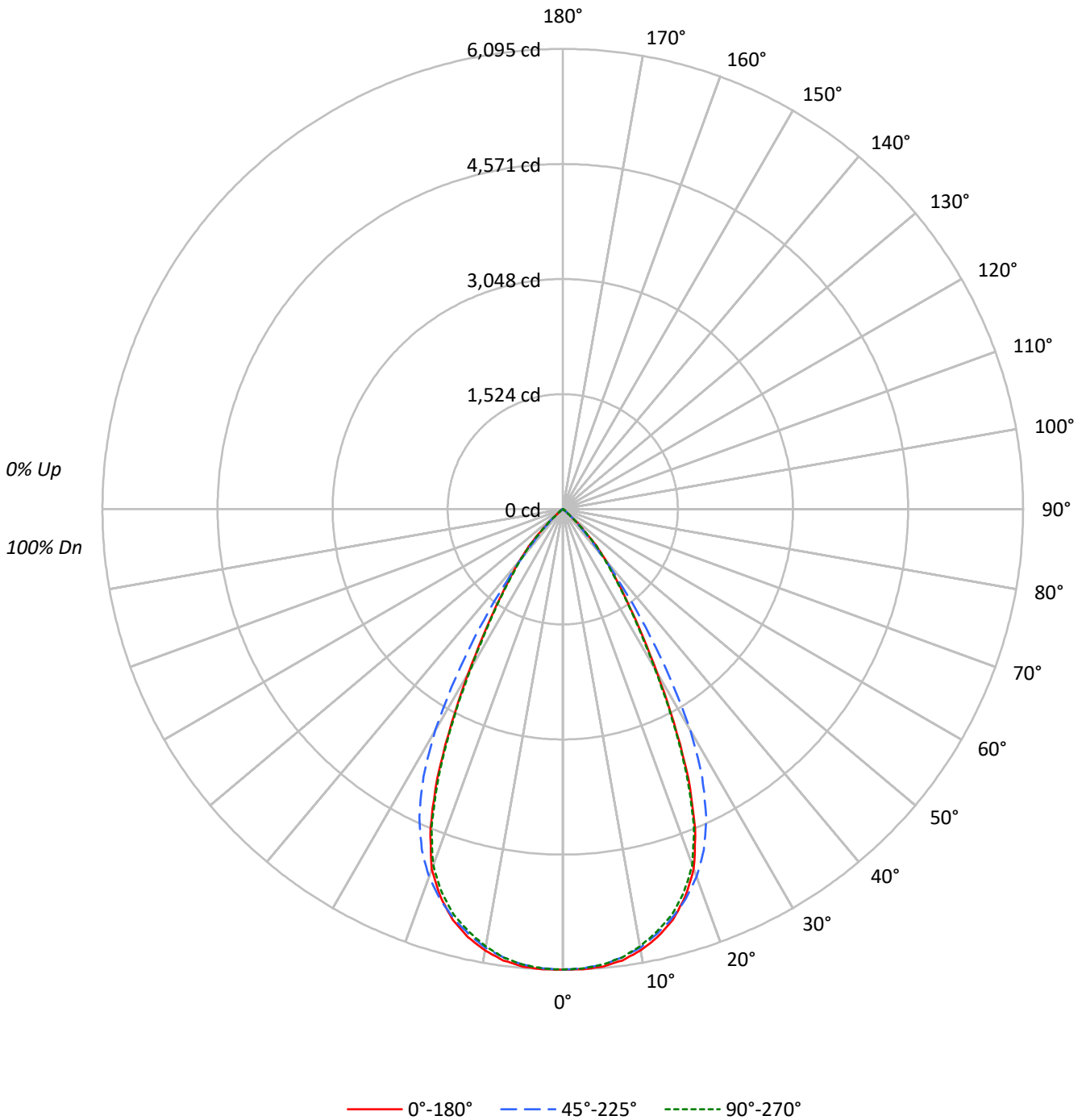
Lumens per Lamp: N/A
 Luminaire Lumens: 5455.0 lumens
 Efficiency: N/A
 Efficacy: 69.9 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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° | 587936 | 587936 | 587936 |
| 5° | 588554 | 585842 | 585842 |
| 10° | 580830 | 577400 | 575617 |
| 15° | 561976 | 559319 | 555543 |
| 20° | 520461 | 531817 | 514711 |
| 25° | 418466 | 478384 | 412951 |
| 30° | 276200 | 375081 | 269660 |
| 35° | 172635 | 225229 | 169502 |
| 40° | 112669 | 104381 | 108260 |
| 45° | 54241 | 41646 | 51185 |
| 50° | 13660 | 16602 | 12819 |
| 55° | 7536 | 6830 | 7301 |
| 60° | 5133 | 4323 | 4863 |
| 65° | 3516 | 3196 | 3516 |
| 70° | 2765 | 2370 | 2765 |
| 75° | 2088 | 2088 | 2088 |
| 80° | 1556 | 2334 | 2334 |
| 85° | 1550 | 3100 | 3100 |

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 573.0 | 10.5 |
| 10°-20° | 1564.9 | 28.7 |
| 20°-30° | 1864.9 | 34.2 |
| 30°-40° | 1056.0 | 19.4 |
| 40°-50° | 326.5 | 6.0 |
| 50°-60° | 45.4 | 0.8 |
| 60°-70° | 15.5 | 0.3 |
| 70°-80° | 6.2 | 0.1 |
| 80°-90° | 2.6 | 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° | 4002.9 | 73.4 |
| 0°-40° | 5058.9 | 92.7 |
| 0°-60° | 5430.8 | 99.6 |
| 0°-90° | 5455.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5455.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 6093 | 6093 | 6093 | 6093 | 6093 | |
| 5° | 6076 | 6062 | 6048 | 6044 | 6048 | 575 |
| 15° | 5626 | 5616 | 5599 | 5577 | 5561 | 1569 |
| 25° | 3931 | 4160 | 4493 | 4167 | 3879 | 1753 |
| 35° | 1466 | 1599 | 1912 | 1603 | 1439 | 954 |
| 45° | 398 | 463 | 305 | 451 | 375 | 328 |
| 55° | 45 | 45 | 41 | 43 | 43 | 44 |
| 65° | 15 | 15 | 14 | 15 | 15 | 16 |
| 75° | 6 | 6 | 6 | 6 | 6 | 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° | 6093.3 | 6093.3 | 6093.3 | 6093.3 | 6093.3 |
| 2.5° | 6094.7 | 6084.9 | 6082.1 | 6079.3 | 6084.9 |
| 5° | 6076.5 | 6062.5 | 6048.5 | 6044.3 | 6048.5 |
| 7.5° | 6024.7 | 6010.7 | 5987.0 | 5981.4 | 5985.6 |
| 10° | 5928.2 | 5915.6 | 5893.2 | 5880.6 | 5875.0 |
| 12.5° | 5800.8 | 5779.8 | 5758.8 | 5744.8 | 5730.8 |
| 15° | 5625.8 | 5616.0 | 5599.2 | 5576.8 | 5561.4 |
| 17.5° | 5383.6 | 5397.6 | 5407.4 | 5362.6 | 5322.0 |
| 20° | 5068.7 | 5120.5 | 5179.3 | 5088.3 | 5012.7 |
| 22.5° | 4577.4 | 4725.7 | 4875.5 | 4703.3 | 4535.4 |
| 25° | 3930.6 | 4160.2 | 4493.4 | 4167.2 | 3878.8 |
| 27.5° | 3176.1 | 3467.3 | 3992.2 | 3468.7 | 3134.2 |
| 30° | 2479.0 | 2778.6 | 3366.5 | 2739.4 | 2420.3 |
| 32.5° | 1903.7 | 2127.7 | 2630.2 | 2094.1 | 1863.1 |
| 35° | 1465.6 | 1598.6 | 1912.1 | 1602.8 | 1439.0 |
| 37.5° | 1139.4 | 1206.6 | 1286.4 | 1182.8 | 1105.8 |
| 40° | 894.5 | 897.3 | 828.7 | 883.3 | 859.5 |
| 42.5° | 663.5 | 660.7 | 509.5 | 643.9 | 648.1 |
| 45° | 397.5 | 463.3 | 305.2 | 450.7 | 375.1 |
| 47.5° | 189.0 | 261.8 | 183.4 | 247.8 | 175.0 |
| 50° | 91.0 | 126.0 | 110.6 | 117.6 | 85.4 |
| 52.5° | 61.6 | 64.4 | 63.0 | 61.6 | 58.8 |
| 55° | 44.8 | 44.8 | 40.6 | 43.4 | 43.4 |
| 57.5° | 33.6 | 33.6 | 29.4 | 32.2 | 32.2 |
| 60° | 26.6 | 25.2 | 22.4 | 25.2 | 25.2 |
| 62.5° | 19.6 | 19.6 | 16.8 | 19.6 | 19.6 |
| 65° | 15.4 | 15.4 | 14.0 | 15.4 | 15.4 |
| 67.5° | 12.6 | 12.6 | 9.8 | 12.6 | 11.2 |
| 70° | 9.8 | 9.8 | 8.4 | 9.8 | 9.8 |
| 72.5° | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| 75° | 5.6 | 5.6 | 5.6 | 5.6 | 5.6 |
| 77.5° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 80° | 2.8 | 2.8 | 4.2 | 4.2 | 4.2 |
| 82.5° | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 |
| 85° | 1.4 | 2.8 | 2.8 | 2.8 | 2.8 |
| 87.5° | 1.4 | 1.4 | 2.8 | 2.8 | 2.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)