

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 FEU4C459050 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 FEU4C459050 F4LC-SQ-WLI
 Description: 4 INCH 4500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 5000K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

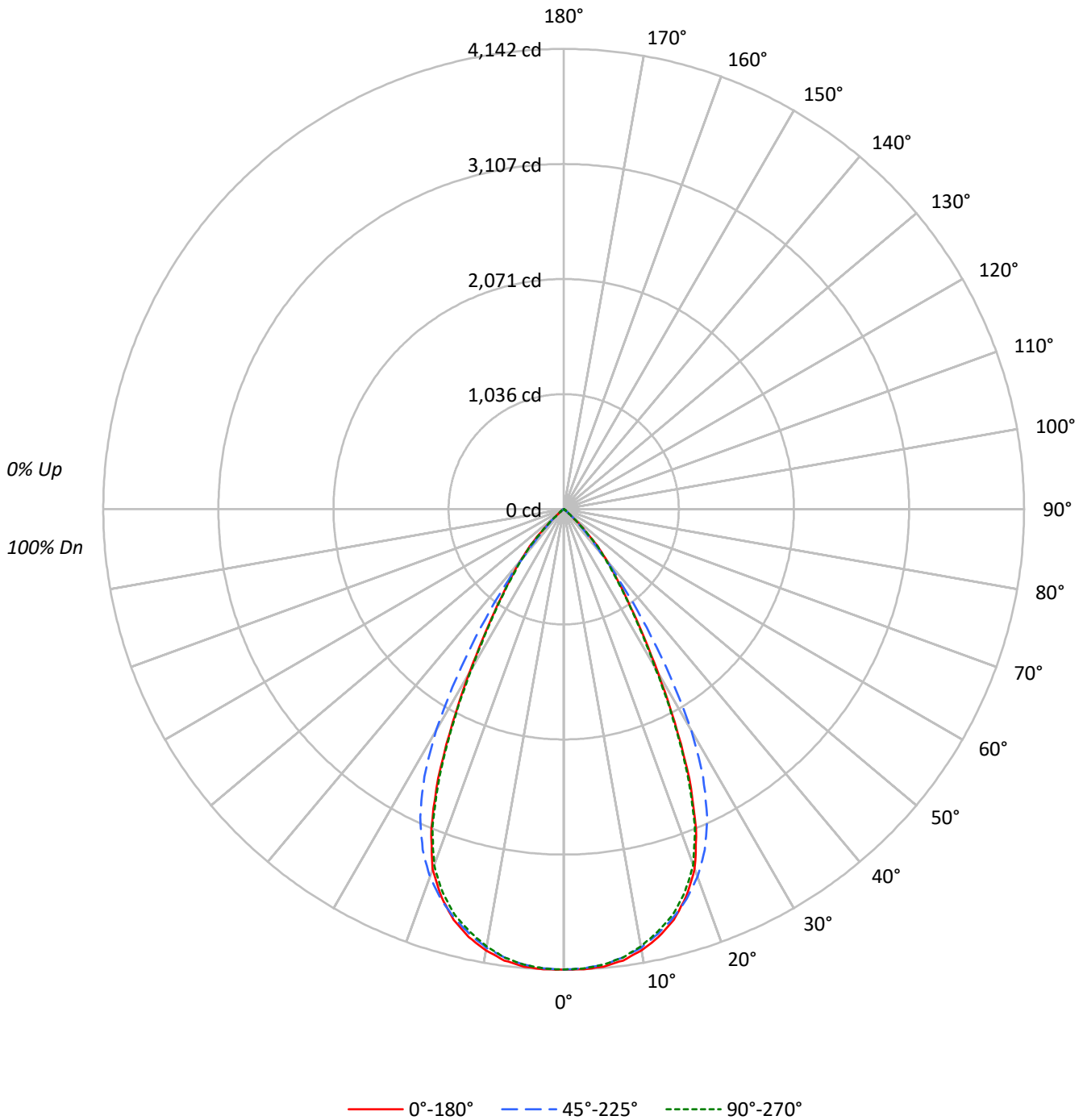
Lumens per Lamp: N/A
 Luminaire Lumens: 3707.1 lumens
 Efficiency: N/A
 Efficacy: 74.7 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

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

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 399541 | 399541 | 399541 |
| 5° | 399963 | 398113 | 398113 |
| 10° | 394702 | 392380 | 391165 |
| 15° | 381900 | 380092 | 377524 |
| 20° | 353686 | 361397 | 349774 |
| 25° | 284375 | 325087 | 280628 |
| 30° | 187702 | 254897 | 183246 |
| 35° | 117320 | 153058 | 115188 |
| 40° | 76557 | 70927 | 73572 |
| 45° | 36870 | 28301 | 34783 |
| 50° | 9277 | 11273 | 8706 |
| 55° | 5114 | 4643 | 4963 |
| 60° | 3493 | 2933 | 3300 |
| 65° | 2397 | 2169 | 2397 |
| 70° | 1890 | 1608 | 1890 |
| 75° | 1417 | 1417 | 1417 |
| 80° | 1056 | 1611 | 1611 |
| 85° | 1107 | 2103 | 2103 |

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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 389.4 | 10.5 |
| 10°-20° | 1063.5 | 28.7 |
| 20°-30° | 1267.3 | 34.2 |
| 30°-40° | 717.6 | 19.4 |
| 40°-50° | 221.9 | 6.0 |
| 50°-60° | 30.8 | 0.8 |
| 60°-70° | 10.5 | 0.3 |
| 70°-80° | 4.2 | 0.1 |
| 80°-90° | 1.8 | 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° | 2720.2 | 73.4 |
| 0°-40° | 3437.9 | 92.7 |
| 0°-60° | 3690.5 | 99.6 |
| 0°-90° | 3707.1 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3707.1 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 4141 | 4141 | 4141 | 4141 | 4141 | |
| 5° | 4129 | 4120 | 4110 | 4108 | 4110 | 391 |
| 15° | 3823 | 3816 | 3805 | 3790 | 3779 | 1066 |
| 25° | 2671 | 2827 | 3054 | 2832 | 2636 | 1191 |
| 35° | 996 | 1086 | 1299 | 1089 | 978 | 648 |
| 45° | 270 | 315 | 207 | 306 | 255 | 223 |
| 55° | 30 | 30 | 28 | 30 | 30 | 30 |
| 65° | 10 | 10 | 10 | 10 | 10 | 11 |
| 75° | 4 | 4 | 4 | 4 | 4 | 4 |
| 85° | 1 | 2 | 2 | 2 | 2 | 1 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P#
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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 4140.8 | 4140.8 | 4140.8 | 4140.8 | 4140.8 |
| 2.5° | 4141.7 | 4135.1 | 4133.2 | 4131.3 | 4135.1 |
| 5° | 4129.4 | 4119.9 | 4110.3 | 4107.5 | 4110.3 |
| 7.5° | 4094.2 | 4084.7 | 4068.5 | 4064.7 | 4067.5 |
| 10° | 4028.5 | 4020.0 | 4004.8 | 3996.2 | 3992.4 |
| 12.5° | 3942.0 | 3927.7 | 3913.4 | 3903.9 | 3894.4 |
| 15° | 3823.1 | 3816.4 | 3805.0 | 3789.8 | 3779.3 |
| 17.5° | 3658.5 | 3668.0 | 3674.7 | 3644.2 | 3616.6 |
| 20° | 3444.5 | 3479.7 | 3519.6 | 3457.8 | 3406.4 |
| 22.5° | 3110.6 | 3211.4 | 3313.2 | 3196.2 | 3082.0 |
| 25° | 2671.1 | 2827.1 | 3053.5 | 2831.9 | 2635.9 |
| 27.5° | 2158.4 | 2356.2 | 2713.0 | 2357.2 | 2129.8 |
| 30° | 1684.7 | 1888.2 | 2287.8 | 1861.6 | 1644.7 |
| 32.5° | 1293.7 | 1445.9 | 1787.4 | 1423.1 | 1266.1 |
| 35° | 996.0 | 1086.3 | 1299.4 | 1089.2 | 977.9 |
| 37.5° | 774.3 | 820.0 | 874.2 | 803.8 | 751.5 |
| 40° | 607.8 | 609.8 | 563.1 | 600.2 | 584.1 |
| 42.5° | 450.9 | 449.0 | 346.3 | 437.6 | 440.4 |
| 45° | 270.2 | 314.9 | 207.4 | 306.3 | 254.9 |
| 47.5° | 128.4 | 177.9 | 124.6 | 168.4 | 118.9 |
| 50° | 61.8 | 85.6 | 75.1 | 79.9 | 58.0 |
| 52.5° | 41.9 | 43.8 | 42.8 | 41.9 | 40.0 |
| 55° | 30.4 | 30.4 | 27.6 | 29.5 | 29.5 |
| 57.5° | 22.8 | 22.8 | 20.0 | 21.9 | 21.9 |
| 60° | 18.1 | 17.1 | 15.2 | 17.1 | 17.1 |
| 62.5° | 13.3 | 13.3 | 11.4 | 13.3 | 13.3 |
| 65° | 10.5 | 10.5 | 9.5 | 10.5 | 10.5 |
| 67.5° | 8.6 | 8.6 | 6.7 | 8.6 | 7.6 |
| 70° | 6.7 | 6.7 | 5.7 | 6.7 | 6.7 |
| 72.5° | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 |
| 75° | 3.8 | 3.8 | 3.8 | 3.8 | 3.8 |
| 77.5° | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| 80° | 1.9 | 1.9 | 2.9 | 2.9 | 2.9 |
| 82.5° | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |
| 85° | 1.0 | 1.9 | 1.9 | 1.9 | 1.9 |
| 87.5° | 1.0 | 1.0 | 1.9 | 1.9 | 1.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)