

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: **FLDSQ4C65D010 FEU4C659030 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: FLDSQ4C65D010 FEU4C659030 F4LC-SQ-WLI  
 Description: 4 INCH 6500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQW TRIM WITH LI FINISH  
 Light Source: -  
 Ballast/Driver: -

**Summary**

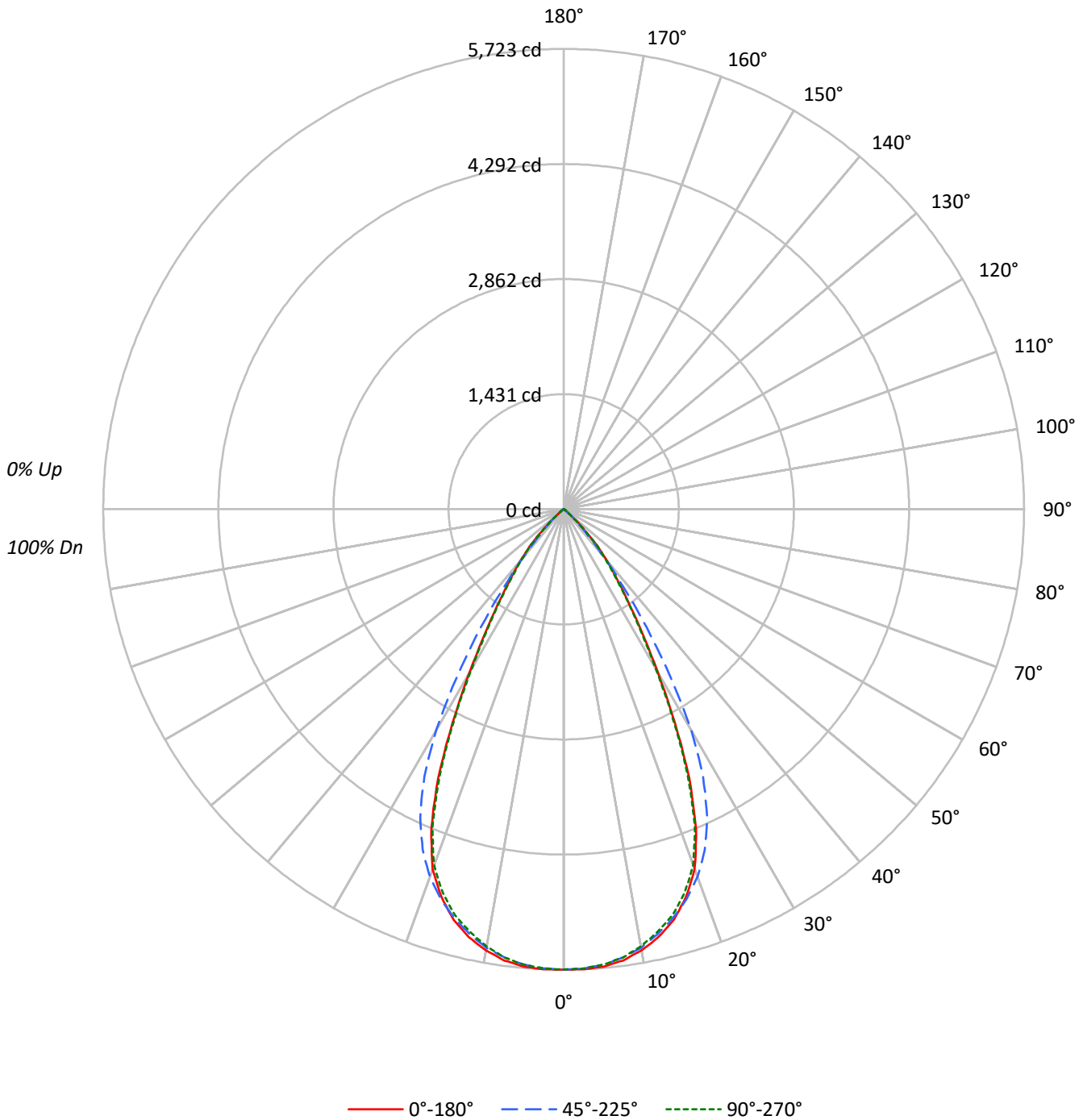
Lumens per Lamp: N/A  
 Luminaire Lumens: 5122.0 lumens  
 Efficiency: N/A  
 Efficacy: 70.7 lumens/watt  
 Spacing Criteria (0/90/45): 0.91 / 0.91 / 0.9  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 72.4  
 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°  | 552052 | 552052 | 552052 |
| 5°  | 552630 | 550083 | 550083 |
| 10° | 545372 | 542148 | 540473 |
| 15° | 527673 | 525176 | 521629 |
| 20° | 488691 | 499350 | 483290 |
| 25° | 392926 | 449181 | 387751 |
| 30° | 259343 | 352185 | 253192 |
| 35° | 162092 | 211482 | 159159 |
| 40° | 105792 | 98007  | 101648 |
| 45° | 50939  | 39095  | 48060  |
| 50° | 12819  | 15581  | 12039  |
| 55° | 7082   | 6409   | 6847   |
| 60° | 4824   | 4053   | 4574   |
| 65° | 3311   | 2991   | 3311   |
| 70° | 2595   | 2229   | 2595   |
| 75° | 1976   | 1976   | 1976   |
| 80° | 1445   | 2167   | 2167   |
| 85° | 1439   | 2878   | 2878   |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 538.1  | 10.5      |
| 10°-20°   | 1469.4 | 28.7      |
| 20°-30°   | 1751.1 | 34.2      |
| 30°-40°   | 991.6  | 19.4      |
| 40°-50°   | 306.5  | 6.0       |
| 50°-60°   | 42.6   | 0.8       |
| 60°-70°   | 14.5   | 0.3       |
| 70°-80°   | 5.8    | 0.1       |
| 80°-90°   | 2.4    | 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°    | 3758.6 | 73.4      |
| 0°-40°    | 4750.1 | 92.7      |
| 0°-60°    | 5099.2 | 99.6      |
| 0°-90°    | 5122.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 5122.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 5721 | 5721  | 5721 | 5721  | 5721 |      |
| 5°  | 5706 | 5692  | 5679 | 5675  | 5679 | 540  |
| 15° | 5282 | 5273  | 5257 | 5236  | 5222 | 1473 |
| 25° | 3691 | 3906  | 4219 | 3913  | 3642 | 1646 |
| 35° | 1376 | 1501  | 1795 | 1505  | 1351 | 896  |
| 45° | 373  | 435   | 286  | 423   | 352  | 308  |
| 55° | 42   | 42    | 38   | 41    | 41   | 41   |
| 65° | 14   | 14    | 13   | 14    | 14   | 15   |
| 75° | 5    | 5     | 5    | 5     | 5    | 6    |
| 85° | 1    | 3     | 3    | 3     | 3    | 2    |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 5721.4 | 5721.4 | 5721.4 | 5721.4 | 5721.4 |
| 2.5°  | 5722.7 | 5713.5 | 5710.9 | 5708.2 | 5713.5 |
| 5°    | 5705.6 | 5692.5 | 5679.3 | 5675.4 | 5679.3 |
| 7.5°  | 5657.0 | 5643.8 | 5621.5 | 5616.2 | 5620.2 |
| 10°   | 5566.3 | 5554.4 | 5533.4 | 5521.6 | 5516.3 |
| 12.5° | 5446.7 | 5427.0 | 5407.2 | 5394.1 | 5381.0 |
| 15°   | 5282.4 | 5273.2 | 5257.4 | 5236.4 | 5221.9 |
| 17.5° | 5055.0 | 5068.1 | 5077.3 | 5035.3 | 4997.2 |
| 20°   | 4759.3 | 4807.9 | 4863.1 | 4777.7 | 4706.7 |
| 22.5° | 4297.9 | 4437.2 | 4577.9 | 4416.2 | 4258.5 |
| 25°   | 3690.7 | 3906.3 | 4219.1 | 3912.8 | 3642.1 |
| 27.5° | 2982.3 | 3255.6 | 3748.5 | 3257.0 | 2942.8 |
| 30°   | 2327.7 | 2609.0 | 3161.0 | 2572.2 | 2272.5 |
| 32.5° | 1787.5 | 1997.8 | 2469.7 | 1966.3 | 1749.4 |
| 35°   | 1376.1 | 1501.0 | 1795.4 | 1504.9 | 1351.2 |
| 37.5° | 1069.9 | 1133.0 | 1207.9 | 1110.6 | 1038.3 |
| 40°   | 839.9  | 842.5  | 778.1  | 829.4  | 807.0  |
| 42.5° | 623.0  | 620.4  | 478.4  | 604.6  | 608.5  |
| 45°   | 373.3  | 435.1  | 286.5  | 423.2  | 352.2  |
| 47.5° | 177.4  | 245.8  | 172.2  | 232.6  | 164.3  |
| 50°   | 85.4   | 118.3  | 103.8  | 110.4  | 80.2   |
| 52.5° | 57.8   | 60.5   | 59.1   | 57.8   | 55.2   |
| 55°   | 42.1   | 42.1   | 38.1   | 40.7   | 40.7   |
| 57.5° | 31.5   | 31.5   | 27.6   | 30.2   | 30.2   |
| 60°   | 25.0   | 23.7   | 21.0   | 23.7   | 23.7   |
| 62.5° | 18.4   | 18.4   | 15.8   | 18.4   | 18.4   |
| 65°   | 14.5   | 14.5   | 13.1   | 14.5   | 14.5   |
| 67.5° | 11.8   | 11.8   | 9.2    | 11.8   | 10.5   |
| 70°   | 9.2    | 9.2    | 7.9    | 9.2    | 9.2    |
| 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° | 3.9    | 3.9    | 3.9    | 3.9    | 3.9    |
| 80°   | 2.6    | 2.6    | 3.9    | 3.9    | 3.9    |
| 82.5° | 2.6    | 2.6    | 2.6    | 2.6    | 2.6    |
| 85°   | 1.3    | 2.6    | 2.6    | 2.6    | 2.6    |
| 87.5° | 1.3    | 1.3    | 2.6    | 2.6    | 2.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)