

Scaled data based on original data using  
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: P183417

Luminaire Tested: **FMS-24-4-LD4-4LO-80-84**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P183417  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26873)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FMS-24-4-LD4-4LO-80-84  
Description:  
Light Source: 2UT217042A8404A  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9510.5 lumens  
Efficiency: N/A  
Efficacy: 96.3 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.2 / 1.33  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct

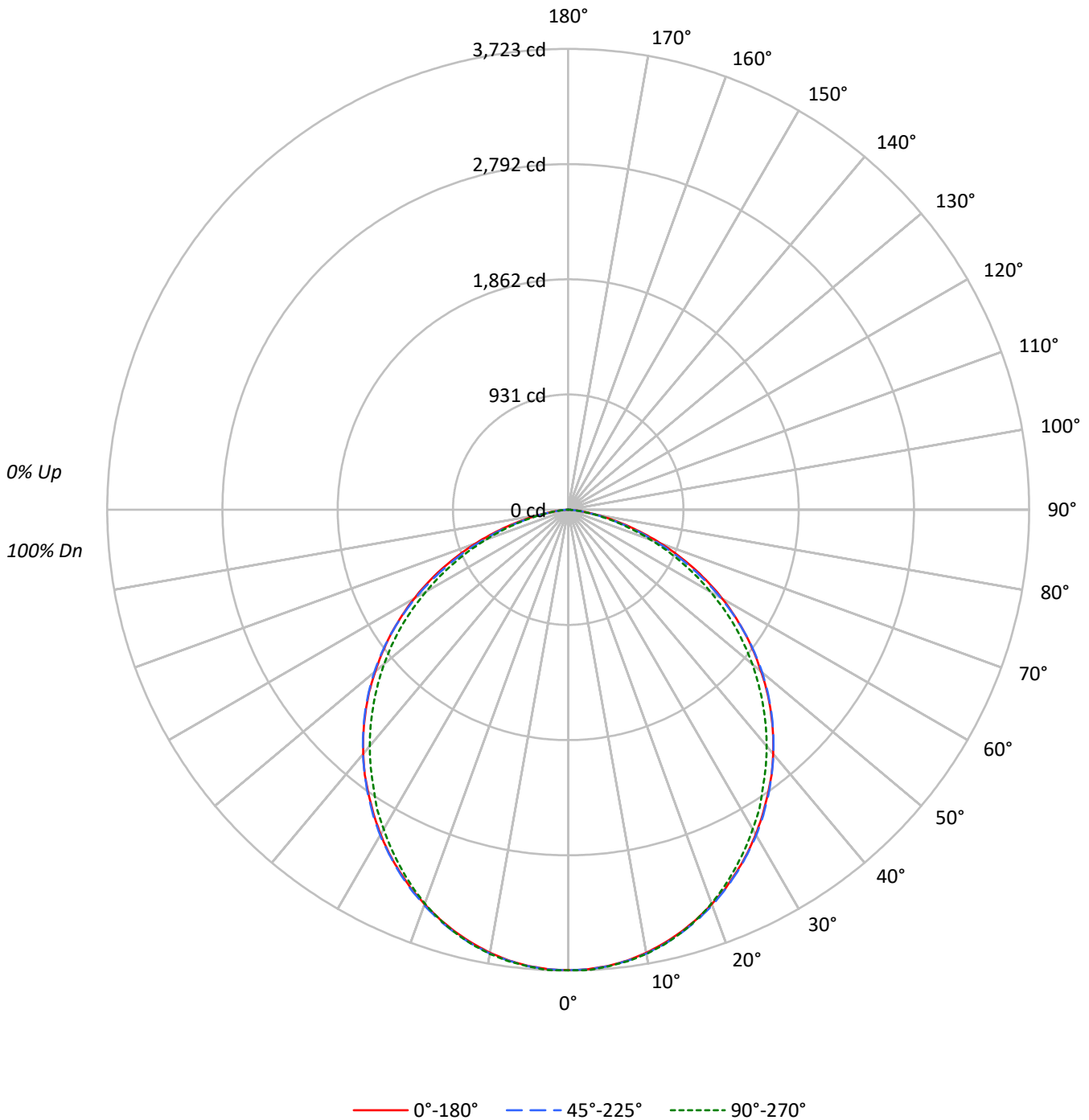
Input Watts (W): 98.8  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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   | 110 | 105 | 101 | 98  | 107 | 103 | 99  | 96  | 99  | 96  | 93  | 95  | 92  | 90  | 91  | 89  | 87  | 85  |
| 2   | 100 | 92  | 86  | 80  | 97  | 90  | 84  | 79  | 87  | 82  | 78  | 84  | 79  | 76  | 81  | 77  | 74  | 72  |
| 3   | 92  | 81  | 74  | 67  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 74  | 69  | 64  | 72  | 67  | 63  | 61  |
| 4   | 84  | 72  | 64  | 57  | 82  | 71  | 63  | 57  | 69  | 62  | 56  | 66  | 60  | 55  | 64  | 59  | 55  | 53  |
| 5   | 77  | 65  | 56  | 50  | 75  | 64  | 55  | 49  | 62  | 54  | 49  | 60  | 53  | 48  | 58  | 52  | 48  | 46  |
| 6   | 71  | 58  | 50  | 43  | 70  | 58  | 49  | 43  | 56  | 48  | 43  | 54  | 48  | 43  | 52  | 47  | 42  | 40  |
| 7   | 66  | 53  | 44  | 38  | 65  | 52  | 44  | 38  | 51  | 43  | 38  | 49  | 43  | 38  | 48  | 42  | 38  | 36  |
| 8   | 62  | 48  | 40  | 34  | 60  | 48  | 40  | 34  | 46  | 39  | 34  | 45  | 39  | 34  | 44  | 38  | 34  | 32  |
| 9   | 58  | 45  | 36  | 31  | 56  | 44  | 36  | 31  | 43  | 36  | 31  | 42  | 35  | 31  | 41  | 35  | 30  | 29  |
| 10  | 54  | 41  | 33  | 28  | 53  | 41  | 33  | 28  | 40  | 33  | 28  | 39  | 32  | 28  | 38  | 32  | 28  | 26  |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5006 | 5006 | 5006 |
| 5°  | 4996 | 4999 | 5003 |
| 10° | 4966 | 4974 | 4979 |
| 15° | 4916 | 4929 | 4927 |
| 20° | 4856 | 4869 | 4847 |
| 25° | 4787 | 4796 | 4744 |
| 30° | 4706 | 4718 | 4630 |
| 35° | 4615 | 4627 | 4501 |
| 40° | 4524 | 4527 | 4379 |
| 45° | 4406 | 4415 | 4231 |
| 50° | 4255 | 4280 | 4064 |
| 55° | 4089 | 4091 | 3855 |
| 60° | 3867 | 3827 | 3571 |
| 65° | 3560 | 3455 | 3226 |
| 70° | 3121 | 2967 | 2769 |
| 75° | 2519 | 2332 | 2232 |
| 80° | 1752 | 1608 | 1550 |
| 85° | 892  | 824  | 834  |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 351.4  | 3.7       |
| 10°-20°   | 997.0  | 10.5      |
| 20°-30°   | 1484.2 | 15.6      |
| 30°-40°   | 1749.8 | 18.4      |
| 40°-50°   | 1766.1 | 18.6      |
| 50°-60°   | 1527.6 | 16.1      |
| 60°-70°   | 1062.3 | 11.2      |
| 70°-80°   | 490.6  | 5.2       |
| 80°-90°   | 81.7   | 0.9       |
| 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°    | 2832.6 | 29.8      |
| 0°-40°    | 4582.4 | 48.2      |
| 0°-60°    | 7876.0 | 82.8      |
| 0°-90°    | 9510.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 9510.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 3721 | 3721  | 3721 | 3721  | 3721 |      |
| 5°  | 3699 | 3698  | 3702 | 3706  | 3704 | 351  |
| 15° | 3529 | 3534  | 3539 | 3539  | 3537 | 995  |
| 25° | 3224 | 3234  | 3231 | 3213  | 3195 | 1485 |
| 35° | 2809 | 2823  | 2817 | 2775  | 2740 | 1758 |
| 45° | 2315 | 2314  | 2320 | 2260  | 2224 | 1785 |
| 55° | 1743 | 1726  | 1744 | 1683  | 1643 | 1556 |
| 65° | 1118 | 1100  | 1085 | 1045  | 1013 | 1105 |
| 75° | 485  | 476   | 449  | 441   | 429  | 521  |
| 85° | 58   | 58    | 53   | 55    | 54   | 86   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 3720.7 | 3720.7 | 3720.7 | 3720.7 | 3720.7 |
| 2.5°  | 3715.2 | 3713.3 | 3716.4 | 3721.4 | 3722.6 |
| 5°    | 3699.0 | 3698.4 | 3701.5 | 3705.8 | 3704.0 |
| 7.5°  | 3673.5 | 3672.9 | 3675.4 | 3681.0 | 3679.7 |
| 10°   | 3635.0 | 3636.3 | 3640.6 | 3645.6 | 3644.3 |
| 12.5° | 3585.9 | 3589.0 | 3594.6 | 3598.4 | 3596.5 |
| 15°   | 3529.4 | 3533.7 | 3538.7 | 3539.3 | 3536.9 |
| 17.5° | 3464.2 | 3472.2 | 3474.1 | 3471.0 | 3466.6 |
| 20°   | 3391.5 | 3400.8 | 3400.2 | 3395.8 | 3385.3 |
| 22.5° | 3313.8 | 3321.3 | 3318.8 | 3310.7 | 3294.6 |
| 25°   | 3224.4 | 3234.3 | 3230.6 | 3213.2 | 3195.2 |
| 27.5° | 3130.5 | 3140.5 | 3135.5 | 3113.1 | 3090.8 |
| 30°   | 3029.3 | 3041.1 | 3036.7 | 3005.7 | 2980.2 |
| 32.5° | 2921.2 | 2934.8 | 2929.9 | 2892.6 | 2871.5 |
| 35°   | 2809.4 | 2823.0 | 2816.8 | 2775.2 | 2740.4 |
| 37.5° | 2698.1 | 2703.1 | 2699.4 | 2652.8 | 2621.7 |
| 40°   | 2575.8 | 2579.5 | 2577.6 | 2526.7 | 2493.1 |
| 42.5° | 2447.8 | 2449.0 | 2452.1 | 2396.2 | 2360.2 |
| 45°   | 2315.4 | 2313.6 | 2320.4 | 2260.2 | 2223.5 |
| 47.5° | 2179.4 | 2173.2 | 2186.8 | 2121.0 | 2083.7 |
| 50°   | 2032.8 | 2027.8 | 2044.6 | 1978.1 | 1941.4 |
| 52.5° | 1889.9 | 1878.7 | 1898.0 | 1832.7 | 1794.8 |
| 55°   | 1743.3 | 1726.5 | 1743.9 | 1683.0 | 1643.2 |
| 57.5° | 1591.7 | 1571.8 | 1585.5 | 1528.3 | 1487.3 |
| 60°   | 1437.0 | 1414.6 | 1422.1 | 1369.3 | 1327.0 |
| 62.5° | 1279.2 | 1255.6 | 1253.7 | 1207.7 | 1172.3 |
| 65°   | 1118.3 | 1099.6 | 1085.3 | 1045.0 | 1013.3 |
| 67.5° | 955.5  | 940.0  | 918.2  | 884.7  | 859.8  |
| 70°   | 793.4  | 780.9  | 754.2  | 729.4  | 703.9  |
| 72.5° | 635.6  | 622.5  | 597.7  | 580.9  | 562.2  |
| 75°   | 484.6  | 475.9  | 448.6  | 441.1  | 429.3  |
| 77.5° | 347.3  | 339.8  | 317.5  | 314.4  | 306.9  |
| 80°   | 226.1  | 221.2  | 207.5  | 205.0  | 200.0  |
| 82.5° | 128.6  | 125.5  | 117.4  | 116.8  | 115.6  |
| 85°   | 57.8   | 58.4   | 53.4   | 54.7   | 54.0   |
| 87.5° | 16.8   | 19.3   | 18.0   | 19.3   | 18.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)