

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: P233094

Luminaire Tested: **FCB-24-2-LD4-44-35-UNV-EDD1**

Issue Date: 3/3/2020



**Test Information**

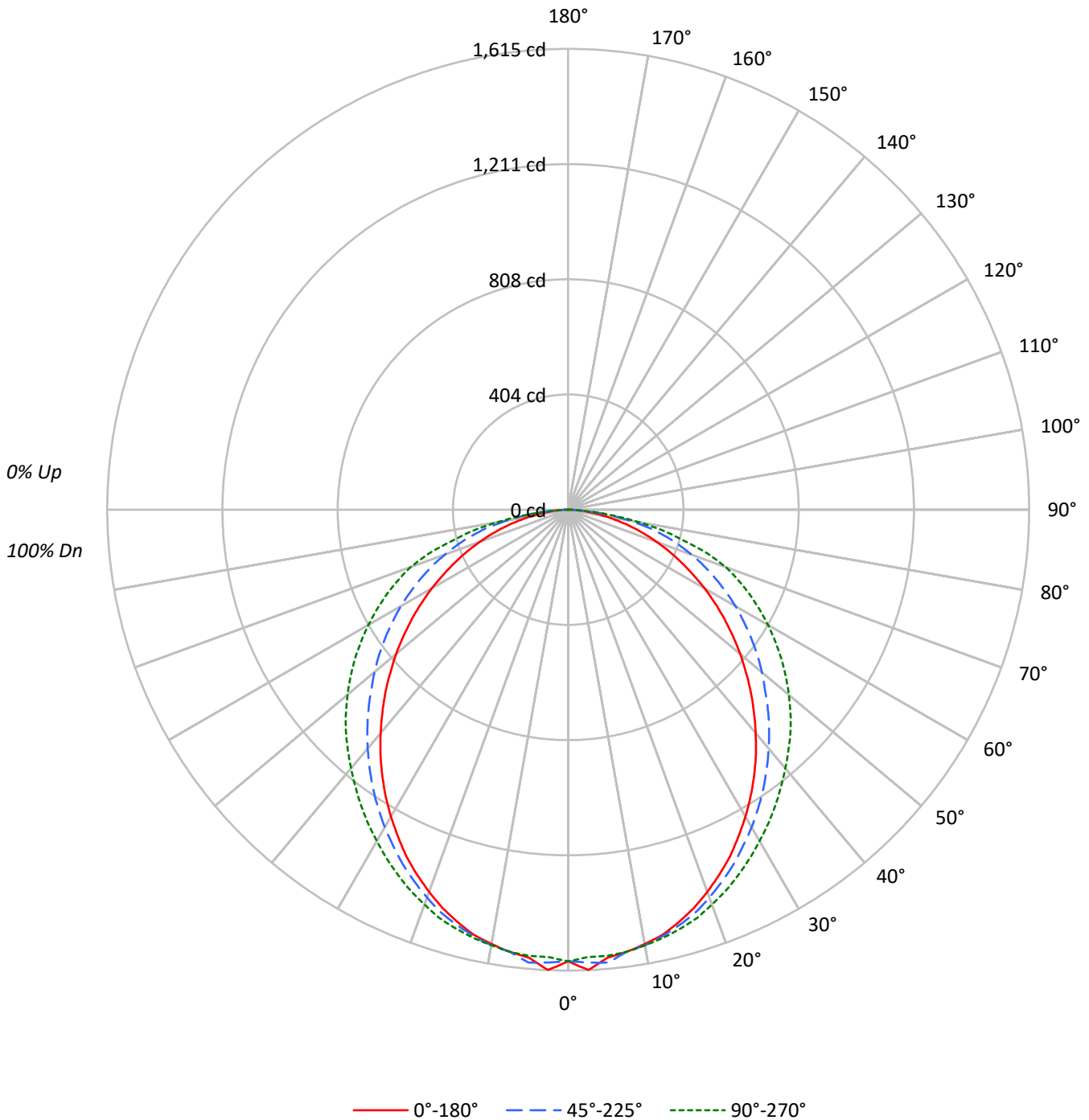
Test Method: LM-79-08  
Report Number: P233094  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25706)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FCB-24-2-LD4-44-35-UNV-EDD1  
Description: FAILSAFE 2X2 FCB LED TROFFER  
OPAL DIFFUSER, NO LENS  
Light Source: (84)3500K CCT, 80 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4433.0 lumens  
Efficiency: N/A  
Efficacy: 106.1 lumens/watt  
Spacing Criteria (0/90/45): 1.17 / 1.26 / 1.34  
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 41.8  
Input Voltage (V): 120  
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  | 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 |   |  |   |
| 1   | 108 | 104 | 99  | 95  | 106 | 101 | 97  | 94  | 97  | 94  | 91  | 93  | 90  | 88  | 89  | 87  | 85  | 83  |    |    |    |    | 83  |   |  |   |
| 2   | 98  | 90  | 83  | 77  | 96  | 88  | 82  | 76  | 84  | 79  | 74  | 81  | 77  | 73  | 78  | 74  | 71  | 69  |    |    |    |    | 69  |   |  |   |
| 3   | 90  | 79  | 70  | 64  | 87  | 77  | 69  | 63  | 74  | 68  | 62  | 71  | 66  | 61  | 69  | 64  | 60  | 58  |    |    |    |    | 58  |   |  |   |
| 4   | 82  | 70  | 61  | 54  | 80  | 68  | 60  | 54  | 66  | 59  | 53  | 64  | 57  | 52  | 61  | 56  | 51  | 49  |    |    |    |    | 49  |   |  |   |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 53  | 46  | 59  | 51  | 46  | 57  | 50  | 45  | 55  | 49  | 45  | 43  |    |    |    |    | 43  |   |  |   |
| 6   | 70  | 56  | 47  | 41  | 68  | 55  | 47  | 40  | 53  | 46  | 40  | 52  | 45  | 40  | 50  | 44  | 39  | 37  |    |    |    |    | 37  |   |  |   |
| 7   | 65  | 51  | 42  | 36  | 63  | 50  | 42  | 36  | 48  | 41  | 35  | 47  | 40  | 35  | 46  | 40  | 35  | 33  |    |    |    |    | 33  |   |  |   |
| 8   | 60  | 46  | 38  | 32  | 58  | 46  | 38  | 32  | 44  | 37  | 32  | 43  | 36  | 31  | 42  | 36  | 31  | 29  |    |    |    |    | 29  |   |  |   |
| 9   | 56  | 43  | 34  | 29  | 55  | 42  | 34  | 29  | 41  | 34  | 29  | 40  | 33  | 28  | 39  | 33  | 28  | 26  |    |    |    |    | 26  |   |  |   |
| 10  | 53  | 39  | 31  | 26  | 51  | 39  | 31  | 26  | 38  | 31  | 26  | 37  | 30  | 26  | 36  | 30  | 26  | 24  |    |    |    |    | 24  |   |  |   |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4258 | 4258 | 4258 |
| 5°  | 4257 | 4303 | 4239 |
| 10° | 4223 | 4235 | 4235 |
| 15° | 4168 | 4198 | 4234 |
| 20° | 4080 | 4142 | 4216 |
| 25° | 3981 | 4071 | 4192 |
| 30° | 3858 | 3992 | 4166 |
| 35° | 3732 | 3916 | 4157 |
| 40° | 3589 | 3839 | 4157 |
| 45° | 3446 | 3766 | 4192 |
| 50° | 3294 | 3709 | 4224 |
| 55° | 3135 | 3671 | 4278 |
| 60° | 2970 | 3643 | 4351 |
| 65° | 2786 | 3624 | 4461 |
| 70° | 2595 | 3613 | 4614 |
| 75° | 2353 | 3609 | 4371 |
| 80° | 2038 | 3341 | 3876 |
| 85° | 1729 | 2529 | 2464 |



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 150.1  | 3.4       |
| 10°-20°   | 425.1  | 9.6       |
| 20°-30°   | 632.4  | 14.3      |
| 30°-40°   | 747.9  | 16.9      |
| 40°-50°   | 768.7  | 17.3      |
| 50°-60°   | 702.4  | 15.8      |
| 60°-70°   | 561.9  | 12.7      |
| 70°-80°   | 352.7  | 8.0       |
| 80°-90°   | 91.8   | 2.1       |
| 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°    | 1207.5 | 27.2      |
| 0°-40°    | 1955.4 | 44.1      |
| 0°-60°    | 3426.6 | 77.3      |
| 0°-90°    | 4433.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4433.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1582 | 1582  | 1582 | 1582  | 1582 |      |
| 5°  | 1576 | 1576  | 1593 | 1582  | 1569 | 150  |
| 15° | 1496 | 1498  | 1507 | 1516  | 1520 | 421  |
| 25° | 1341 | 1350  | 1371 | 1395  | 1412 | 617  |
| 35° | 1136 | 1151  | 1192 | 1237  | 1265 | 710  |
| 45° | 905  | 929   | 990  | 1063  | 1102 | 698  |
| 55° | 668  | 701   | 782  | 869   | 912  | 598  |
| 65° | 438  | 476   | 569  | 655   | 701  | 434  |
| 75° | 226  | 270   | 347  | 399   | 420  | 240  |
| 85° | 56   | 71    | 82   | 80    | 80   | 65   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1582.3 | 1582.3 | 1582.3 | 1582.3 | 1582.3 |
| 2.5°  | 1614.6 | 1608.2 | 1588.8 | 1575.8 | 1569.4 |
| 5°    | 1575.8 | 1575.8 | 1593.1 | 1582.3 | 1569.4 |
| 7.5°  | 1562.9 | 1562.9 | 1562.9 | 1595.2 | 1562.9 |
| 10°   | 1545.6 | 1547.8 | 1550.0 | 1562.9 | 1550.0 |
| 12.5° | 1526.2 | 1526.2 | 1530.6 | 1534.9 | 1537.0 |
| 15°   | 1496.1 | 1498.2 | 1506.8 | 1515.5 | 1519.8 |
| 17.5° | 1463.7 | 1470.2 | 1481.0 | 1491.7 | 1500.4 |
| 20°   | 1424.9 | 1433.5 | 1446.5 | 1463.7 | 1472.3 |
| 22.5° | 1384.0 | 1392.6 | 1409.8 | 1429.2 | 1444.3 |
| 25°   | 1340.8 | 1349.5 | 1371.0 | 1394.7 | 1412.0 |
| 27.5° | 1291.3 | 1302.0 | 1327.9 | 1360.2 | 1377.5 |
| 30°   | 1241.7 | 1254.6 | 1284.8 | 1321.4 | 1340.8 |
| 32.5° | 1189.9 | 1205.0 | 1239.5 | 1280.5 | 1304.2 |
| 35°   | 1136.1 | 1151.1 | 1192.1 | 1237.4 | 1265.4 |
| 37.5° | 1080.0 | 1097.3 | 1142.5 | 1194.3 | 1224.4 |
| 40°   | 1021.8 | 1041.2 | 1092.9 | 1149.0 | 1183.5 |
| 42.5° | 963.6  | 985.2  | 1041.2 | 1108.0 | 1142.5 |
| 45°   | 905.4  | 929.1  | 989.5  | 1062.8 | 1101.6 |
| 47.5° | 845.0  | 873.1  | 935.6  | 1017.5 | 1056.3 |
| 50°   | 786.8  | 814.9  | 886.0  | 970.1  | 1008.9 |
| 52.5° | 726.5  | 758.8  | 834.3  | 920.5  | 961.4  |
| 55°   | 668.3  | 700.6  | 782.5  | 868.7  | 911.9  |
| 57.5° | 610.1  | 642.4  | 728.6  | 817.0  | 860.1  |
| 60°   | 551.9  | 586.4  | 676.9  | 763.1  | 808.4  |
| 62.5° | 493.7  | 530.3  | 623.0  | 711.4  | 754.5  |
| 65°   | 437.6  | 476.4  | 569.1  | 655.3  | 700.6  |
| 67.5° | 383.7  | 424.7  | 515.2  | 599.3  | 644.6  |
| 70°   | 329.8  | 370.8  | 459.2  | 541.1  | 586.4  |
| 72.5° | 278.1  | 319.0  | 405.3  | 478.6  | 513.1  |
| 75°   | 226.3  | 269.5  | 347.1  | 398.8  | 420.4  |
| 77.5° | 176.8  | 219.9  | 286.7  | 321.2  | 344.9  |
| 80°   | 131.5  | 168.1  | 215.6  | 241.4  | 250.1  |
| 82.5° | 90.5   | 120.7  | 150.9  | 157.4  | 161.7  |
| 85°   | 56.0   | 71.1   | 81.9   | 79.8   | 79.8   |
| 87.5° | 25.9   | 28.0   | 23.7   | 17.2   | 10.8   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

(END OF REPORT)