

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: P589636

Luminaire Tested: **FMR-24-2-LD4-4HI-50-UNV-81-97-EDD**

Issue Date: 12/8/2021



Test Information

Test Method: LM-79-08
Report Number: P589636
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2102-135-1)
Test Lab: INNOVATION CENTER
Issue Date: 12/8/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FMR-24-2-LD4-4HI-50-UNV-81-97-EDD
Description: 2X2 FMR TROFFER WITH .156 CLEAR PC FIXTURE SIDE AND .375 CLEAR
TEMPERED GLASS ENVIRONMENTAL SIDE LENSES WITH, 80 CRI AND 5000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

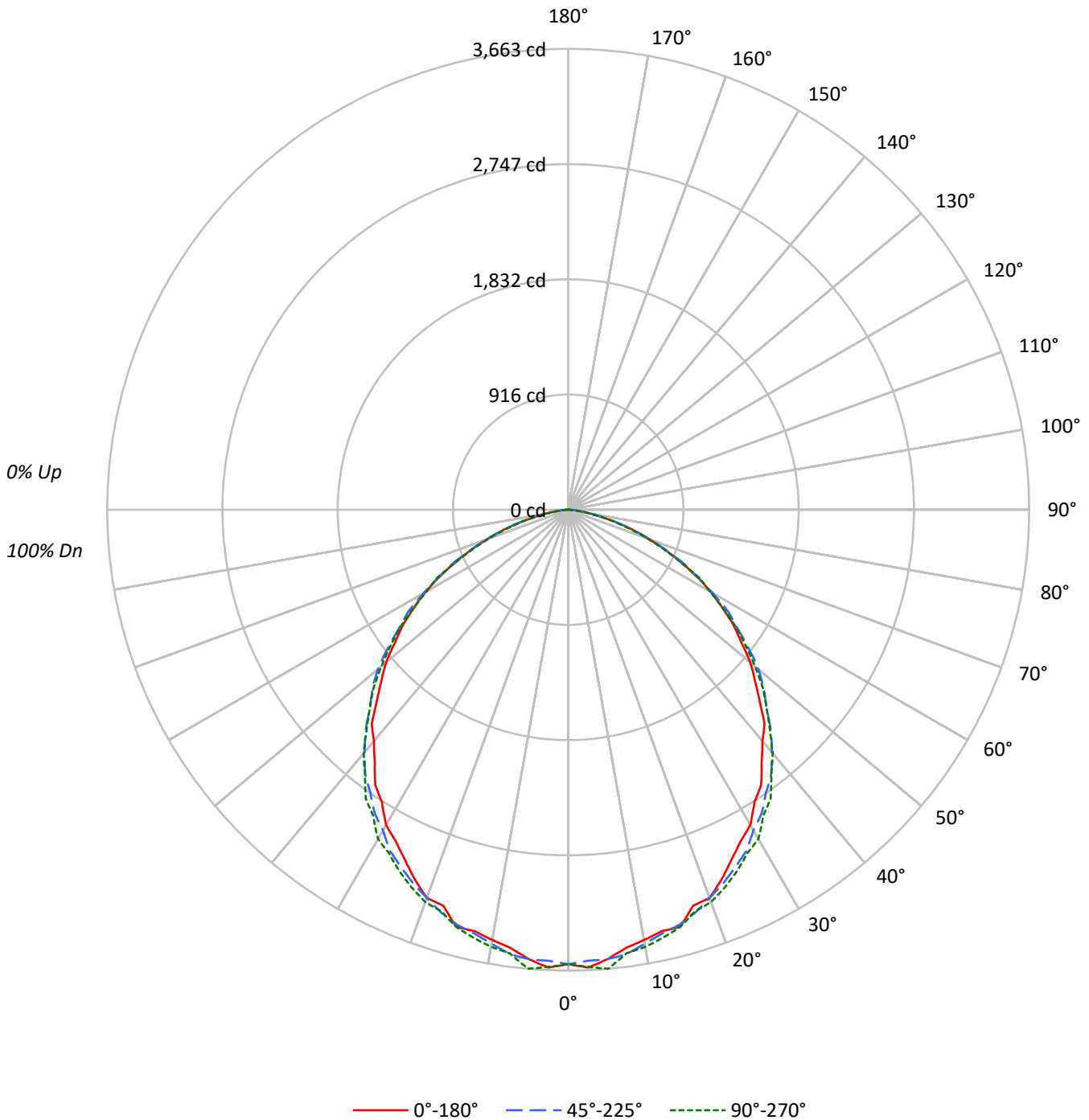
Lumens per Lamp: N/A
Luminaire Lumens: 9102.0 lumens
Efficiency: N/A
Efficacy: 105.3 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

Input Watts (W): 86.4
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 | 100 | 96 | 99 | 96 | 93 | 95 | 93 | 90 | 91 | 90 | 88 | 86 |
| 2 | 100 | 93 | 86 | 81 | 98 | 91 | 85 | 80 | 87 | 82 | 78 | 84 | 80 | 76 | 81 | 78 | 75 | 73 |
| 3 | 92 | 82 | 74 | 68 | 89 | 80 | 73 | 67 | 77 | 71 | 66 | 75 | 69 | 65 | 72 | 68 | 64 | 62 |
| 4 | 84 | 73 | 64 | 58 | 82 | 71 | 64 | 58 | 69 | 62 | 57 | 67 | 61 | 56 | 65 | 59 | 55 | 53 |
| 5 | 78 | 65 | 57 | 50 | 76 | 64 | 56 | 50 | 62 | 55 | 49 | 60 | 54 | 49 | 58 | 53 | 48 | 46 |
| 6 | 72 | 59 | 50 | 44 | 70 | 58 | 50 | 44 | 56 | 49 | 43 | 54 | 48 | 43 | 53 | 47 | 43 | 41 |
| 7 | 67 | 53 | 45 | 39 | 65 | 53 | 45 | 39 | 51 | 44 | 39 | 50 | 43 | 38 | 48 | 42 | 38 | 36 |
| 8 | 62 | 49 | 41 | 35 | 61 | 48 | 40 | 35 | 47 | 40 | 34 | 46 | 39 | 34 | 44 | 39 | 34 | 32 |
| 9 | 58 | 45 | 37 | 31 | 57 | 44 | 37 | 31 | 43 | 36 | 31 | 42 | 36 | 31 | 41 | 35 | 31 | 29 |
| 10 | 54 | 41 | 34 | 29 | 53 | 41 | 33 | 28 | 40 | 33 | 28 | 39 | 33 | 28 | 38 | 32 | 28 | 26 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 9718 | 9718 | 9718 |
| 5° | 9686 | 9690 | 9894 |
| 10° | 9490 | 9573 | 9640 |
| 15° | 9565 | 9513 | 9566 |
| 20° | 9403 | 9403 | 9503 |
| 25° | 9114 | 9314 | 9416 |
| 30° | 8989 | 9147 | 9390 |
| 35° | 8777 | 9007 | 9209 |
| 40° | 8436 | 8842 | 8881 |
| 45° | 8181 | 8472 | 8484 |
| 50° | 7912 | 8269 | 8111 |
| 55° | 7538 | 7685 | 7630 |
| 60° | 7049 | 7120 | 6992 |
| 65° | 6285 | 6446 | 6241 |
| 70° | 5393 | 5412 | 5261 |
| 75° | 4271 | 4262 | 4096 |
| 80° | 2862 | 2782 | 2673 |
| 85° | 1556 | 1541 | 1439 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 339.7 | 3.7 |
| 10°-20° | 962.8 | 10.6 |
| 20°-30° | 1442.4 | 15.8 |
| 30°-40° | 1709.6 | 18.8 |
| 40°-50° | 1712.7 | 18.8 |
| 50°-60° | 1453.8 | 16.0 |
| 60°-70° | 980.2 | 10.8 |
| 70°-80° | 430.7 | 4.7 |
| 80°-90° | 70.0 | 0.8 |
| 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° | 2744.9 | 30.2 |
| 0°-40° | 4454.5 | 48.9 |
| 0°-60° | 7621.1 | 83.7 |
| 0°-90° | 9102.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 9102.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3611 | 3611 | 3611 | 3611 | 3611 | |
| 5° | 3586 | 3577 | 3587 | 3576 | 3663 | 338 |
| 15° | 3433 | 3394 | 3415 | 3432 | 3434 | 957 |
| 25° | 3070 | 3086 | 3137 | 3178 | 3171 | 1419 |
| 35° | 2672 | 2680 | 2742 | 2805 | 2803 | 1659 |
| 45° | 2150 | 2190 | 2226 | 2283 | 2229 | 1663 |
| 55° | 1607 | 1596 | 1638 | 1627 | 1626 | 1429 |
| 65° | 987 | 974 | 1012 | 974 | 980 | 982 |
| 75° | 411 | 402 | 410 | 381 | 394 | 440 |
| 85° | 50 | 49 | 50 | 48 | 47 | 73 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P589636

CATALOG NUMBER: FMR-24-2-LD4-4HI-50-UNV-81-97-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3611.4 | 3611.4 | 3611.4 | 3611.4 | 3611.4 |
| 2.5° | 3642.7 | 3615.2 | 3589.5 | 3619.4 | 3637.6 |
| 5° | 3585.8 | 3577.4 | 3587.2 | 3576.5 | 3662.7 |
| 7.5° | 3512.1 | 3544.3 | 3562.9 | 3551.3 | 3556.4 |
| 10° | 3473.0 | 3461.8 | 3503.3 | 3532.2 | 3528.0 |
| 12.5° | 3431.0 | 3447.8 | 3450.1 | 3481.3 | 3484.1 |
| 15° | 3433.3 | 3393.7 | 3414.7 | 3432.4 | 3433.8 |
| 17.5° | 3300.0 | 3342.9 | 3357.3 | 3397.9 | 3347.5 |
| 20° | 3283.6 | 3252.4 | 3283.6 | 3325.1 | 3318.6 |
| 22.5° | 3183.4 | 3148.4 | 3215.6 | 3252.4 | 3250.1 |
| 25° | 3069.6 | 3086.4 | 3136.8 | 3177.8 | 3171.3 |
| 27.5° | 2969.8 | 2989.4 | 3061.2 | 3117.6 | 3081.3 |
| 30° | 2892.9 | 2883.1 | 2943.7 | 2994.1 | 3022.0 |
| 32.5° | 2755.3 | 2790.8 | 2861.6 | 2911.5 | 2885.0 |
| 35° | 2671.9 | 2679.8 | 2741.8 | 2805.2 | 2803.4 |
| 37.5° | 2525.9 | 2562.7 | 2649.9 | 2667.7 | 2651.3 |
| 40° | 2401.4 | 2438.2 | 2517.1 | 2536.2 | 2528.2 |
| 42.5° | 2309.6 | 2316.1 | 2383.7 | 2405.6 | 2370.6 |
| 45° | 2149.6 | 2189.7 | 2226.1 | 2283.4 | 2229.3 |
| 47.5° | 2013.5 | 2032.1 | 2110.4 | 2125.8 | 2097.4 |
| 50° | 1889.9 | 1896.4 | 1975.2 | 1956.1 | 1937.4 |
| 52.5° | 1734.6 | 1762.1 | 1806.4 | 1802.7 | 1780.8 |
| 55° | 1606.8 | 1596.1 | 1638.1 | 1626.9 | 1626.4 |
| 57.5° | 1453.4 | 1472.1 | 1506.6 | 1488.9 | 1460.4 |
| 60° | 1309.8 | 1310.3 | 1322.9 | 1302.8 | 1299.1 |
| 62.5° | 1149.9 | 1155.5 | 1158.3 | 1133.6 | 1173.7 |
| 65° | 987.1 | 974.1 | 1012.3 | 973.6 | 980.1 |
| 67.5° | 837.5 | 844.0 | 840.3 | 816.0 | 825.3 |
| 70° | 685.5 | 693.8 | 687.8 | 660.3 | 668.7 |
| 72.5° | 546.5 | 536.2 | 542.8 | 508.3 | 524.1 |
| 75° | 410.8 | 402.4 | 409.9 | 381.0 | 394.0 |
| 77.5° | 279.8 | 286.3 | 281.6 | 266.3 | 275.1 |
| 80° | 184.7 | 179.5 | 179.5 | 170.7 | 172.5 |
| 82.5° | 107.7 | 102.6 | 101.2 | 98.4 | 102.6 |
| 85° | 50.4 | 49.0 | 49.9 | 48.5 | 46.6 |
| 87.5° | 18.2 | 18.7 | 18.7 | 17.7 | 16.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)