

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: P589604

Luminaire Tested: **FMR-24-2-LD4-4HI-40-UNV-81-97-EDD**

Issue Date: 12/8/2021



Test Information

Test Method: LM-79-08
Report Number: P589604
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-40-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 4000K CCT LEDS
Light Source: -
Ballast/Driver: -

Summary

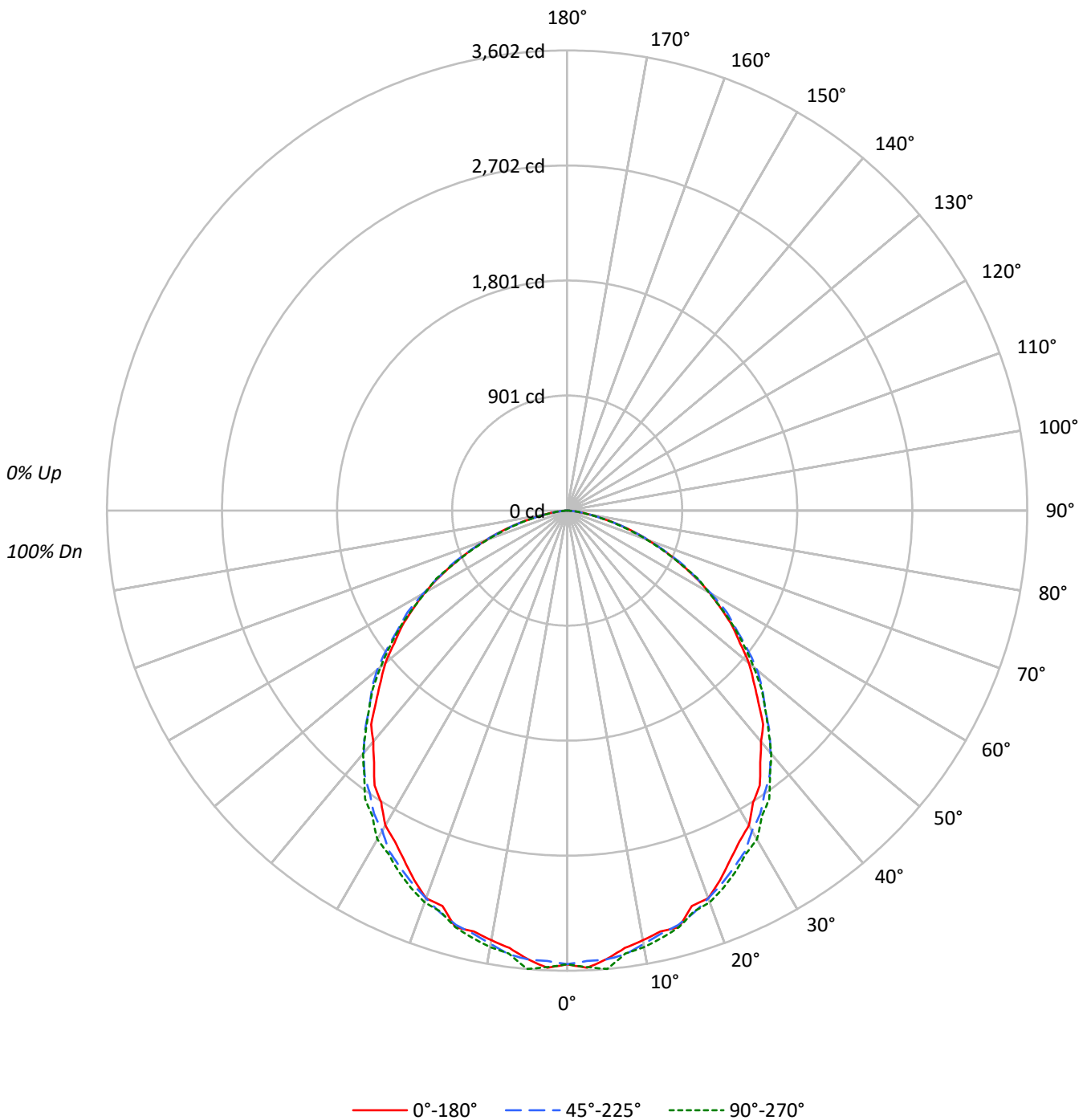
Lumens per Lamp: N/A
Luminaire Lumens: 8950.0 lumens
Efficiency: N/A
Efficacy: 103.6 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.23 / 1.33
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

Input Watts (W): 86.4
Input Voltage (V): NR
Input Current (A_{in}): 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

TEST NUMBER: P589604

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-97-EDD

Luminous Intensity Polar Plot





TEST NUMBER: P589604

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-97-EDD

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 | 110 | 105 | 101 | 98 | 107 | 103 | 100 | 96 | 99 | 96 | 93 | 95 | 93 | 90 | 91 | 90 | 88 | 86 | | | | | 86 | | | |
| 2 | 100 | 93 | 86 | 81 | 98 | 91 | 85 | 80 | 87 | 82 | 78 | 84 | 80 | 76 | 81 | 78 | 75 | 73 | | | | | 73 | | | |
| 3 | 92 | 82 | 74 | 68 | 89 | 80 | 73 | 67 | 77 | 71 | 66 | 75 | 69 | 65 | 72 | 68 | 64 | 62 | | | | | 62 | | | |
| 4 | 84 | 73 | 64 | 58 | 82 | 71 | 64 | 58 | 69 | 62 | 57 | 67 | 61 | 56 | 65 | 59 | 55 | 53 | | | | | 53 | | | |
| 5 | 78 | 65 | 57 | 50 | 76 | 64 | 56 | 50 | 62 | 55 | 49 | 60 | 54 | 49 | 58 | 53 | 48 | 46 | | | | | 46 | | | |
| 6 | 72 | 59 | 50 | 44 | 70 | 58 | 50 | 44 | 56 | 49 | 43 | 54 | 48 | 43 | 53 | 47 | 43 | 41 | | | | | 41 | | | |
| 7 | 67 | 53 | 45 | 39 | 65 | 53 | 45 | 39 | 51 | 44 | 39 | 50 | 43 | 38 | 48 | 42 | 38 | 36 | | | | | 36 | | | |
| 8 | 62 | 49 | 41 | 35 | 61 | 48 | 40 | 35 | 47 | 40 | 34 | 46 | 39 | 34 | 44 | 39 | 34 | 32 | | | | | 32 | | | |
| 9 | 58 | 45 | 37 | 31 | 57 | 44 | 37 | 31 | 43 | 36 | 31 | 42 | 36 | 31 | 41 | 35 | 31 | 29 | | | | | 29 | | | |
| 10 | 54 | 41 | 34 | 29 | 53 | 41 | 33 | 28 | 40 | 33 | 28 | 39 | 33 | 28 | 38 | 32 | 28 | 26 | | | | | 26 | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 9556 | 9556 | 9556 |
| 5° | 9524 | 9528 | 9729 |
| 10° | 9331 | 9413 | 9479 |
| 15° | 9405 | 9354 | 9406 |
| 20° | 9246 | 9246 | 9345 |
| 25° | 8962 | 9158 | 9259 |
| 30° | 8839 | 8994 | 9234 |
| 35° | 8631 | 8857 | 9055 |
| 40° | 8295 | 8694 | 8733 |
| 45° | 8044 | 8330 | 8342 |
| 50° | 7780 | 8131 | 7976 |
| 55° | 7413 | 7557 | 7503 |
| 60° | 6931 | 7001 | 6875 |
| 65° | 6181 | 6338 | 6137 |
| 70° | 5303 | 5321 | 5173 |
| 75° | 4199 | 4190 | 4028 |
| 80° | 2814 | 2735 | 2628 |
| 85° | 1528 | 1516 | 1417 |



TEST NUMBER: P589604

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-97-EDD

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 334.0 | 3.7 |
| 10°-20° | 946.7 | 10.6 |
| 20°-30° | 1418.4 | 15.8 |
| 30°-40° | 1681.0 | 18.8 |
| 40°-50° | 1684.1 | 18.8 |
| 50°-60° | 1429.6 | 16.0 |
| 60°-70° | 963.8 | 10.8 |
| 70°-80° | 423.5 | 4.7 |
| 80°-90° | 68.8 | 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° | 2699.1 | 30.2 |
| 0°-40° | 4380.1 | 48.9 |
| 0°-60° | 7493.8 | 83.7 |
| 0°-90° | 8950.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 8950.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3551 | 3551 | 3551 | 3551 | 3551 | |
| 5° | 3526 | 3518 | 3527 | 3517 | 3602 | 332 |
| 15° | 3376 | 3337 | 3358 | 3375 | 3376 | 941 |
| 25° | 3018 | 3035 | 3084 | 3125 | 3118 | 1395 |
| 35° | 2627 | 2635 | 2696 | 2758 | 2756 | 1631 |
| 45° | 2114 | 2153 | 2189 | 2245 | 2192 | 1635 |
| 55° | 1580 | 1570 | 1611 | 1600 | 1599 | 1405 |
| 65° | 971 | 958 | 995 | 957 | 964 | 965 |
| 75° | 404 | 396 | 403 | 375 | 387 | 433 |
| 85° | 50 | 48 | 49 | 48 | 46 | 72 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P589604

CATALOG NUMBER: FMR-24-2-LD4-4HI-40-UNV-81-97-EDD

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3551.1 | 3551.1 | 3551.1 | 3551.1 | 3551.1 |
| 2.5° | 3581.9 | 3554.8 | 3529.6 | 3558.9 | 3576.8 |
| 5° | 3525.9 | 3517.7 | 3527.3 | 3516.7 | 3601.6 |
| 7.5° | 3453.5 | 3485.1 | 3503.4 | 3492.0 | 3497.0 |
| 10° | 3415.0 | 3404.0 | 3444.8 | 3473.2 | 3469.1 |
| 12.5° | 3373.7 | 3390.2 | 3392.5 | 3423.2 | 3426.0 |
| 15° | 3376.0 | 3337.0 | 3357.6 | 3375.1 | 3376.4 |
| 17.5° | 3244.9 | 3287.0 | 3301.2 | 3341.1 | 3291.6 |
| 20° | 3228.8 | 3198.1 | 3228.8 | 3269.6 | 3263.2 |
| 22.5° | 3130.2 | 3095.8 | 3161.9 | 3198.1 | 3195.8 |
| 25° | 3018.3 | 3034.9 | 3084.4 | 3124.7 | 3118.3 |
| 27.5° | 2920.2 | 2939.5 | 3010.1 | 3065.6 | 3029.8 |
| 30° | 2844.6 | 2834.9 | 2894.6 | 2944.1 | 2971.6 |
| 32.5° | 2709.3 | 2744.2 | 2813.9 | 2862.9 | 2836.8 |
| 35° | 2627.2 | 2635.0 | 2696.0 | 2758.4 | 2756.5 |
| 37.5° | 2483.7 | 2520.0 | 2605.7 | 2623.1 | 2607.1 |
| 40° | 2361.3 | 2397.5 | 2475.0 | 2493.8 | 2486.0 |
| 42.5° | 2271.0 | 2277.4 | 2343.9 | 2365.4 | 2331.0 |
| 45° | 2113.7 | 2153.1 | 2188.9 | 2245.3 | 2192.1 |
| 47.5° | 1979.8 | 1998.2 | 2075.2 | 2090.3 | 2062.4 |
| 50° | 1858.3 | 1864.7 | 1942.2 | 1923.4 | 1905.1 |
| 52.5° | 1705.6 | 1732.7 | 1776.3 | 1772.6 | 1751.0 |
| 55° | 1580.0 | 1569.5 | 1610.7 | 1599.7 | 1599.3 |
| 57.5° | 1429.2 | 1447.5 | 1481.4 | 1464.0 | 1436.0 |
| 60° | 1287.9 | 1288.4 | 1300.8 | 1281.1 | 1277.4 |
| 62.5° | 1130.7 | 1136.2 | 1138.9 | 1114.6 | 1154.1 |
| 65° | 970.7 | 957.8 | 995.4 | 957.4 | 963.8 |
| 67.5° | 823.5 | 829.9 | 826.2 | 802.4 | 811.6 |
| 70° | 674.0 | 682.3 | 676.3 | 649.2 | 657.5 |
| 72.5° | 537.4 | 527.3 | 533.7 | 499.8 | 515.4 |
| 75° | 403.9 | 395.7 | 403.0 | 374.6 | 387.4 |
| 77.5° | 275.1 | 281.5 | 276.9 | 261.8 | 270.5 |
| 80° | 181.6 | 176.5 | 176.5 | 167.8 | 169.6 |
| 82.5° | 105.9 | 100.9 | 99.5 | 96.7 | 100.9 |
| 85° | 49.5 | 48.1 | 49.1 | 47.7 | 45.9 |
| 87.5° | 17.9 | 18.3 | 18.3 | 17.4 | 16.5 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)