

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: BALLABS TEST NO. 9187.0

Luminaire Tested: **CFE-3-432-120V-IK12-EB81**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: BALLABS TEST NO. 9187.0
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: CFE-3-432-120V-IK12-EB81
Description: 4/32W T8 2x4 RECESSED CLEANROOM LUMINAIRE
Light Source: -
F32T8/735/RS
Ballast/Driver: ADVANCE BALLAST #REL-4P32-RH-TP

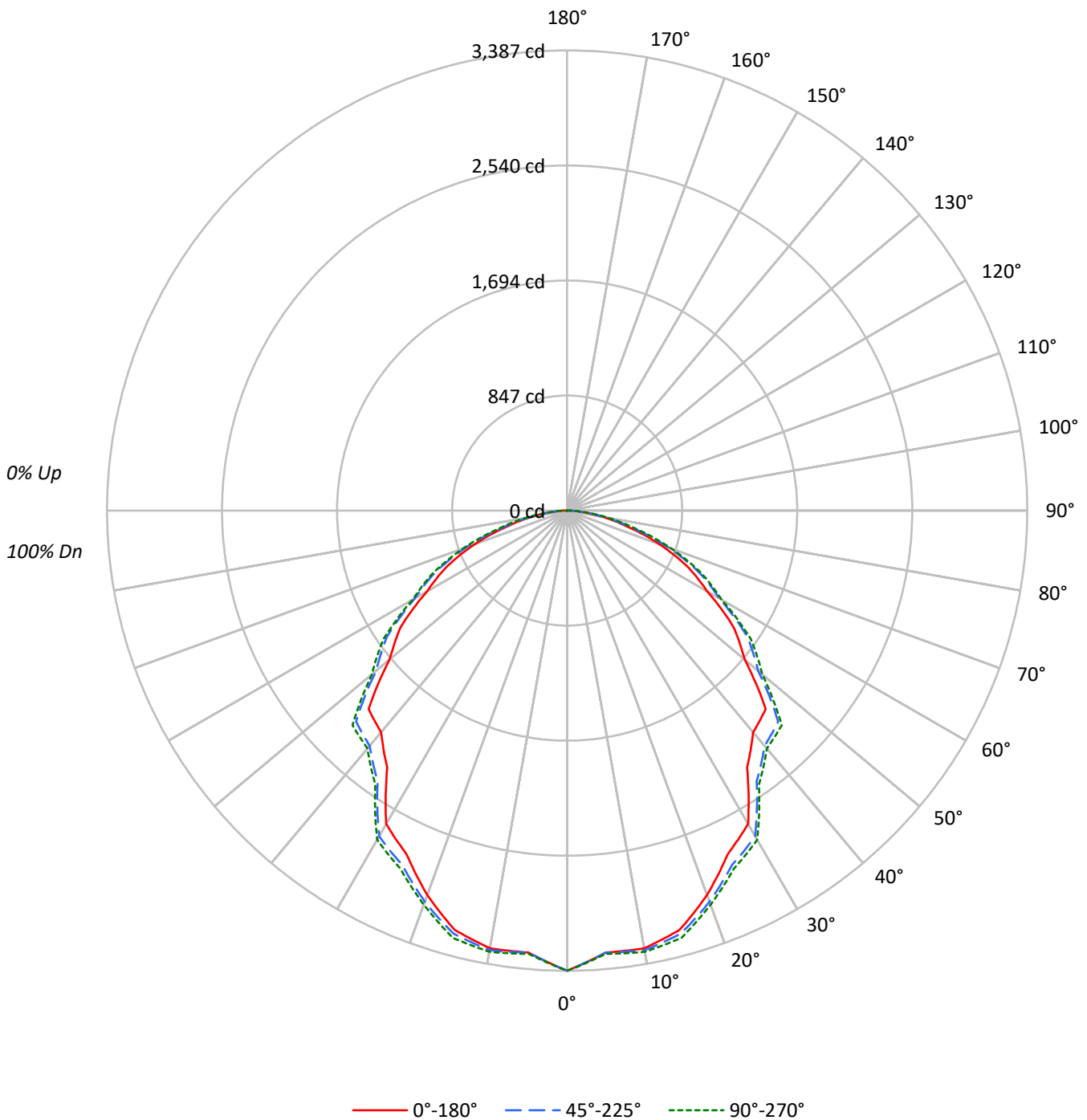
Summary

Lumens per Lamp: 2850 (4 lamps)
Luminaire Lumens: 8821.6 lumens
Efficiency: 77.4%
Efficacy: 85.6 lumens/watt
Spacing Criteria (0/90/45): 1.17 / 1.21 / 1.34
Luminous Opening: Rectangular (W 1.71' x L: 3.73' x H: 0')
CIE Type: Direct

Input Watts (W): 103
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





TEST NUMBER: BALLABS TEST NO. 9187.0
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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 | 0 | |
| RCR | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 92 | 92 | 92 | 92 | 90 | 90 | 90 | 90 | 86 | 86 | 86 | 82 | 82 | 82 | 79 | 79 | 79 | 77 | | | | 77 |
| 1 | 84 | 81 | 78 | 75 | 82 | 79 | 76 | 73 | 76 | 73 | 71 | 73 | 71 | 69 | 70 | 68 | 67 | | | | 65 | |
| 2 | 77 | 71 | 65 | 61 | 75 | 69 | 64 | 60 | 66 | 62 | 59 | 64 | 61 | 58 | 62 | 59 | 56 | | | | 55 | |
| 3 | 70 | 62 | 56 | 51 | 68 | 61 | 55 | 51 | 59 | 54 | 50 | 56 | 52 | 49 | 55 | 51 | 48 | | | | 46 | |
| 4 | 64 | 55 | 48 | 43 | 63 | 54 | 48 | 43 | 52 | 47 | 42 | 50 | 46 | 42 | 49 | 45 | 41 | | | | 40 | |
| 5 | 59 | 49 | 42 | 37 | 58 | 48 | 42 | 37 | 47 | 41 | 37 | 45 | 40 | 36 | 44 | 40 | 36 | | | | 34 | |
| 6 | 55 | 44 | 38 | 33 | 53 | 44 | 37 | 33 | 42 | 37 | 32 | 41 | 36 | 32 | 40 | 35 | 32 | | | | 30 | |
| 7 | 51 | 40 | 34 | 29 | 49 | 40 | 33 | 29 | 39 | 33 | 29 | 37 | 32 | 28 | 36 | 32 | 28 | | | | 27 | |
| 8 | 47 | 37 | 30 | 26 | 46 | 36 | 30 | 26 | 35 | 30 | 26 | 34 | 29 | 25 | 33 | 29 | 25 | | | | 24 | |
| 9 | 44 | 34 | 28 | 23 | 43 | 33 | 27 | 23 | 33 | 27 | 23 | 32 | 27 | 23 | 31 | 26 | 23 | | | | 21 | |
| 10 | 41 | 31 | 25 | 21 | 40 | 31 | 25 | 21 | 30 | 25 | 21 | 29 | 24 | 21 | 29 | 24 | 21 | | | | 19 | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 5724 | 5724 | 5724 |
| 5° | 5539 | 5539 | 5556 |
| 10° | 5613 | 5637 | 5660 |
| 15° | 5592 | 5643 | 5695 |
| 20° | 5415 | 5511 | 5552 |
| 25° | 5208 | 5363 | 5421 |
| 30° | 5197 | 5402 | 5460 |
| 35° | 4764 | 5018 | 5079 |
| 40° | 4699 | 4988 | 5045 |
| 45° | 4938 | 5251 | 5339 |
| 50° | 4485 | 4827 | 4930 |
| 55° | 4408 | 4770 | 4868 |
| 60° | 4026 | 4377 | 4445 |
| 65° | 3915 | 4271 | 4359 |
| 70° | 3577 | 3909 | 4032 |
| 75° | 3017 | 3271 | 3454 |
| 80° | 2569 | 2735 | 2998 |
| 85° | 1958 | 2075 | 2346 |



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 CATALOG NUMBER: CFE-3-432-120V-IK12-EB81

ZONAL LUMENS:

CANDELA DISTRIBUTION:

| Zone | Lumens | % Fixture | % Lamp | | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----------|--------|-----------|--------|-----|------|-------|------|-------|------|------|
| 0°-10° | 313.9 | 3.6 | 2.8 | 0° | 3387 | 3387 | 3387 | 3387 | 3387 | |
| 10°-20° | 904.0 | 10.2 | 7.9 | 5° | 3265 | 3265 | 3265 | 3267 | 3275 | 313 |
| 20°-30° | 1331.5 | 15.1 | 11.7 | 15° | 3196 | 3205 | 3225 | 3246 | 3255 | 895 |
| 30°-40° | 1533.3 | 17.4 | 13.4 | 25° | 2793 | 2823 | 2876 | 2910 | 2907 | 1299 |
| 40°-50° | 1621.0 | 18.4 | 14.2 | 35° | 2309 | 2348 | 2432 | 2459 | 2462 | 1473 |
| 50°-60° | 1402.9 | 15.9 | 12.3 | 45° | 2066 | 2116 | 2197 | 2231 | 2234 | 1539 |
| 60°-70° | 1029.0 | 11.7 | 9.0 | 55° | 1496 | 1540 | 1619 | 1644 | 1652 | 1317 |
| 70°-80° | 544.8 | 6.2 | 4.8 | 65° | 979 | 1016 | 1068 | 1088 | 1090 | 959 |
| 80°-90° | 141.2 | 1.6 | 1.2 | 75° | 462 | 481 | 501 | 521 | 529 | 504 |
| 90°-100° | 0.0 | 0.0 | 0.0 | 85° | 101 | 105 | 107 | 116 | 121 | 130 |
| 100°-110° | 0.0 | 0.0 | 0.0 | 90° | 10 | 12 | 14 | 17 | 17 | |
| 110°-120° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 120°-130° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 130°-140° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 140°-150° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 150°-160° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 160°-170° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 170°-180° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 0°-30° | 2549.4 | 28.9 | 22.4 | | | | | | | |
| 0°-40° | 4082.7 | 46.3 | 35.8 | | | | | | | |
| 0°-60° | 7106.5 | 80.6 | 62.3 | | | | | | | |
| 0°-90° | 8821.6 | 100.0 | 77.4 | | | | | | | |
| 90°-120° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 90°-150° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 90°-180° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 0°-180° | 8821.6 | 100.0 | 77.4 | | | | | | | |



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CATALOG NUMBER: CFE-3-432-120V-IK12-EB81

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-----|------|-------|------|-------|------|
| 0° | 3387 | 3387 | 3387 | 3387 | 3387 |
| 5° | 3265 | 3265 | 3265 | 3267 | 3275 |
| 10° | 3271 | 3275 | 3285 | 3296 | 3298 |
| 15° | 3196 | 3205 | 3225 | 3246 | 3255 |
| 20° | 3011 | 3026 | 3064 | 3089 | 3087 |
| 25° | 2793 | 2823 | 2876 | 2910 | 2907 |
| 30° | 2663 | 2695 | 2768 | 2803 | 2798 |
| 35° | 2309 | 2348 | 2432 | 2459 | 2462 |
| 40° | 2130 | 2178 | 2261 | 2287 | 2287 |
| 45° | 2066 | 2116 | 2197 | 2231 | 2234 |
| 50° | 1706 | 1753 | 1836 | 1862 | 1875 |
| 55° | 1496 | 1540 | 1619 | 1644 | 1652 |
| 60° | 1191 | 1227 | 1295 | 1314 | 1315 |
| 65° | 979 | 1016 | 1068 | 1088 | 1090 |
| 70° | 724 | 753 | 791 | 811 | 816 |
| 75° | 462 | 481 | 501 | 521 | 529 |
| 80° | 264 | 274 | 281 | 300 | 308 |
| 85° | 101 | 105 | 107 | 116 | 121 |
| 90° | 10 | 12 | 14 | 17 | 17 |

(END OF REPORT)