

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: P30110

Luminaire Tested: **CRF-24-417-UNV-IK12**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: P30110
Test Lab: METALUX RESEARCH LABS
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: CRF-24-417-UNV-IK12
Description: FAILSAFE TRISEAL CRF SERIES 2x2 4L T8
Light Source: (4) DOUBLE ENDED T8 2 FOOT LINEAR FLUORESCENT LAMPS
F17W T8 17 WATTS
Ballast/Driver: (2) GE PROLINE T8
GE 232-MNV

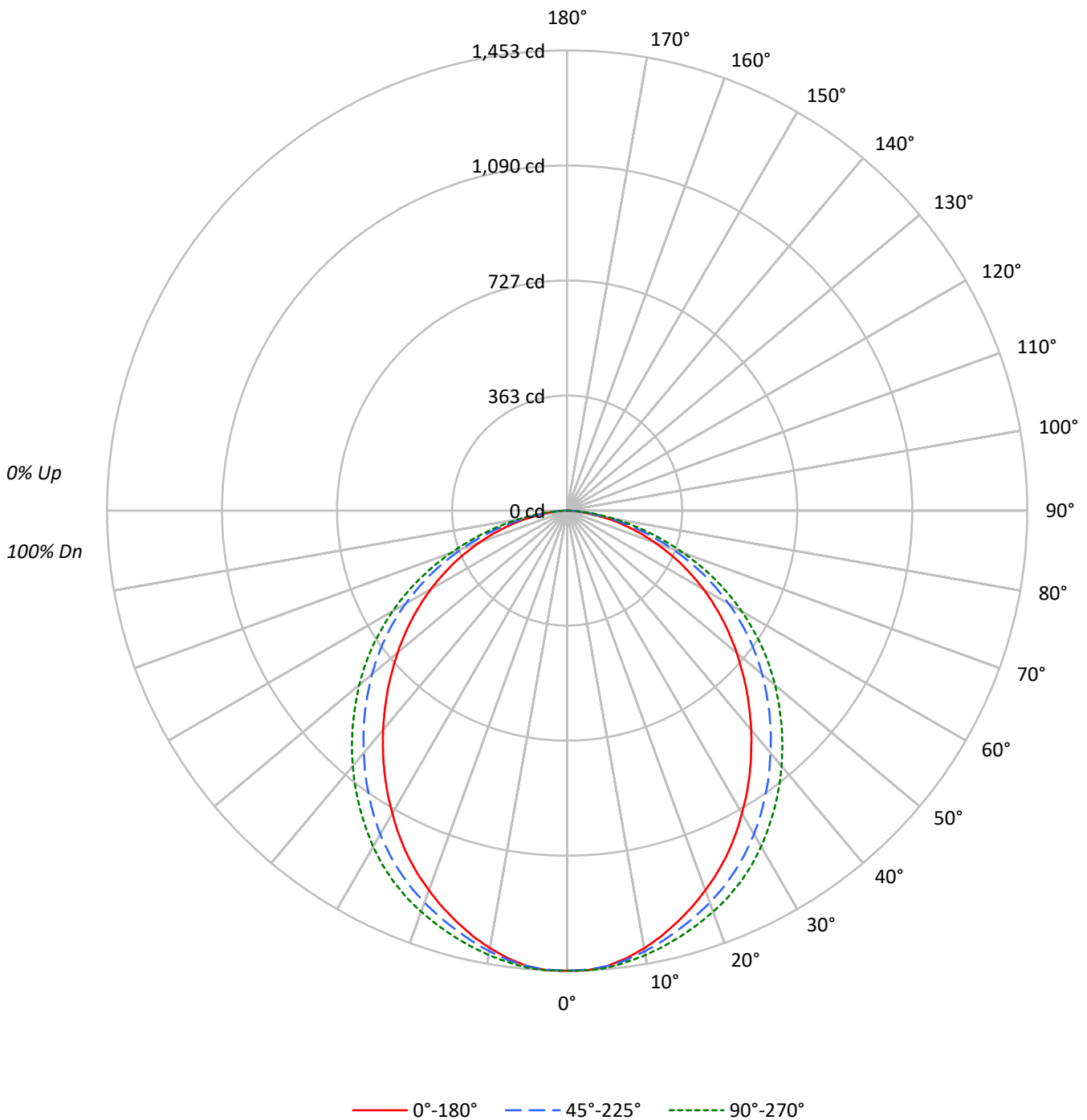
Summary

Lumens per Lamp: 1325 (4 lamps)
Luminaire Lumens: 3845.8 lumens
Efficiency: 72.6%
Efficacy: 60.0 lumens/watt
Spacing Criteria (0/90/45): 1.14 / 1.25 / 1.33
Luminous Opening: Rectangular (W 1.75' x L: 1.75' x H: 0')
CIE Type: Direct

Input Watts (W): 64.1
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

TEST NUMBER: P30110
CATALOG NUMBER: CRF-24-417-UNV-IK12

Luminous Intensity Polar Plot





TEST NUMBER: P30110

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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 | 86 | 86 | 86 | 86 | 84 | 84 | 84 | 84 | 81 | 81 | 81 | 77 | 77 | 77 | 74 | 74 | 74 | 73 |
| 1 | 79 | 76 | 73 | 70 | 77 | 74 | 71 | 69 | 71 | 69 | 67 | 68 | 66 | 65 | 66 | 64 | 63 | 61 |
| 2 | 72 | 66 | 61 | 57 | 70 | 65 | 60 | 56 | 62 | 58 | 55 | 60 | 57 | 54 | 58 | 55 | 53 | 51 |
| 3 | 66 | 58 | 52 | 48 | 64 | 57 | 52 | 47 | 55 | 50 | 46 | 53 | 49 | 46 | 51 | 48 | 45 | 43 |
| 4 | 60 | 52 | 45 | 40 | 59 | 51 | 45 | 40 | 49 | 44 | 40 | 47 | 43 | 39 | 46 | 42 | 38 | 37 |
| 5 | 55 | 46 | 40 | 35 | 54 | 45 | 39 | 35 | 44 | 38 | 34 | 42 | 38 | 34 | 41 | 37 | 34 | 32 |
| 6 | 51 | 42 | 35 | 30 | 50 | 41 | 35 | 30 | 40 | 34 | 30 | 38 | 33 | 30 | 37 | 33 | 30 | 28 |
| 7 | 47 | 38 | 31 | 27 | 46 | 37 | 31 | 27 | 36 | 31 | 27 | 35 | 30 | 26 | 34 | 30 | 26 | 25 |
| 8 | 44 | 34 | 28 | 24 | 43 | 34 | 28 | 24 | 33 | 28 | 24 | 32 | 27 | 24 | 31 | 27 | 24 | 22 |
| 9 | 41 | 32 | 26 | 22 | 40 | 31 | 26 | 22 | 30 | 25 | 22 | 30 | 25 | 21 | 29 | 24 | 21 | 20 |
| 10 | 39 | 29 | 24 | 20 | 38 | 29 | 23 | 20 | 28 | 23 | 20 | 27 | 23 | 19 | 27 | 22 | 19 | 18 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 5107 | 5107 | 5107 |
| 5° | 5095 | 5095 | 5112 |
| 10° | 5007 | 5043 | 5086 |
| 15° | 4894 | 4978 | 5061 |
| 20° | 4773 | 4926 | 5042 |
| 25° | 4642 | 4867 | 5018 |
| 30° | 4481 | 4789 | 4972 |
| 35° | 4316 | 4690 | 4904 |
| 40° | 4148 | 4584 | 4831 |
| 45° | 3981 | 4488 | 4757 |
| 50° | 3822 | 4396 | 4686 |
| 55° | 3664 | 4289 | 4602 |
| 60° | 3494 | 4147 | 4478 |
| 65° | 3293 | 3934 | 4300 |
| 70° | 3021 | 3638 | 4018 |
| 75° | 2702 | 3205 | 3626 |
| 80° | 2226 | 2591 | 3056 |
| 85° | 1653 | 1815 | 2258 |



TEST NUMBER: P30110

CATALOG NUMBER: CRF-24-417-UNV-IK12

ZONAL LUMENS:

CANDELA DISTRIBUTION:

| Zone | Lumens | % Fixture | % Lamp | | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----------|--------|-----------|--------|------|------|-------|------|-------|------|------|
| 0°-10° | 136.9 | 3.6 | 2.6 | 0° | 1453 | 1453 | 1453 | 1453 | 1453 | |
| 10°-20° | 385.9 | 10.0 | 7.3 | 5° | 1444 | 1443 | 1444 | 1447 | 1449 | 136 |
| 20°-30° | 575.5 | 15.0 | 10.9 | 15° | 1345 | 1352 | 1368 | 1384 | 1391 | 379 |
| 30°-40° | 677.6 | 17.6 | 12.8 | 25° | 1197 | 1214 | 1255 | 1286 | 1294 | 550 |
| 40°-50° | 687.6 | 17.9 | 13.0 | 35° | 1006 | 1032 | 1093 | 1133 | 1143 | 629 |
| 50°-60° | 614.3 | 16.0 | 11.6 | 45° | 801 | 834 | 903 | 948 | 957 | 618 |
| 60°-70° | 460.1 | 12.0 | 8.7 | 55° | 598 | 633 | 700 | 744 | 751 | 535 |
| 70°-80° | 249.6 | 6.5 | 4.7 | 65° | 396 | 423 | 473 | 510 | 517 | 391 |
| 80°-90° | 58.3 | 1.5 | 1.1 | 75° | 199 | 213 | 236 | 260 | 267 | 211 |
| 90°-100° | 0.1 | 0.0 | 0.0 | 85° | 41 | 43 | 45 | 51 | 56 | 48 |
| 100°-110° | 0.0 | 0.0 | 0.0 | 90° | 1 | 1 | 0 | 0 | 0 | 2 |
| 110°-120° | 0.0 | 0.0 | 0.0 | 95° | 0 | 0 | 0 | 0 | 0 | 0 |
| 120°-130° | 0.0 | 0.0 | 0.0 | 105° | 0 | 0 | 0 | 0 | 0 | 0 |
| 130°-140° | 0.0 | 0.0 | 0.0 | 115° | 0 | 0 | 0 | 0 | 0 | 0 |
| 140°-150° | 0.0 | 0.0 | 0.0 | 125° | 0 | 0 | 0 | 0 | 0 | 0 |
| 150°-160° | 0.0 | 0.0 | 0.0 | 135° | 0 | 0 | 0 | 0 | 0 | 0 |
| 160°-170° | 0.0 | 0.0 | 0.0 | 145° | 0 | 0 | 0 | 0 | 0 | 0 |
| 170°-180° | 0.0 | 0.0 | 0.0 | 155° | 0 | 0 | 0 | 0 | 0 | 0 |
| 0°-30° | 1098.4 | 28.6 | 20.7 | 165° | 0 | 0 | 0 | 0 | 0 | 0 |
| 0°-40° | 1775.9 | 46.2 | 33.5 | 175° | 0 | 0 | 0 | 0 | 0 | 0 |
| 0°-60° | 3077.7 | 80.0 | 58.1 | 180° | 0 | 0 | 0 | 0 | 0 | 0 |
| 0°-90° | 3845.8 | 100.0 | 72.6 | | | | | | | |
| 90°-120° | 0.1 | 0.0 | 0.0 | | | | | | | |
| 90°-150° | 0.1 | 0.0 | 0.0 | | | | | | | |
| 90°-180° | 0.0 | 0.0 | 0.0 | | | | | | | |
| 0°-180° | 3845.8 | 100.0 | 72.6 | | | | | | | |



TEST NUMBER: P30110

CATALOG NUMBER: CRF-24-417-UNV-IK12

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|------|-------|------|-------|------|
| 0° | 1453 | 1453 | 1453 | 1453 | 1453 |
| 2.5° | 1453 | 1452 | 1451 | 1452 | 1453 |
| 5° | 1444 | 1443 | 1444 | 1447 | 1449 |
| 7.5° | 1426 | 1427 | 1431 | 1436 | 1438 |
| 10° | 1403 | 1405 | 1413 | 1420 | 1425 |
| 12.5° | 1376 | 1380 | 1392 | 1403 | 1409 |
| 15° | 1345 | 1352 | 1368 | 1384 | 1391 |
| 17.5° | 1312 | 1322 | 1344 | 1363 | 1370 |
| 20° | 1276 | 1289 | 1317 | 1340 | 1348 |
| 22.5° | 1238 | 1253 | 1288 | 1315 | 1323 |
| 25° | 1197 | 1214 | 1255 | 1286 | 1294 |
| 27.5° | 1152 | 1172 | 1219 | 1253 | 1262 |
| 30° | 1104 | 1127 | 1180 | 1216 | 1225 |
| 32.5° | 1056 | 1081 | 1138 | 1176 | 1185 |
| 35° | 1006 | 1032 | 1093 | 1133 | 1143 |
| 37.5° | 955 | 983 | 1047 | 1089 | 1099 |
| 40° | 904 | 934 | 999 | 1043 | 1053 |
| 42.5° | 852 | 884 | 952 | 996 | 1006 |
| 45° | 801 | 834 | 903 | 948 | 957 |
| 47.5° | 749 | 784 | 853 | 899 | 907 |
| 50° | 699 | 734 | 804 | 848 | 857 |
| 52.5° | 648 | 683 | 753 | 797 | 805 |
| 55° | 598 | 633 | 700 | 744 | 751 |
| 57.5° | 548 | 581 | 646 | 688 | 694 |
| 60° | 497 | 529 | 590 | 630 | 637 |
| 62.5° | 446 | 476 | 532 | 571 | 577 |
| 65° | 396 | 423 | 473 | 510 | 517 |
| 67.5° | 345 | 370 | 413 | 448 | 454 |
| 70° | 294 | 316 | 354 | 384 | 391 |
| 72.5° | 246 | 263 | 294 | 321 | 328 |
| 75° | 199 | 213 | 236 | 260 | 267 |
| 77.5° | 153 | 163 | 180 | 200 | 207 |
| 80° | 110 | 117 | 128 | 144 | 151 |
| 82.5° | 73 | 77 | 83 | 94 | 100 |
| 85° | 41 | 43 | 45 | 51 | 56 |
| 87.5° | 16 | 16 | 16 | 19 | 20 |
| 90° | 1 | 1 | 0 | 0 | 0 |
| 92.5° | 0 | 0 | 0 | 0 | 0 |
| 95° | 0 | 0 | 0 | 0 | 0 |
| 97.5° | 0 | 0 | 0 | 0 | 0 |
| 100° | 0 | 0 | 0 | 0 | 0 |
| 102.5° | 0 | 0 | 0 | 0 | 0 |
| 105° | 0 | 0 | 0 | 0 | 0 |
| 107.5° | 0 | 0 | 0 | 0 | 0 |
| 110° | 0 | 0 | 0 | 0 | 0 |



TEST NUMBER: P30110

CATALOG NUMBER: CRF-24-417-UNV-IK12

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|----|-------|-----|-------|-----|
| 112.5° | 0 | 0 | 0 | 0 | 0 |
| 115° | 0 | 0 | 0 | 0 | 0 |
| 117.5° | 0 | 0 | 0 | 0 | 0 |
| 120° | 0 | 0 | 0 | 0 | 0 |
| 122.5° | 0 | 0 | 0 | 0 | 0 |
| 125° | 0 | 0 | 0 | 0 | 0 |
| 127.5° | 0 | 0 | 0 | 0 | 0 |
| 130° | 0 | 0 | 0 | 0 | 0 |
| 132.5° | 0 | 0 | 0 | 0 | 0 |
| 135° | 0 | 0 | 0 | 0 | 0 |
| 137.5° | 0 | 0 | 0 | 0 | 0 |
| 140° | 0 | 0 | 0 | 0 | 0 |
| 142.5° | 0 | 0 | 0 | 0 | 0 |
| 145° | 0 | 0 | 0 | 0 | 0 |
| 147.5° | 0 | 0 | 0 | 0 | 0 |
| 150° | 0 | 0 | 0 | 0 | 0 |
| 152.5° | 0 | 0 | 0 | 0 | 0 |
| 155° | 0 | 0 | 0 | 0 | 0 |
| 157.5° | 0 | 0 | 0 | 0 | 0 |
| 160° | 0 | 0 | 0 | 0 | 0 |
| 162.5° | 0 | 0 | 0 | 0 | 0 |
| 165° | 0 | 0 | 0 | 0 | 0 |
| 167.5° | 0 | 0 | 0 | 0 | 0 |
| 170° | 0 | 0 | 0 | 0 | 0 |
| 172.5° | 0 | 0 | 0 | 0 | 0 |
| 175° | 0 | 0 | 0 | 0 | 0 |
| 177.5° | 0 | 0 | 0 | 0 | 0 |
| 180° | 0 | 0 | 0 | 0 | 0 |

(END OF REPORT)