

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: METALUX

Report Number: P474602

Luminaire Tested: **24CZ2-140VHE-SQR-UNV-L830-CD1-U**

Issue Date: 01/28/2021

Test Information

Test Method: LM-79-08
Report Number: P474602
Test Lab: INNOVATION CENTER(G3)
Issue Date: 01/28/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-140VHE-SQR-UNV-L830-CD1-U
Description: 2'X4' TROFFER LED MODULE, VERY HIGH EFFICIENCY,SQUARE LENS
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12869.2 lumens
Efficiency: N/A
Efficacy: 128.1 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.3 / 1.39
Luminous Opening: Rectangular (W 2' x L: 2' x H: 0')
CIE Type: Direct

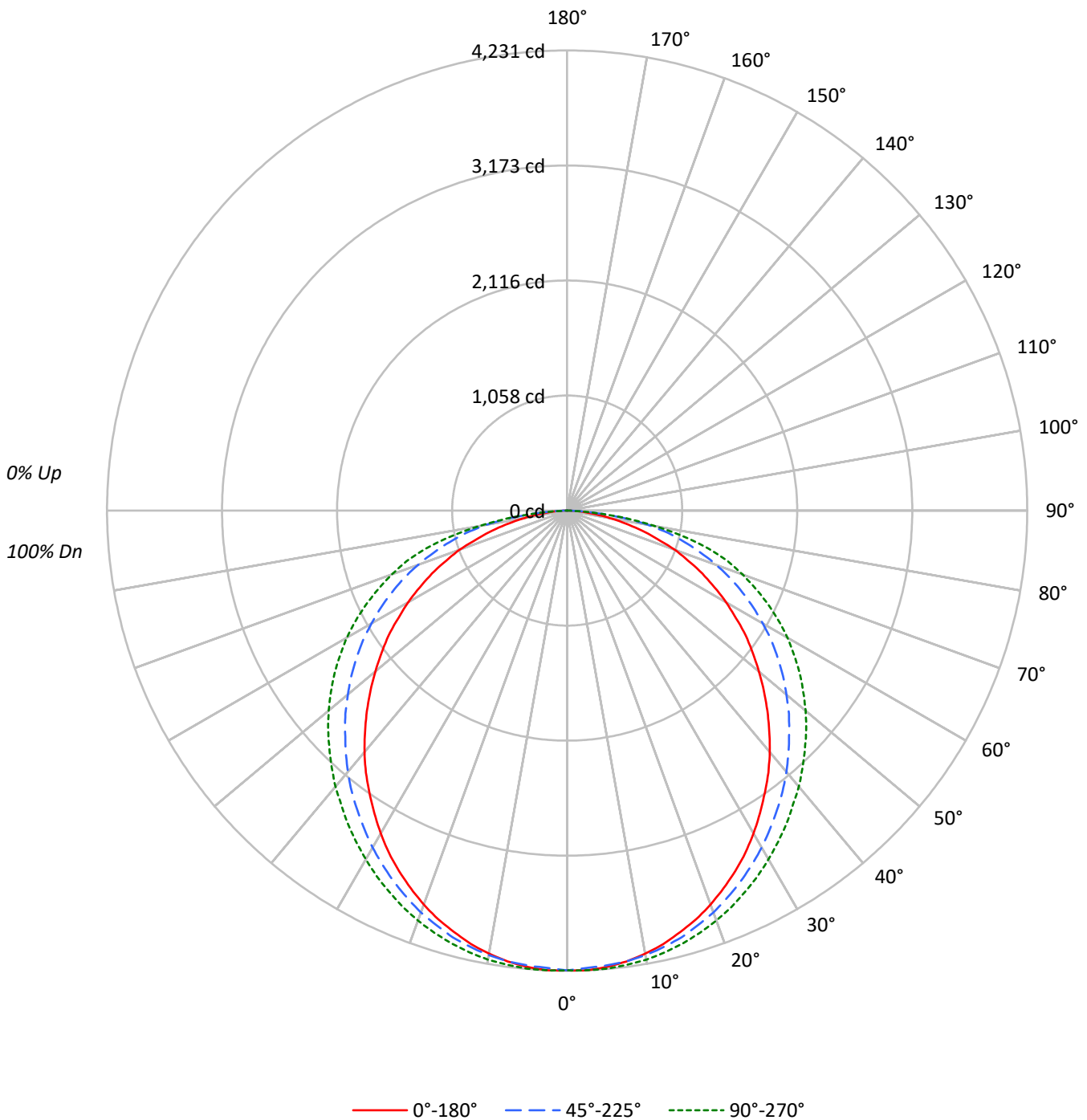
Input Watts (W): 100.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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 | 0 |
| RCR | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 108 | 103 | 98 | 94 | 105 | 101 | 96 | 93 | 96 | 93 | 90 | 92 | 90 | 87 | 89 | 87 | 84 | 82 |
| 2 | 98 | 89 | 82 | 76 | 95 | 87 | 81 | 75 | 84 | 78 | 73 | 80 | 76 | 71 | 77 | 73 | 70 | 68 |
| 3 | 89 | 78 | 69 | 62 | 86 | 76 | 68 | 62 | 73 | 66 | 61 | 70 | 64 | 60 | 68 | 63 | 59 | 56 |
| 4 | 81 | 69 | 59 | 53 | 79 | 67 | 59 | 52 | 65 | 57 | 51 | 62 | 56 | 51 | 60 | 55 | 50 | 48 |
| 5 | 74 | 61 | 52 | 45 | 72 | 60 | 51 | 45 | 58 | 50 | 44 | 56 | 49 | 44 | 54 | 48 | 43 | 41 |
| 6 | 69 | 55 | 46 | 39 | 67 | 54 | 45 | 39 | 52 | 44 | 39 | 50 | 43 | 38 | 49 | 43 | 38 | 36 |
| 7 | 64 | 50 | 41 | 34 | 62 | 49 | 40 | 34 | 47 | 40 | 34 | 46 | 39 | 34 | 44 | 38 | 33 | 31 |
| 8 | 59 | 45 | 37 | 31 | 58 | 45 | 36 | 31 | 43 | 36 | 30 | 42 | 35 | 30 | 41 | 35 | 30 | 28 |
| 9 | 55 | 42 | 33 | 28 | 54 | 41 | 33 | 27 | 40 | 32 | 27 | 39 | 32 | 27 | 38 | 31 | 27 | 25 |
| 10 | 52 | 38 | 30 | 25 | 50 | 38 | 30 | 25 | 37 | 30 | 25 | 36 | 29 | 25 | 35 | 29 | 24 | 23 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 11375 | 11375 | 11375 |
| 5° | 11374 | 11341 | 11418 |
| 10° | 11303 | 11343 | 11455 |
| 15° | 11181 | 11318 | 11473 |
| 20° | 11039 | 11263 | 11487 |
| 25° | 10860 | 11184 | 11489 |
| 30° | 10650 | 11116 | 11506 |
| 35° | 10408 | 11050 | 11549 |
| 40° | 10183 | 11014 | 11643 |
| 45° | 9906 | 10985 | 11768 |
| 50° | 9640 | 11017 | 11981 |
| 55° | 9414 | 11093 | 12250 |
| 60° | 9096 | 11176 | 12592 |
| 65° | 8732 | 11311 | 12974 |
| 70° | 8283 | 11469 | 13491 |
| 75° | 7417 | 11629 | 13937 |
| 80° | 6245 | 11661 | 12648 |
| 85° | 4634 | 8824 | 8315 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 400.6 | 3.1 |
| 10°-20° | 1148.0 | 8.9 |
| 20°-30° | 1737.9 | 13.5 |
| 30°-40° | 2102.4 | 16.3 |
| 40°-50° | 2219.2 | 17.2 |
| 50°-60° | 2092.7 | 16.3 |
| 60°-70° | 1725.3 | 13.4 |
| 70°-80° | 1131.8 | 8.8 |
| 80°-90° | 311.2 | 2.4 |
| 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° | 3286.5 | 25.5 |
| 0°-40° | 5388.9 | 41.9 |
| 0°-60° | 9700.8 | 75.4 |
| 0°-90° | 12869.2 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 12869.2 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 4227 | 4227 | 4227 | 4227 | 4227 | |
| 5° | 4211 | 4211 | 4198 | 4227 | 4227 | 400 |
| 15° | 4013 | 4036 | 4063 | 4110 | 4118 | 1132 |
| 25° | 3658 | 3703 | 3767 | 3845 | 3869 | 1684 |
| 35° | 3168 | 3250 | 3364 | 3479 | 3516 | 1983 |
| 45° | 2603 | 2720 | 2887 | 3041 | 3092 | 2009 |
| 55° | 2007 | 2148 | 2364 | 2541 | 2611 | 1788 |
| 65° | 1371 | 1536 | 1776 | 1966 | 2038 | 1354 |
| 75° | 713 | 896 | 1118 | 1295 | 1340 | 754 |
| 85° | 150 | 259 | 286 | 278 | 269 | 186 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P474602

CATALOG NUMBER: 24CZ2-140VHE-SQR-UNV-L830-CD1-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 4227.1 | 4227.1 | 4227.1 | 4227.1 | 4227.1 |
| 2.5° | 4231.2 | 4227.1 | 4208.6 | 4233.3 | 4231.2 |
| 5° | 4210.7 | 4210.7 | 4198.3 | 4227.1 | 4227.1 |
| 7.5° | 4181.9 | 4183.9 | 4179.8 | 4212.7 | 4212.7 |
| 10° | 4136.6 | 4144.9 | 4151.0 | 4188.0 | 4192.2 |
| 12.5° | 4083.2 | 4097.6 | 4109.9 | 4155.1 | 4159.3 |
| 15° | 4013.3 | 4035.9 | 4062.6 | 4109.9 | 4118.1 |
| 17.5° | 3941.3 | 3968.1 | 3996.8 | 4058.5 | 4068.8 |
| 20° | 3855.0 | 3885.8 | 3933.1 | 3994.8 | 4011.2 |
| 22.5° | 3758.3 | 3801.5 | 3850.9 | 3924.9 | 3945.4 |
| 25° | 3657.6 | 3702.8 | 3766.6 | 3844.7 | 3869.4 |
| 27.5° | 3548.6 | 3602.1 | 3674.0 | 3764.5 | 3791.2 |
| 30° | 3427.3 | 3489.0 | 3577.4 | 3674.0 | 3702.8 |
| 32.5° | 3299.9 | 3371.8 | 3470.5 | 3577.4 | 3610.3 |
| 35° | 3168.3 | 3250.5 | 3363.6 | 3478.7 | 3515.7 |
| 37.5° | 3038.7 | 3121.0 | 3254.6 | 3375.9 | 3410.9 |
| 40° | 2898.9 | 2989.4 | 3135.4 | 3264.9 | 3314.3 |
| 42.5° | 2750.9 | 2857.8 | 3012.0 | 3155.9 | 3203.2 |
| 45° | 2602.9 | 2720.1 | 2886.6 | 3040.8 | 3092.2 |
| 47.5° | 2452.8 | 2582.3 | 2765.3 | 2921.6 | 2981.2 |
| 50° | 2302.7 | 2440.5 | 2631.7 | 2800.3 | 2861.9 |
| 52.5° | 2150.6 | 2294.5 | 2502.1 | 2681.0 | 2736.5 |
| 55° | 2006.6 | 2148.5 | 2364.4 | 2541.2 | 2611.1 |
| 57.5° | 1840.1 | 2000.5 | 2228.7 | 2407.6 | 2475.4 |
| 60° | 1690.0 | 1846.3 | 2076.5 | 2265.7 | 2339.7 |
| 62.5° | 1527.6 | 1688.0 | 1930.6 | 2119.7 | 2191.7 |
| 65° | 1371.3 | 1535.8 | 1776.4 | 1965.5 | 2037.5 |
| 67.5° | 1202.8 | 1375.5 | 1622.2 | 1805.2 | 1875.1 |
| 70° | 1052.7 | 1215.1 | 1457.7 | 1644.8 | 1714.7 |
| 72.5° | 869.7 | 1054.7 | 1287.0 | 1472.1 | 1548.2 |
| 75° | 713.4 | 896.4 | 1118.5 | 1295.3 | 1340.5 |
| 77.5° | 548.9 | 731.9 | 951.9 | 1067.1 | 1097.9 |
| 80° | 403.0 | 575.7 | 752.5 | 814.2 | 816.2 |
| 82.5° | 271.4 | 423.5 | 524.3 | 555.1 | 551.0 |
| 85° | 150.1 | 259.1 | 285.8 | 277.6 | 269.3 |
| 87.5° | 61.7 | 86.4 | 69.9 | 49.3 | 39.1 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)