

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: P474607

Luminaire Tested: **24CZ2-165VHE-SQR-UNV-L830-CD1-U**

Issue Date: 01/28/2021

Test Information

Test Method: LM-79-08
Report Number: P474607
Test Lab: INNOVATION CENTER(G3)
Issue Date: 01/28/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-165VHE-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: 15157.5 lumens
Efficiency: N/A
Efficacy: 124.1 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

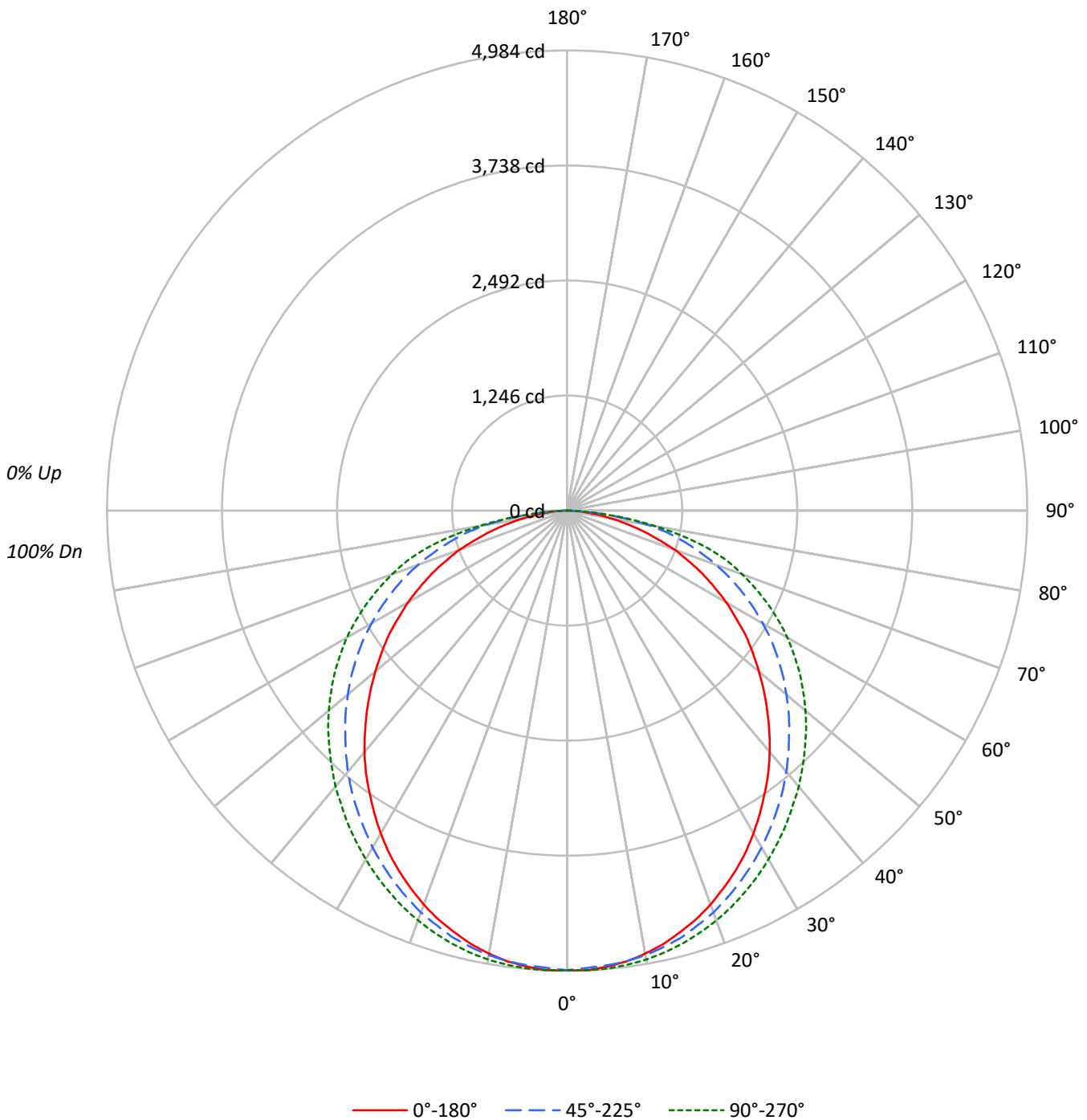
Input Watts (W): 122.1
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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° | 13398 | 13398 | 13398 |
| 5° | 13397 | 13357 | 13449 |
| 10° | 13313 | 13360 | 13492 |
| 15° | 13169 | 13331 | 13513 |
| 20° | 13003 | 13266 | 13529 |
| 25° | 12791 | 13172 | 13532 |
| 30° | 12543 | 13093 | 13552 |
| 35° | 12259 | 13014 | 13603 |
| 40° | 11994 | 12973 | 13713 |
| 45° | 11667 | 12939 | 13860 |
| 50° | 11354 | 12976 | 14112 |
| 55° | 11089 | 13065 | 14428 |
| 60° | 10713 | 13163 | 14832 |
| 65° | 10285 | 13322 | 15280 |
| 70° | 9755 | 13508 | 15890 |
| 75° | 8737 | 13696 | 16416 |
| 80° | 7355 | 13735 | 14899 |
| 85° | 5459 | 10393 | 9794 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 471.8 | 3.1 |
| 10°-20° | 1352.2 | 8.9 |
| 20°-30° | 2046.9 | 13.5 |
| 30°-40° | 2476.2 | 16.3 |
| 40°-50° | 2613.8 | 17.2 |
| 50°-60° | 2464.8 | 16.3 |
| 60°-70° | 2032.1 | 13.4 |
| 70°-80° | 1333.1 | 8.8 |
| 80°-90° | 366.5 | 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° | 3871.0 | 25.5 |
| 0°-40° | 6347.1 | 41.9 |
| 0°-60° | 11425.8 | 75.4 |
| 0°-90° | 15157.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 15157.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 4979 | 4979 | 4979 | 4979 | 4979 | |
| 5° | 4959 | 4959 | 4945 | 4979 | 4979 | 471 |
| 15° | 4727 | 4754 | 4785 | 4841 | 4850 | 1333 |
| 25° | 4308 | 4361 | 4436 | 4528 | 4557 | 1984 |
| 35° | 3732 | 3828 | 3962 | 4097 | 4141 | 2336 |
| 45° | 3066 | 3204 | 3400 | 3582 | 3642 | 2366 |
| 55° | 2364 | 2530 | 2785 | 2993 | 3075 | 2106 |
| 65° | 1615 | 1809 | 2092 | 2315 | 2400 | 1595 |
| 75° | 840 | 1056 | 1317 | 1526 | 1579 | 888 |
| 85° | 177 | 305 | 337 | 327 | 317 | 219 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P474607

CATALOG NUMBER: 24CZ2-165VHE-SQR-UNV-L830-CD1-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 4978.8 | 4978.8 | 4978.8 | 4978.8 | 4978.8 |
| 2.5° | 4983.6 | 4978.8 | 4957.0 | 4986.0 | 4983.6 |
| 5° | 4959.4 | 4959.4 | 4944.9 | 4978.8 | 4978.8 |
| 7.5° | 4925.5 | 4927.9 | 4923.1 | 4961.8 | 4961.8 |
| 10° | 4872.2 | 4881.9 | 4889.2 | 4932.7 | 4937.6 |
| 12.5° | 4809.2 | 4826.2 | 4840.7 | 4894.0 | 4898.8 |
| 15° | 4726.9 | 4753.5 | 4785.0 | 4840.7 | 4850.4 |
| 17.5° | 4642.2 | 4673.6 | 4707.5 | 4780.2 | 4792.3 |
| 20° | 4540.5 | 4576.8 | 4632.5 | 4705.1 | 4724.5 |
| 22.5° | 4426.6 | 4477.5 | 4535.6 | 4622.8 | 4647.0 |
| 25° | 4308.0 | 4361.3 | 4436.3 | 4528.3 | 4557.4 |
| 27.5° | 4179.6 | 4242.6 | 4327.4 | 4433.9 | 4465.4 |
| 30° | 4036.8 | 4109.4 | 4213.5 | 4327.4 | 4361.3 |
| 32.5° | 3886.6 | 3971.4 | 4087.6 | 4213.5 | 4252.3 |
| 35° | 3731.6 | 3828.5 | 3961.7 | 4097.3 | 4140.9 |
| 37.5° | 3579.1 | 3675.9 | 3833.4 | 3976.2 | 4017.4 |
| 40° | 3414.4 | 3521.0 | 3692.9 | 3845.5 | 3903.6 |
| 42.5° | 3240.1 | 3366.0 | 3547.6 | 3717.1 | 3772.8 |
| 45° | 3065.7 | 3203.7 | 3399.9 | 3581.5 | 3642.0 |
| 47.5° | 2888.9 | 3041.5 | 3257.0 | 3441.1 | 3511.3 |
| 50° | 2712.2 | 2874.4 | 3099.6 | 3298.2 | 3370.8 |
| 52.5° | 2533.0 | 2702.5 | 2947.1 | 3157.7 | 3223.1 |
| 55° | 2363.5 | 2530.5 | 2784.8 | 2993.1 | 3075.4 |
| 57.5° | 2167.3 | 2356.2 | 2625.0 | 2835.7 | 2915.6 |
| 60° | 1990.5 | 2174.6 | 2445.8 | 2668.6 | 2755.8 |
| 62.5° | 1799.2 | 1988.1 | 2273.9 | 2496.6 | 2581.4 |
| 65° | 1615.2 | 1808.9 | 2092.2 | 2315.0 | 2399.8 |
| 67.5° | 1416.6 | 1620.0 | 1910.6 | 2126.1 | 2208.5 |
| 70° | 1239.8 | 1431.1 | 1716.9 | 1937.3 | 2019.6 |
| 72.5° | 1024.3 | 1242.3 | 1515.9 | 1733.8 | 1823.4 |
| 75° | 840.3 | 1055.8 | 1317.3 | 1525.6 | 1578.9 |
| 77.5° | 646.6 | 862.1 | 1121.2 | 1256.8 | 1293.1 |
| 80° | 474.6 | 678.0 | 886.3 | 958.9 | 961.4 |
| 82.5° | 319.6 | 498.8 | 617.5 | 653.8 | 649.0 |
| 85° | 176.8 | 305.1 | 336.6 | 326.9 | 317.2 |
| 87.5° | 72.6 | 101.7 | 82.3 | 58.1 | 46.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)