

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: P473992

Luminaire Tested: **24CZ2-90VHE-S-UNV-L830-CD1-U**

Issue Date: 01/28/2021

Test Information

Test Method: LM-79-08
Report Number: P473992
Test Lab: INNOVATION CENTER(G3)
Issue Date: 01/28/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-90VHE-S-UNV-L830-CD1-U
Description: 2'X4' TROFFER LED MODULE, VERY HIGH EFFICIENCY,SMOOTH LENS
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8936.5 lumens
Efficiency: N/A
Efficacy: 139.4 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.25 / 1.35
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')
CIE Type: Direct

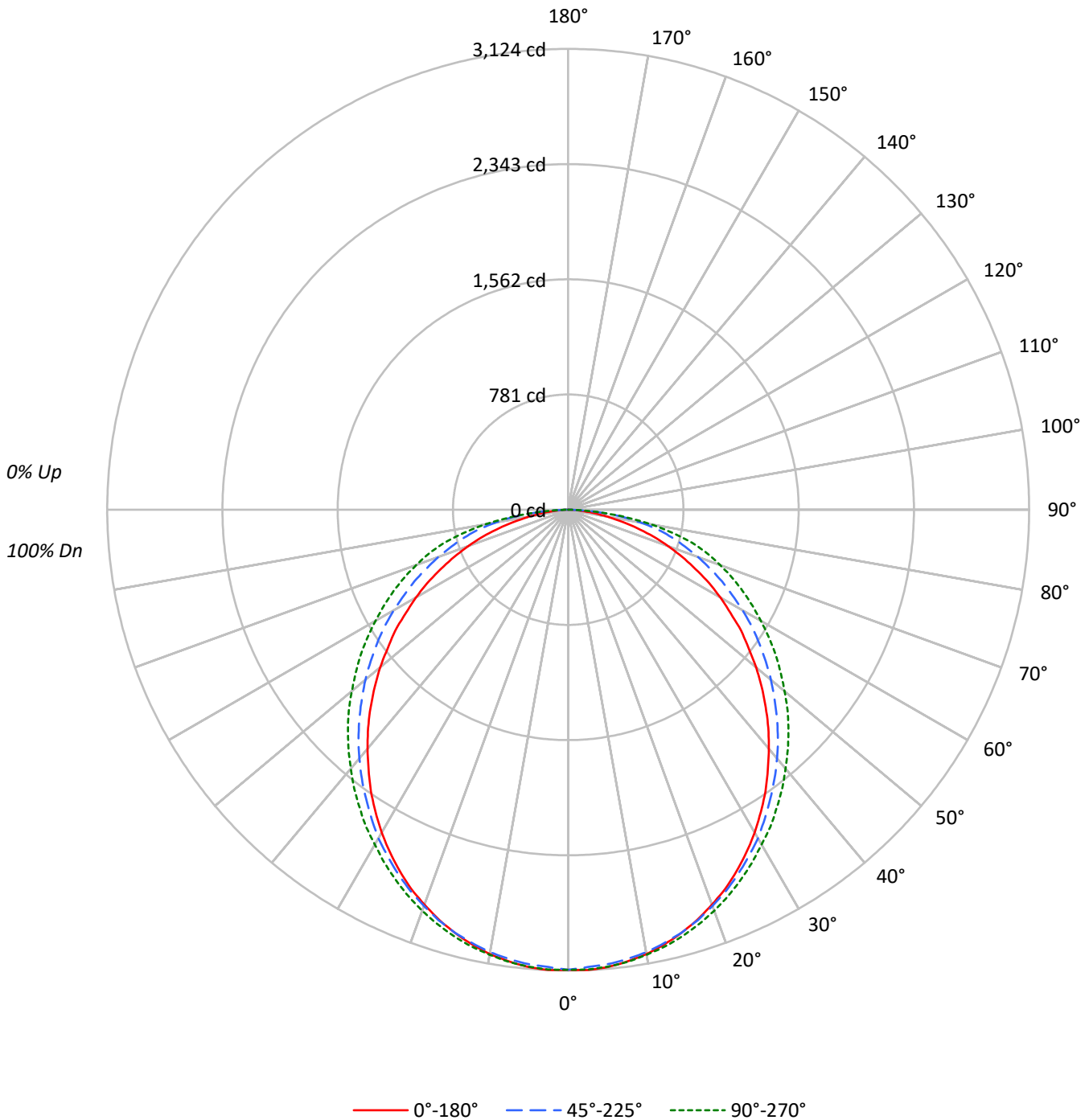
Input Watts (W): 64.1
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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 | 99 | 95 | 105 | 101 | 97 | 93 | 97 | 93 | 90 | 93 | 90 | 87 | 89 | 87 | 85 | 83 |
| 2 | 98 | 90 | 83 | 77 | 95 | 88 | 81 | 76 | 84 | 79 | 74 | 81 | 76 | 72 | 78 | 74 | 71 | 68 |
| 3 | 89 | 78 | 70 | 63 | 87 | 77 | 69 | 63 | 74 | 67 | 62 | 71 | 65 | 61 | 68 | 64 | 59 | 57 |
| 4 | 82 | 69 | 60 | 54 | 79 | 68 | 60 | 53 | 66 | 58 | 52 | 63 | 57 | 52 | 61 | 55 | 51 | 49 |
| 5 | 75 | 62 | 53 | 46 | 73 | 61 | 52 | 46 | 59 | 51 | 45 | 57 | 50 | 45 | 55 | 49 | 44 | 42 |
| 6 | 69 | 56 | 47 | 40 | 67 | 55 | 46 | 40 | 53 | 45 | 40 | 51 | 44 | 39 | 50 | 44 | 39 | 37 |
| 7 | 64 | 51 | 42 | 35 | 63 | 50 | 41 | 35 | 48 | 41 | 35 | 47 | 40 | 35 | 45 | 39 | 34 | 32 |
| 8 | 60 | 46 | 38 | 32 | 58 | 45 | 37 | 31 | 44 | 37 | 31 | 43 | 36 | 31 | 42 | 35 | 31 | 29 |
| 9 | 56 | 42 | 34 | 28 | 54 | 42 | 34 | 28 | 41 | 33 | 28 | 39 | 33 | 28 | 38 | 32 | 28 | 26 |
| 10 | 52 | 39 | 31 | 26 | 51 | 39 | 31 | 26 | 38 | 30 | 26 | 37 | 30 | 25 | 36 | 30 | 25 | 24 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 4197 | 4197 | 4197 |
| 5° | 4203 | 4177 | 4199 |
| 10° | 4179 | 4161 | 4185 |
| 15° | 4136 | 4134 | 4169 |
| 20° | 4080 | 4092 | 4143 |
| 25° | 4012 | 4047 | 4110 |
| 30° | 3927 | 3995 | 4071 |
| 35° | 3829 | 3925 | 4048 |
| 40° | 3715 | 3867 | 4025 |
| 45° | 3603 | 3807 | 4016 |
| 50° | 3481 | 3755 | 4007 |
| 55° | 3357 | 3708 | 4029 |
| 60° | 3204 | 3673 | 4057 |
| 65° | 3033 | 3659 | 4154 |
| 70° | 2830 | 3678 | 4302 |
| 75° | 2518 | 3785 | 4533 |
| 80° | 2059 | 3867 | 4424 |
| 85° | 1450 | 3376 | 3444 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 294.9 | 3.3 |
| 10°-20° | 839.9 | 9.4 |
| 20°-30° | 1259.0 | 14.1 |
| 30°-40° | 1499.5 | 16.8 |
| 40°-50° | 1546.1 | 17.3 |
| 50°-60° | 1410.8 | 15.8 |
| 60°-70° | 1128.2 | 12.6 |
| 70°-80° | 736.9 | 8.2 |
| 80°-90° | 221.3 | 2.5 |
| 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° | 2393.8 | 26.8 |
| 0°-40° | 3893.3 | 43.6 |
| 0°-60° | 6850.2 | 76.7 |
| 0°-90° | 8936.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 8936.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3119 | 3119 | 3119 | 3119 | 3119 | |
| 5° | 3112 | 3106 | 3093 | 3112 | 3109 | 295 |
| 15° | 2970 | 2971 | 2968 | 2993 | 2993 | 837 |
| 25° | 2702 | 2707 | 2726 | 2766 | 2768 | 1244 |
| 35° | 2331 | 2347 | 2390 | 2450 | 2465 | 1456 |
| 45° | 1894 | 1927 | 2001 | 2084 | 2111 | 1460 |
| 55° | 1431 | 1472 | 1581 | 1685 | 1717 | 1275 |
| 65° | 953 | 1017 | 1149 | 1262 | 1305 | 945 |
| 75° | 484 | 565 | 728 | 846 | 872 | 515 |
| 85° | 94 | 169 | 219 | 223 | 223 | 119 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P473992

CATALOG NUMBER: 24CZ2-90VHE-S-UNV-L830-CD1-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3119.2 | 3119.2 | 3119.2 | 3119.2 | 3119.2 |
| 2.5° | 3123.7 | 3119.2 | 3103.1 | 3122.2 | 3119.2 |
| 5° | 3111.9 | 3106.0 | 3092.8 | 3111.9 | 3109.0 |
| 7.5° | 3088.4 | 3085.5 | 3072.3 | 3094.3 | 3091.4 |
| 10° | 3059.1 | 3056.1 | 3045.9 | 3067.9 | 3063.5 |
| 12.5° | 3018.0 | 3016.5 | 3009.2 | 3035.6 | 3032.6 |
| 15° | 2969.5 | 2971.0 | 2968.1 | 2993.0 | 2993.0 |
| 17.5° | 2913.7 | 2912.3 | 2918.1 | 2949.0 | 2946.0 |
| 20° | 2849.2 | 2850.6 | 2858.0 | 2893.2 | 2893.2 |
| 22.5° | 2781.6 | 2780.2 | 2796.3 | 2831.5 | 2834.5 |
| 25° | 2702.4 | 2706.8 | 2725.9 | 2765.5 | 2768.4 |
| 27.5° | 2617.2 | 2624.6 | 2648.1 | 2693.6 | 2698.0 |
| 30° | 2527.7 | 2536.5 | 2571.7 | 2614.3 | 2620.2 |
| 32.5° | 2429.3 | 2448.4 | 2480.7 | 2535.0 | 2549.7 |
| 35° | 2331.0 | 2347.1 | 2389.7 | 2449.9 | 2464.6 |
| 37.5° | 2222.4 | 2248.8 | 2297.2 | 2363.3 | 2382.4 |
| 40° | 2115.2 | 2141.6 | 2201.8 | 2270.8 | 2291.4 |
| 42.5° | 2006.6 | 2034.5 | 2103.5 | 2181.3 | 2203.3 |
| 45° | 1893.6 | 1927.3 | 2000.7 | 2084.4 | 2110.8 |
| 47.5° | 1777.6 | 1817.2 | 1896.5 | 1987.5 | 2016.9 |
| 50° | 1663.1 | 1702.7 | 1793.8 | 1887.7 | 1914.1 |
| 52.5° | 1539.8 | 1589.7 | 1686.6 | 1787.9 | 1814.3 |
| 55° | 1431.2 | 1472.3 | 1580.9 | 1685.1 | 1717.4 |
| 57.5° | 1303.5 | 1359.3 | 1475.2 | 1580.9 | 1611.7 |
| 60° | 1190.5 | 1241.8 | 1365.1 | 1472.3 | 1507.5 |
| 62.5° | 1076.0 | 1128.8 | 1252.1 | 1373.9 | 1406.2 |
| 65° | 952.7 | 1017.2 | 1149.4 | 1262.4 | 1304.9 |
| 67.5° | 835.2 | 902.7 | 1037.8 | 1158.2 | 1202.2 |
| 70° | 719.3 | 788.3 | 935.0 | 1058.3 | 1093.6 |
| 72.5° | 604.8 | 676.7 | 829.4 | 949.7 | 990.8 |
| 75° | 484.4 | 565.1 | 728.1 | 845.5 | 871.9 |
| 77.5° | 371.4 | 460.9 | 625.3 | 704.6 | 723.7 |
| 80° | 265.7 | 364.0 | 499.1 | 556.3 | 571.0 |
| 82.5° | 174.7 | 270.1 | 372.8 | 403.7 | 399.3 |
| 85° | 93.9 | 168.8 | 218.7 | 223.1 | 223.1 |
| 87.5° | 36.7 | 67.5 | 69.0 | 52.8 | 49.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)