

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: P474497

Luminaire Tested: **24CZ2-115VHE-HRP-UNV-L840-CD1-U**

Issue Date: 01/28/2021

Test Information

Test Method: LM-79-08
Report Number: P474497
Test Lab: INNOVATION CENTER(G3)
Issue Date: 01/28/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-115VHE-HRP-UNV-L840-CD1-U
Description: 2'X4' TROFFER LED MODULE, VERY HIGH EFFICIENCY,SMOOTH LENS W/ HRP
INSERT
Light Source: 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9501.6 lumens
Efficiency: N/A
Efficacy: 117.9 lumens/watt
Spacing Criteria (0/90/45): 1.24 / 1.3 / 1.4
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')
CIE Type: Direct

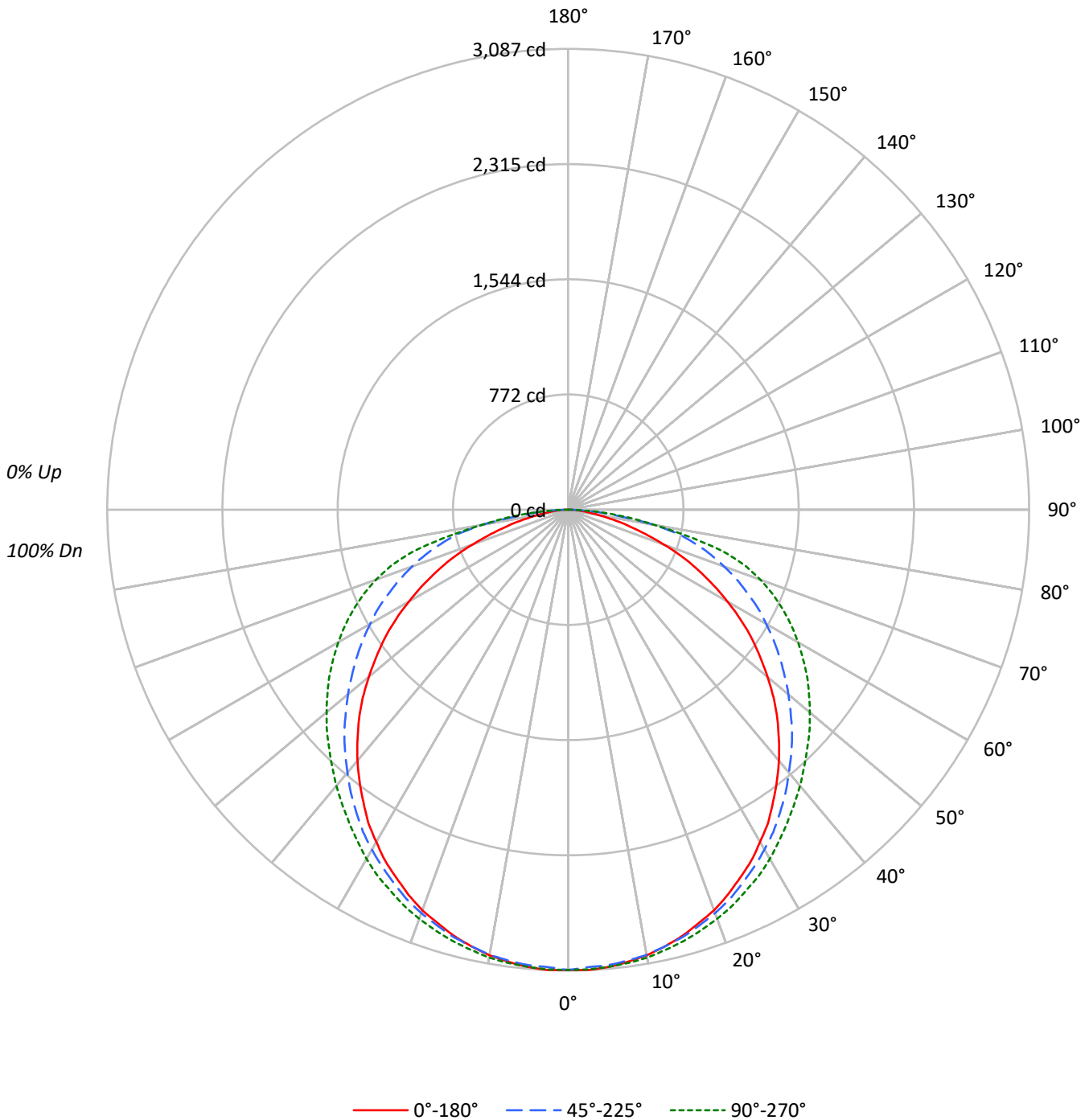
Input Watts (W): 80.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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 | 86 | 84 | 82 |
| 2 | 98 | 89 | 82 | 76 | 95 | 87 | 80 | 75 | 83 | 78 | 73 | 80 | 75 | 71 | 77 | 73 | 70 | 67 |
| 3 | 89 | 78 | 69 | 62 | 86 | 76 | 68 | 62 | 73 | 66 | 61 | 70 | 64 | 59 | 68 | 63 | 58 | 56 |
| 4 | 81 | 68 | 59 | 52 | 79 | 67 | 59 | 52 | 65 | 57 | 51 | 62 | 56 | 50 | 60 | 54 | 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 | 38 | 50 | 43 | 38 | 49 | 42 | 38 | 36 |
| 7 | 63 | 50 | 41 | 34 | 62 | 49 | 40 | 34 | 47 | 39 | 34 | 46 | 39 | 34 | 44 | 38 | 33 | 31 |
| 8 | 59 | 45 | 36 | 30 | 57 | 44 | 36 | 30 | 43 | 36 | 30 | 42 | 35 | 30 | 41 | 34 | 30 | 28 |
| 9 | 55 | 41 | 33 | 27 | 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 | 24 | 35 | 29 | 24 | 23 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 4148 | 4148 | 4148 |
| 5° | 4153 | 4137 | 4153 |
| 10° | 4141 | 4136 | 4163 |
| 15° | 4117 | 4128 | 4167 |
| 20° | 4090 | 4118 | 4175 |
| 25° | 4039 | 4098 | 4181 |
| 30° | 3992 | 4085 | 4197 |
| 35° | 3927 | 4064 | 4201 |
| 40° | 3856 | 4039 | 4241 |
| 45° | 3769 | 4034 | 4307 |
| 50° | 3647 | 4030 | 4421 |
| 55° | 3518 | 4059 | 4582 |
| 60° | 3318 | 4121 | 4785 |
| 65° | 3065 | 4218 | 5053 |
| 70° | 2676 | 4366 | 5384 |
| 75° | 2171 | 4591 | 5563 |
| 80° | 1604 | 4502 | 4502 |
| 85° | 1229 | 3314 | 3744 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 292.0 | 3.1 |
| 10°-20° | 838.6 | 8.8 |
| 20°-30° | 1276.7 | 13.4 |
| 30°-40° | 1550.2 | 16.3 |
| 40°-50° | 1637.8 | 17.2 |
| 50°-60° | 1545.4 | 16.3 |
| 60°-70° | 1285.0 | 13.5 |
| 70°-80° | 845.4 | 8.9 |
| 80°-90° | 230.4 | 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° | 2407.4 | 25.3 |
| 0°-40° | 3957.6 | 41.7 |
| 0°-60° | 7140.8 | 75.2 |
| 0°-90° | 9501.6 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 9501.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 3083 | 3083 | 3083 | 3083 | 3083 | |
| 5° | 3075 | 3075 | 3063 | 3075 | 3075 | 292 |
| 15° | 2955 | 2960 | 2964 | 2991 | 2991 | 834 |
| 25° | 2721 | 2737 | 2761 | 2808 | 2816 | 1255 |
| 35° | 2391 | 2418 | 2474 | 2538 | 2558 | 1497 |
| 45° | 1981 | 2021 | 2120 | 2223 | 2263 | 1526 |
| 55° | 1500 | 1563 | 1730 | 1894 | 1953 | 1336 |
| 65° | 963 | 1074 | 1325 | 1520 | 1587 | 952 |
| 75° | 418 | 609 | 883 | 1046 | 1070 | 450 |
| 85° | 80 | 175 | 215 | 239 | 242 | 97 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P474497

CATALOG NUMBER: 24CZ2-115VHE-HRP-UNV-L840-CD1-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 3082.8 | 3082.8 | 3082.8 | 3082.8 | 3082.8 |
| 2.5° | 3086.9 | 3082.8 | 3066.9 | 3082.8 | 3082.8 |
| 5° | 3075.0 | 3075.0 | 3062.8 | 3075.0 | 3075.0 |
| 7.5° | 3055.0 | 3055.0 | 3046.9 | 3062.8 | 3062.8 |
| 10° | 3030.9 | 3030.9 | 3027.3 | 3046.9 | 3046.9 |
| 12.5° | 2995.4 | 2999.1 | 2995.4 | 3019.1 | 3019.1 |
| 15° | 2955.4 | 2959.5 | 2963.6 | 2991.3 | 2991.3 |
| 17.5° | 2904.0 | 2911.7 | 2919.9 | 2951.3 | 2955.4 |
| 20° | 2856.2 | 2859.9 | 2875.8 | 2911.7 | 2915.8 |
| 22.5° | 2792.5 | 2804.3 | 2824.4 | 2859.9 | 2872.1 |
| 25° | 2720.7 | 2736.6 | 2760.7 | 2808.4 | 2816.2 |
| 27.5° | 2653.3 | 2665.1 | 2697.0 | 2748.8 | 2764.7 |
| 30° | 2569.6 | 2589.6 | 2629.2 | 2681.1 | 2701.1 |
| 32.5° | 2490.0 | 2510.0 | 2557.8 | 2613.3 | 2629.2 |
| 35° | 2390.8 | 2418.5 | 2474.1 | 2537.8 | 2557.8 |
| 37.5° | 2295.2 | 2323.0 | 2390.8 | 2462.2 | 2486.3 |
| 40° | 2195.6 | 2227.5 | 2299.3 | 2382.6 | 2414.5 |
| 42.5° | 2088.3 | 2131.9 | 2211.6 | 2303.0 | 2338.9 |
| 45° | 1980.9 | 2020.9 | 2120.1 | 2223.4 | 2263.4 |
| 47.5° | 1865.8 | 1913.5 | 2020.9 | 2144.2 | 2192.0 |
| 50° | 1742.5 | 1802.1 | 1925.4 | 2060.5 | 2112.3 |
| 52.5° | 1619.2 | 1686.5 | 1825.7 | 1976.8 | 2032.7 |
| 55° | 1499.5 | 1563.2 | 1730.2 | 1893.5 | 1953.1 |
| 57.5° | 1368.5 | 1448.1 | 1631.0 | 1805.7 | 1865.8 |
| 60° | 1232.9 | 1320.7 | 1531.4 | 1714.3 | 1778.0 |
| 62.5° | 1097.8 | 1197.4 | 1435.9 | 1619.2 | 1686.5 |
| 65° | 962.7 | 1074.1 | 1324.8 | 1519.5 | 1587.3 |
| 67.5° | 831.2 | 954.5 | 1221.1 | 1416.3 | 1483.6 |
| 70° | 680.2 | 835.3 | 1109.7 | 1300.7 | 1368.5 |
| 72.5° | 540.9 | 720.2 | 1002.3 | 1181.5 | 1241.1 |
| 75° | 417.7 | 608.7 | 883.1 | 1046.0 | 1070.1 |
| 77.5° | 306.2 | 497.3 | 759.8 | 815.3 | 819.4 |
| 80° | 207.0 | 397.6 | 581.0 | 572.8 | 581.0 |
| 82.5° | 135.1 | 298.4 | 365.8 | 409.9 | 413.6 |
| 85° | 79.6 | 175.1 | 214.7 | 238.8 | 242.5 |
| 87.5° | 39.6 | 59.6 | 75.5 | 79.6 | 87.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)