

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: P391801

Luminaire Tested: **24CZ2-90VHE-HRP-UNV-L935-CD1-SWPD1-U**

Issue Date: 2/28/2020

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Test Information

Test Method: LM-79-08
Report Number: P391801
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1808-918-19)
Test Lab: INNOVATIONS CENTER(G3)
Issue Date: 2/28/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-90VHE-HRP-UNV-L935-CD1-SWPD1-U
Description: 2x4 CRUZE LED TROFFER WITH 3500K, 90 LEDS, AND HRP LENS
Light Source: -
Ballast/Driver: -

Luminaire Equipment: Sample No. Condition Description

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 6416.5 lumens
Efficiency: N/A
Efficacy: 103.8 lumens/watt
Spacing Criteria (0/90/45): 1.26 / 1.3 / 1.41
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')
CIE Type: Direct

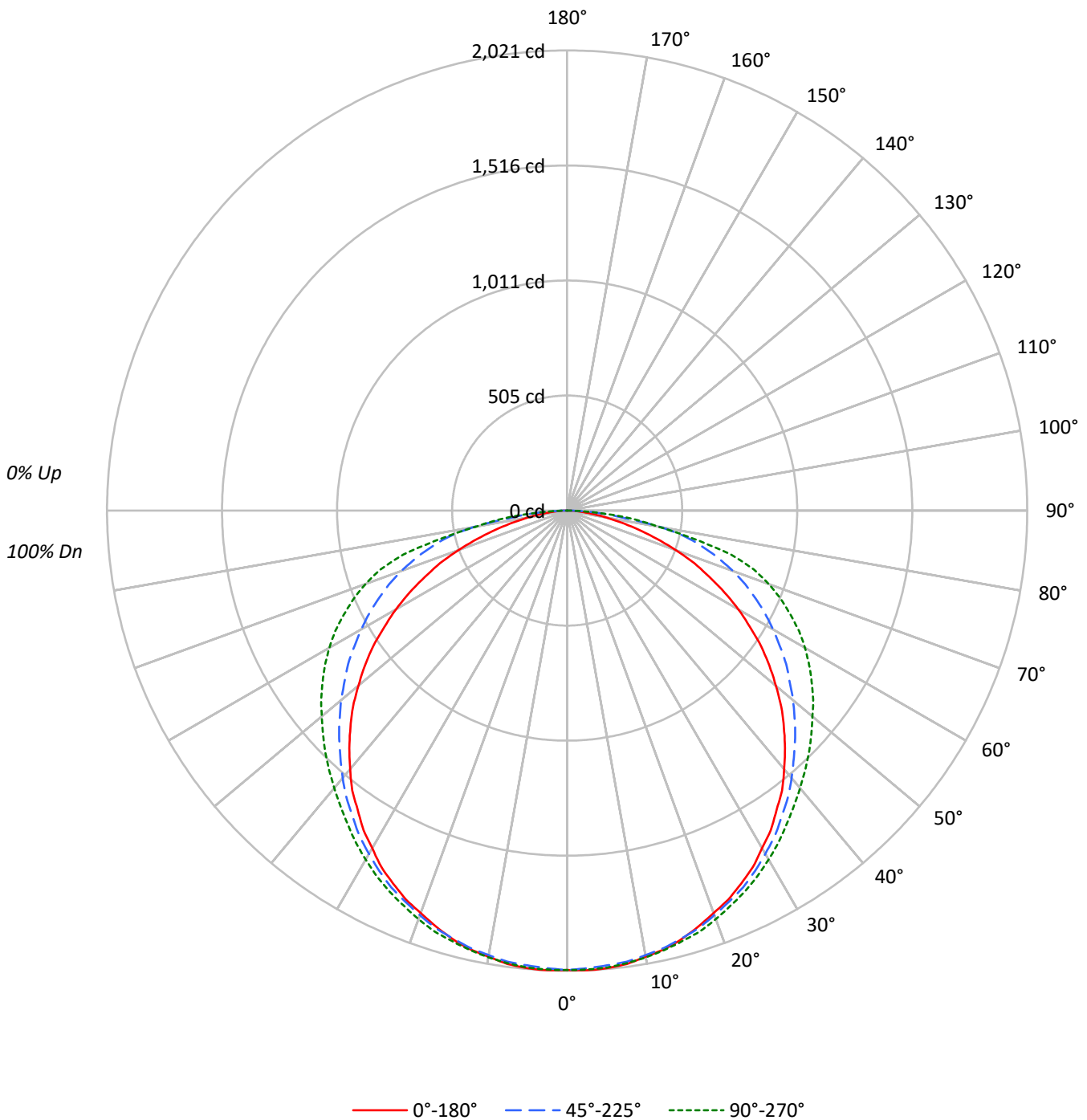
Input Watts (W): 61.8
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P391801

CATALOG NUMBER: 24CZ2-90VHE-HRP-UNV-L935-CD1-SWPD1-U

Luminous Intensity Polar Plot





TEST NUMBER: P391801

CATALOG NUMBER: 24CZ2-90VHE-HRP-UNV-L935-CD1-SWPD1-U

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 | 100 | 96 | 92 | 96 | 93 | 89 | 92 | 89 | 87 | 88 | 86 | 84 | 82 |
| 2 | 97 | 89 | 81 | 75 | 95 | 87 | 80 | 74 | 83 | 77 | 72 | 80 | 75 | 71 | 77 | 73 | 69 | 67 |
| 3 | 88 | 77 | 68 | 62 | 86 | 76 | 67 | 61 | 72 | 66 | 60 | 70 | 64 | 59 | 67 | 62 | 58 | 56 |
| 4 | 81 | 68 | 59 | 52 | 78 | 67 | 58 | 51 | 64 | 57 | 51 | 62 | 55 | 50 | 59 | 54 | 49 | 47 |
| 5 | 74 | 60 | 51 | 44 | 72 | 59 | 51 | 44 | 57 | 49 | 43 | 55 | 48 | 43 | 53 | 47 | 42 | 40 |
| 6 | 68 | 54 | 45 | 38 | 66 | 53 | 45 | 38 | 51 | 44 | 38 | 50 | 43 | 37 | 48 | 42 | 37 | 35 |
| 7 | 63 | 49 | 40 | 34 | 61 | 48 | 40 | 34 | 47 | 39 | 33 | 45 | 38 | 33 | 44 | 38 | 33 | 31 |
| 8 | 59 | 45 | 36 | 30 | 57 | 44 | 36 | 30 | 43 | 35 | 30 | 41 | 34 | 29 | 40 | 34 | 29 | 27 |
| 9 | 55 | 41 | 33 | 27 | 53 | 40 | 32 | 27 | 39 | 32 | 27 | 38 | 31 | 26 | 37 | 31 | 26 | 24 |
| 10 | 51 | 38 | 30 | 24 | 50 | 37 | 29 | 24 | 36 | 29 | 24 | 35 | 29 | 24 | 34 | 28 | 24 | 22 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2715 | 2715 | 2715 |
| 5° | 2725 | 2708 | 2721 |
| 10° | 2718 | 2709 | 2722 |
| 15° | 2713 | 2709 | 2726 |
| 20° | 2693 | 2707 | 2734 |
| 25° | 2684 | 2712 | 2740 |
| 30° | 2660 | 2705 | 2749 |
| 35° | 2635 | 2698 | 2760 |
| 40° | 2605 | 2694 | 2795 |
| 45° | 2562 | 2695 | 2858 |
| 50° | 2505 | 2711 | 2945 |
| 55° | 2441 | 2755 | 3076 |
| 60° | 2338 | 2809 | 3246 |
| 65° | 2189 | 2908 | 3445 |
| 70° | 1991 | 3043 | 3706 |
| 75° | 1687 | 3210 | 3871 |
| 80° | 1332 | 3230 | 3132 |
| 85° | 983 | 2456 | 2751 |



TEST NUMBER: P391801

CATALOG NUMBER: 24CZ2-90VHE-HRP-UNV-L935-CD1-SWPD1-U

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 191.4 | 3.0 |
| 10°-20° | 550.9 | 8.6 |
| 20°-30° | 842.4 | 13.1 |
| 30°-40° | 1029.8 | 16.0 |
| 40°-50° | 1097.6 | 17.1 |
| 50°-60° | 1049.4 | 16.4 |
| 60°-70° | 889.0 | 13.9 |
| 70°-80° | 597.5 | 9.3 |
| 80°-90° | 168.5 | 2.6 |
| 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° | 1584.7 | 24.7 |
| 0°-40° | 2614.5 | 40.7 |
| 0°-60° | 4761.5 | 74.2 |
| 0°-90° | 6416.5 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 6416.5 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 2018 | 2018 | 2018 | 2018 | 2018 | |
| 5° | 2018 | 2015 | 2005 | 2015 | 2015 | 192 |
| 15° | 1948 | 1948 | 1945 | 1960 | 1957 | 549 |
| 25° | 1808 | 1814 | 1827 | 1843 | 1846 | 833 |
| 35° | 1604 | 1617 | 1642 | 1674 | 1680 | 1005 |
| 45° | 1346 | 1368 | 1416 | 1477 | 1502 | 1038 |
| 55° | 1041 | 1079 | 1174 | 1267 | 1311 | 927 |
| 65° | 688 | 758 | 913 | 1034 | 1082 | 683 |
| 75° | 325 | 442 | 617 | 722 | 745 | 348 |
| 85° | 64 | 130 | 159 | 172 | 178 | 79 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P391801

CATALOG NUMBER: 24CZ2-90VHE-HRP-UNV-L935-CD1-SWPD1-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 2017.8 | 2017.8 | 2017.8 | 2017.8 | 2017.8 |
| 2.5° | 2021.0 | 2021.0 | 2011.4 | 2017.8 | 2017.8 |
| 5° | 2017.8 | 2014.6 | 2005.1 | 2014.6 | 2014.6 |
| 7.5° | 2008.3 | 2005.1 | 1998.7 | 2008.3 | 2005.1 |
| 10° | 1989.2 | 1989.2 | 1982.8 | 1992.3 | 1992.3 |
| 12.5° | 1973.2 | 1970.1 | 1966.9 | 1979.6 | 1976.4 |
| 15° | 1947.8 | 1947.8 | 1944.6 | 1960.5 | 1957.3 |
| 17.5° | 1916.0 | 1919.1 | 1922.3 | 1935.1 | 1938.2 |
| 20° | 1881.0 | 1887.3 | 1890.5 | 1909.6 | 1909.6 |
| 22.5° | 1849.1 | 1852.3 | 1858.7 | 1877.8 | 1877.8 |
| 25° | 1807.8 | 1814.1 | 1826.8 | 1842.8 | 1845.9 |
| 27.5° | 1766.4 | 1769.6 | 1785.5 | 1807.8 | 1810.9 |
| 30° | 1712.3 | 1721.8 | 1740.9 | 1766.4 | 1769.6 |
| 32.5° | 1664.5 | 1674.1 | 1696.4 | 1721.8 | 1728.2 |
| 35° | 1604.1 | 1616.8 | 1642.3 | 1674.1 | 1680.4 |
| 37.5° | 1550.0 | 1559.5 | 1591.3 | 1626.3 | 1635.9 |
| 40° | 1483.1 | 1502.2 | 1534.0 | 1575.4 | 1591.3 |
| 42.5° | 1416.3 | 1435.4 | 1473.6 | 1527.7 | 1546.8 |
| 45° | 1346.3 | 1368.5 | 1416.3 | 1476.8 | 1502.2 |
| 47.5° | 1276.2 | 1301.7 | 1355.8 | 1425.8 | 1454.5 |
| 50° | 1196.7 | 1228.5 | 1295.3 | 1374.9 | 1406.7 |
| 52.5° | 1120.3 | 1158.5 | 1231.7 | 1320.8 | 1362.2 |
| 55° | 1040.7 | 1078.9 | 1174.4 | 1266.7 | 1311.3 |
| 57.5° | 951.6 | 1002.5 | 1107.6 | 1212.6 | 1260.3 |
| 60° | 868.9 | 916.6 | 1043.9 | 1158.5 | 1206.2 |
| 62.5° | 779.8 | 843.4 | 980.3 | 1101.2 | 1148.9 |
| 65° | 687.5 | 757.5 | 913.4 | 1034.4 | 1082.1 |
| 67.5° | 604.7 | 681.1 | 846.6 | 967.5 | 1015.3 |
| 70° | 506.0 | 601.5 | 773.4 | 894.3 | 942.1 |
| 72.5° | 413.7 | 518.8 | 697.0 | 814.8 | 859.3 |
| 75° | 324.6 | 442.4 | 617.4 | 722.5 | 744.7 |
| 77.5° | 241.9 | 366.0 | 534.7 | 579.2 | 563.3 |
| 80° | 171.9 | 292.8 | 416.9 | 394.6 | 404.2 |
| 82.5° | 111.4 | 222.8 | 257.8 | 292.8 | 302.4 |
| 85° | 63.7 | 130.5 | 159.1 | 171.9 | 178.2 |
| 87.5° | 28.6 | 47.7 | 63.7 | 63.7 | 60.5 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)