

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: P295060

Luminaire Tested: **24CZ2-60HE-HRP-UNV-L935-CD1-U**

Issue Date: 12/2/2019

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: P295060
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1808-918-20)
Test Lab: INNOVATIONS CENTER(G3)
Issue Date: 12/2/2019
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-60HE-HRP-UNV-L935-CD1-U
Description: 2'x4' TROFFER LED MODULE, HIGH EFFICIENCY ROUND PERF. LENS
Light Source: (392) 3500K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER
Luminaire Equipment: Sample No. Condition Description

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3948.0 lumens
Efficiency: N/A
Efficacy: 89.5 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

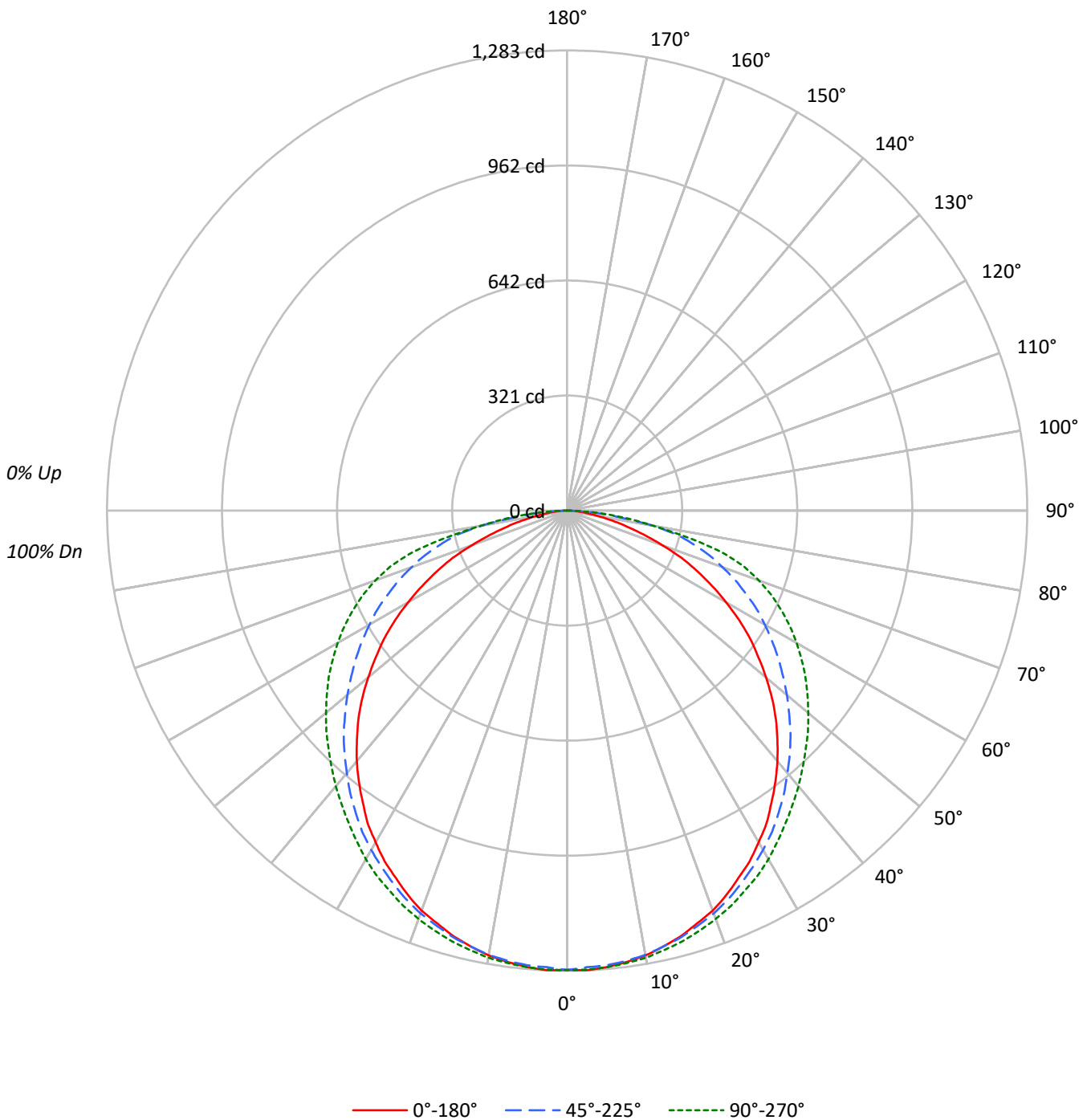
Input Watts (W): 44.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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° | 1723 | 1723 | 1723 |
| 5° | 1726 | 1719 | 1726 |
| 10° | 1721 | 1718 | 1730 |
| 15° | 1711 | 1715 | 1731 |
| 20° | 1699 | 1711 | 1735 |
| 25° | 1678 | 1703 | 1737 |
| 30° | 1659 | 1697 | 1743 |
| 35° | 1632 | 1689 | 1746 |
| 40° | 1602 | 1678 | 1762 |
| 45° | 1566 | 1676 | 1789 |
| 50° | 1515 | 1674 | 1837 |
| 55° | 1462 | 1687 | 1904 |
| 60° | 1379 | 1712 | 1988 |
| 65° | 1273 | 1752 | 2100 |
| 70° | 1112 | 1814 | 2237 |
| 75° | 902 | 1907 | 2311 |
| 80° | 666 | 1870 | 1870 |
| 85° | 511 | 1379 | 1556 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 121.3 | 3.1 |
| 10°-20° | 348.4 | 8.8 |
| 20°-30° | 530.5 | 13.4 |
| 30°-40° | 644.1 | 16.3 |
| 40°-50° | 680.5 | 17.2 |
| 50°-60° | 642.1 | 16.3 |
| 60°-70° | 533.9 | 13.5 |
| 70°-80° | 351.3 | 8.9 |
| 80°-90° | 95.8 | 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° | 1000.3 | 25.3 |
| 0°-40° | 1644.4 | 41.7 |
| 0°-60° | 2967.0 | 75.2 |
| 0°-90° | 3948.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 3948.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1281 | 1281 | 1281 | 1281 | 1281 | |
| 5° | 1278 | 1278 | 1273 | 1278 | 1278 | 121 |
| 15° | 1228 | 1230 | 1231 | 1243 | 1243 | 346 |
| 25° | 1130 | 1137 | 1147 | 1167 | 1170 | 521 |
| 35° | 993 | 1005 | 1028 | 1054 | 1063 | 622 |
| 45° | 823 | 840 | 881 | 924 | 940 | 634 |
| 55° | 623 | 650 | 719 | 787 | 812 | 555 |
| 65° | 400 | 446 | 550 | 631 | 660 | 395 |
| 75° | 174 | 253 | 367 | 435 | 445 | 187 |
| 85° | 33 | 73 | 89 | 99 | 101 | 40 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 1280.9 | 1280.9 | 1280.9 | 1280.9 | 1280.9 |
| 2.5° | 1282.6 | 1280.9 | 1274.3 | 1280.9 | 1280.9 |
| 5° | 1277.6 | 1277.6 | 1272.6 | 1277.6 | 1277.6 |
| 7.5° | 1269.3 | 1269.3 | 1266.0 | 1272.6 | 1272.6 |
| 10° | 1259.4 | 1259.4 | 1257.8 | 1266.0 | 1266.0 |
| 12.5° | 1244.5 | 1246.2 | 1244.5 | 1254.5 | 1254.5 |
| 15° | 1228.0 | 1229.7 | 1231.3 | 1242.9 | 1242.9 |
| 17.5° | 1206.5 | 1209.8 | 1213.1 | 1226.4 | 1228.0 |
| 20° | 1186.7 | 1188.4 | 1195.0 | 1209.8 | 1211.5 |
| 22.5° | 1160.3 | 1165.2 | 1173.5 | 1188.4 | 1193.3 |
| 25° | 1130.5 | 1137.1 | 1147.0 | 1166.9 | 1170.2 |
| 27.5° | 1102.4 | 1107.4 | 1120.6 | 1142.1 | 1148.7 |
| 30° | 1067.7 | 1076.0 | 1092.5 | 1114.0 | 1122.2 |
| 32.5° | 1034.6 | 1042.9 | 1062.7 | 1085.9 | 1092.5 |
| 35° | 993.3 | 1004.9 | 1028.0 | 1054.5 | 1062.7 |
| 37.5° | 953.7 | 965.2 | 993.3 | 1023.1 | 1033.0 |
| 40° | 912.3 | 925.6 | 955.3 | 990.0 | 1003.2 |
| 42.5° | 867.7 | 885.9 | 918.9 | 957.0 | 971.8 |
| 45° | 823.1 | 839.6 | 880.9 | 923.9 | 940.4 |
| 47.5° | 775.2 | 795.0 | 839.6 | 890.9 | 910.7 |
| 50° | 723.9 | 748.7 | 799.9 | 856.1 | 877.6 |
| 52.5° | 672.7 | 700.8 | 758.6 | 821.4 | 844.6 |
| 55° | 623.1 | 649.5 | 719.0 | 786.7 | 811.5 |
| 57.5° | 568.6 | 601.6 | 677.6 | 750.4 | 775.2 |
| 60° | 512.4 | 548.7 | 636.3 | 712.4 | 738.8 |
| 62.5° | 456.2 | 497.5 | 596.7 | 672.7 | 700.8 |
| 65° | 400.0 | 446.3 | 550.4 | 631.4 | 659.5 |
| 67.5° | 345.4 | 396.7 | 507.4 | 588.4 | 616.5 |
| 70° | 282.6 | 347.1 | 461.1 | 540.5 | 568.6 |
| 72.5° | 224.8 | 299.2 | 416.5 | 490.9 | 515.7 |
| 75° | 173.5 | 252.9 | 366.9 | 434.7 | 444.6 |
| 77.5° | 127.3 | 206.6 | 315.7 | 338.8 | 340.5 |
| 80° | 85.9 | 165.3 | 241.3 | 238.0 | 241.3 |
| 82.5° | 56.2 | 124.0 | 152.1 | 170.2 | 171.9 |
| 85° | 33.1 | 72.7 | 89.3 | 99.2 | 100.8 |
| 87.5° | 16.5 | 24.8 | 31.4 | 33.1 | 36.4 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)