

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: P276418

Luminaire Tested: **24CZ2-60HE-S-UNV-L93050-W2A1-U-3500K**

Issue Date: 3/3/2020

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: P276418
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1805-783-1)
Test Lab: INNOVATION CENTER(G3)
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-60HE-S-UNV-L93050-W2A1-U-3500K
Description: CRUZE 2.0 2x4 TUNABLE WHITE LED TROFFER WITH SMOOTH LENS
Light Source: (336) 90 CRI LEDS TUNED TO 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER
Luminaire Equipment: Sample No. Condition Description

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5096.4 lumens
Efficiency: N/A
Efficacy: 113.0 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.26 / 1.35
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')
CIE Type: Direct

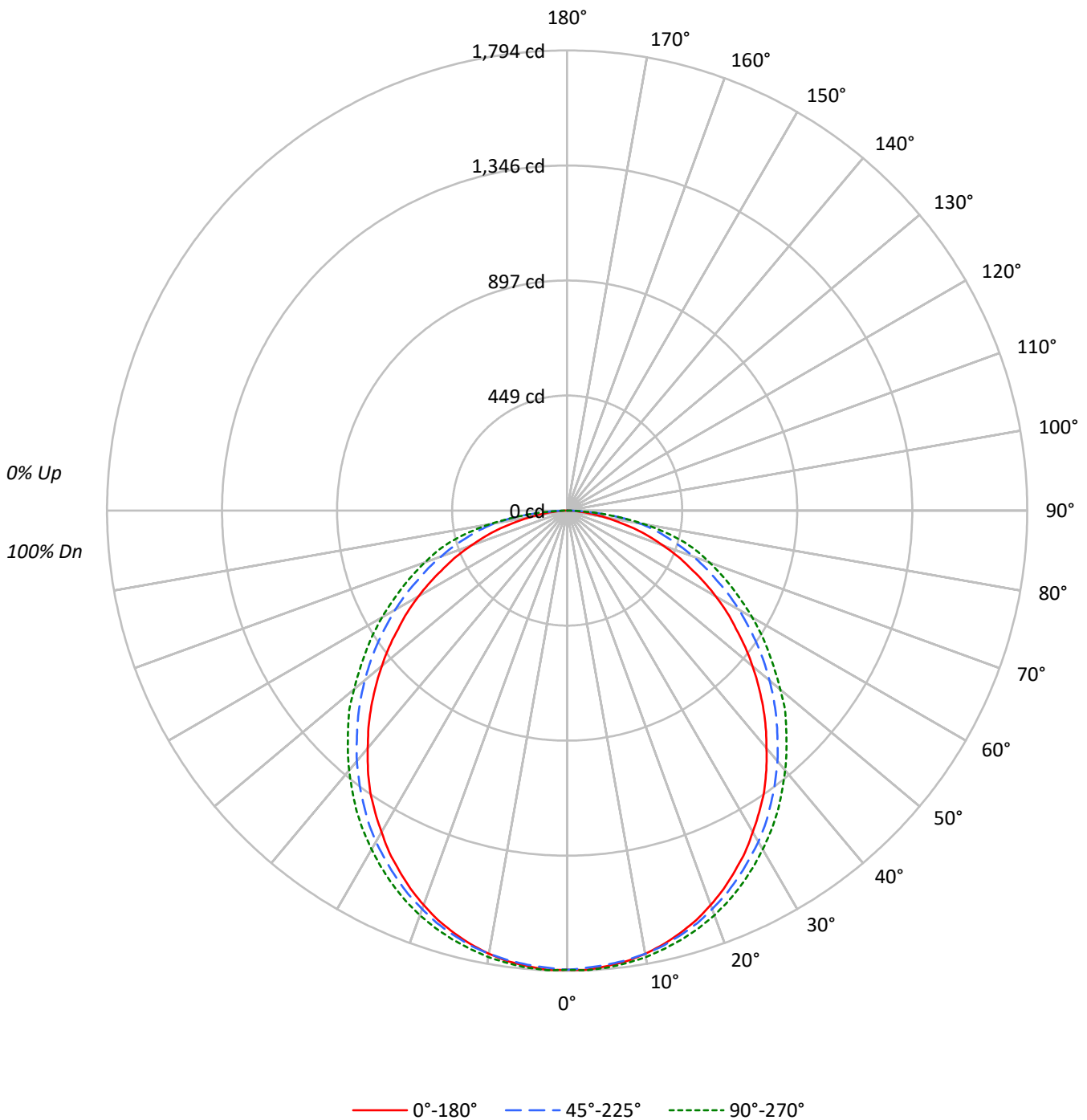
Input Watts (W): 45.109092
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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 | 106 | 101 | 97 | 93 | 97 | 93 | 90 | 93 | 90 | 88 | 89 | 87 | 85 | 83 |
| 2 | 98 | 90 | 83 | 77 | 96 | 88 | 81 | 76 | 84 | 79 | 74 | 81 | 76 | 72 | 78 | 74 | 71 | 69 |
| 3 | 89 | 79 | 70 | 64 | 87 | 77 | 69 | 63 | 74 | 67 | 62 | 71 | 66 | 61 | 69 | 64 | 60 | 58 |
| 4 | 82 | 70 | 61 | 54 | 80 | 68 | 60 | 54 | 66 | 59 | 53 | 63 | 57 | 52 | 61 | 56 | 51 | 49 |
| 5 | 75 | 62 | 53 | 46 | 73 | 61 | 53 | 46 | 59 | 51 | 46 | 57 | 50 | 45 | 55 | 49 | 45 | 42 |
| 6 | 70 | 56 | 47 | 40 | 68 | 55 | 47 | 40 | 53 | 46 | 40 | 52 | 45 | 40 | 50 | 44 | 39 | 37 |
| 7 | 64 | 51 | 42 | 36 | 63 | 50 | 42 | 36 | 48 | 41 | 35 | 47 | 40 | 35 | 46 | 39 | 35 | 33 |
| 8 | 60 | 46 | 38 | 32 | 58 | 46 | 37 | 32 | 44 | 37 | 32 | 43 | 36 | 31 | 42 | 36 | 31 | 29 |
| 9 | 56 | 43 | 34 | 29 | 55 | 42 | 34 | 29 | 41 | 34 | 28 | 40 | 33 | 28 | 39 | 33 | 28 | 26 |
| 10 | 53 | 39 | 31 | 26 | 51 | 39 | 31 | 26 | 38 | 31 | 26 | 37 | 30 | 26 | 36 | 30 | 26 | 24 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2409 | 2409 | 2409 |
| 5° | 2407 | 2401 | 2416 |
| 10° | 2397 | 2397 | 2415 |
| 15° | 2374 | 2386 | 2411 |
| 20° | 2343 | 2367 | 2404 |
| 25° | 2300 | 2343 | 2389 |
| 30° | 2248 | 2316 | 2369 |
| 35° | 2199 | 2279 | 2350 |
| 40° | 2124 | 2240 | 2323 |
| 45° | 2054 | 2196 | 2298 |
| 50° | 1976 | 2155 | 2270 |
| 55° | 1887 | 2115 | 2248 |
| 60° | 1799 | 2082 | 2243 |
| 65° | 1685 | 2046 | 2257 |
| 70° | 1560 | 2057 | 2318 |
| 75° | 1397 | 2096 | 2449 |
| 80° | 1129 | 2220 | 2396 |
| 85° | 849 | 1950 | 1899 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 169.5 | 3.3 |
| 10°-20° | 484.3 | 9.5 |
| 20°-30° | 728.0 | 14.3 |
| 30°-40° | 867.2 | 17.0 |
| 40°-50° | 887.5 | 17.4 |
| 50°-60° | 799.1 | 15.7 |
| 60°-70° | 627.5 | 12.3 |
| 70°-80° | 407.3 | 8.0 |
| 80°-90° | 125.9 | 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° | 1381.8 | 27.1 |
| 0°-40° | 2249.1 | 44.1 |
| 0°-60° | 3935.7 | 77.2 |
| 0°-90° | 5096.4 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5096.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 1790 | 1790 | 1790 | 1790 | 1790 | |
| 5° | 1782 | 1786 | 1778 | 1787 | 1789 | 169 |
| 15° | 1705 | 1710 | 1713 | 1727 | 1730 | 481 |
| 25° | 1549 | 1562 | 1578 | 1604 | 1609 | 714 |
| 35° | 1339 | 1355 | 1387 | 1421 | 1431 | 835 |
| 45° | 1080 | 1106 | 1154 | 1198 | 1208 | 832 |
| 55° | 804 | 840 | 902 | 949 | 958 | 721 |
| 65° | 529 | 570 | 643 | 696 | 709 | 527 |
| 75° | 269 | 320 | 403 | 458 | 471 | 284 |
| 85° | 55 | 102 | 126 | 123 | 123 | 66 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P276418

CATALOG NUMBER: 24CZ2-60HE-S-UNV-L93050-W2A1-U-3500K

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|--------|--------|--------|--------|--------|
| 0° | 1790.4 | 1790.4 | 1790.4 | 1790.4 | 1790.4 |
| 2.5° | 1792.0 | 1792.0 | 1783.9 | 1792.0 | 1793.6 |
| 5° | 1782.3 | 1785.5 | 1777.5 | 1787.2 | 1788.8 |
| 7.5° | 1772.6 | 1772.6 | 1767.7 | 1777.5 | 1779.1 |
| 10° | 1754.8 | 1756.4 | 1754.8 | 1766.1 | 1767.7 |
| 12.5° | 1732.1 | 1735.4 | 1737.0 | 1748.3 | 1749.9 |
| 15° | 1704.6 | 1709.5 | 1712.7 | 1727.3 | 1730.5 |
| 17.5° | 1673.8 | 1678.7 | 1686.8 | 1703.0 | 1706.2 |
| 20° | 1636.6 | 1643.1 | 1652.8 | 1673.8 | 1678.7 |
| 22.5° | 1596.1 | 1602.6 | 1618.8 | 1638.2 | 1646.3 |
| 25° | 1549.2 | 1562.1 | 1578.3 | 1604.2 | 1609.1 |
| 27.5° | 1502.3 | 1513.6 | 1534.6 | 1562.1 | 1568.6 |
| 30° | 1447.2 | 1465.0 | 1490.9 | 1518.4 | 1524.9 |
| 32.5° | 1393.8 | 1411.6 | 1442.4 | 1471.5 | 1479.6 |
| 35° | 1338.8 | 1354.9 | 1387.3 | 1421.3 | 1431.0 |
| 37.5° | 1275.6 | 1296.7 | 1332.3 | 1366.3 | 1376.0 |
| 40° | 1209.2 | 1235.2 | 1275.6 | 1311.2 | 1322.6 |
| 42.5° | 1146.1 | 1173.6 | 1214.1 | 1253.0 | 1265.9 |
| 45° | 1079.7 | 1105.6 | 1154.2 | 1197.9 | 1207.6 |
| 47.5° | 1011.8 | 1040.9 | 1092.7 | 1136.4 | 1152.6 |
| 50° | 943.8 | 974.5 | 1029.6 | 1074.9 | 1084.6 |
| 52.5° | 875.8 | 908.2 | 966.4 | 1015.0 | 1019.8 |
| 55° | 804.5 | 840.2 | 901.7 | 948.6 | 958.3 |
| 57.5° | 739.8 | 770.6 | 836.9 | 885.5 | 896.8 |
| 60° | 668.6 | 702.6 | 773.8 | 819.1 | 833.7 |
| 62.5° | 600.6 | 636.2 | 710.7 | 756.0 | 768.9 |
| 65° | 529.4 | 569.8 | 642.7 | 696.1 | 709.0 |
| 67.5° | 467.8 | 506.7 | 584.4 | 636.2 | 649.1 |
| 70° | 396.6 | 440.3 | 522.9 | 576.3 | 589.2 |
| 72.5° | 335.1 | 380.4 | 463.0 | 514.8 | 534.2 |
| 75° | 268.7 | 320.5 | 403.1 | 458.1 | 471.1 |
| 77.5° | 204.0 | 263.9 | 348.0 | 390.1 | 390.1 |
| 80° | 145.7 | 208.8 | 286.5 | 306.0 | 309.2 |
| 82.5° | 95.5 | 157.0 | 212.1 | 210.4 | 210.4 |
| 85° | 55.0 | 102.0 | 126.3 | 123.0 | 123.0 |
| 87.5° | 21.0 | 42.1 | 45.3 | 45.3 | 43.7 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)