

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: P474483

Luminaire Tested: **24CZ2-35VHE-HRP-UNV-L840-CD1-U**

Issue Date: 01/28/2021

Test Information

Test Method: LM-79-08
Report Number: P474483
Test Lab: INNOVATION CENTER(G3)
Issue Date: 01/28/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: 24CZ2-35VHE-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: 2923.9 lumens
Efficiency: N/A
Efficacy: 122.3 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

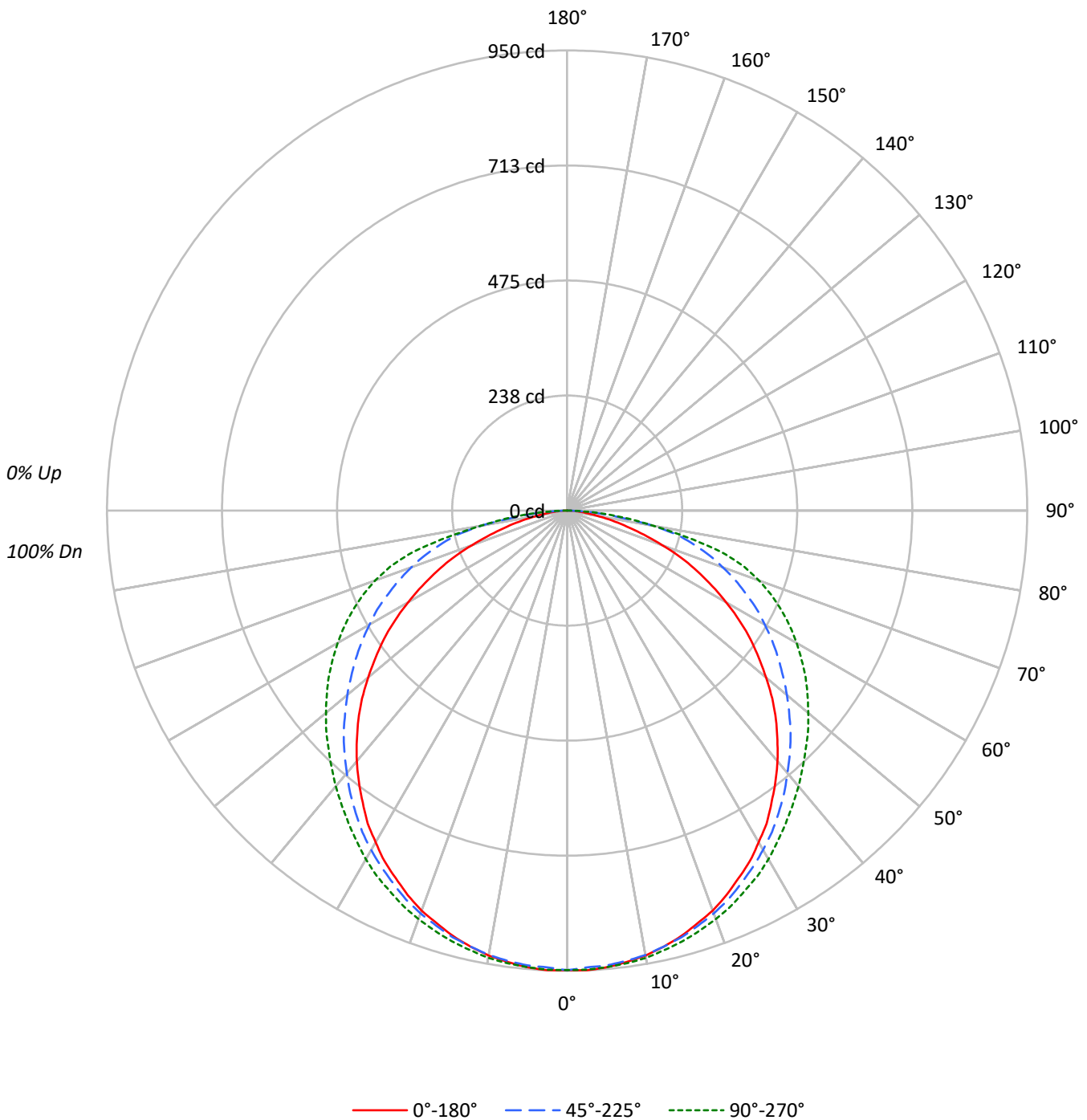
Input Watts (W): 23.9
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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° | 1276 | 1276 | 1276 |
| 5° | 1278 | 1273 | 1278 |
| 10° | 1274 | 1273 | 1281 |
| 15° | 1267 | 1270 | 1282 |
| 20° | 1258 | 1267 | 1285 |
| 25° | 1243 | 1261 | 1287 |
| 30° | 1228 | 1257 | 1291 |
| 35° | 1208 | 1250 | 1293 |
| 40° | 1187 | 1243 | 1305 |
| 45° | 1160 | 1241 | 1325 |
| 50° | 1122 | 1240 | 1361 |
| 55° | 1083 | 1249 | 1410 |
| 60° | 1021 | 1268 | 1472 |
| 65° | 943 | 1298 | 1555 |
| 70° | 823 | 1343 | 1657 |
| 75° | 668 | 1412 | 1712 |
| 80° | 494 | 1385 | 1385 |
| 85° | 378 | 1020 | 1152 |



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 89.9 | 3.1 |
| 10°-20° | 258.1 | 8.8 |
| 20°-30° | 392.9 | 13.4 |
| 30°-40° | 477.0 | 16.3 |
| 40°-50° | 504.0 | 17.2 |
| 50°-60° | 475.6 | 16.3 |
| 60°-70° | 395.4 | 13.5 |
| 70°-80° | 260.1 | 8.9 |
| 80°-90° | 70.9 | 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° | 740.8 | 25.3 |
| 0°-40° | 1217.9 | 41.7 |
| 0°-60° | 2197.4 | 75.2 |
| 0°-90° | 2923.9 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2923.9 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 949 | 949 | 949 | 949 | 949 | |
| 5° | 946 | 946 | 942 | 946 | 946 | 90 |
| 15° | 910 | 911 | 912 | 920 | 920 | 257 |
| 25° | 837 | 842 | 850 | 864 | 867 | 386 |
| 35° | 736 | 744 | 761 | 781 | 787 | 461 |
| 45° | 610 | 622 | 652 | 684 | 696 | 469 |
| 55° | 462 | 481 | 532 | 583 | 601 | 411 |
| 65° | 296 | 330 | 408 | 468 | 488 | 293 |
| 75° | 128 | 187 | 272 | 322 | 329 | 138 |
| 85° | 24 | 54 | 66 | 74 | 75 | 30 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P474483

CATALOG NUMBER: 24CZ2-35VHE-HRP-UNV-L840-CD1-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|-------|-------|-------|-------|-------|
| 0° | 948.7 | 948.7 | 948.7 | 948.7 | 948.7 |
| 2.5° | 949.9 | 948.7 | 943.8 | 948.7 | 948.7 |
| 5° | 946.3 | 946.3 | 942.5 | 946.3 | 946.3 |
| 7.5° | 940.1 | 940.1 | 937.6 | 942.5 | 942.5 |
| 10° | 932.7 | 932.7 | 931.6 | 937.6 | 937.6 |
| 12.5° | 921.8 | 922.9 | 921.8 | 929.1 | 929.1 |
| 15° | 909.5 | 910.7 | 912.0 | 920.5 | 920.5 |
| 17.5° | 893.6 | 896.0 | 898.5 | 908.2 | 909.5 |
| 20° | 878.9 | 880.1 | 885.0 | 896.0 | 897.3 |
| 22.5° | 859.3 | 863.0 | 869.1 | 880.1 | 883.8 |
| 25° | 837.2 | 842.1 | 849.5 | 864.2 | 866.6 |
| 27.5° | 816.5 | 820.1 | 829.9 | 845.9 | 850.8 |
| 30° | 790.7 | 796.9 | 809.1 | 825.0 | 831.2 |
| 32.5° | 766.2 | 772.4 | 787.1 | 804.2 | 809.1 |
| 35° | 735.7 | 744.3 | 761.3 | 780.9 | 787.1 |
| 37.5° | 706.3 | 714.9 | 735.7 | 757.7 | 765.1 |
| 40° | 675.7 | 685.5 | 707.6 | 733.2 | 743.0 |
| 42.5° | 642.6 | 656.1 | 680.6 | 708.7 | 719.8 |
| 45° | 609.6 | 621.9 | 652.4 | 684.2 | 696.5 |
| 47.5° | 574.2 | 588.9 | 621.9 | 659.8 | 674.5 |
| 50° | 536.2 | 554.6 | 592.5 | 634.1 | 650.0 |
| 52.5° | 498.3 | 519.0 | 561.8 | 608.3 | 625.5 |
| 55° | 461.5 | 481.1 | 532.4 | 582.7 | 601.0 |
| 57.5° | 421.1 | 445.6 | 501.9 | 555.7 | 574.2 |
| 60° | 379.4 | 406.4 | 471.3 | 527.5 | 547.1 |
| 62.5° | 337.8 | 368.5 | 441.9 | 498.3 | 519.0 |
| 65° | 296.2 | 330.5 | 407.7 | 467.6 | 488.5 |
| 67.5° | 255.8 | 293.7 | 375.8 | 435.8 | 456.6 |
| 70° | 209.3 | 257.0 | 341.5 | 400.3 | 421.1 |
| 72.5° | 166.5 | 221.6 | 308.4 | 363.6 | 381.9 |
| 75° | 128.5 | 187.3 | 271.7 | 321.9 | 329.3 |
| 77.5° | 94.2 | 153.0 | 233.8 | 250.9 | 252.1 |
| 80° | 63.7 | 122.4 | 178.8 | 176.3 | 178.8 |
| 82.5° | 41.6 | 91.8 | 112.6 | 126.1 | 127.3 |
| 85° | 24.5 | 53.9 | 66.1 | 73.5 | 74.6 |
| 87.5° | 12.2 | 18.3 | 23.2 | 24.5 | 26.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)