

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: P381661

Luminaire Tested: **BMK-50-NCL-UNV-L840-CD-U**

Issue Date: 2/4/2020

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: P381661
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1908-468-3)
Test Lab: INNOVATIONS CENTER(G2)
Issue Date: 2/4/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: BMK-50-NCL-UNV-L840-CD-U
Description: BENCHMARK HIGHBAY LED FIXTURE WITH NARROW CLEAR LENS

Light Source: -
Ballast/Driver: -

Luminaire Equipment: Sample No. Condition Description

Summary

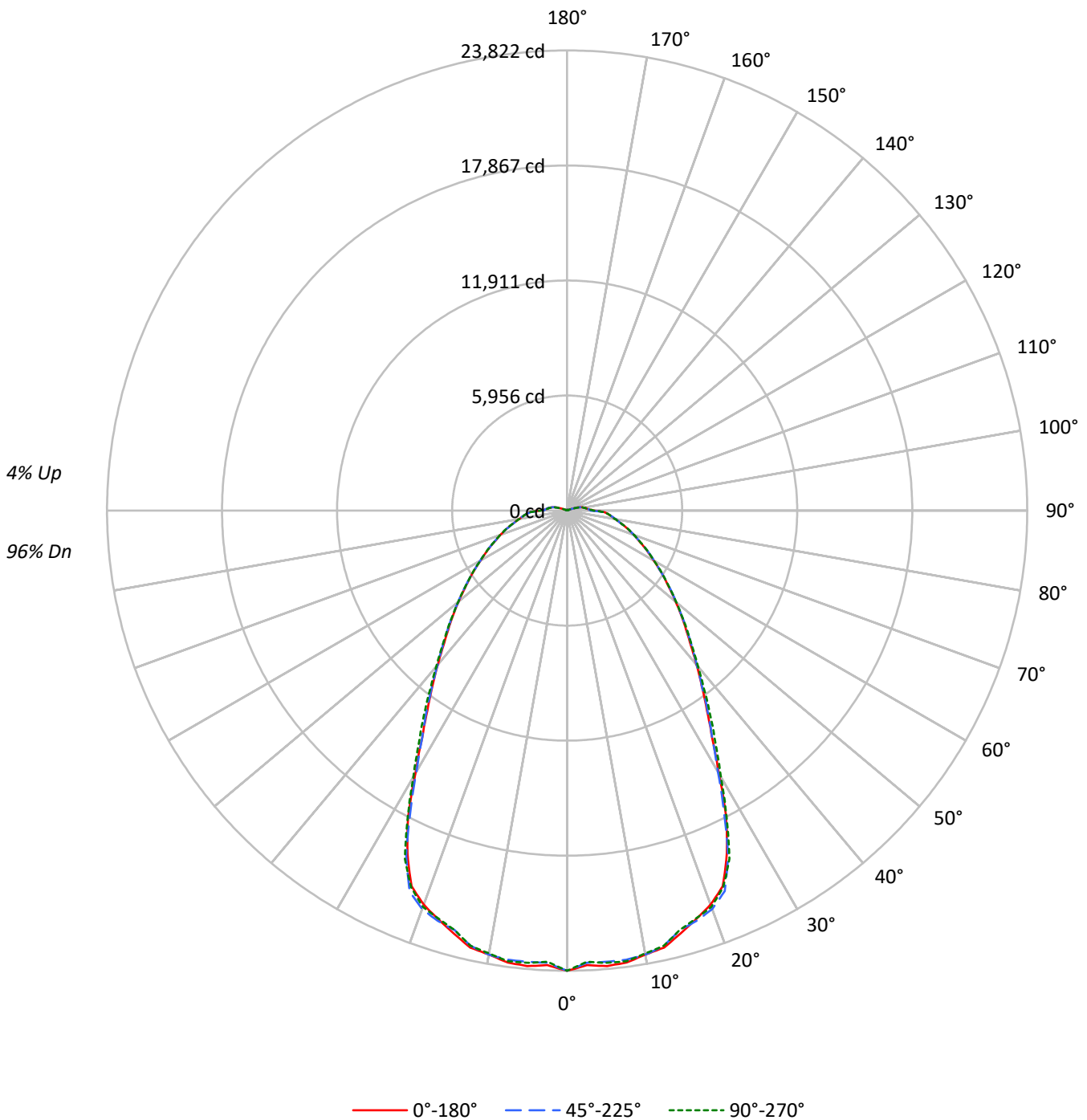
Lumens per Lamp: N/A
Luminaire Lumens: 49741.4 lumens
Efficiency: N/A
Efficacy: 149.6 lumens/watt
Spacing Criteria (0/90/45): 1.07 / 1.07 / 1.07
Luminous Opening: Vertical Cylinder (Dia: 1.33' x H: 0.12')
CIE Type: Direct

Input Watts (W): 332.5
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 | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 109 | 109 | 109 | 103 | 103 | 103 | 98 | 98 | 98 | 96 |
| 1 | 107 | 103 | 98 | 94 | 104 | 100 | 96 | 92 | 95 | 92 | 89 | 90 | 88 | 85 | 86 | 84 | 82 | 80 |
| 2 | 98 | 90 | 84 | 78 | 95 | 88 | 82 | 77 | 84 | 79 | 74 | 80 | 76 | 72 | 76 | 73 | 70 | 68 |
| 3 | 91 | 80 | 73 | 66 | 88 | 79 | 71 | 65 | 75 | 69 | 64 | 72 | 67 | 62 | 69 | 64 | 61 | 58 |
| 4 | 84 | 72 | 64 | 57 | 81 | 71 | 63 | 57 | 68 | 61 | 56 | 65 | 59 | 54 | 62 | 57 | 53 | 51 |
| 5 | 77 | 65 | 57 | 50 | 75 | 64 | 56 | 50 | 61 | 54 | 49 | 59 | 53 | 48 | 57 | 52 | 47 | 45 |
| 6 | 72 | 59 | 51 | 45 | 70 | 58 | 50 | 45 | 56 | 49 | 44 | 54 | 48 | 43 | 52 | 47 | 43 | 40 |
| 7 | 67 | 54 | 46 | 40 | 65 | 54 | 46 | 40 | 52 | 45 | 40 | 50 | 44 | 39 | 48 | 43 | 38 | 37 |
| 8 | 63 | 50 | 42 | 37 | 61 | 49 | 42 | 36 | 48 | 41 | 36 | 46 | 40 | 36 | 45 | 39 | 35 | 33 |
| 9 | 59 | 46 | 39 | 33 | 58 | 46 | 38 | 33 | 44 | 38 | 33 | 43 | 37 | 33 | 42 | 36 | 32 | 30 |
| 10 | 56 | 43 | 36 | 31 | 54 | 43 | 35 | 31 | 41 | 35 | 30 | 40 | 34 | 30 | 39 | 34 | 30 | 28 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 183736 | 183736 | 183736 |
| 5° | 181343 | 179675 | 180076 |
| 10° | 178981 | 179053 | 178540 |
| 15° | 175372 | 174029 | 173950 |
| 20° | 170734 | 172673 | 171736 |
| 25° | 157711 | 158945 | 160261 |
| 30° | 130816 | 129943 | 132630 |
| 35° | 109548 | 110218 | 112235 |
| 40° | 95413 | 95592 | 96484 |
| 45° | 84818 | 85549 | 85649 |
| 50° | 77064 | 77313 | 77485 |
| 55° | 70972 | 71137 | 71149 |
| 60° | 66220 | 66535 | 66364 |
| 65° | 63335 | 63573 | 63857 |
| 70° | 62262 | 62454 | 62612 |
| 75° | 62778 | 62586 | 63032 |
| 80° | 67023 | 67322 | 66777 |
| 85° | 79911 | 79604 | 80293 |



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CATALOG NUMBER: BMK-50-NCL-UNV-L840-CD-U

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 2240.9 | 4.5 |
| 10°-20° | 6384.6 | 12.8 |
| 20°-30° | 8879.0 | 17.9 |
| 30°-40° | 8004.2 | 16.1 |
| 40°-50° | 6784.0 | 13.6 |
| 50°-60° | 5552.2 | 11.2 |
| 60°-70° | 4364.4 | 8.8 |
| 70°-80° | 3246.0 | 6.5 |
| 80°-90° | 2260.6 | 4.5 |
| 90°-100° | 1170.1 | 2.4 |
| 100°-110° | 654.7 | 1.3 |
| 110°-120° | 95.8 | 0.2 |
| 120°-130° | 25.9 | 0.1 |
| 130°-140° | 28.8 | 0.1 |
| 140°-150° | 24.8 | 0.0 |
| 150°-160° | 14.1 | 0.0 |
| 160°-170° | 8.4 | 0.0 |
| 170°-180° | 2.9 | 0.0 |
| 0°-30° | 17504.4 | 35.2 |
| 0°-40° | 25508.7 | 51.3 |
| 0°-60° | 37844.8 | 76.1 |
| 0°-90° | 47716.0 | 95.9 |
| 90°-120° | 1920.6 | 3.9 |
| 90°-150° | 2000.0 | 4.0 |
| 90°-180° | 2025.0 | 4.1 |
| 0°-180° | 49741.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-------|-------|-------|-------|-------|------|
| 0° | 23822 | 23822 | 23822 | 23822 | 23822 | |
| 5° | 23667 | 23458 | 23449 | 23570 | 23501 | ### |
| 15° | 22665 | 22536 | 22492 | 22653 | 22482 | 6391 |
| 25° | 19564 | 19619 | 19717 | 19899 | 19880 | 8841 |
| 35° | 12607 | 12591 | 12684 | 12722 | 12916 | 7960 |
| 45° | 8704 | 8721 | 8779 | 8726 | 8790 | 6755 |
| 55° | 6178 | 6148 | 6192 | 6192 | 6193 | 5549 |
| 65° | 4359 | 4356 | 4375 | 4424 | 4395 | 4338 |
| 75° | 3045 | 3056 | 3036 | 3057 | 3058 | 3242 |
| 85° | 2135 | 2140 | 2127 | 2120 | 2146 | 1823 |
| 90° | 1398 | 1330 | 1217 | 1313 | 1368 | 807 |
| 95° | 1044 | 1054 | 1079 | 1029 | 1024 | 829 |
| 105° | 659 | 653 | 647 | 632 | 640 | 659 |
| 115° | 64 | 63 | 63 | 60 | 62 | 98 |
| 125° | 29 | 30 | 29 | 29 | 30 | 25 |
| 135° | 37 | 38 | 37 | 37 | 38 | 29 |
| 145° | 41 | 40 | 41 | 40 | 40 | 25 |
| 155° | 29 | 30 | 29 | 29 | 29 | 14 |
| 165° | 31 | 30 | 30 | 30 | 30 | 9 |
| 175° | 30 | 30 | 30 | 30 | 31 | 3 |
| 180° | 30 | 30 | 30 | 30 | 30 | |



TEST NUMBER: P381661

CATALOG NUMBER: BMK-50-NCL-UNV-L840-CD-U

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|---------|---------|---------|---------|---------|
| 0° | 23821.8 | 23821.8 | 23821.8 | 23821.8 | 23821.8 |
| 2.5° | 23553.7 | 23438.7 | 23430.5 | 23464.4 | 23375.0 |
| 5° | 23666.7 | 23458.2 | 23449.0 | 23570.2 | 23501.4 |
| 7.5° | 23594.8 | 23421.2 | 23450.0 | 23590.7 | 23526.0 |
| 10° | 23333.9 | 23263.1 | 23343.2 | 23462.3 | 23276.4 |
| 12.5° | 23172.7 | 23074.1 | 23074.1 | 23091.6 | 23082.3 |
| 15° | 22665.3 | 22535.9 | 22491.7 | 22653.0 | 22481.5 |
| 17.5° | 22185.7 | 22072.7 | 22265.8 | 22217.5 | 22145.6 |
| 20° | 21705.0 | 21769.7 | 21951.5 | 21852.9 | 21832.4 |
| 22.5° | 21049.7 | 21073.4 | 21318.8 | 21322.9 | 21106.2 |
| 25° | 19563.6 | 19619.0 | 19716.6 | 19899.4 | 19879.9 |
| 27.5° | 17813.5 | 17598.8 | 17589.6 | 17996.3 | 17868.9 |
| 30° | 15700.8 | 15642.2 | 15596.0 | 15901.1 | 15918.5 |
| 32.5° | 13969.1 | 14030.8 | 13966.1 | 14132.4 | 14287.5 |
| 35° | 12607.2 | 12590.8 | 12684.3 | 12722.3 | 12916.4 |
| 37.5° | 11448.7 | 11434.3 | 11471.3 | 11587.4 | 11640.8 |
| 40° | 10425.8 | 10425.8 | 10445.3 | 10561.3 | 10542.8 |
| 42.5° | 9473.7 | 9564.0 | 9558.9 | 9591.8 | 9593.8 |
| 45° | 8704.4 | 8720.8 | 8779.4 | 8726.0 | 8789.6 |
| 47.5° | 7996.7 | 7969.0 | 8044.0 | 7982.4 | 8038.9 |
| 50° | 7336.3 | 7288.1 | 7360.0 | 7293.2 | 7376.4 |
| 52.5° | 6719.1 | 6666.7 | 6761.2 | 6693.4 | 6754.0 |
| 55° | 6177.8 | 6148.0 | 6192.2 | 6192.2 | 6193.2 |
| 57.5° | 5665.3 | 5659.1 | 5660.2 | 5701.2 | 5694.1 |
| 60° | 5180.5 | 5205.2 | 5205.2 | 5233.9 | 5191.8 |
| 62.5° | 4753.3 | 4762.5 | 4794.3 | 4810.8 | 4774.8 |
| 65° | 4358.9 | 4355.8 | 4375.3 | 4423.6 | 4394.8 |
| 67.5° | 3984.0 | 3996.3 | 4010.7 | 4061.0 | 4006.6 |
| 70° | 3666.6 | 3663.5 | 3677.9 | 3710.8 | 3687.2 |
| 72.5° | 3358.5 | 3352.3 | 3363.6 | 3380.1 | 3379.1 |
| 75° | 3045.3 | 3055.5 | 3036.0 | 3056.6 | 3057.6 |
| 77.5° | 2773.1 | 2771.0 | 2770.0 | 2759.7 | 2780.3 |
| 80° | 2530.7 | 2528.6 | 2542.0 | 2515.3 | 2521.4 |
| 82.5° | 2328.4 | 2325.3 | 2340.7 | 2304.7 | 2310.9 |
| 85° | 2135.3 | 2140.4 | 2127.1 | 2119.9 | 2145.5 |
| 87.5° | 1937.0 | 1923.7 | 1909.3 | 1914.5 | 1918.6 |
| 90° | 1397.8 | 1330.1 | 1217.1 | 1312.6 | 1368.1 |
| 92.5° | 1156.5 | 1189.3 | 1145.2 | 1137.0 | 1179.1 |
| 95° | 1044.5 | 1053.8 | 1079.4 | 1029.1 | 1024.0 |
| 97.5° | 980.8 | 1003.4 | 996.3 | 963.4 | 962.4 |
| 100° | 877.1 | 889.4 | 883.3 | 871.0 | 872.0 |
| 102.5° | 784.7 | 811.4 | 782.6 | 776.5 | 785.7 |
| 105° | 659.4 | 653.2 | 647.1 | 631.6 | 639.9 |
| 107.5° | 458.1 | 464.2 | 450.9 | 447.8 | 461.2 |
| 110° | 282.4 | 278.3 | 265.0 | 268.1 | 276.3 |



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CATALOG NUMBER: BMK-50-NCL-UNV-L840-CD-U

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 140.7 | 143.8 | 143.8 | 138.7 | 136.6 |
| 115° | 63.7 | 62.7 | 62.7 | 59.6 | 61.6 |
| 117.5° | 29.8 | 28.8 | 26.7 | 28.8 | 30.8 |
| 120° | 23.6 | 24.6 | 22.6 | 23.6 | 25.7 |
| 122.5° | 25.7 | 27.7 | 25.7 | 26.7 | 27.7 |
| 125° | 28.8 | 29.8 | 28.8 | 28.8 | 29.8 |
| 127.5° | 30.8 | 31.8 | 30.8 | 30.8 | 31.8 |
| 130° | 32.9 | 33.9 | 32.9 | 33.9 | 33.9 |
| 132.5° | 34.9 | 35.9 | 34.9 | 34.9 | 35.9 |
| 135° | 37.0 | 38.0 | 37.0 | 37.0 | 38.0 |
| 137.5° | 39.0 | 40.1 | 39.0 | 39.0 | 39.0 |
| 140° | 41.1 | 41.1 | 40.1 | 41.1 | 40.1 |
| 142.5° | 42.1 | 41.1 | 41.1 | 41.1 | 40.1 |
| 145° | 41.1 | 40.1 | 41.1 | 40.1 | 40.1 |
| 147.5° | 39.0 | 38.0 | 38.0 | 38.0 | 38.0 |
| 150° | 34.9 | 34.9 | 33.9 | 34.9 | 34.9 |
| 152.5° | 31.8 | 31.8 | 30.8 | 30.8 | 31.8 |
| 155° | 28.8 | 29.8 | 28.8 | 28.8 | 28.8 |
| 157.5° | 29.8 | 29.8 | 28.8 | 28.8 | 29.8 |
| 160° | 29.8 | 29.8 | 28.8 | 28.8 | 29.8 |
| 162.5° | 29.8 | 29.8 | 28.8 | 28.8 | 29.8 |
| 165° | 30.8 | 29.8 | 29.8 | 29.8 | 29.8 |
| 167.5° | 30.8 | 29.8 | 29.8 | 28.8 | 29.8 |
| 170° | 30.8 | 30.8 | 29.8 | 28.8 | 29.8 |
| 172.5° | 30.8 | 30.8 | 29.8 | 29.8 | 29.8 |
| 175° | 29.8 | 29.8 | 29.8 | 29.8 | 30.8 |
| 177.5° | 28.8 | 28.8 | 28.8 | 29.8 | 30.8 |
| 180° | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 |

(END OF REPORT)