

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: P294534

Luminaire Tested: **BMK-18-NFL-UNV-L840-CD-U**

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: P294534  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1901-103-7)  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: BMK-18-NFL-UNV-L840-CD-U  
Description: BENCHMARK HIGHBAY LED FIXTURE  
WITH NARROW FROSTED LENS  
Light Source: (528) 80 CRI 4000K LEDS  
Ballast/Driver: ELECTRONIC DRIVER  
Luminaire Equipment: Sample No.   Condition   Description

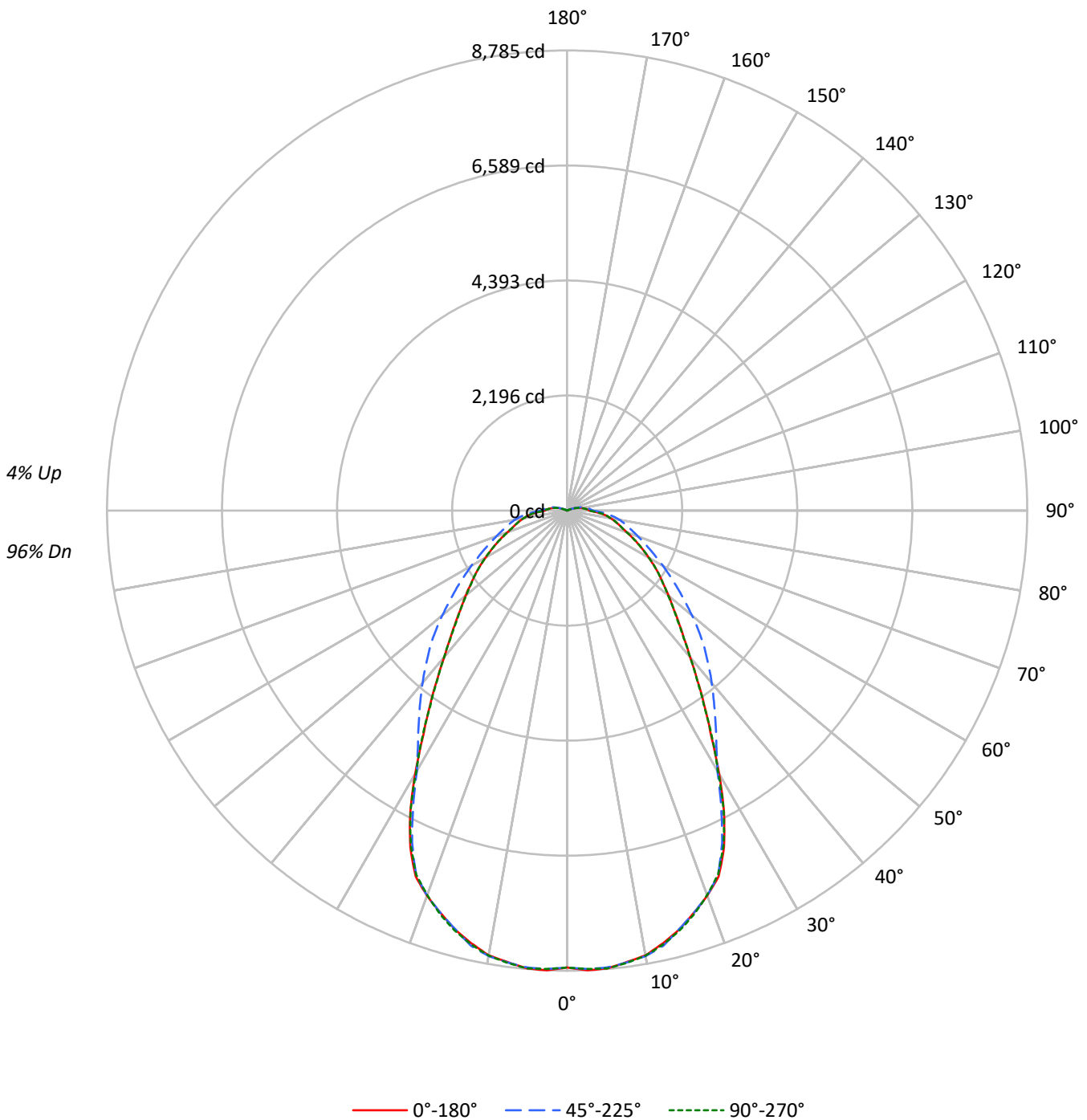
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 18270.0 lumens  
Efficiency: N/A  
Efficacy: 160.5 lumens/watt  
Spacing Criteria (0/90/45): 1.06 / 1.06 / 1.11  
Luminous Opening: Vertical Cylinder (Dia: 1.33' x H: 0.12')  
CIE Type: Direct  
  
Input Watts (W): 113.8  
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 | 50 | 30 | 10 | 50 | 30 | 10 | 0  |  |   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |  |   |
| 0   | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 109 | 109 | 109 | 104 | 104 | 104 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 96 |  |   |
| 1   | 108 | 103 | 98  | 95  | 105 | 100 | 96  | 93  | 95  | 92  | 89  | 91  | 88  | 86  | 87 | 84 | 82 | 87 | 84 | 82 | 87 | 84 | 82 | 80 |  |   |
| 2   | 99  | 91  | 84  | 78  | 96  | 88  | 82  | 77  | 84  | 79  | 75  | 80  | 76  | 72  | 77 | 73 | 70 | 77 | 73 | 70 | 77 | 73 | 70 | 68 |  |   |
| 3   | 91  | 80  | 73  | 66  | 88  | 79  | 71  | 66  | 75  | 69  | 64  | 72  | 67  | 62  | 69 | 65 | 61 | 69 | 65 | 61 | 69 | 65 | 61 | 59 |  |   |
| 4   | 84  | 72  | 64  | 57  | 81  | 71  | 63  | 57  | 68  | 61  | 56  | 65  | 59  | 55  | 62 | 58 | 53 | 62 | 58 | 53 | 62 | 58 | 53 | 51 |  |   |
| 5   | 77  | 65  | 57  | 50  | 75  | 64  | 56  | 50  | 61  | 55  | 49  | 59  | 53  | 48  | 57 | 52 | 47 | 57 | 52 | 47 | 57 | 52 | 47 | 45 |  |   |
| 6   | 72  | 59  | 51  | 45  | 70  | 58  | 50  | 45  | 56  | 49  | 44  | 54  | 48  | 43  | 52 | 47 | 43 | 52 | 47 | 43 | 52 | 47 | 43 | 41 |  |   |
| 7   | 67  | 54  | 46  | 40  | 65  | 53  | 46  | 40  | 52  | 45  | 40  | 50  | 44  | 39  | 48 | 43 | 38 | 48 | 43 | 38 | 48 | 43 | 38 | 37 |  |   |
| 8   | 63  | 50  | 42  | 37  | 61  | 49  | 42  | 36  | 48  | 41  | 36  | 46  | 40  | 35  | 45 | 39 | 35 | 45 | 39 | 35 | 45 | 39 | 35 | 33 |  |   |
| 9   | 59  | 46  | 39  | 33  | 58  | 46  | 38  | 33  | 44  | 38  | 33  | 43  | 37  | 32  | 42 | 36 | 32 | 42 | 36 | 32 | 42 | 36 | 32 | 30 |  |   |
| 10  | 56  | 43  | 36  | 31  | 54  | 42  | 35  | 30  | 41  | 35  | 30  | 40  | 34  | 30  | 39 | 34 | 30 | 39 | 34 | 30 | 39 | 34 | 30 | 28 |  |   |

**AVERAGE LUMINANCE (cd/sqm):**

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 67237 | 67237 | 67237 |
| 5°  | 67184 | 67066 | 67184 |
| 10° | 66095 | 66217 | 66129 |
| 15° | 64010 | 63937 | 64190 |
| 20° | 61525 | 61474 | 61396 |
| 25° | 57109 | 56409 | 56877 |
| 30° | 48329 | 47741 | 48015 |
| 35° | 39773 | 42897 | 39656 |
| 40° | 33372 | 39290 | 33408 |
| 45° | 29285 | 36108 | 29063 |
| 50° | 26590 | 32627 | 26409 |
| 55° | 24672 | 29497 | 24661 |
| 60° | 22983 | 27014 | 23040 |
| 65° | 21687 | 25181 | 21565 |
| 70° | 20587 | 24386 | 20504 |
| 75° | 20853 | 24871 | 20864 |
| 80° | 22365 | 26884 | 22378 |
| 85° | 24478 | 29139 | 24777 |



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 830.6   | 4.5       |
| 10°-20°   | 2326.9  | 12.7      |
| 20°-30°   | 3181.0  | 17.4      |
| 30°-40°   | 2987.9  | 16.4      |
| 40°-50°   | 2576.2  | 14.1      |
| 50°-60°   | 2113.7  | 11.6      |
| 60°-70°   | 1628.6  | 8.9       |
| 70°-80°   | 1193.3  | 6.5       |
| 80°-90°   | 764.7   | 4.2       |
| 90°-100°  | 413.5   | 2.3       |
| 100°-110° | 214.1   | 1.2       |
| 110°-120° | 38.7    | 0.2       |
| 120°-130° | 0.6     | 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°    | 6338.6  | 34.7      |
| 0°-40°    | 9326.5  | 51.0      |
| 0°-60°    | 14016.4 | 76.7      |
| 0°-90°    | 17603.1 | 96.3      |
| 90°-120°  | 666.3   | 3.6       |
| 90°-150°  | 666.9   | 3.7       |
| 90°-180°  | 667.0   | 3.7       |
| 0°-180°   | 18270.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 8722 | 8722  | 8722 | 8722  | 8722 |      |
| 5°   | 8772 | 8766  | 8757 | 8753  | 8772 | 831  |
| 15°  | 8277 | 8258  | 8267 | 8262  | 8300 | 2328 |
| 25°  | 7088 | 7010  | 7001 | 6982  | 7059 | 3206 |
| 35°  | 4579 | 4744  | 4939 | 4733  | 4566 | 2882 |
| 45°  | 3007 | 3301  | 3707 | 3291  | 2984 | 2338 |
| 55°  | 2149 | 2348  | 2569 | 2346  | 2148 | 1925 |
| 65°  | 1493 | 1660  | 1734 | 1656  | 1485 | 1482 |
| 75°  | 1012 | 1138  | 1207 | 1135  | 1012 | 1074 |
| 85°  | 654  | 702   | 779  | 699   | 662  | 572  |
| 90°  | 425  | 458   | 490  | 463   | 424  | 244  |
| 95°  | 360  | 370   | 417  | 369   | 360  | 278  |
| 105° | 194  | 196   | 229  | 197   | 195  | 202  |
| 115° | 22   | 29    | 37   | 29    | 22   | 34   |
| 125° | 0    | 0     | 0    | 0     | 0    | 1    |
| 135° | 0    | 0     | 0    | 0     | 0    | 0    |
| 145° | 0    | 0     | 0    | 0     | 0    | 0    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    | 0    |



TEST NUMBER: P294534

CATALOG NUMBER: BMK-18-NFL-UNV-L840-CD-U

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 8721.8 | 8721.8 | 8721.8 | 8721.8 | 8721.8 |
| 2.5°   | 8785.3 | 8768.9 | 8760.0 | 8750.1 | 8758.5 |
| 5°     | 8772.4 | 8766.4 | 8757.0 | 8753.0 | 8772.4 |
| 7.5°   | 8695.0 | 8689.5 | 8701.9 | 8681.1 | 8710.4 |
| 10°    | 8621.1 | 8603.2 | 8637.0 | 8567.0 | 8625.5 |
| 12.5°  | 8458.9 | 8471.3 | 8507.0 | 8457.4 | 8480.2 |
| 15°    | 8276.8 | 8257.9 | 8267.4 | 8262.4 | 8300.1 |
| 17.5°  | 8049.6 | 8037.7 | 8048.6 | 8035.7 | 8075.4 |
| 20°    | 7825.3 | 7810.5 | 7818.9 | 7811.5 | 7809.0 |
| 22.5°  | 7559.4 | 7511.8 | 7531.2 | 7478.1 | 7524.7 |
| 25°    | 7087.7 | 7009.8 | 7000.8 | 6982.5 | 7058.9 |
| 27.5°  | 6486.9 | 6409.5 | 6365.8 | 6384.7 | 6477.5 |
| 30°    | 5803.3 | 5798.8 | 5732.8 | 5776.0 | 5765.6 |
| 32.5°  | 5124.6 | 5255.1 | 5297.8 | 5252.6 | 5154.9 |
| 35°    | 4579.4 | 4743.6 | 4939.1 | 4733.2 | 4566.0 |
| 37.5°  | 4084.3 | 4317.5 | 4602.7 | 4296.2 | 4071.4 |
| 40°    | 3648.3 | 3932.0 | 4295.2 | 3912.7 | 3652.2 |
| 42.5°  | 3296.0 | 3595.7 | 3988.1 | 3590.7 | 3292.1 |
| 45°    | 3006.8 | 3301.0 | 3707.3 | 3290.6 | 2984.0 |
| 47.5°  | 2741.9 | 3038.1 | 3411.6 | 3032.6 | 2741.4 |
| 50°    | 2532.5 | 2775.1 | 3107.5 | 2774.6 | 2515.2 |
| 52.5°  | 2323.2 | 2552.4 | 2821.8 | 2556.9 | 2314.3 |
| 55°    | 2148.6 | 2348.5 | 2568.8 | 2346.5 | 2147.6 |
| 57.5°  | 1973.5 | 2164.4 | 2329.1 | 2162.0 | 1975.9 |
| 60°    | 1798.8 | 1984.4 | 2114.3 | 1978.9 | 1803.3 |
| 62.5°  | 1639.1 | 1820.2 | 1908.5 | 1810.7 | 1643.1 |
| 65°    | 1493.2 | 1659.9 | 1733.8 | 1656.4 | 1484.8 |
| 67.5°  | 1348.4 | 1512.6 | 1579.6 | 1514.1 | 1343.9 |
| 70°    | 1212.9 | 1381.1 | 1436.7 | 1379.1 | 1208.0 |
| 72.5°  | 1101.8 | 1260.1 | 1315.1 | 1255.6 | 1101.8 |
| 75°    | 1012.0 | 1138.5 | 1207.0 | 1135.1 | 1012.5 |
| 77.5°  | 925.2  | 1028.4 | 1110.7 | 1025.4 | 932.2  |
| 80°    | 844.8  | 924.7  | 1015.5 | 915.8  | 845.3  |
| 82.5°  | 760.5  | 812.6  | 902.9  | 808.6  | 764.5  |
| 85°    | 654.3  | 701.5  | 778.9  | 699.0  | 662.3  |
| 87.5°  | 530.3  | 584.4  | 628.1  | 584.4  | 537.3  |
| 90°    | 424.7  | 457.9  | 489.6  | 463.3  | 424.2  |
| 92.5°  | 402.3  | 413.2  | 454.4  | 414.7  | 403.3  |
| 95°    | 359.7  | 369.6  | 417.2  | 369.1  | 359.7  |
| 97.5°  | 319.5  | 328.9  | 377.0  | 327.4  | 317.5  |
| 100°   | 276.8  | 285.3  | 331.4  | 287.7  | 275.3  |
| 102.5° | 238.1  | 244.6  | 283.8  | 245.1  | 237.6  |
| 105°   | 194.0  | 196.5  | 229.2  | 197.4  | 195.0  |
| 107.5° | 143.9  | 146.8  | 163.7  | 148.8  | 146.3  |
| 110°   | 96.2   | 98.7   | 110.1  | 100.7  | 98.7   |



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CATALOG NUMBER: BMK-18-NFL-UNV-L840-CD-U

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|--------|------|-------|------|-------|------|
| 112.5° | 54.6 | 57.5  | 71.9 | 58.0  | 53.6 |
| 115°   | 21.8 | 28.8  | 37.2 | 29.3  | 22.3 |
| 117.5° | 6.0  | 10.9  | 13.4 | 10.9  | 6.4  |
| 120°   | 5.0  | 5.5   | 5.0  | 5.5   | 4.5  |
| 122.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 125°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 127.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 130°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 132.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 135°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 137.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 140°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 142.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 145°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 147.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 150°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 152.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 155°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 157.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 160°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 162.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 165°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 167.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 170°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 172.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 175°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 177.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 180°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |

(END OF REPORT)