

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: METALUX

Report Number: P1436187

Luminaire Tested: EHBR1-60-UNV-M-L830-UPL12

Issue Date: 3/25/2026

**Test Information**

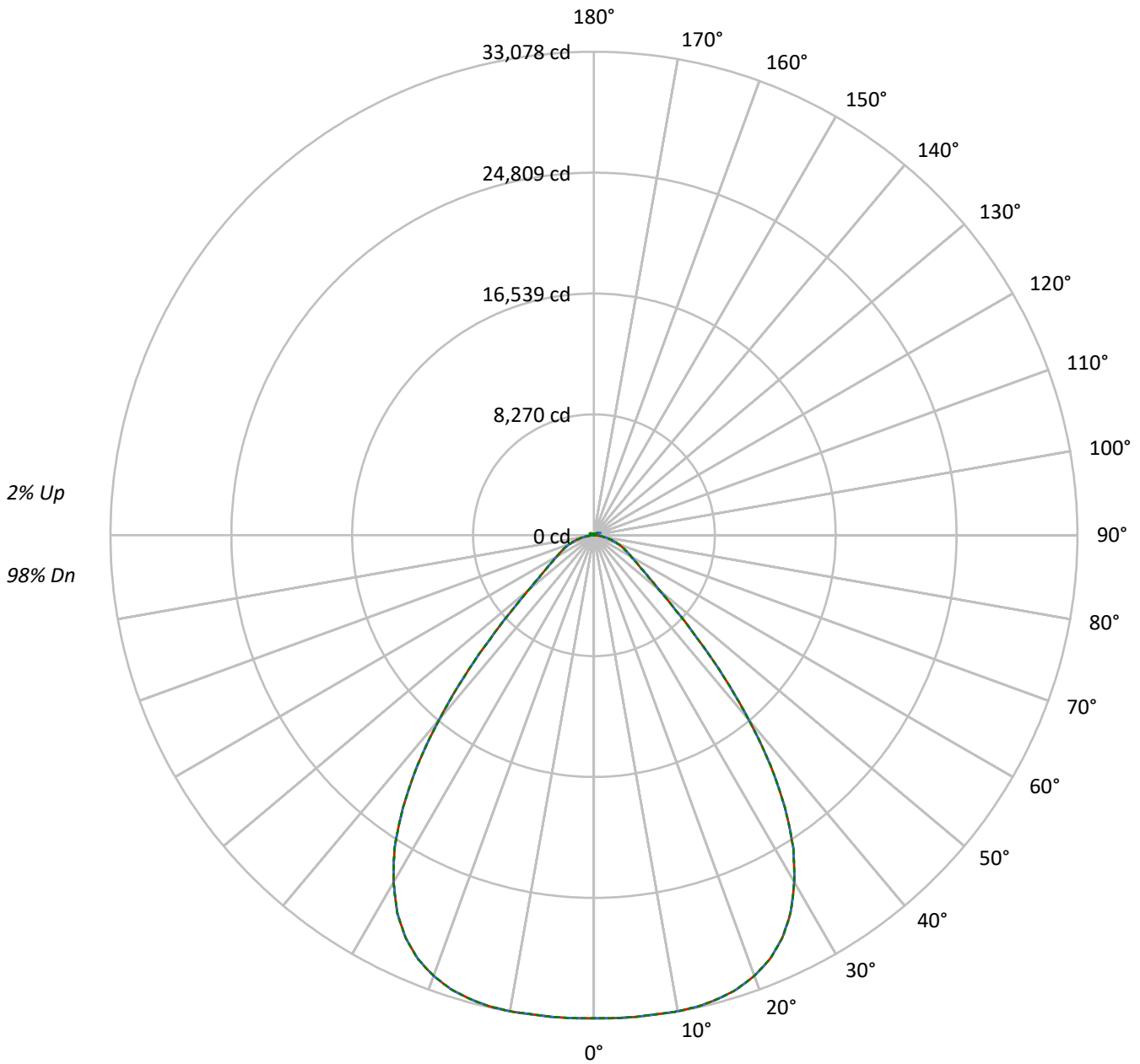
Test Method: LM-79-2019  
Report Number: P1436187  
REPORT IS A COMBINATION OF REPORTS P1436115 AND P1431635  
Test Lab: INNOVATION CENTER  
Issue Date: 3/25/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: METALUX  
Catalog Number: EHBR1-60-UNV-M-L830-UPL12  
Description: Elevate Round Highbay at, 60000 lumens, 3000K 80CRI LEDs with M lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 57031.9 lumens  
Efficiency: N/A  
Efficacy: 168.8 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.15  
Luminous Opening: Vertical Cylinder (Dia: 1.71' x H: 0.1')  
CIE Type: Direct  
  
Input Watts (W): 337.8  
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: 24 FT

TEST NUMBER: P1436187  
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### Luminous Intensity Polar Plot



— 0°-180°    - - 45°-225°    - - - 90°-270°



TEST NUMBER: P1436187

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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  | 0  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 98 |
| 1   | 111 | 108 | 104 | 101 | 108 | 105 | 102 | 100 | 101 | 98  | 96  | 97  | 95  | 93  | 93  | 91  | 90  | 93  | 91  | 90  | 88 |
| 2   | 104 | 97  | 92  | 88  | 101 | 95  | 91  | 87  | 92  | 88  | 84  | 88  | 85  | 82  | 85  | 83  | 80  | 85  | 83  | 80  | 78 |
| 3   | 97  | 88  | 82  | 77  | 94  | 87  | 81  | 76  | 84  | 79  | 75  | 81  | 77  | 73  | 78  | 75  | 72  | 78  | 75  | 72  | 70 |
| 4   | 90  | 81  | 74  | 68  | 88  | 79  | 73  | 68  | 77  | 71  | 67  | 74  | 70  | 66  | 72  | 68  | 65  | 72  | 68  | 65  | 63 |
| 5   | 84  | 74  | 67  | 61  | 82  | 73  | 66  | 61  | 71  | 65  | 60  | 69  | 63  | 59  | 67  | 62  | 59  | 67  | 62  | 59  | 57 |
| 6   | 79  | 68  | 60  | 55  | 77  | 67  | 60  | 55  | 65  | 59  | 54  | 63  | 58  | 54  | 62  | 57  | 53  | 62  | 57  | 53  | 51 |
| 7   | 74  | 63  | 55  | 50  | 72  | 62  | 55  | 50  | 60  | 54  | 49  | 59  | 53  | 49  | 57  | 52  | 49  | 57  | 52  | 49  | 47 |
| 8   | 70  | 58  | 51  | 46  | 68  | 57  | 50  | 46  | 56  | 50  | 45  | 55  | 49  | 45  | 53  | 48  | 45  | 53  | 48  | 45  | 43 |
| 9   | 65  | 54  | 47  | 42  | 64  | 53  | 46  | 42  | 52  | 46  | 42  | 51  | 45  | 41  | 50  | 45  | 41  | 50  | 45  | 41  | 39 |
| 10  | 62  | 50  | 43  | 39  | 60  | 50  | 43  | 39  | 49  | 43  | 38  | 48  | 42  | 38  | 47  | 42  | 38  | 47  | 42  | 38  | 36 |

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

|     | 0°     | 45°    | 90°    |
|-----|--------|--------|--------|
| 0°  | 155184 | 155184 | 155184 |
| 5°  | 154919 | 154919 | 154919 |
| 10° | 155646 | 155646 | 155646 |
| 15° | 156540 | 156540 | 156540 |
| 20° | 156067 | 156067 | 156067 |
| 25° | 152423 | 152423 | 152423 |
| 30° | 142526 | 142526 | 142526 |
| 35° | 124127 | 124127 | 124127 |
| 40° | 95129  | 95129  | 95129  |
| 45° | 62145  | 62145  | 62145  |
| 50° | 39177  | 39177  | 39177  |
| 55° | 29204  | 29204  | 29204  |
| 60° | 24587  | 24587  | 24587  |
| 65° | 22357  | 22357  | 22357  |
| 70° | 20367  | 20367  | 20367  |
| 75° | 17435  | 17435  | 17435  |
| 80° | 13426  | 13426  | 13426  |
| 85° | 7041   | 7041   | 7041   |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 62145 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 3156.2  | 5.5       |
| 10°-20°   | 9268.6  | 16.3      |
| 20°-30°   | 13907.3 | 24.4      |
| 30°-40°   | 13992.2 | 24.5      |
| 40°-50°   | 8009.5  | 14.0      |
| 50°-60°   | 3663.3  | 6.4       |
| 60°-70°   | 2324.3  | 4.1       |
| 70°-80°   | 1303.8  | 2.3       |
| 80°-90°   | 307.8   | 0.5       |
| 90°-100°  | 31.3    | 0.1       |
| 100°-110° | 196.4   | 0.3       |
| 110°-120° | 351.1   | 0.6       |
| 120°-130° | 206.0   | 0.4       |
| 130°-140° | 126.4   | 0.2       |
| 140°-150° | 87.7    | 0.2       |
| 150°-160° | 56.9    | 0.1       |
| 160°-170° | 32.4    | 0.1       |
| 170°-180° | 10.7    | 0.0       |
| 0°-30°    | 26332.1 | 46.2      |
| 0°-40°    | 40324.3 | 70.7      |
| 0°-60°    | 51997.1 | 91.2      |
| 0°-90°    | 55933.0 | 98.1      |
| 90°-120°  | 578.8   | 1.0       |
| 90°-150°  | 998.9   | 1.8       |
| 90°-180°  | 1099.0  | 1.9       |
| 0°-180°   | 57031.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°    | 22.5° | 45°   | 67.5° | 90°   | Flux  |
|------|-------|-------|-------|-------|-------|-------|
| 0°   | 33045 | 33045 | 33045 | 33045 | 33045 |       |
| 5°   | 33078 | 33078 | 33078 | 33078 | 33078 | 3156  |
| 15°  | 32841 | 32841 | 32841 | 32841 | 32841 | 9269  |
| 25°  | 30439 | 30439 | 30439 | 30439 | 30439 | 13907 |
| 35°  | 22782 | 22782 | 22782 | 22782 | 22782 | 13992 |
| 45°  | 10055 | 10055 | 10055 | 10055 | 10055 | 8009  |
| 55°  | 3947  | 3947  | 3947  | 3947  | 3947  | 3663  |
| 65°  | 2334  | 2334  | 2334  | 2334  | 2334  | 2324  |
| 75°  | 1228  | 1228  | 1228  | 1228  | 1228  | 1304  |
| 85°  | 242   | 242   | 242   | 242   | 242   | 296   |
| 90°  | 8     | 13    | 23    | 14    | 8     | 13    |
| 95°  | 14    | 23    | 51    | 25    | 16    | 13    |
| 105° | 69    | 135   | 345   | 149   | 91    | 92    |
| 115° | 316   | 332   | 408   | 391   | 389   | 291   |
| 125° | 228   | 213   | 218   | 221   | 248   | 208   |
| 135° | 166   | 161   | 167   | 157   | 156   | 130   |
| 145° | 136   | 135   | 143   | 141   | 140   | 86    |
| 155° | 120   | 118   | 124   | 124   | 124   | 56    |
| 165° | 112   | 112   | 115   | 115   | 114   | 32    |
| 175° | 111   | 111   | 113   | 113   | 113   | 11    |
| 180° | 112   | 112   | 112   | 112   | 112   |       |



TEST NUMBER: P1436187

CATALOG NUMBER: EHBR1-60-UNV-M-L830-UPL12

**CANDELA DISTRIBUTION (FULL):**

|        | 0°      | 22.5°   | 45°     | 67.5°   | 90°     |
|--------|---------|---------|---------|---------|---------|
| 0°     | 33045.4 | 33045.4 | 33045.4 | 33045.4 | 33045.4 |
| 2.5°   | 33061.6 | 33061.6 | 33061.6 | 33061.6 | 33061.6 |
| 5°     | 33077.7 | 33077.7 | 33077.7 | 33077.7 | 33077.7 |
| 7.5°   | 33054.9 | 33054.9 | 33054.9 | 33054.9 | 33054.9 |
| 10°    | 33069.1 | 33069.1 | 33069.1 | 33069.1 | 33069.1 |
| 12.5°  | 33012.4 | 33012.4 | 33012.4 | 33012.4 | 33012.4 |
| 15°    | 32841.2 | 32841.2 | 32841.2 | 32841.2 | 32841.2 |
| 17.5°  | 32558.5 | 32558.5 | 32558.5 | 32558.5 | 32558.5 |
| 20°    | 32076.3 | 32076.3 | 32076.3 | 32076.3 | 32076.3 |
| 22.5°  | 31413.5 | 31413.5 | 31413.5 | 31413.5 | 31413.5 |
| 25°    | 30438.7 | 30438.7 | 30438.7 | 30438.7 | 30438.7 |
| 27.5°  | 29127.2 | 29127.2 | 29127.2 | 29127.2 | 29127.2 |
| 30°    | 27414.8 | 27414.8 | 27414.8 | 27414.8 | 27414.8 |
| 32.5°  | 25387.6 | 25387.6 | 25387.6 | 25387.6 | 25387.6 |
| 35°    | 22781.7 | 22781.7 | 22781.7 | 22781.7 | 22781.7 |
| 37.5°  | 19829.8 | 19829.8 | 19829.8 | 19829.8 | 19829.8 |
| 40°    | 16488.3 | 16488.3 | 16488.3 | 16488.3 | 16488.3 |
| 42.5°  | 13176.0 | 13176.0 | 13176.0 | 13176.0 | 13176.0 |
| 45°    | 10054.8 | 10054.8 | 10054.8 | 10054.8 | 10054.8 |
| 47.5°  | 7569.0  | 7569.0  | 7569.0  | 7569.0  | 7569.0  |
| 50°    | 5838.7  | 5838.7  | 5838.7  | 5838.7  | 5838.7  |
| 52.5°  | 4717.3  | 4717.3  | 4717.3  | 4717.3  | 4717.3  |
| 55°    | 3946.6  | 3946.6  | 3946.6  | 3946.6  | 3946.6  |
| 57.5°  | 3379.4  | 3379.4  | 3379.4  | 3379.4  | 3379.4  |
| 60°    | 2955.7  | 2955.7  | 2955.7  | 2955.7  | 2955.7  |
| 62.5°  | 2628.6  | 2628.6  | 2628.6  | 2628.6  | 2628.6  |
| 65°    | 2333.6  | 2333.6  | 2333.6  | 2333.6  | 2333.6  |
| 67.5°  | 2062.2  | 2062.2  | 2062.2  | 2062.2  | 2062.2  |
| 70°    | 1787.1  | 1787.1  | 1787.1  | 1787.1  | 1787.1  |
| 72.5°  | 1510.0  | 1510.0  | 1510.0  | 1510.0  | 1510.0  |
| 75°    | 1228.2  | 1228.2  | 1228.2  | 1228.2  | 1228.2  |
| 77.5°  | 960.7   | 960.7   | 960.7   | 960.7   | 960.7   |
| 80°    | 706.3   | 706.3   | 706.3   | 706.3   | 706.3   |
| 82.5°  | 460.5   | 460.5   | 460.5   | 460.5   | 460.5   |
| 85°    | 242.0   | 242.0   | 242.0   | 242.0   | 242.0   |
| 87.5°  | 69.0    | 69.0    | 69.0    | 69.0    | 69.0    |
| 90°    | 8.1     | 13.2    | 22.7    | 14.4    | 8.1     |
| 92.5°  | 12.0    | 20.1    | 36.5    | 18.8    | 10.7    |
| 95°    | 13.9    | 23.2    | 51.0    | 25.2    | 15.7    |
| 97.5°  | 17.6    | 25.8    | 58.5    | 30.8    | 24.5    |
| 100°   | 23.2    | 30.2    | 91.2    | 37.7    | 32.7    |
| 102.5° | 39.6    | 64.2    | 193.8   | 71.1    | 49.7    |
| 105°   | 68.6    | 135.3   | 345.4   | 149.1   | 90.6    |
| 107.5° | 118.9   | 242.2   | 455.4   | 264.2   | 171.8   |
| 110°   | 222.1   | 321.5   | 477.5   | 363.0   | 274.9   |



TEST NUMBER: P1436187

CATALOG NUMBER: EHBR1-60-UNV-M-L830-UPL12

**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 300.1 | 345.4 | 457.4 | 400.7 | 357.9 |
| 115°   | 315.9 | 332.2 | 408.3 | 391.3 | 388.8 |
| 117.5° | 305.1 | 303.2 | 346.7 | 351.6 | 375.6 |
| 120°   | 282.5 | 269.9 | 289.3 | 307.0 | 339.1 |
| 122.5° | 254.1 | 239.0 | 247.9 | 261.1 | 293.2 |
| 125°   | 227.7 | 212.6 | 218.3 | 221.4 | 248.5 |
| 127.5° | 204.5 | 194.4 | 197.6 | 193.8 | 210.8 |
| 130°   | 188.7 | 179.9 | 184.3 | 175.5 | 183.7 |
| 132.5° | 175.5 | 169.8 | 174.9 | 164.2 | 166.7 |
| 135°   | 166.1 | 161.0 | 166.7 | 156.6 | 156.1 |
| 137.5° | 157.9 | 153.5 | 159.1 | 151.7 | 149.7 |
| 140°   | 150.3 | 146.6 | 152.9 | 147.3 | 145.9 |
| 142.5° | 142.2 | 139.7 | 147.3 | 143.4 | 142.2 |
| 145°   | 136.5 | 134.6 | 142.8 | 140.9 | 140.3 |
| 147.5° | 131.5 | 130.2 | 137.8 | 137.1 | 137.1 |
| 150°   | 127.1 | 125.8 | 133.4 | 132.7 | 133.4 |
| 152.5° | 122.7 | 121.4 | 128.3 | 127.7 | 128.3 |
| 155°   | 119.5 | 118.3 | 123.9 | 123.9 | 123.9 |
| 157.5° | 117.0 | 116.3 | 120.8 | 120.8 | 120.8 |
| 160°   | 115.1 | 114.5 | 118.3 | 118.3 | 117.7 |
| 162.5° | 113.2 | 112.6 | 117.0 | 116.3 | 116.3 |
| 165°   | 111.9 | 111.9 | 115.1 | 115.1 | 114.5 |
| 167.5° | 111.9 | 111.4 | 114.5 | 114.5 | 113.9 |
| 170°   | 111.4 | 111.4 | 113.9 | 113.2 | 112.6 |
| 172.5° | 111.4 | 111.4 | 113.9 | 113.2 | 112.6 |
| 175°   | 110.7 | 110.7 | 112.6 | 112.6 | 112.6 |
| 177.5° | 111.4 | 111.4 | 112.6 | 112.6 | 111.9 |
| 180°   | 111.9 | 111.9 | 111.9 | 111.9 | 111.9 |



TEST NUMBER: P1436187  
 CATALOG NUMBER: EHBR1-60-UNV-M-L830-UPL12

**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 20.25            | 21.49 | 20.65 | 21.84 | 22.21 | 20.25          | 21.49 | 20.65 | 21.84 | 22.21 |
|                 | 3H   | 21.74            | 22.84 | 22.15 | 23.21 | 23.62 | 21.74          | 22.84 | 22.15 | 23.21 | 23.62 |
|                 | 4H   | 22.26            | 23.29 | 22.70 | 23.68 | 24.11 | 22.26          | 23.29 | 22.70 | 23.68 | 24.11 |
|                 | 6H   | 22.59            | 23.53 | 23.04 | 23.94 | 24.38 | 22.59          | 23.53 | 23.04 | 23.94 | 24.38 |
|                 | 8H   | 22.66            | 23.55 | 23.12 | 23.98 | 24.44 | 22.66          | 23.55 | 23.12 | 23.98 | 24.44 |
|                 | 12H  | 22.67            | 23.53 | 23.14 | 23.95 | 24.43 | 22.67          | 23.53 | 23.14 | 23.95 | 24.43 |
| 4H              | 2H   | 20.69            | 21.72 | 21.13 | 22.11 | 22.54 | 20.69          | 21.72 | 21.13 | 22.11 | 22.54 |
|                 | 3H   | 22.39            | 23.23 | 22.84 | 23.68 | 24.13 | 22.39          | 23.23 | 22.84 | 23.68 | 24.13 |
|                 | 4H   | 23.02            | 23.78 | 23.49 | 24.24 | 24.73 | 23.02          | 23.78 | 23.49 | 24.24 | 24.73 |
|                 | 6H   | 23.45            | 24.10 | 23.95 | 24.59 | 25.10 | 23.45          | 24.10 | 23.95 | 24.59 | 25.10 |
|                 | 8H   | 23.55            | 24.15 | 24.05 | 24.64 | 25.15 | 23.55          | 24.15 | 24.05 | 24.64 | 25.15 |
|                 | 12H  | 23.58            | 24.11 | 24.10 | 24.63 | 25.15 | 23.58          | 24.11 | 24.10 | 24.63 | 25.15 |
| 8H              | 4H   | 23.20            | 23.81 | 23.71 | 24.29 | 24.81 | 23.20          | 23.81 | 23.71 | 24.29 | 24.81 |
|                 | 6H   | 23.71            | 24.21 | 24.25 | 24.74 | 25.27 | 23.71          | 24.21 | 24.25 | 24.74 | 25.27 |
|                 | 8H   | 23.85            | 24.30 | 24.41 | 24.85 | 25.38 | 23.85          | 24.30 | 24.41 | 24.85 | 25.38 |
|                 | 12H  | 23.92            | 24.31 | 24.47 | 24.84 | 25.46 | 23.92          | 24.31 | 24.47 | 24.84 | 25.46 |
| 12H             | 4H   | 23.19            | 23.73 | 23.71 | 24.25 | 24.77 | 23.19          | 23.73 | 23.71 | 24.25 | 24.77 |
|                 | 6H   | 23.72            | 24.16 | 24.27 | 24.71 | 25.25 | 23.72          | 24.16 | 24.27 | 24.71 | 25.25 |
|                 | 8H   | 23.89            | 24.28 | 24.44 | 24.81 | 25.43 | 23.89          | 24.28 | 24.44 | 24.81 | 25.43 |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-2

Test Date: 07/31/2025

Luminaire Tested: EHBR-60-L830-N

Data in this report applies to families of products including EHBR-60-L830-N

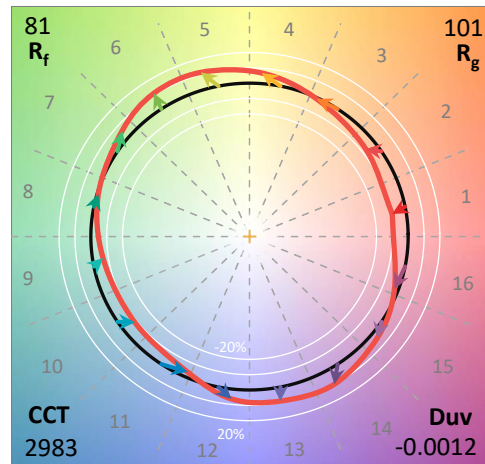
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2506-472-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/05/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Metalux  
 Catalog Number: **EHBR-60-L830-N**  
 Description: Elevate Round Highbay at, 60000 lumens, 3000K 80CRI LEDs with N lens

**Spectral Parameters**

CCT (K): 2983  
 CIE u': 0.2516  
 CIE v': 0.5201  
 Duv: -0.0012  
 CIE x: 0.4364  
 CIE y: 0.4010  
 CIE z: 0.1626  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 583  
 Purity: 51.34918  
 Rf: 81.2  
 Rg: 101.5

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 83.4 |      |      |
| R1:       | 84.0 | R9:  | 29.4 |
| R2:       | 87.5 | R10: | 68.6 |
| R3:       | 88.9 | R11: | 82.2 |
| R4:       | 83.8 | R12: | 61.6 |
| R5:       | 81.9 | R13: | 83.9 |
| R6:       | 83.1 | R14: | 92.5 |
| R7:       | 87.1 | R15: | 79.8 |
| R8:       | 70.9 |      |      |



**Test Conditions**

Stabilization Time: 38M  
 Operation Time: 1H 38M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-2

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 6/16/2025        | 12/16/2025           |
| Power Meter                    | XITRON INXT2011004    | 1/21/2025        | 1/21/2026            |
| AC Power Source                | CHROMA 61603 IN0063   | 10/22/2024       | 10/22/2025           |
| DC Power Source                | AGILENT E3634A IN0208 | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | ONSET IN0085          | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | ONSET IN0046          | 10/22/2024       | 10/22/2025           |

REPORT NUMBER: SP1-2506-472-2

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



CCT = 2983K  
 CIE x = 0.4364  
 CIE y = 0.4010  
 Duv = -0.0012

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2506-472-2

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 43                       | NR            | 620    | 294                      | NR            | 750    | 6                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 59                       | NR            | 625    | 294                      | NR            | 755    | 5                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 81                       | NR            | 630    | 1000                     | NR            | 760    | 4                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 109                      | NR            | 635    | 637                      | NR            | 765    | 4                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 135                      | NR            | 640    | 175                      | NR            | 770    | 3                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 160                      | NR            | 645    | 171                      | NR            | 775    | 3                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 180                      | NR            | 650    | 146                      | NR            | 780    | 2                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 195                      | NR            | 655    | 119                      | NR            | 785    | 2                        | NR            | 915    | 0                        | NR            |
| 400    | 2                        | NR            | 530    | 207                      | NR            | 660    | 99                       | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 3                        | NR            | 535    | 218                      | NR            | 665    | 82                       | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 5                        | NR            | 540    | 227                      | NR            | 670    | 76                       | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 10                       | NR            | 545    | 237                      | NR            | 675    | 61                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 20                       | NR            | 550    | 247                      | NR            | 680    | 52                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 35                       | NR            | 555    | 259                      | NR            | 685    | 44                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 58                       | NR            | 560    | 271                      | NR            | 690    | 38                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 90                       | NR            | 565    | 283                      | NR            | 695    | 33                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 135                      | NR            | 570    | 293                      | NR            | 700    | 27                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 204                      | NR            | 575    | 303                      | NR            | 705    | 24                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 233                      | NR            | 580    | 310                      | NR            | 710    | 20                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 153                      | NR            | 585    | 313                      | NR            | 715    | 17                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 98                       | NR            | 590    | 314                      | NR            | 720    | 15                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 76                       | NR            | 595    | 310                      | NR            | 725    | 13                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 53                       | NR            | 600    | 307                      | NR            | 730    | 11                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 39                       | NR            | 605    | 303                      | NR            | 735    | 9                        | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 35                       | NR            | 610    | 331                      | NR            | 740    | 8                        | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 36                       | NR            | 615    | 353                      | NR            | 745    | 7                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-472-2

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.27**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 43                       | NR            | 620    | 294                      | NR            | 750    | 6                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 59                       | NR            | 625    | 294                      | NR            | 755    | 5                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 81                       | NR            | 630    | 1000                     | NR            | 760    | 4                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 109                      | NR            | 635    | 637                      | NR            | 765    | 4                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 135                      | NR            | 640    | 175                      | NR            | 770    | 3                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 160                      | NR            | 645    | 171                      | NR            | 775    | 3                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 180                      | NR            | 650    | 146                      | NR            | 780    | 2                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 195                      | NR            | 655    | 119                      | NR            | 785    | 2                        | NR            | 915    | 0                        | NR            |
| 400    | 2                        | NR            | 530    | 207                      | NR            | 660    | 99                       | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 3                        | NR            | 535    | 218                      | NR            | 665    | 82                       | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 5                        | NR            | 540    | 227                      | NR            | 670    | 76                       | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 10                       | NR            | 545    | 237                      | NR            | 675    | 61                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 20                       | NR            | 550    | 247                      | NR            | 680    | 52                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 35                       | NR            | 555    | 259                      | NR            | 685    | 44                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 58                       | NR            | 560    | 271                      | NR            | 690    | 38                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 90                       | NR            | 565    | 283                      | NR            | 695    | 33                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 135                      | NR            | 570    | 293                      | NR            | 700    | 27                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 204                      | NR            | 575    | 303                      | NR            | 705    | 24                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 233                      | NR            | 580    | 310                      | NR            | 710    | 20                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 153                      | NR            | 585    | 313                      | NR            | 715    | 17                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 98                       | NR            | 590    | 314                      | NR            | 720    | 15                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 76                       | NR            | 595    | 310                      | NR            | 725    | 13                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 53                       | NR            | 600    | 307                      | NR            | 730    | 11                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 39                       | NR            | 605    | 303                      | NR            | 735    | 9                        | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 35                       | NR            | 610    | 331                      | NR            | 740    | 8                        | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 36                       | NR            | 615    | 353                      | NR            | 745    | 7                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-472-2

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.34**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 43                       | NR            | 620    | 294                      | NR            | 750    | 6                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 59                       | NR            | 625    | 294                      | NR            | 755    | 5                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 81                       | NR            | 630    | 1000                     | NR            | 760    | 4                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 109                      | NR            | 635    | 637                      | NR            | 765    | 4                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 135                      | NR            | 640    | 175                      | NR            | 770    | 3                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 160                      | NR            | 645    | 171                      | NR            | 775    | 3                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 180                      | NR            | 650    | 146                      | NR            | 780    | 2                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 195                      | NR            | 655    | 119                      | NR            | 785    | 2                        | NR            | 915    | 0                        | NR            |
| 400    | 2                        | NR            | 530    | 207                      | NR            | 660    | 99                       | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 3                        | NR            | 535    | 218                      | NR            | 665    | 82                       | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 5                        | NR            | 540    | 227                      | NR            | 670    | 76                       | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 10                       | NR            | 545    | 237                      | NR            | 675    | 61                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 20                       | NR            | 550    | 247                      | NR            | 680    | 52                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 35                       | NR            | 555    | 259                      | NR            | 685    | 44                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 58                       | NR            | 560    | 271                      | NR            | 690    | 38                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 90                       | NR            | 565    | 283                      | NR            | 695    | 33                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 135                      | NR            | 570    | 293                      | NR            | 700    | 27                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 204                      | NR            | 575    | 303                      | NR            | 705    | 24                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 233                      | NR            | 580    | 310                      | NR            | 710    | 20                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 153                      | NR            | 585    | 313                      | NR            | 715    | 17                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 98                       | NR            | 590    | 314                      | NR            | 720    | 15                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 76                       | NR            | 595    | 310                      | NR            | 725    | 13                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 53                       | NR            | 600    | 307                      | NR            | 730    | 11                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 39                       | NR            | 605    | 303                      | NR            | 735    | 9                        | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 35                       | NR            | 610    | 331                      | NR            | 740    | 8                        | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 36                       | NR            | 615    | 353                      | NR            | 745    | 7                        | NR            | 875    | 0                        | NR            |        |                          |               |

**Summary**

$R_f = 81.2$   
 $R_g = 101.5$   
 CIE  $R_a = 83.4$   
 $R_9 = 29.4$



**Color Vector Graphics**



**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 71 | CES51 = 89 | CES76 = 65 |
| CES02 = 63 | CES27 = 89 | CES52 = 89 | CES77 = 82 |
| CES03 = 31 | CES28 = 86 | CES53 = 80 | CES78 = 67 |
| CES04 = 70 | CES29 = 68 | CES54 = 92 | CES79 = 89 |
| CES05 = 50 | CES30 = 77 | CES55 = 90 | CES80 = 85 |
| CES06 = 51 | CES31 = 70 | CES56 = 81 | CES81 = 75 |
| CES07 = 43 | CES32 = 64 | CES57 = 79 | CES82 = 93 |
| CES08 = 41 | CES33 = 74 | CES58 = 81 | CES83 = 89 |
| CES09 = 29 | CES34 = 76 | CES59 = 92 | CES84 = 91 |
| CES10 = 76 | CES35 = 87 | CES60 = 96 | CES85 = 81 |
| CES11 = 59 | CES36 = 99 | CES61 = 91 | CES86 = 74 |
| CES12 = 65 | CES37 = 81 | CES62 = 93 | CES87 = 83 |
| CES13 = 44 | CES38 = 83 | CES63 = 79 | CES88 = 86 |
| CES14 = 74 | CES39 = 94 | CES64 = 81 | CES89 = 74 |
| CES15 = 72 | CES40 = 89 | CES65 = 78 | CES90 = 85 |
| CES16 = 48 | CES41 = 88 | CES66 = 76 | CES91 = 87 |
| CES17 = 50 | CES42 = 80 | CES67 = 74 | CES92 = 73 |
| CES18 = 57 | CES43 = 75 | CES68 = 79 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 83 | CES94 = 64 |
| CES20 = 67 | CES45 = 83 | CES70 = 72 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 70 | CES96 = 86 |
| CES22 = 79 | CES47 = 79 | CES72 = 90 | CES97 = 85 |
| CES23 = 92 | CES48 = 78 | CES73 = 65 | CES98 = 83 |
| CES24 = 91 | CES49 = 79 | CES74 = 94 | CES99 = 82 |
| CES25 = 72 | CES50 = 88 | CES75 = 70 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)