

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: P1436389

Luminaire Tested: EHBR1-48-UNV-M-L850-UPL18

Issue Date: 3/25/2026

Test Information

Test Method: LM-79-2019
Report Number: P1436389
REPORT IS A COMBINATION OF REPORTS P1436101 AND P1431635
Test Lab: INNOVATION CENTER
Issue Date: 3/25/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: METALUX
Catalog Number: EHBR1-48-UNV-M-L850-UPL18
Description: Elevate Round Highbay at, 48000 lumens, 5000K 80CRI LEDs with M lens
Light Source: -
Ballast/Driver: -

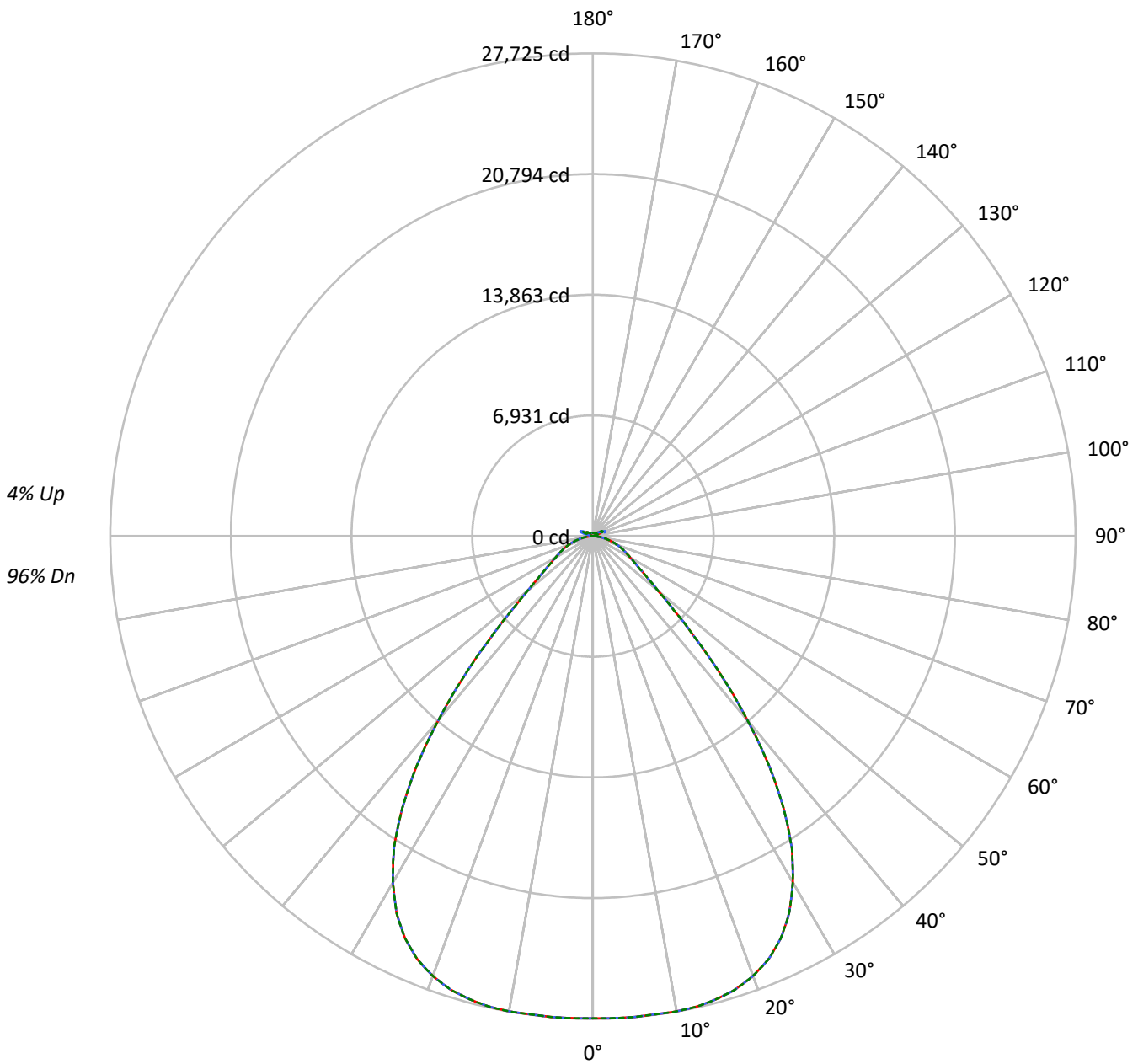
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 48642.2 lumens
Efficiency: N/A
Efficacy: 179.8 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): 270.5
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: 24 FT

TEST NUMBER: P1436389
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Luminous Intensity Polar Plot



— 0°-180° - - 45°-225° - - - 90°-270°



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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 | 104 | 104 | 104 | 99 | 99 | 99 | | 96 |
| 1 | 111 | 107 | 104 | 101 | 108 | 105 | 102 | 99 | 100 | 97 | 95 | 95 | 94 | 92 | 91 | 90 | 89 | | 86 |
| 2 | 103 | 97 | 92 | 87 | 101 | 95 | 90 | 86 | 91 | 87 | 84 | 87 | 84 | 81 | 84 | 81 | 79 | | 77 |
| 3 | 96 | 88 | 82 | 77 | 94 | 86 | 80 | 76 | 83 | 78 | 74 | 80 | 76 | 72 | 77 | 74 | 71 | | 69 |
| 4 | 90 | 80 | 73 | 68 | 87 | 79 | 72 | 67 | 76 | 70 | 66 | 73 | 69 | 65 | 71 | 67 | 64 | | 62 |
| 5 | 84 | 73 | 66 | 61 | 82 | 72 | 65 | 60 | 70 | 64 | 59 | 68 | 63 | 58 | 66 | 61 | 58 | | 56 |
| 6 | 78 | 67 | 60 | 55 | 77 | 66 | 59 | 54 | 64 | 58 | 54 | 63 | 57 | 53 | 61 | 56 | 52 | | 51 |
| 7 | 74 | 62 | 55 | 50 | 72 | 61 | 54 | 49 | 60 | 53 | 49 | 58 | 52 | 48 | 56 | 52 | 48 | | 46 |
| 8 | 69 | 58 | 50 | 45 | 68 | 57 | 50 | 45 | 55 | 49 | 45 | 54 | 48 | 44 | 53 | 48 | 44 | | 42 |
| 9 | 65 | 53 | 46 | 42 | 64 | 53 | 46 | 41 | 51 | 45 | 41 | 50 | 45 | 41 | 49 | 44 | 40 | | 39 |
| 10 | 61 | 50 | 43 | 38 | 60 | 49 | 43 | 38 | 48 | 42 | 38 | 47 | 41 | 38 | 46 | 41 | 37 | | 36 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 130073 | 130073 | 130073 |
| 5° | 129850 | 129850 | 129850 |
| 10° | 130460 | 130460 | 130460 |
| 15° | 131209 | 131209 | 131209 |
| 20° | 130813 | 130813 | 130813 |
| 25° | 127758 | 127758 | 127758 |
| 30° | 119463 | 119463 | 119463 |
| 35° | 104041 | 104041 | 104041 |
| 40° | 79735 | 79735 | 79735 |
| 45° | 52089 | 52089 | 52089 |
| 50° | 32837 | 32837 | 32837 |
| 55° | 24478 | 24478 | 24478 |
| 60° | 20608 | 20608 | 20608 |
| 65° | 18739 | 18739 | 18739 |
| 70° | 17071 | 17071 | 17071 |
| 75° | 14614 | 14614 | 14614 |
| 80° | 11253 | 11253 | 11253 |
| 85° | 5901 | 5901 | 5901 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 52089 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 2645.4 | 5.4 |
| 10°-20° | 7768.8 | 16.0 |
| 20°-30° | 11656.8 | 24.0 |
| 30°-40° | 11728.0 | 24.1 |
| 40°-50° | 6713.4 | 13.8 |
| 50°-60° | 3070.6 | 6.3 |
| 60°-70° | 1948.2 | 4.0 |
| 70°-80° | 1092.8 | 2.2 |
| 80°-90° | 259.5 | 0.5 |
| 90°-100° | 50.1 | 0.1 |
| 100°-110° | 314.2 | 0.6 |
| 110°-120° | 561.9 | 1.2 |
| 120°-130° | 329.7 | 0.7 |
| 130°-140° | 202.3 | 0.4 |
| 140°-150° | 140.3 | 0.3 |
| 150°-160° | 91.1 | 0.2 |
| 160°-170° | 51.9 | 0.1 |
| 170°-180° | 17.2 | 0.0 |
| 0°-30° | 22071.1 | 45.4 |
| 0°-40° | 33799.1 | 69.5 |
| 0°-60° | 43583.0 | 89.6 |
| 0°-90° | 46883.5 | 96.4 |
| 90°-120° | 926.2 | 1.9 |
| 90°-150° | 1598.5 | 3.3 |
| 90°-180° | 1759.0 | 3.6 |
| 0°-180° | 48642.2 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-------|-------|-------|-------|-------|-------|
| 0° | 27698 | 27698 | 27698 | 27698 | 27698 | |
| 5° | 27725 | 27725 | 27725 | 27725 | 27725 | 2645 |
| 15° | 27527 | 27527 | 27527 | 27527 | 27527 | 7769 |
| 25° | 25513 | 25513 | 25513 | 25513 | 25513 | 11657 |
| 35° | 19095 | 19095 | 19095 | 19095 | 19095 | 11728 |
| 45° | 8428 | 8428 | 8428 | 8428 | 8428 | 6713 |
| 55° | 3308 | 3308 | 3308 | 3308 | 3308 | 3071 |
| 65° | 1956 | 1956 | 1956 | 1956 | 1956 | 1948 |
| 75° | 1030 | 1030 | 1030 | 1030 | 1030 | 1093 |
| 85° | 203 | 203 | 203 | 203 | 203 | 248 |
| 90° | 13 | 21 | 36 | 23 | 13 | 14 |
| 95° | 22 | 37 | 82 | 40 | 25 | 21 |
| 105° | 110 | 216 | 553 | 239 | 145 | 147 |
| 115° | 505 | 532 | 653 | 626 | 622 | 466 |
| 125° | 364 | 340 | 349 | 354 | 398 | 332 |
| 135° | 266 | 258 | 267 | 251 | 250 | 208 |
| 145° | 218 | 215 | 229 | 226 | 224 | 138 |
| 155° | 191 | 189 | 198 | 198 | 198 | 89 |
| 165° | 179 | 179 | 184 | 184 | 183 | 51 |
| 175° | 177 | 177 | 180 | 180 | 180 | 17 |
| 180° | 179 | 179 | 179 | 179 | 179 | |



TEST NUMBER: P1436389

CATALOG NUMBER: EHBR1-48-UNV-M-L850-UPL18

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|---------|---------|---------|---------|---------|
| 0° | 27698.1 | 27698.1 | 27698.1 | 27698.1 | 27698.1 |
| 2.5° | 27711.6 | 27711.6 | 27711.6 | 27711.6 | 27711.6 |
| 5° | 27725.0 | 27725.0 | 27725.0 | 27725.0 | 27725.0 |
| 7.5° | 27706.1 | 27706.1 | 27706.1 | 27706.1 | 27706.1 |
| 10° | 27718.0 | 27718.0 | 27718.0 | 27718.0 | 27718.0 |
| 12.5° | 27670.3 | 27670.3 | 27670.3 | 27670.3 | 27670.3 |
| 15° | 27526.9 | 27526.9 | 27526.9 | 27526.9 | 27526.9 |
| 17.5° | 27290.0 | 27290.0 | 27290.0 | 27290.0 | 27290.0 |
| 20° | 26885.8 | 26885.8 | 26885.8 | 26885.8 | 26885.8 |
| 22.5° | 26330.2 | 26330.2 | 26330.2 | 26330.2 | 26330.2 |
| 25° | 25513.2 | 25513.2 | 25513.2 | 25513.2 | 25513.2 |
| 27.5° | 24413.9 | 24413.9 | 24413.9 | 24413.9 | 24413.9 |
| 30° | 22978.6 | 22978.6 | 22978.6 | 22978.6 | 22978.6 |
| 32.5° | 21279.4 | 21279.4 | 21279.4 | 21279.4 | 21279.4 |
| 35° | 19095.2 | 19095.2 | 19095.2 | 19095.2 | 19095.2 |
| 37.5° | 16621.0 | 16621.0 | 16621.0 | 16621.0 | 16621.0 |
| 40° | 13820.1 | 13820.1 | 13820.1 | 13820.1 | 13820.1 |
| 42.5° | 11043.9 | 11043.9 | 11043.9 | 11043.9 | 11043.9 |
| 45° | 8427.8 | 8427.8 | 8427.8 | 8427.8 | 8427.8 |
| 47.5° | 6344.2 | 6344.2 | 6344.2 | 6344.2 | 6344.2 |
| 50° | 4893.9 | 4893.9 | 4893.9 | 4893.9 | 4893.9 |
| 52.5° | 3954.0 | 3954.0 | 3954.0 | 3954.0 | 3954.0 |
| 55° | 3308.0 | 3308.0 | 3308.0 | 3308.0 | 3308.0 |
| 57.5° | 2832.5 | 2832.5 | 2832.5 | 2832.5 | 2832.5 |
| 60° | 2477.4 | 2477.4 | 2477.4 | 2477.4 | 2477.4 |
| 62.5° | 2203.3 | 2203.3 | 2203.3 | 2203.3 | 2203.3 |
| 65° | 1955.9 | 1955.9 | 1955.9 | 1955.9 | 1955.9 |
| 67.5° | 1728.5 | 1728.5 | 1728.5 | 1728.5 | 1728.5 |
| 70° | 1497.9 | 1497.9 | 1497.9 | 1497.9 | 1497.9 |
| 72.5° | 1265.7 | 1265.7 | 1265.7 | 1265.7 | 1265.7 |
| 75° | 1029.5 | 1029.5 | 1029.5 | 1029.5 | 1029.5 |
| 77.5° | 805.2 | 805.2 | 805.2 | 805.2 | 805.2 |
| 80° | 592.0 | 592.0 | 592.0 | 592.0 | 592.0 |
| 82.5° | 385.9 | 385.9 | 385.9 | 385.9 | 385.9 |
| 85° | 202.8 | 202.8 | 202.8 | 202.8 | 202.8 |
| 87.5° | 57.9 | 57.9 | 57.9 | 57.9 | 57.9 |
| 90° | 13.1 | 21.1 | 36.2 | 23.2 | 13.1 |
| 92.5° | 19.2 | 32.2 | 58.3 | 30.2 | 17.1 |
| 95° | 22.1 | 37.2 | 81.5 | 40.3 | 25.1 |
| 97.5° | 28.2 | 41.3 | 93.6 | 49.3 | 39.3 |
| 100° | 37.2 | 48.3 | 146.0 | 60.4 | 52.4 |
| 102.5° | 63.5 | 102.6 | 310.1 | 113.7 | 79.6 |
| 105° | 109.7 | 216.5 | 552.7 | 238.6 | 145.0 |
| 107.5° | 190.3 | 387.6 | 728.9 | 422.9 | 274.8 |
| 110° | 355.4 | 514.4 | 764.1 | 580.9 | 440.0 |



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CATALOG NUMBER: EHBR1-48-UNV-M-L850-UPL18

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 480.2 | 552.7 | 731.9 | 641.3 | 572.9 |
| 115° | 505.4 | 531.6 | 653.4 | 626.2 | 622.2 |
| 117.5° | 488.3 | 485.2 | 554.7 | 562.7 | 601.1 |
| 120° | 452.0 | 431.9 | 463.1 | 491.3 | 542.6 |
| 122.5° | 406.8 | 382.6 | 396.6 | 417.8 | 469.1 |
| 125° | 364.4 | 340.3 | 349.3 | 354.4 | 397.6 |
| 127.5° | 327.2 | 311.1 | 316.1 | 310.1 | 337.2 |
| 130° | 302.1 | 287.9 | 295.0 | 280.9 | 294.0 |
| 132.5° | 280.9 | 271.8 | 279.9 | 262.8 | 266.8 |
| 135° | 265.8 | 257.8 | 266.8 | 250.7 | 249.7 |
| 137.5° | 252.7 | 245.7 | 254.7 | 242.6 | 239.6 |
| 140° | 240.7 | 234.6 | 244.7 | 235.6 | 233.6 |
| 142.5° | 227.5 | 223.5 | 235.6 | 229.6 | 227.5 |
| 145° | 218.5 | 215.4 | 228.6 | 225.5 | 224.5 |
| 147.5° | 210.4 | 208.4 | 220.5 | 219.4 | 219.4 |
| 150° | 203.3 | 201.4 | 213.4 | 212.5 | 213.4 |
| 152.5° | 196.4 | 194.3 | 205.4 | 204.4 | 205.4 |
| 155° | 191.2 | 189.3 | 198.3 | 198.3 | 198.3 |
| 157.5° | 187.2 | 186.2 | 193.3 | 193.3 | 193.3 |
| 160° | 184.3 | 183.2 | 189.3 | 189.3 | 188.3 |
| 162.5° | 181.2 | 180.2 | 187.2 | 186.2 | 186.2 |
| 165° | 179.2 | 179.2 | 184.3 | 184.3 | 183.2 |
| 167.5° | 179.2 | 178.2 | 183.2 | 183.2 | 182.2 |
| 170° | 178.2 | 178.2 | 182.2 | 181.2 | 180.2 |
| 172.5° | 178.2 | 178.2 | 182.2 | 181.2 | 180.2 |
| 175° | 177.2 | 177.2 | 180.2 | 180.2 | 180.2 |
| 177.5° | 178.2 | 178.2 | 180.2 | 180.2 | 179.2 |
| 180° | 179.2 | 179.2 | 179.2 | 179.2 | 179.2 |



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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 | 19.50 | 20.71 | 19.93 | 21.10 | 21.51 | 19.50 | 20.71 | 19.93 | 21.10 | 21.51 |
| | 3H | 20.99 | 22.06 | 21.43 | 22.47 | 22.93 | 20.99 | 22.06 | 21.43 | 22.47 | 22.93 |
| | 4H | 21.51 | 22.52 | 21.98 | 22.94 | 23.42 | 21.51 | 22.52 | 21.98 | 22.94 | 23.42 |
| | 6H | 21.84 | 22.76 | 22.32 | 23.20 | 23.69 | 21.84 | 22.76 | 22.32 | 23.20 | 23.69 |
| | 8H | 21.91 | 22.78 | 22.40 | 23.25 | 23.74 | 21.91 | 22.78 | 22.40 | 23.25 | 23.74 |
| | 12H | 21.92 | 22.76 | 22.42 | 23.21 | 23.73 | 21.92 | 22.76 | 22.42 | 23.21 | 23.73 |
| 4H | 2H | 19.94 | 20.95 | 20.41 | 21.37 | 21.85 | 19.94 | 20.95 | 20.41 | 21.37 | 21.85 |
| | 3H | 21.64 | 22.46 | 22.12 | 22.94 | 23.43 | 21.64 | 22.46 | 22.12 | 22.94 | 23.43 |
| | 4H | 22.27 | 23.01 | 22.77 | 23.50 | 24.03 | 22.27 | 23.01 | 22.77 | 23.50 | 24.03 |
| | 6H | 22.70 | 23.34 | 23.23 | 23.85 | 24.40 | 22.70 | 23.34 | 23.23 | 23.85 | 24.40 |
| | 8H | 22.79 | 23.39 | 23.32 | 23.90 | 24.46 | 22.79 | 23.39 | 23.32 | 23.90 | 24.46 |
| | 12H | 22.82 | 23.35 | 23.37 | 23.90 | 24.46 | 22.82 | 23.35 | 23.37 | 23.90 | 24.46 |
| 8H | 4H | 22.45 | 23.05 | 22.98 | 23.56 | 24.12 | 22.45 | 23.05 | 22.98 | 23.56 | 24.12 |
| | 6H | 22.96 | 23.45 | 23.53 | 24.01 | 24.57 | 22.96 | 23.45 | 23.53 | 24.01 | 24.57 |
| | 8H | 23.10 | 23.53 | 23.68 | 24.11 | 24.69 | 23.10 | 23.53 | 23.68 | 24.11 | 24.69 |
| | 12H | 23.17 | 23.55 | 23.74 | 24.11 | 24.76 | 23.17 | 23.55 | 23.74 | 24.11 | 24.76 |
| 12H | 4H | 22.44 | 22.96 | 22.99 | 23.51 | 24.07 | 22.44 | 22.96 | 22.99 | 23.51 | 24.07 |
| | 6H | 22.96 | 23.40 | 23.55 | 23.98 | 24.55 | 22.96 | 23.40 | 23.55 | 23.98 | 24.55 |
| | 8H | 23.14 | 23.52 | 23.71 | 24.08 | 24.73 | 23.14 | 23.52 | 23.71 | 24.08 | 24.73 |

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



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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-472-4

Test Date: 07/31/2025

Luminaire Tested: EHBR-60-L850-N

Data in this report applies to families of products including EHBR-60-L850-N

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-472-4
 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-L850-N**
 Description: Elevate Round Highbay at, 60000 lumens, 5000K 80CRI LEDs with N lens

Spectral Parameters

CCT (K): 4875
 CIE u': 0.2124
 CIE v': 0.4871
 Duv: 0.0005
 CIE x: 0.3488
 CIE y: 0.3555
 CIE z: 0.2957
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 573
 Purity: 11.33556
 Rf: 80
 Rg: 102.3

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 82.3 | | |
| R1: | 85.0 | R9: | 43.9 |
| R2: | 83.1 | R10: | 57.4 |
| R3: | 78.8 | R11: | 83.1 |
| R4: | 84.0 | R12: | 51.0 |
| R5: | 83.0 | R13: | 83.4 |
| R6: | 76.3 | R14: | 87.4 |
| R7: | 86.8 | R15: | 83.4 |
| R8: | 81.7 | | |



Test Conditions

Stabilization Time: 39M
 Operation Time: 1H 39M
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-472-4

| 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 |

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CIE 1931 Chromaticity Diagram



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



CCT = 4875K
 CIE x = 0.3488
 CIE y = 0.3555
 Duv = 0.0005

Point lies inside the ANSI 5000K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 89 | NR | 620 | 280 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 280 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 168 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 224 | NR | 635 | 626 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 275 | NR | 640 | 163 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 321 | NR | 645 | 160 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 354 | NR | 650 | 136 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 375 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 388 | NR | 660 | 93 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 10 | NR | 535 | 395 | NR | 665 | 76 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 15 | NR | 540 | 397 | NR | 670 | 72 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 28 | NR | 545 | 398 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 53 | NR | 550 | 396 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 97 | NR | 555 | 395 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 392 | NR | 690 | 37 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 261 | NR | 565 | 388 | NR | 695 | 32 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 409 | NR | 570 | 381 | NR | 700 | 27 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 637 | NR | 575 | 374 | NR | 705 | 23 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 699 | NR | 580 | 365 | NR | 710 | 20 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 436 | NR | 585 | 354 | NR | 715 | 17 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 274 | NR | 590 | 342 | NR | 720 | 15 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 205 | NR | 595 | 325 | NR | 725 | 13 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 130 | NR | 600 | 313 | NR | 730 | 11 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 90 | NR | 605 | 301 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 78 | NR | 610 | 323 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 77 | NR | 615 | 340 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.82

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 89 | NR | 620 | 280 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 280 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 168 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 224 | NR | 635 | 626 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 275 | NR | 640 | 163 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 321 | NR | 645 | 160 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 354 | NR | 650 | 136 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 375 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 388 | NR | 660 | 93 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 10 | NR | 535 | 395 | NR | 665 | 76 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 15 | NR | 540 | 397 | NR | 670 | 72 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 28 | NR | 545 | 398 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 53 | NR | 550 | 396 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 97 | NR | 555 | 395 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 392 | NR | 690 | 37 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 261 | NR | 565 | 388 | NR | 695 | 32 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 409 | NR | 570 | 381 | NR | 700 | 27 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 637 | NR | 575 | 374 | NR | 705 | 23 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 699 | NR | 580 | 365 | NR | 710 | 20 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 436 | NR | 585 | 354 | NR | 715 | 17 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 274 | NR | 590 | 342 | NR | 720 | 15 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 205 | NR | 595 | 325 | NR | 725 | 13 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 130 | NR | 600 | 313 | NR | 730 | 11 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 90 | NR | 605 | 301 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 78 | NR | 610 | 323 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 77 | NR | 615 | 340 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2506-472-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.71

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 89 | NR | 620 | 280 | NR | 750 | 6 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 121 | NR | 625 | 280 | NR | 755 | 5 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 168 | NR | 630 | 1000 | NR | 760 | 5 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 224 | NR | 635 | 626 | NR | 765 | 4 | NR | 895 | 0 | NR |
| 380 | 1 | NR | 510 | 275 | NR | 640 | 163 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 2 | NR | 515 | 321 | NR | 645 | 160 | NR | 775 | 3 | NR | 905 | 0 | NR |
| 390 | 3 | NR | 520 | 354 | NR | 650 | 136 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 5 | NR | 525 | 375 | NR | 655 | 111 | NR | 785 | 2 | NR | 915 | 0 | NR |
| 400 | 7 | NR | 530 | 388 | NR | 660 | 93 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 10 | NR | 535 | 395 | NR | 665 | 76 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 15 | NR | 540 | 397 | NR | 670 | 72 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 28 | NR | 545 | 398 | NR | 675 | 57 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 53 | NR | 550 | 396 | NR | 680 | 49 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 97 | NR | 555 | 395 | NR | 685 | 42 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 163 | NR | 560 | 392 | NR | 690 | 37 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 261 | NR | 565 | 388 | NR | 695 | 32 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 409 | NR | 570 | 381 | NR | 700 | 27 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 637 | NR | 575 | 374 | NR | 705 | 23 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 699 | NR | 580 | 365 | NR | 710 | 20 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 436 | NR | 585 | 354 | NR | 715 | 17 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 274 | NR | 590 | 342 | NR | 720 | 15 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 205 | NR | 595 | 325 | NR | 725 | 13 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 130 | NR | 600 | 313 | NR | 730 | 11 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 90 | NR | 605 | 301 | NR | 735 | 10 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 78 | NR | 610 | 323 | NR | 740 | 8 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 77 | NR | 615 | 340 | NR | 745 | 7 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 80$
 $R_g = 102.3$
 $CIE R_a = 82.3$
 $R_9 = 43.9$



Color Vector Graphics

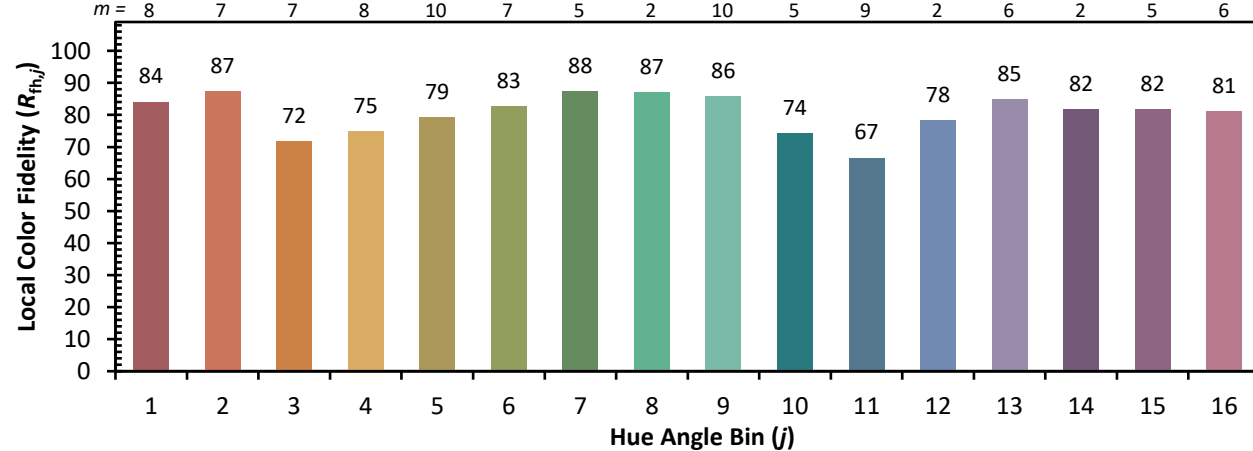
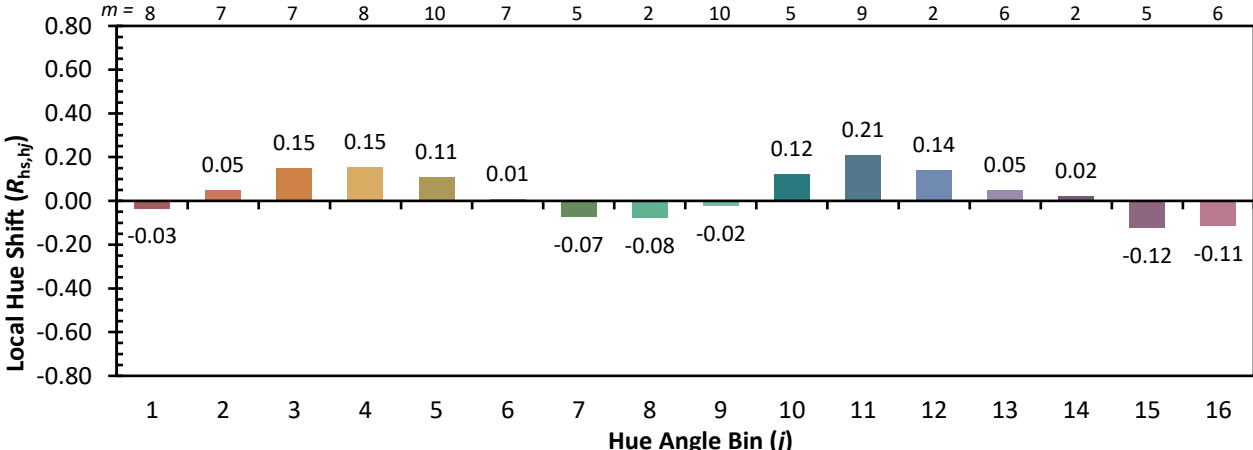
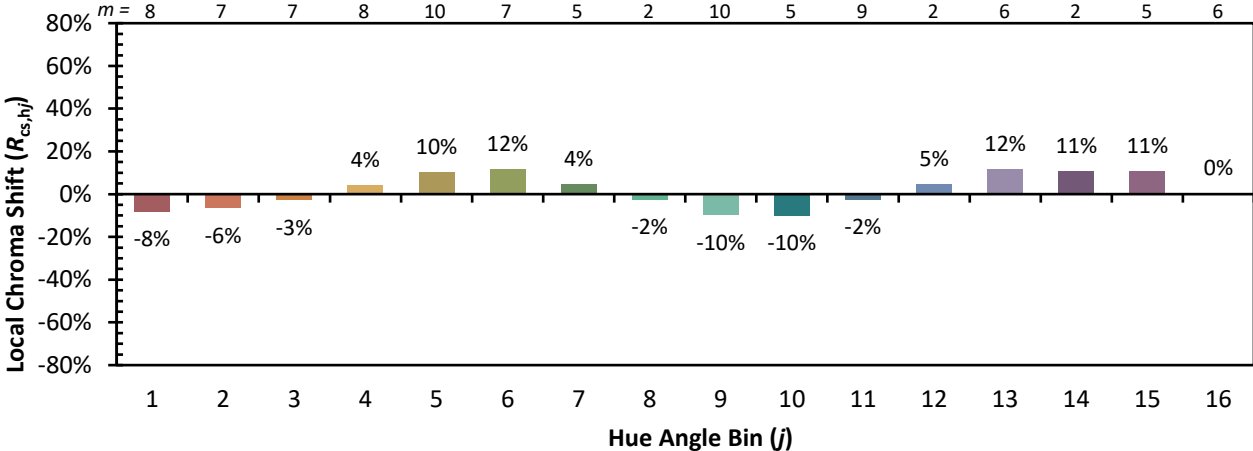


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 67 | CES51 = 92 | CES76 = 54 |
| CES02 = 60 | CES27 = 88 | CES52 = 91 | CES77 = 71 |
| CES03 = 31 | CES28 = 81 | CES53 = 82 | CES78 = 55 |
| CES04 = 69 | CES29 = 66 | CES54 = 92 | CES79 = 81 |
| CES05 = 47 | CES30 = 80 | CES55 = 90 | CES80 = 75 |
| CES06 = 50 | CES31 = 69 | CES56 = 81 | CES81 = 79 |
| CES07 = 40 | CES32 = 61 | CES57 = 80 | CES82 = 90 |
| CES08 = 39 | CES33 = 76 | CES58 = 81 | CES83 = 87 |
| CES09 = 29 | CES34 = 68 | CES59 = 93 | CES84 = 87 |
| CES10 = 73 | CES35 = 82 | CES60 = 94 | CES85 = 82 |
| CES11 = 56 | CES36 = 95 | CES61 = 91 | CES86 = 83 |
| CES12 = 62 | CES37 = 75 | CES62 = 89 | CES87 = 78 |
| CES13 = 42 | CES38 = 87 | CES63 = 80 | CES88 = 85 |
| CES14 = 74 | CES39 = 94 | CES64 = 79 | CES89 = 81 |
| CES15 = 71 | CES40 = 87 | CES65 = 75 | CES90 = 86 |
| CES16 = 46 | CES41 = 91 | CES66 = 72 | CES91 = 80 |
| CES17 = 48 | CES42 = 71 | CES67 = 69 | CES92 = 77 |
| CES18 = 56 | CES43 = 72 | CES68 = 75 | CES93 = 86 |
| CES19 = 70 | CES44 = 99 | CES69 = 80 | CES94 = 71 |
| CES20 = 65 | CES45 = 81 | CES70 = 66 | CES95 = 79 |
| CES21 = 85 | CES46 = 83 | CES71 = 59 | CES96 = 86 |
| CES22 = 77 | CES47 = 83 | CES72 = 87 | CES97 = 85 |
| CES23 = 91 | CES48 = 83 | CES73 = 56 | CES98 = 82 |
| CES24 = 90 | CES49 = 82 | CES74 = 95 | CES99 = 84 |
| CES25 = 71 | CES50 = 91 | CES75 = 58 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)