

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: PrentaLux

Report Number: P1057174

Luminaire Tested: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

Issue Date: 8/6/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1057174  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2504-407-4)  
Test Lab: INNOVATION CENTER  
Issue Date: 8/6/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: PrentaLux  
Catalog Number: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK  
Description: PrentaLux 2-INCH CYLINDER  
DOWNLIGHT 1000 LUMENS, MEDIUM OPTIC (23-DEGREES)  
Light Source: 2700K CCT, 90 CRI LEDS  
Ballast/Driver: -

**Summary**

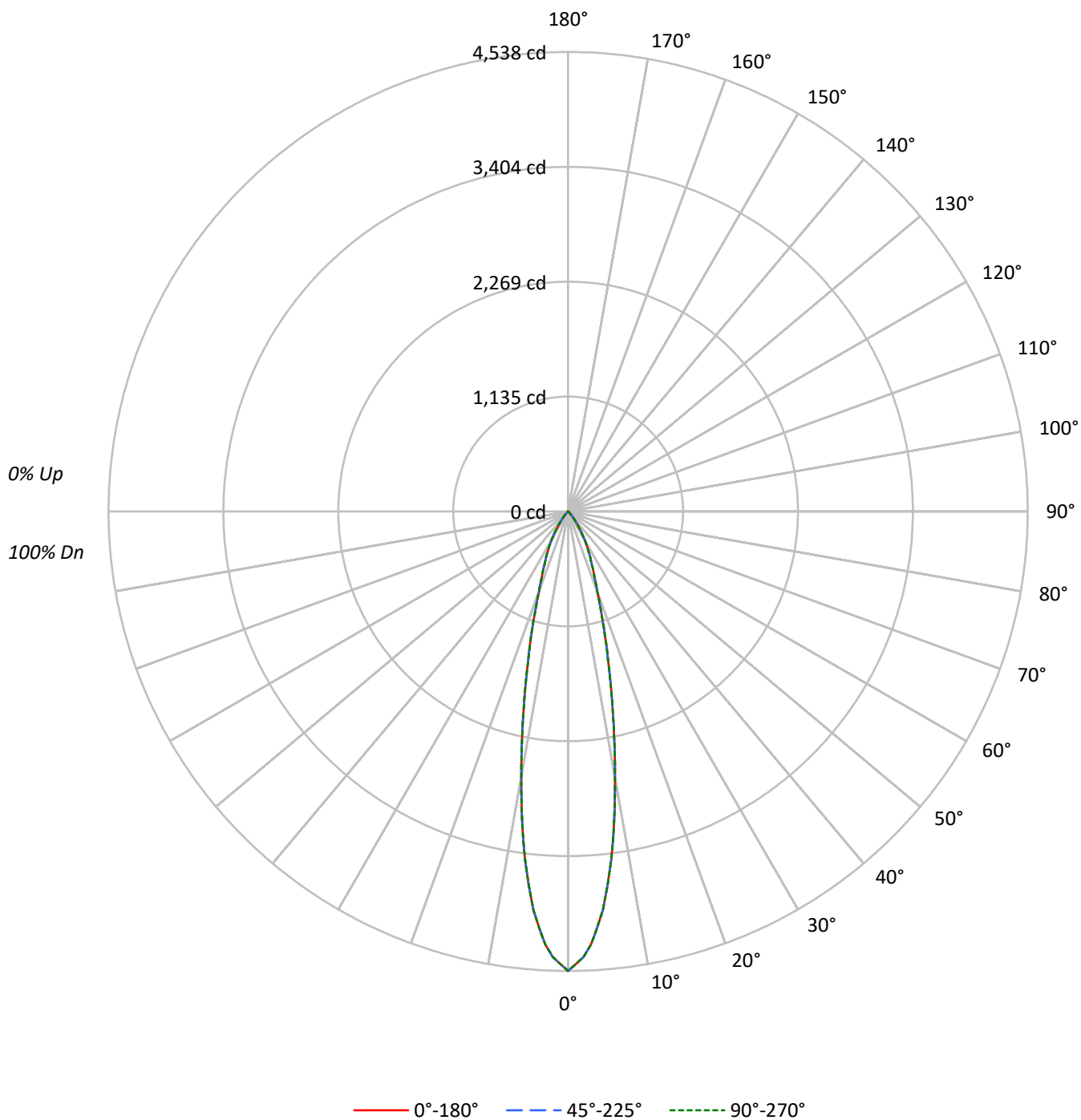
Lumens per Lamp: N/A  
Luminaire Lumens: 1144.5 lumens  
Efficiency: N/A  
Efficacy: 127.2 lumens/watt  
Spacing Criteria (0/90/45): 0.39 / 0.39 / 0.42  
Luminous Opening: Circular (Dia: 0.15' x H: 0')  
CIE Type: Direct

Input Watts (W): 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: 24 FT

TEST NUMBER: P1057174

CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

### Luminous Intensity Polar Plot



TEST NUMBER: P1057174

CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 10  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 |
| 1   | 115 | 112 | 110 | 108 | 112 | 110 | 108 | 107 | 106 | 105 | 103 |  | 103 | 101 | 100 |  | 99  |
| 2   | 110 | 106 | 103 | 100 | 108 | 105 | 102 | 99  | 102 | 99  | 97  |  | 99  | 97  | 95  |  | 96  |
| 3   | 106 | 101 | 97  | 94  | 104 | 100 | 96  | 93  | 97  | 94  | 92  |  | 95  | 92  | 90  |  | 93  |
| 4   | 102 | 96  | 92  | 89  | 101 | 95  | 91  | 88  | 93  | 90  | 87  |  | 91  | 89  | 86  |  | 90  |
| 5   | 99  | 92  | 88  | 84  | 97  | 91  | 87  | 84  | 90  | 86  | 83  |  | 88  | 85  | 83  |  | 87  |
| 6   | 95  | 88  | 84  | 80  | 94  | 88  | 83  | 80  | 86  | 83  | 80  |  | 85  | 82  | 79  |  | 84  |
| 7   | 92  | 85  | 80  | 77  | 91  | 84  | 80  | 77  | 83  | 79  | 76  |  | 82  | 79  | 76  |  | 81  |
| 8   | 89  | 82  | 77  | 74  | 88  | 81  | 77  | 74  | 80  | 76  | 74  |  | 79  | 76  | 73  |  | 79  |
| 9   | 86  | 79  | 74  | 71  | 85  | 78  | 74  | 71  | 78  | 74  | 71  |  | 77  | 73  | 71  |  | 76  |
| 10  | 84  | 76  | 72  | 69  | 83  | 76  | 72  | 69  | 75  | 71  | 68  |  | 74  | 71  | 68  |  | 74  |

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

|     | 0°      | 45°     | 90°     |
|-----|---------|---------|---------|
| 0°  | 2924247 | 2924247 | 2924247 |
| 5°  | 2554469 | 2554469 | 2554469 |
| 10° | 1742432 | 1742432 | 1742432 |
| 15° | 1015473 | 1015473 | 1015473 |
| 20° | 578590  | 578590  | 578590  |
| 25° | 374504  | 374504  | 374504  |
| 30° | 247715  | 247715  | 247715  |
| 35° | 130119  | 130119  | 130119  |
| 40° | 50474   | 50474   | 50474   |
| 45° | 16313   | 16313   | 16313   |
| 50° | 8421    | 8421    | 8421    |
| 55° | 5955    | 5955    | 5955    |
| 60° | 4124    | 4124    | 4124    |
| 65° | 3202    | 3202    | 3202    |
| 70° | 2073    | 2073    | 2073    |
| 75° | 2739    | 2739    | 2739    |
| 80° | 0       | 0       | 0       |
| 85° | 0       | 0       | 0       |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 16313 cd/sqm

TEST NUMBER: P1057174

CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 334.0  | 29.2      |
| 10°-20°   | 428.6  | 37.4      |
| 20°-30°   | 247.4  | 21.6      |
| 30°-40°   | 108.2  | 9.5       |
| 40°-50°   | 18.4   | 1.6       |
| 50°-60°   | 4.8    | 0.4       |
| 60°-70°   | 2.3    | 0.2       |
| 70°-80°   | 0.7    | 0.1       |
| 80°-90°   | 0.0    | 0.0       |
| 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°    | 1010.0 | 88.3      |
| 0°-40°    | 1118.2 | 97.7      |
| 0°-60°    | 1141.4 | 99.7      |
| 0°-90°    | 1144.5 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 1144.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 4538 | 4538  | 4538 | 4538  | 4538 |      |
| 5°  | 3949 | 3949  | 3949 | 3949  | 3949 | 334  |
| 15° | 1522 | 1522  | 1522 | 1522  | 1522 | 429  |
| 25° | 527  | 527   | 527  | 527   | 527  | 247  |
| 35° | 165  | 165   | 165  | 165   | 165  | 108  |
| 45° | 18   | 18    | 18   | 18    | 18   | 18   |
| 55° | 5    | 5     | 5    | 5     | 5    | 5    |
| 65° | 2    | 2     | 2    | 2     | 2    | 2    |
| 75° | 1    | 1     | 1    | 1     | 1    | 1    |
| 85° | 0    | 0     | 0    | 0     | 0    | 0    |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

TEST NUMBER: P1057174

CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

**CANDELA DISTRIBUTION (FULL):**

|     | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-----|--------|--------|--------|--------|--------|
| 0°  | 4537.8 | 4537.8 | 4537.8 | 4537.8 | 4537.8 |
| 1°  | 4469.9 | 4469.9 | 4469.9 | 4469.9 | 4469.9 |
| 2°  | 4402.1 | 4402.1 | 4402.1 | 4402.1 | 4402.1 |
| 3°  | 4284.3 | 4284.3 | 4284.3 | 4284.3 | 4284.3 |
| 4°  | 4116.6 | 4116.6 | 4116.6 | 4116.6 | 4116.6 |
| 5°  | 3948.9 | 3948.9 | 3948.9 | 3948.9 | 3948.9 |
| 6°  | 3711.7 | 3711.7 | 3711.7 | 3711.7 | 3711.7 |
| 7°  | 3474.5 | 3474.5 | 3474.5 | 3474.5 | 3474.5 |
| 8°  | 3217.3 | 3217.3 | 3217.3 | 3217.3 | 3217.3 |
| 9°  | 2940.1 | 2940.1 | 2940.1 | 2940.1 | 2940.1 |
| 10° | 2662.8 | 2662.8 | 2662.8 | 2662.8 | 2662.8 |
| 11° | 2410.9 | 2410.9 | 2410.9 | 2410.9 | 2410.9 |
| 12° | 2158.9 | 2158.9 | 2158.9 | 2158.9 | 2158.9 |
| 13° | 1930.8 | 1930.8 | 1930.8 | 1930.8 | 1930.8 |
| 14° | 1726.4 | 1726.4 | 1726.4 | 1726.4 | 1726.4 |
| 15° | 1522.1 | 1522.1 | 1522.1 | 1522.1 | 1522.1 |
| 16° | 1363.6 | 1363.6 | 1363.6 | 1363.6 | 1363.6 |
| 17° | 1205.2 | 1205.2 | 1205.2 | 1205.2 | 1205.2 |
| 18° | 1069.6 | 1069.6 | 1069.6 | 1069.6 | 1069.6 |
| 19° | 956.6  | 956.6  | 956.6  | 956.6  | 956.6  |
| 20° | 843.7  | 843.7  | 843.7  | 843.7  | 843.7  |
| 21° | 769.1  | 769.1  | 769.1  | 769.1  | 769.1  |
| 22° | 694.6  | 694.6  | 694.6  | 694.6  | 694.6  |
| 23° | 631.2  | 631.2  | 631.2  | 631.2  | 631.2  |
| 24° | 578.9  | 578.9  | 578.9  | 578.9  | 578.9  |
| 25° | 526.7  | 526.7  | 526.7  | 526.7  | 526.7  |
| 26° | 486.2  | 486.2  | 486.2  | 486.2  | 486.2  |
| 27° | 445.8  | 445.8  | 445.8  | 445.8  | 445.8  |
| 28° | 407.0  | 407.0  | 407.0  | 407.0  | 407.0  |
| 29° | 369.9  | 369.9  | 369.9  | 369.9  | 369.9  |
| 30° | 332.9  | 332.9  | 332.9  | 332.9  | 332.9  |
| 31° | 297.9  | 297.9  | 297.9  | 297.9  | 297.9  |
| 32° | 262.9  | 262.9  | 262.9  | 262.9  | 262.9  |
| 33° | 229.4  | 229.4  | 229.4  | 229.4  | 229.4  |
| 34° | 197.4  | 197.4  | 197.4  | 197.4  | 197.4  |
| 35° | 165.4  | 165.4  | 165.4  | 165.4  | 165.4  |
| 36° | 140.9  | 140.9  | 140.9  | 140.9  | 140.9  |
| 37° | 116.5  | 116.5  | 116.5  | 116.5  | 116.5  |
| 38° | 95.4   | 95.4   | 95.4   | 95.4   | 95.4   |
| 39° | 77.7   | 77.7   | 77.7   | 77.7   | 77.7   |
| 40° | 60.0   | 60.0   | 60.0   | 60.0   | 60.0   |
| 41° | 49.5   | 49.5   | 49.5   | 49.5   | 49.5   |
| 42° | 39.0   | 39.0   | 39.0   | 39.0   | 39.0   |
| 43° | 30.5   | 30.5   | 30.5   | 30.5   | 30.5   |
| 44° | 24.2   | 24.2   | 24.2   | 24.2   | 24.2   |

TEST NUMBER: P1057174

CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

**CANDELA DISTRIBUTION (continued):**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|-----|------|-------|------|-------|------|
| 45° | 17.9 | 17.9  | 17.9 | 17.9  | 17.9 |
| 46° | 15.4 | 15.4  | 15.4 | 15.4  | 15.4 |
| 47° | 12.9 | 12.9  | 12.9 | 12.9  | 12.9 |
| 48° | 11.0 | 11.0  | 11.0 | 11.0  | 11.0 |
| 49° | 9.7  | 9.7   | 9.7  | 9.7   | 9.7  |
| 50° | 8.4  | 8.4   | 8.4  | 8.4   | 8.4  |
| 51° | 7.6  | 7.6   | 7.6  | 7.6   | 7.6  |
| 52° | 6.7  | 6.7   | 6.7  | 6.7   | 6.7  |
| 53° | 6.1  | 6.1   | 6.1  | 6.1   | 6.1  |
| 54° | 5.7  | 5.7   | 5.7  | 5.7   | 5.7  |
| 55° | 5.3  | 5.3   | 5.3  | 5.3   | 5.3  |
| 56° | 4.8  | 4.8   | 4.8  | 4.8   | 4.8  |
| 57° | 4.4  | 4.4   | 4.4  | 4.4   | 4.4  |
| 58° | 4.0  | 4.0   | 4.0  | 4.0   | 4.0  |
| 59° | 3.6  | 3.6   | 3.6  | 3.6   | 3.6  |
| 60° | 3.2  | 3.2   | 3.2  | 3.2   | 3.2  |
| 61° | 3.2  | 3.2   | 3.2  | 3.2   | 3.2  |
| 62° | 3.2  | 3.2   | 3.2  | 3.2   | 3.2  |
| 63° | 2.9  | 2.9   | 2.9  | 2.9   | 2.9  |
| 64° | 2.5  | 2.5   | 2.5  | 2.5   | 2.5  |
| 65° | 2.1  | 2.1   | 2.1  | 2.1   | 2.1  |
| 66° | 2.1  | 2.1   | 2.1  | 2.1   | 2.1  |
| 67° | 2.1  | 2.1   | 2.1  | 2.1   | 2.1  |
| 68° | 1.9  | 1.9   | 1.9  | 1.9   | 1.9  |
| 69° | 1.5  | 1.5   | 1.5  | 1.5   | 1.5  |
| 70° | 1.1  | 1.1   | 1.1  | 1.1   | 1.1  |
| 71° | 1.1  | 1.1   | 1.1  | 1.1   | 1.1  |
| 72° | 1.1  | 1.1   | 1.1  | 1.1   | 1.1  |
| 73° | 1.1  | 1.1   | 1.1  | 1.1   | 1.1  |
| 74° | 1.1  | 1.1   | 1.1  | 1.1   | 1.1  |
| 75° | 1.1  | 1.1   | 1.1  | 1.1   | 1.1  |
| 76° | 0.6  | 0.6   | 0.6  | 0.6   | 0.6  |
| 77° | 0.2  | 0.2   | 0.2  | 0.2   | 0.2  |
| 78° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 79° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 80° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 81° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 82° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 83° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 84° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 85° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 86° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 87° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 88° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 89° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |



TEST NUMBER: P1057174  
CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

CANDELA DISTRIBUTION (continued):

|     | 0°  | 22.5° | 45° | 67.5° | 90° |
|-----|-----|-------|-----|-------|-----|
| 90° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |



TEST NUMBER: P1057174

CATALOG NUMBER: PRLX-CYL2S-X-927-10L-MD-U-S-X-X-BLAK

**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 | 5.40             | 6.31 | 5.77 | 6.62 | 6.93 | 5.40           | 6.31 | 5.77 | 6.62 | 6.93 |
|                 | 3H   | 6.14             | 6.93 | 6.52 | 7.27 | 7.64 | 6.14           | 6.93 | 6.52 | 7.27 | 7.64 |
|                 | 4H   | 6.43             | 7.16 | 6.84 | 7.52 | 7.91 | 6.43           | 7.16 | 6.84 | 7.52 | 7.91 |
|                 | 6H   | 6.31             | 6.98 | 6.73 | 7.36 | 7.76 | 6.31           | 6.98 | 6.73 | 7.36 | 7.76 |
|                 | 8H   | 6.25             | 6.88 | 6.69 | 7.27 | 7.68 | 6.25           | 6.88 | 6.69 | 7.27 | 7.68 |
|                 | 12H  | 6.19             | 6.79 | 6.62 | 7.17 | 7.60 | 6.19           | 6.79 | 6.62 | 7.17 | 7.60 |
| 4H              | 2H   | 5.51             | 6.25 | 5.92 | 6.60 | 6.99 | 5.51           | 6.25 | 5.92 | 6.60 | 6.99 |
|                 | 3H   | 6.33             | 6.93 | 6.75 | 7.34 | 7.75 | 6.33           | 6.93 | 6.75 | 7.34 | 7.75 |
|                 | 4H   | 6.73             | 7.26 | 7.17 | 7.69 | 8.14 | 6.73           | 7.26 | 7.17 | 7.69 | 8.14 |
|                 | 6H   | 6.61             | 7.07 | 7.08 | 7.52 | 7.99 | 6.61           | 7.07 | 7.08 | 7.52 | 7.99 |
|                 | 8H   | 6.54             | 6.96 | 7.01 | 7.41 | 7.89 | 6.54           | 6.96 | 7.01 | 7.41 | 7.89 |
|                 | 12H  | 6.47             | 6.83 | 6.96 | 7.32 | 7.80 | 6.47           | 6.83 | 6.96 | 7.32 | 7.80 |
| 8H              | 4H   | 6.66             | 7.08 | 7.14 | 7.53 | 8.01 | 6.66           | 7.08 | 7.14 | 7.53 | 8.01 |
|                 | 6H   | 6.53             | 6.86 | 7.04 | 7.37 | 7.85 | 6.53           | 6.86 | 7.04 | 7.37 | 7.85 |
|                 | 8H   | 6.46             | 6.75 | 6.99 | 7.27 | 7.77 | 6.46           | 6.75 | 6.99 | 7.27 | 7.77 |
|                 | 12H  | 6.40             | 6.65 | 6.92 | 7.15 | 7.73 | 6.40           | 6.65 | 6.92 | 7.15 | 7.73 |
| 12H             | 4H   | 6.59             | 6.95 | 7.08 | 7.44 | 7.92 | 6.59           | 6.95 | 7.08 | 7.44 | 7.92 |
|                 | 6H   | 6.46             | 6.75 | 6.99 | 7.27 | 7.77 | 6.46           | 6.75 | 6.99 | 7.27 | 7.77 |
|                 | 8H   | 6.40             | 6.65 | 6.92 | 7.15 | 7.73 | 6.40           | 6.65 | 6.92 | 7.15 | 7.73 |

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

Report Prepared for

Cooper Lighting Solutions

PrentaLux 3D Printing

Report Number: SP1-2504-407-1

Test Date: 07/16/2025

Luminaire Tested: PRLX-CYL2-X-927-10L-FL-U-S-X-X-BLAK

Data in this report applies to families of products including PRLX-CYL2-X-927-10L-FL-U-S-X-X-BLAK

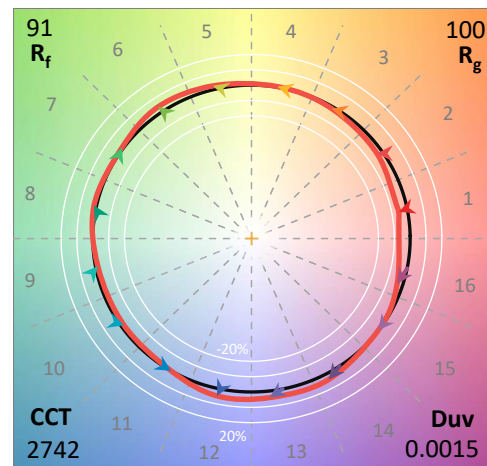
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2504-407-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 07/30/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: PentaLux 3D Printing  
 Catalog Number: **PRLX-CYL2-X-927-10L-FL-U-S-X-X-BLAK**  
 Description: PentaLux 2-INCH CYLINDER, BLACK TRIM, FLOOD OPTIC, 1000 LUMENS, 2700K

### Spectral Parameters

CCT (K): 2742  
 CIE  $u'$ : 0.2602  
 CIE  $v'$ : 0.5287  
 Duv: 0.0015  
 CIE x: 0.4591  
 CIE y: 0.4146  
 CIE z: 0.1264  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 583  
 Purity: 62.24215  
 R<sub>f</sub>: 91.5  
 R<sub>g</sub>: 100.2

CRI (Ra): 93.2  
 R1: 94.5  
 R2: 95.6  
 R3: 95.5  
 R4: 95.6  
 R5: 93.8  
 R6: 96.5  
 R7: 92.3  
 R8: 81.6  
 R9: 55.9  
 R10: 87.9  
 R11: 97.0  
 R12: 84.0  
 R13: 94.5  
 R14: 96.0  
 R15: 88.9



### Test Conditions

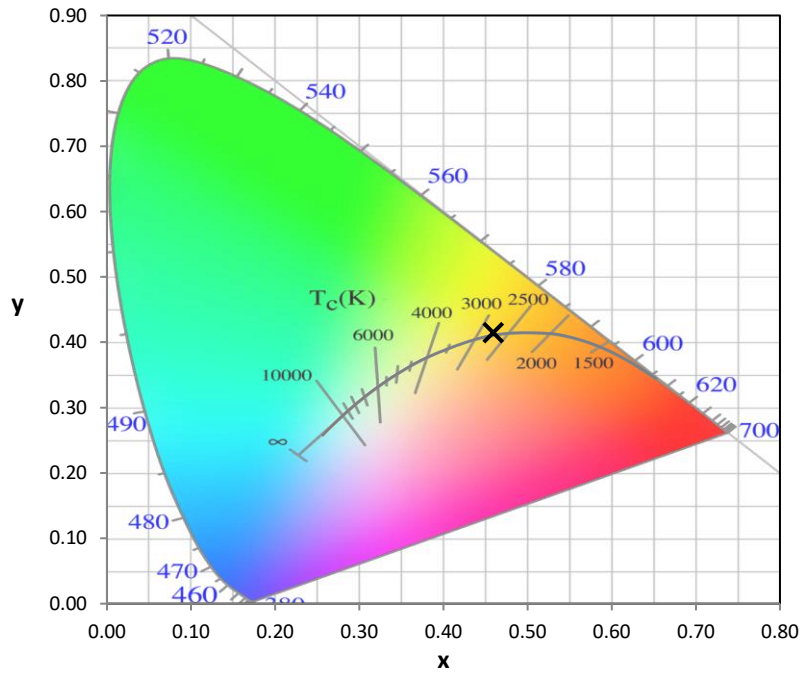
Stabilization Time: 41M  
 Operation Time: 1H 41M  
 Sphere Temperature (°C): 24.0

REPORT NUMBER: SP1-2504-407-1

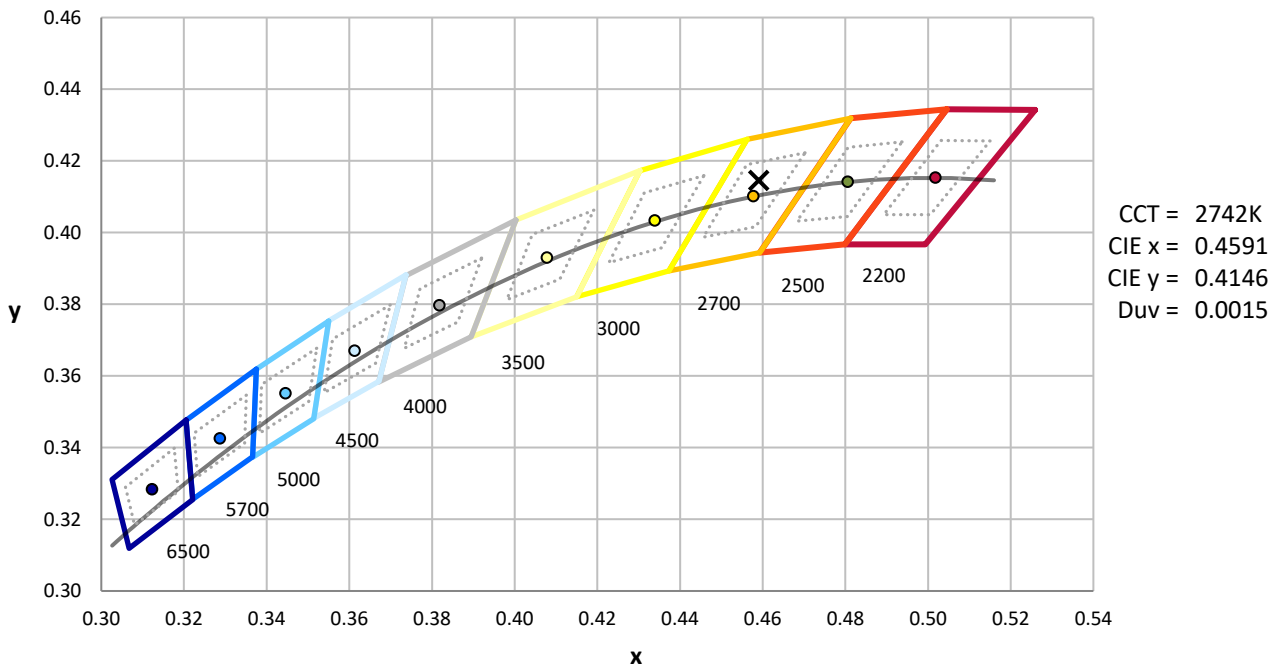
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-2504-407-1

**CIE 1931 Chromaticity Diagram**

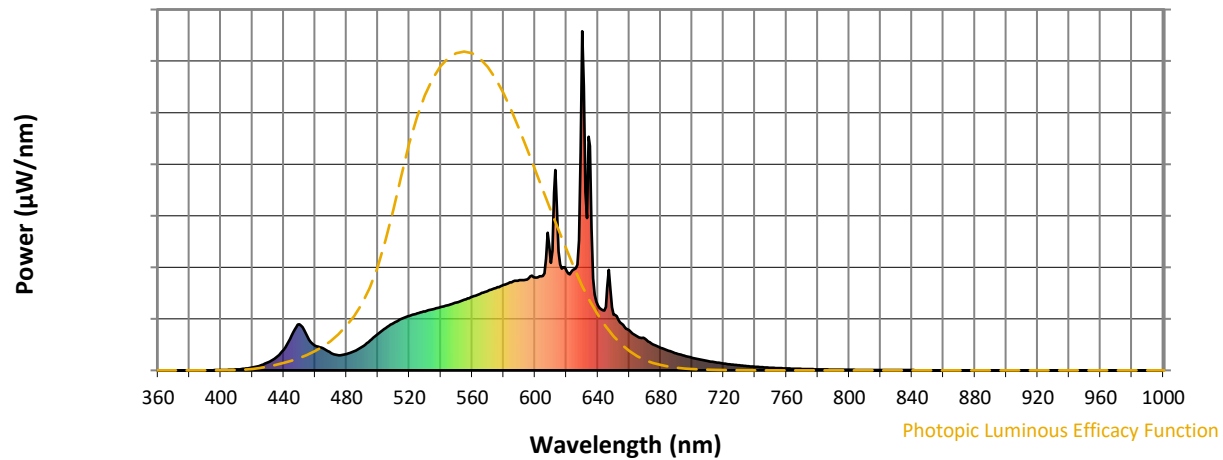


**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



REPORT NUMBER: SP1-2504-407-1

### Photopic Flux vs. Wavelength

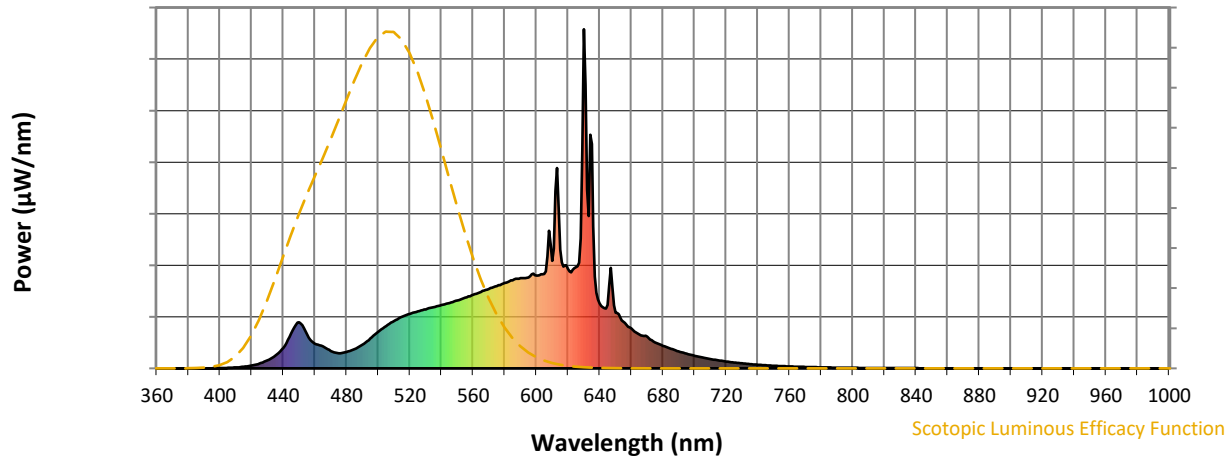


### Photopic Lumens: NR

| 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    | 70                       | NR            | 620    | 293                      | NR            | 750    | 8                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 88                       | NR            | 625    | 299                      | NR            | 755    | 7                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 108                      | NR            | 630    | 1000                     | NR            | 760    | 6                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 125                      | NR            | 635    | 661                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 140                      | NR            | 640    | 192                      | NR            | 770    | 4                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 152                      | NR            | 645    | 187                      | NR            | 775    | 4                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 160                      | NR            | 650    | 164                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 168                      | NR            | 655    | 138                      | NR            | 785    | 3                        | NR            | 915    | 0                        | NR            |
| 400    | 1                        | NR            | 530    | 174                      | NR            | 660    | 118                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 180                      | NR            | 665    | 100                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 187                      | NR            | 670    | 94                       | NR            | 800    | 2                        | NR            | 930    | 0                        | NR            |
| 415    | 5                        | NR            | 545    | 193                      | NR            | 675    | 77                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 9                        | NR            | 550    | 200                      | NR            | 680    | 67                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 14                       | NR            | 555    | 208                      | NR            | 685    | 58                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 23                       | NR            | 560    | 217                      | NR            | 690    | 50                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 38                       | NR            | 565    | 226                      | NR            | 695    | 43                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 61                       | NR            | 570    | 234                      | NR            | 700    | 37                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 103                      | NR            | 575    | 243                      | NR            | 705    | 32                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 135                      | NR            | 580    | 252                      | NR            | 710    | 28                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 100                      | NR            | 585    | 260                      | NR            | 715    | 23                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 72                       | NR            | 590    | 266                      | NR            | 720    | 20                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 65                       | NR            | 595    | 268                      | NR            | 725    | 17                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 51                       | NR            | 600    | 274                      | NR            | 730    | 15                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 45                       | NR            | 605    | 278                      | NR            | 735    | 13                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 48                       | NR            | 610    | 317                      | NR            | 740    | 11                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 57                       | NR            | 615    | 350                      | NR            | 745    | 9                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2504-407-1

### Scotopic Flux vs. Wavelength



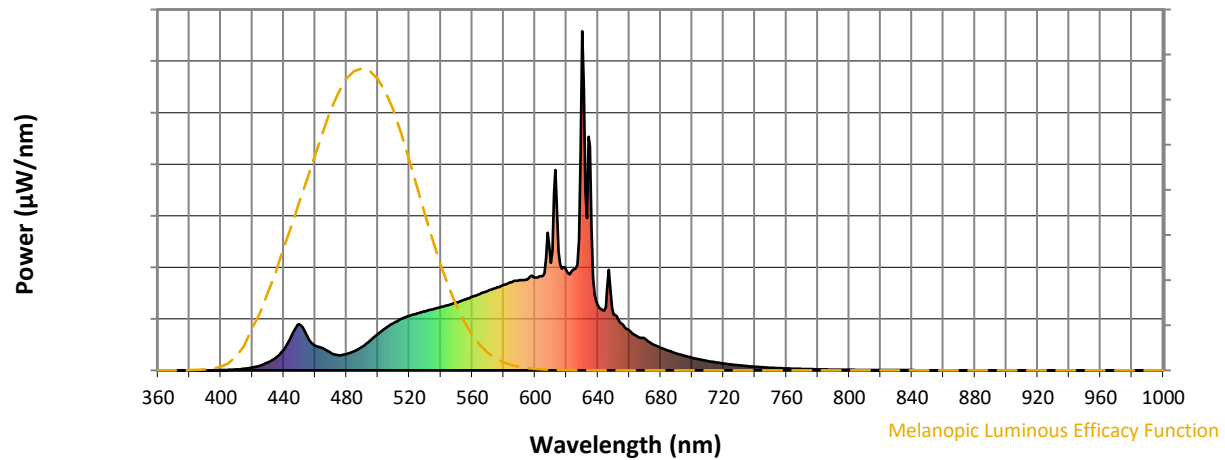
Scotopic Lumens: NR

S/P: 1.28

| 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    | 70                       | NR            | 620    | 293                      | NR            | 750    | 8                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 88                       | NR            | 625    | 299                      | NR            | 755    | 7                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 108                      | NR            | 630    | 1000                     | NR            | 760    | 6                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 125                      | NR            | 635    | 661                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 140                      | NR            | 640    | 192                      | NR            | 770    | 4                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 152                      | NR            | 645    | 187                      | NR            | 775    | 4                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 160                      | NR            | 650    | 164                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 168                      | NR            | 655    | 138                      | NR            | 785    | 3                        | NR            | 915    | 0                        | NR            |
| 400    | 1                        | NR            | 530    | 174                      | NR            | 660    | 118                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 180                      | NR            | 665    | 100                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 187                      | NR            | 670    | 94                       | NR            | 800    | 2                        | NR            | 930    | 0                        | NR            |
| 415    | 5                        | NR            | 545    | 193                      | NR            | 675    | 77                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 9                        | NR            | 550    | 200                      | NR            | 680    | 67                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 14                       | NR            | 555    | 208                      | NR            | 685    | 58                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 23                       | NR            | 560    | 217                      | NR            | 690    | 50                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 38                       | NR            | 565    | 226                      | NR            | 695    | 43                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 61                       | NR            | 570    | 234                      | NR            | 700    | 37                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 103                      | NR            | 575    | 243                      | NR            | 705    | 32                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 135                      | NR            | 580    | 252                      | NR            | 710    | 28                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 100                      | NR            | 585    | 260                      | NR            | 715    | 23                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 72                       | NR            | 590    | 266                      | NR            | 720    | 20                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 65                       | NR            | 595    | 268                      | NR            | 725    | 17                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 51                       | NR            | 600    | 274                      | NR            | 730    | 15                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 45                       | NR            | 605    | 278                      | NR            | 735    | 13                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 48                       | NR            | 610    | 317                      | NR            | 740    | 11                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 57                       | NR            | 615    | 350                      | NR            | 745    | 9                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2504-407-1

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.38

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 70                          | NR               | 620       | 293                         | NR               | 750       | 8                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 88                          | NR               | 625       | 299                         | NR               | 755       | 7                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 108                         | NR               | 630       | 1000                        | NR               | 760       | 6                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 125                         | NR               | 635       | 661                         | NR               | 765       | 5                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 140                         | NR               | 640       | 192                         | NR               | 770       | 4                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 152                         | NR               | 645       | 187                         | NR               | 775       | 4                           | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 160                         | NR               | 650       | 164                         | NR               | 780       | 3                           | NR               | 910       | 0                           | NR               |
| 395       | 0                           | NR               | 525       | 168                         | NR               | 655       | 138                         | NR               | 785       | 3                           | NR               | 915       | 0                           | NR               |
| 400       | 1                           | NR               | 530       | 174                         | NR               | 660       | 118                         | NR               | 790       | 2                           | NR               | 920       | 0                           | NR               |
| 405       | 2                           | NR               | 535       | 180                         | NR               | 665       | 100                         | NR               | 795       | 2                           | NR               | 925       | 0                           | NR               |
| 410       | 3                           | NR               | 540       | 187                         | NR               | 670       | 94                          | NR               | 800       | 2                           | NR               | 930       | 0                           | NR               |
| 415       | 5                           | NR               | 545       | 193                         | NR               | 675       | 77                          | NR               | 805       | 1                           | NR               | 935       | 0                           | NR               |
| 420       | 9                           | NR               | 550       | 200                         | NR               | 680       | 67                          | NR               | 810       | 1                           | NR               | 940       | 0                           | NR               |
| 425       | 14                          | NR               | 555       | 208                         | NR               | 685       | 58                          | NR               | 815       | 1                           | NR               | 945       | 0                           | NR               |
| 430       | 23                          | NR               | 560       | 217                         | NR               | 690       | 50                          | NR               | 820       | 1                           | NR               | 950       | 0                           | NR               |
| 435       | 38                          | NR               | 565       | 226                         | NR               | 695       | 43                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 61                          | NR               | 570       | 234                         | NR               | 700       | 37                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 103                         | NR               | 575       | 243                         | NR               | 705       | 32                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 135                         | NR               | 580       | 252                         | NR               | 710       | 28                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 100                         | NR               | 585       | 260                         | NR               | 715       | 23                          | NR               | 845       | 0                           | NR               | 975       | 0                           | NR               |
| 460       | 72                          | NR               | 590       | 266                         | NR               | 720       | 20                          | NR               | 850       | 0                           | NR               | 980       | 0                           | NR               |
| 465       | 65                          | NR               | 595       | 268                         | NR               | 725       | 17                          | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 51                          | NR               | 600       | 274                         | NR               | 730       | 15                          | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 45                          | NR               | 605       | 278                         | NR               | 735       | 13                          | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 48                          | NR               | 610       | 317                         | NR               | 740       | 11                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 57                          | NR               | 615       | 350                         | NR               | 745       | 9                           | NR               | 875       | 0                           | NR               |           |                             |                  |

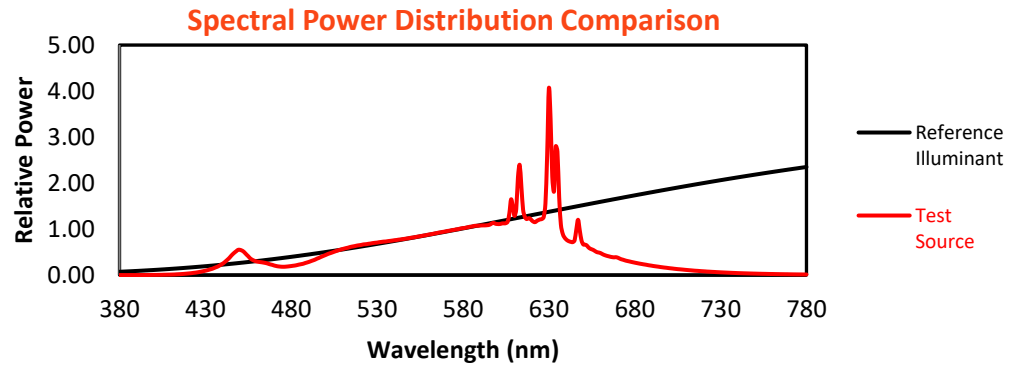


REPORT NUMBER: SP1-2504-407-1

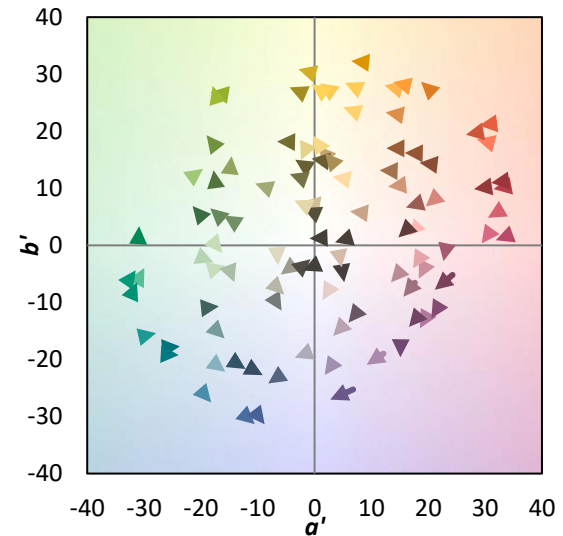
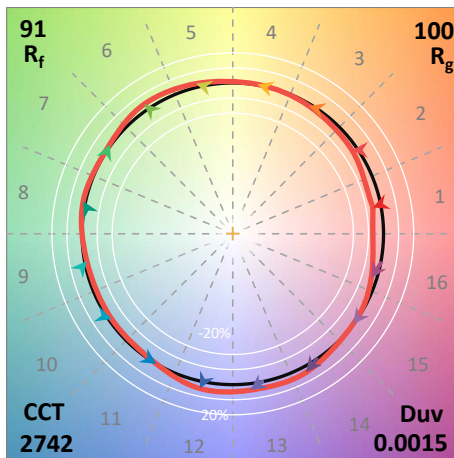
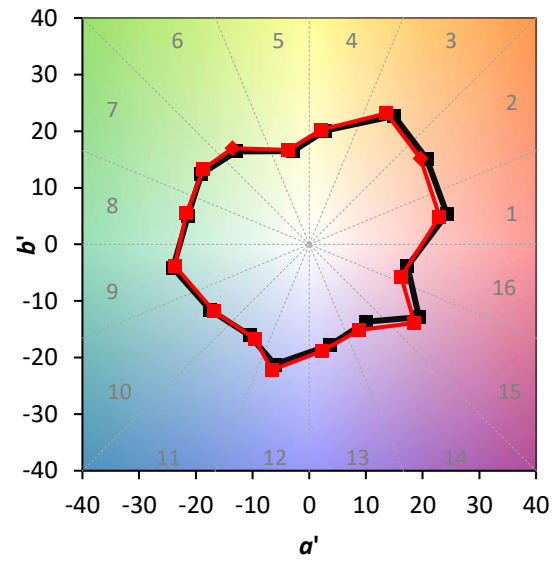
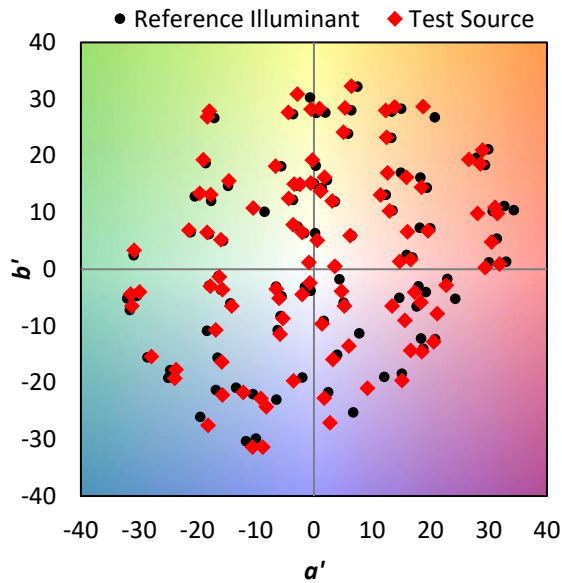
TM-30-18

### Summary

$R_f = 91.5$   
 $R_g = 100.2$   
 $CIE R_a = 93.2$   
 $R_9 = 55.9$

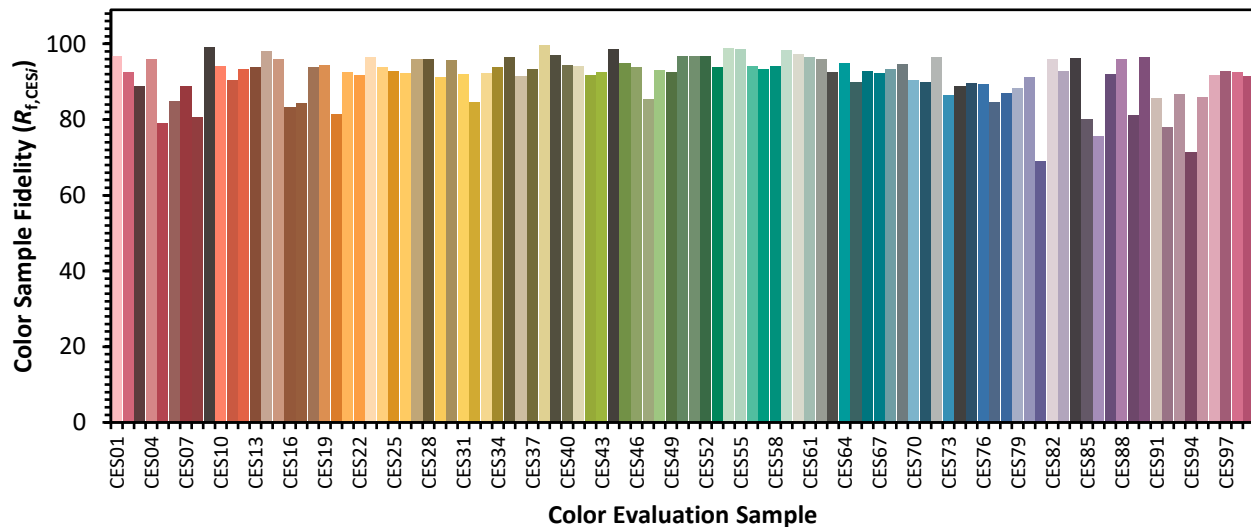


### Color Vector Graphics

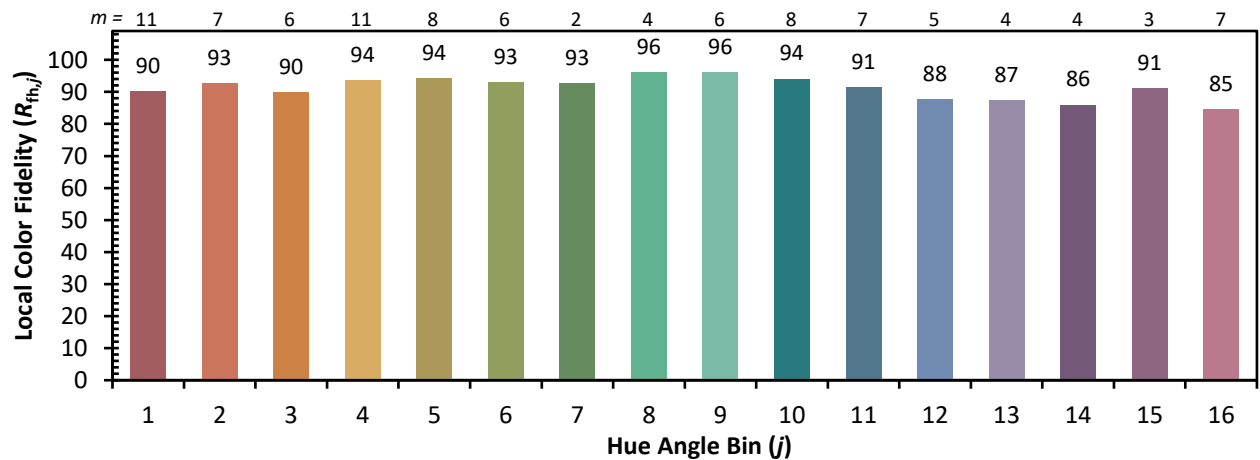
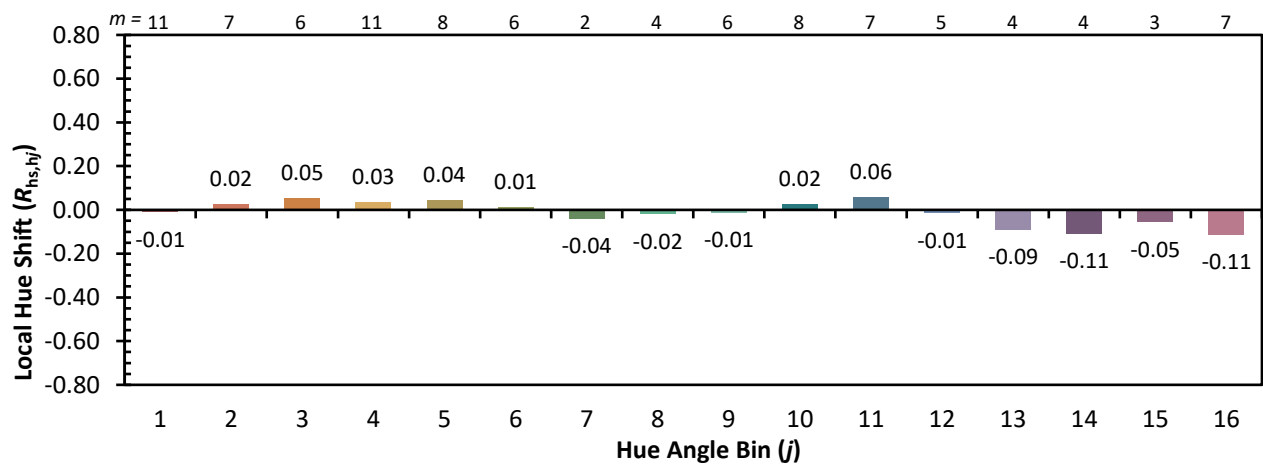
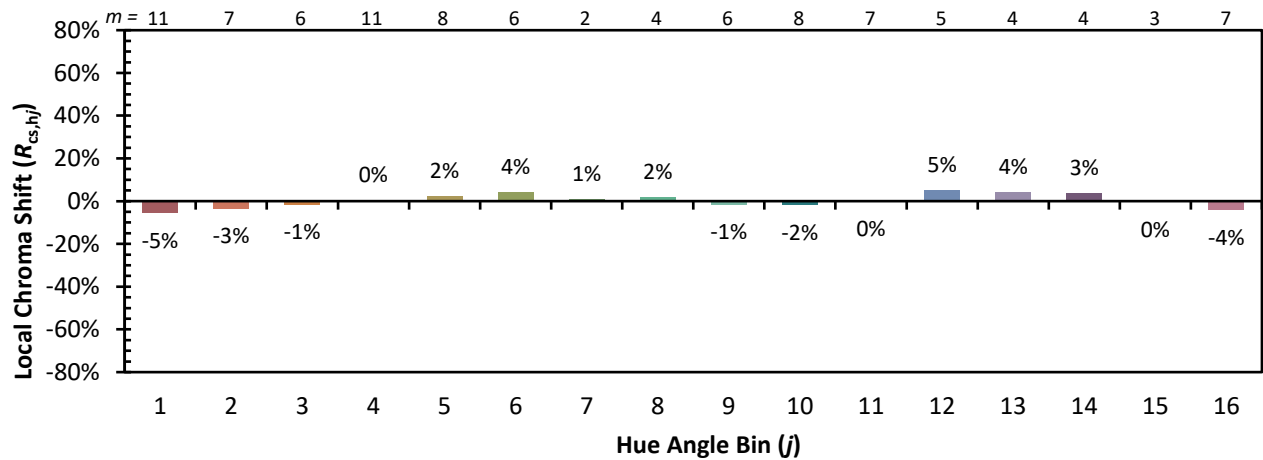


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

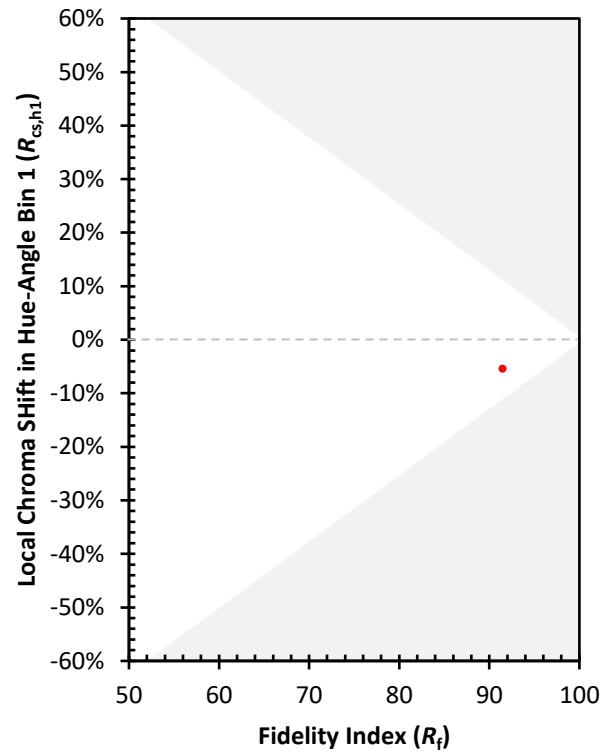
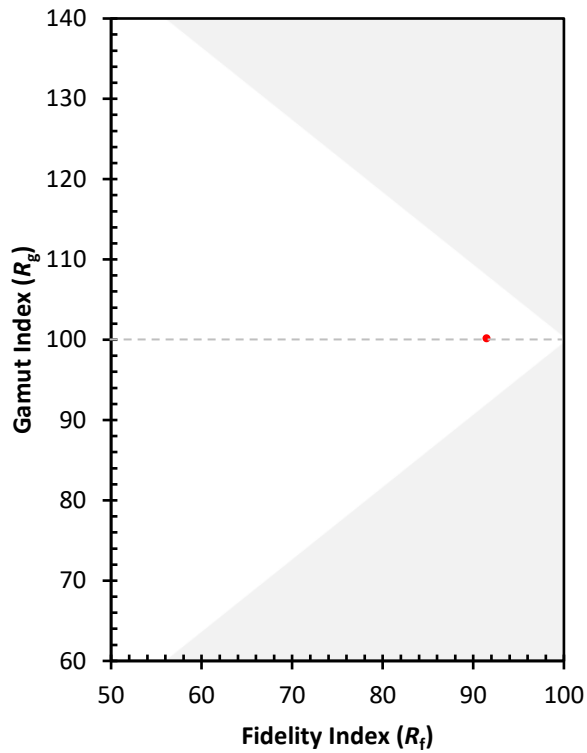
|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 86 | CES26 = 92  | CES51 = 97 | CES76 = 89 |
| CES02 = 64 | CES27 = 96  | CES52 = 97 | CES77 = 85 |
| CES03 = 32 | CES28 = 96  | CES53 = 94 | CES78 = 87 |
| CES04 = 70 | CES29 = 91  | CES54 = 99 | CES79 = 88 |
| CES05 = 51 | CES30 = 96  | CES55 = 99 | CES80 = 91 |
| CES06 = 51 | CES31 = 92  | CES56 = 94 | CES81 = 69 |
| CES07 = 44 | CES32 = 85  | CES57 = 93 | CES82 = 96 |
| CES08 = 43 | CES33 = 92  | CES58 = 94 | CES83 = 93 |
| CES09 = 29 | CES34 = 94  | CES59 = 98 | CES84 = 96 |
| CES10 = 77 | CES35 = 97  | CES60 = 97 | CES85 = 80 |
| CES11 = 59 | CES36 = 91  | CES61 = 97 | CES86 = 76 |
| CES12 = 66 | CES37 = 93  | CES62 = 96 | CES87 = 92 |
| CES13 = 44 | CES38 = 100 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 97  | CES64 = 95 | CES89 = 81 |
| CES15 = 72 | CES40 = 94  | CES65 = 90 | CES90 = 97 |
| CES16 = 48 | CES41 = 94  | CES66 = 93 | CES91 = 86 |
| CES17 = 50 | CES42 = 92  | CES67 = 92 | CES92 = 78 |
| CES18 = 57 | CES43 = 92  | CES68 = 93 | CES93 = 87 |
| CES19 = 72 | CES44 = 99  | CES69 = 95 | CES94 = 71 |
| CES20 = 68 | CES45 = 95  | CES70 = 90 | CES95 = 86 |
| CES21 = 87 | CES46 = 94  | CES71 = 90 | CES96 = 92 |
| CES22 = 79 | CES47 = 86  | CES72 = 96 | CES97 = 93 |
| CES23 = 92 | CES48 = 93  | CES73 = 86 | CES98 = 92 |
| CES24 = 91 | CES49 = 93  | CES74 = 89 | CES99 = 91 |
| CES25 = 72 | CES50 = 97  | CES75 = 90 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)