

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: P878990

Luminaire Tested: PRLX-206-930-LL4-F-U-S-X-X-WHHR-SR-X

Issue Date: 9/24/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P878990  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2405-094-2)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 9/24/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: PrentaLux  
Catalog Number: PRLX-206-930-LL4-F-U-S-X-X-WHHR-SR-X  
Description: PrentaLux 200 SERIES 3D PRINTED LUMINAIRE, 206 SHADE, FROSTED LENS.  
Light Source: 3000K CCT, 90 CRI LEDS  
Ballast/Driver: -

**Summary**

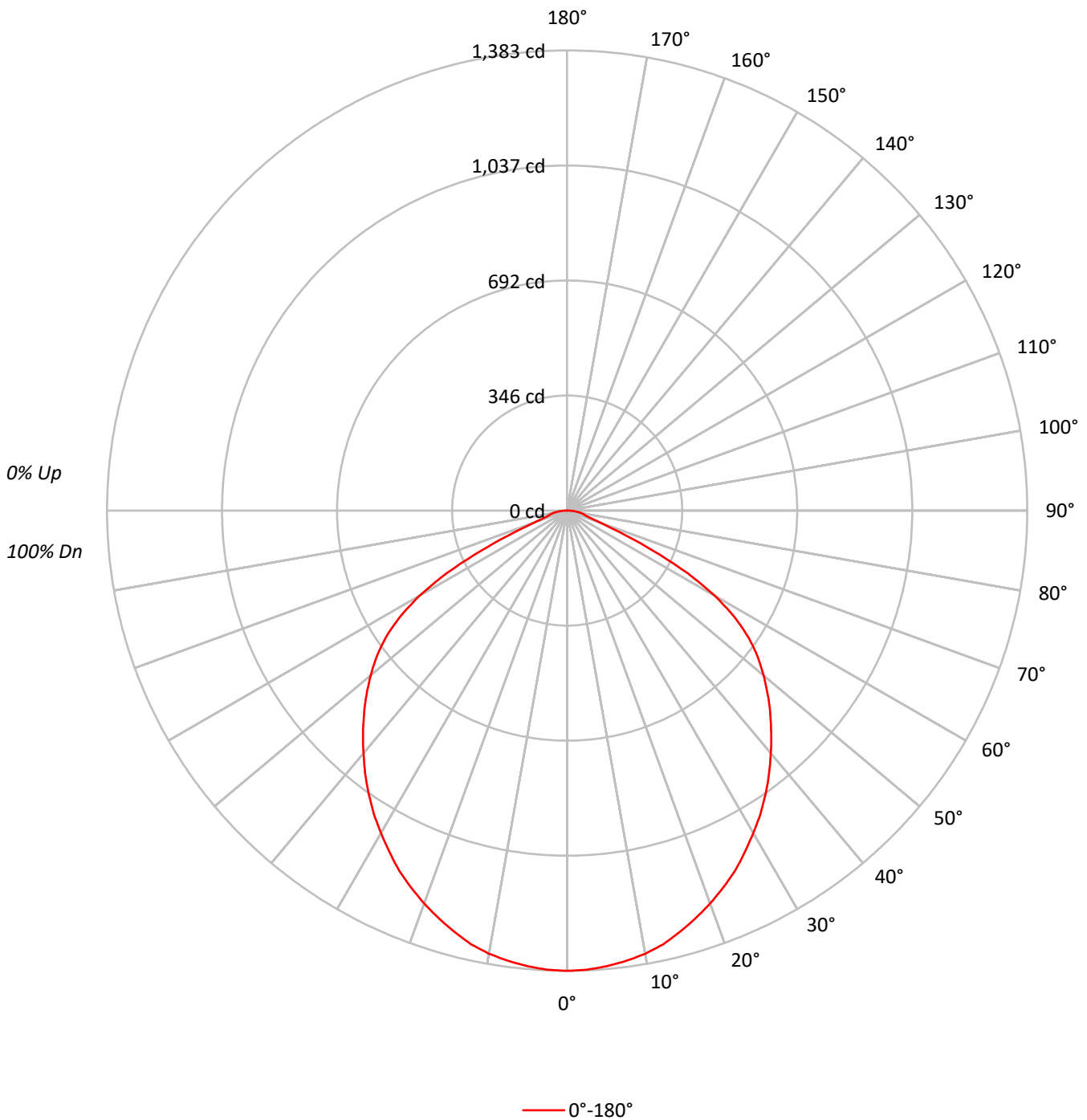
Lumens per Lamp: N/A  
Luminaire Lumens: 3330.9 lumens  
Efficiency: N/A  
Efficacy: 136.5 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.33  
Luminous Opening: Circular (Dia: 0.88' x H: 0')  
CIE Type: Direct

Input Watts (W): 24.4  
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: 0.5 HR  
Operation Time: 3 HR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: PRLX-206-930-LL4-F-U-S-X-X-WHHR-SR-X

### Luminous Intensity Polar Plot





TEST NUMBER: P878990

CATALOG NUMBER: PRLX-206-930-LL4-F-U-S-X-X-WHHR-SR-X

**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   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1   | 110 | 106 | 103 | 99  | 108 | 104 | 101 | 98  | 100 | 97  | 95  | 96  | 94  | 92  | 92  | 91  | 89  | 87  |
| 2   | 101 | 94  | 88  | 83  | 99  | 92  | 87  | 82  | 89  | 84  | 80  | 86  | 82  | 78  | 83  | 80  | 77  | 75  |
| 3   | 93  | 84  | 76  | 70  | 91  | 82  | 75  | 70  | 79  | 73  | 68  | 76  | 71  | 67  | 74  | 70  | 66  | 64  |
| 4   | 86  | 75  | 66  | 60  | 83  | 73  | 66  | 60  | 71  | 64  | 59  | 69  | 63  | 58  | 66  | 62  | 57  | 55  |
| 5   | 79  | 67  | 58  | 52  | 77  | 66  | 58  | 52  | 64  | 57  | 51  | 62  | 56  | 51  | 60  | 55  | 50  | 48  |
| 6   | 73  | 60  | 52  | 46  | 71  | 59  | 51  | 46  | 58  | 51  | 45  | 56  | 50  | 45  | 55  | 49  | 44  | 43  |
| 7   | 68  | 55  | 46  | 41  | 66  | 54  | 46  | 40  | 53  | 45  | 40  | 51  | 45  | 40  | 50  | 44  | 40  | 38  |
| 8   | 63  | 50  | 42  | 36  | 62  | 49  | 42  | 36  | 48  | 41  | 36  | 47  | 40  | 36  | 46  | 40  | 36  | 34  |
| 9   | 59  | 46  | 38  | 33  | 58  | 45  | 38  | 33  | 44  | 37  | 33  | 43  | 37  | 32  | 42  | 36  | 32  | 30  |
| 10  | 55  | 43  | 35  | 30  | 54  | 42  | 35  | 30  | 41  | 34  | 30  | 40  | 34  | 29  | 39  | 33  | 29  | 28  |

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

|     |       |
|-----|-------|
|     | 0°    |
| 0°  | 24760 |
| 5°  | 24698 |
| 10° | 24578 |
| 15° | 24288 |
| 20° | 23934 |
| 25° | 23591 |
| 30° | 23127 |
| 35° | 22718 |
| 40° | 22255 |
| 45° | 21857 |
| 50° | 21457 |
| 55° | 20782 |
| 60° | 18366 |
| 65° | 12055 |
| 70° | 5370  |
| 75° | 3949  |
| 80° | 4288  |
| 85° | 4580  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 21857 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 130.5  | 3.9       |
| 10°-20°   | 369.5  | 11.1      |
| 20°-30°   | 549.5  | 16.5      |
| 30°-40°   | 650.3  | 19.5      |
| 40°-50°   | 666.2  | 20.0      |
| 50°-60°   | 587.0  | 17.6      |
| 60°-70°   | 288.4  | 8.7       |
| 70°-80°   | 65.7   | 2.0       |
| 80°-90°   | 23.8   | 0.7       |
| 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°    | 1049.5 | 31.5      |
| 0°-40°    | 1699.8 | 51.0      |
| 0°-60°    | 2953.0 | 88.7      |
| 0°-90°    | 3330.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3330.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | Flux |
|-----|------|------|
| 0°  | 1383 |      |
| 5°  | 1374 | 130  |
| 15° | 1311 | 370  |
| 25° | 1194 | 550  |
| 35° | 1040 | 650  |
| 45° | 863  | 666  |
| 55° | 666  | 587  |
| 65° | 285  | 288  |
| 75° | 57   | 66   |
| 85° | 22   | 24   |
| 90° | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     |
|-------|--------|
| 0°    | 1383.2 |
| 2.5°  | 1381.2 |
| 5°    | 1374.5 |
| 7.5°  | 1364.8 |
| 10°   | 1352.2 |
| 12.5° | 1334.8 |
| 15°   | 1310.6 |
| 17.5° | 1284.4 |
| 20°   | 1256.4 |
| 22.5° | 1226.4 |
| 25°   | 1194.4 |
| 27.5° | 1156.7 |
| 30°   | 1118.9 |
| 32.5° | 1081.2 |
| 35°   | 1039.6 |
| 37.5° | 997.0  |
| 40°   | 952.4  |
| 42.5° | 907.9  |
| 45°   | 863.4  |
| 47.5° | 817.9  |
| 50°   | 770.5  |
| 52.5° | 722.1  |
| 55°   | 665.9  |
| 57.5° | 597.2  |
| 60°   | 513.0  |
| 62.5° | 408.5  |
| 65°   | 284.6  |
| 67.5° | 172.3  |
| 70°   | 102.6  |
| 72.5° | 69.7   |
| 75°   | 57.1   |
| 77.5° | 50.3   |
| 80°   | 41.6   |
| 82.5° | 32.9   |
| 85°   | 22.3   |
| 87.5° | 11.6   |
| 90°   | 0.0    |

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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 | 22.94            | 24.48 | 23.30 | 24.79 | 25.11 | 22.94          | 24.48 | 23.30 | 24.79 | 25.11 |
|                 | 3H   | 23.19            | 24.56 | 23.56 | 24.89 | 25.25 | 23.19          | 24.56 | 23.56 | 24.89 | 25.25 |
|                 | 4H   | 23.20            | 24.48 | 23.60 | 24.83 | 25.21 | 23.20          | 24.48 | 23.60 | 24.83 | 25.21 |
|                 | 6H   | 23.22            | 24.40 | 23.63 | 24.77 | 25.16 | 23.22          | 24.40 | 23.63 | 24.77 | 25.16 |
|                 | 8H   | 23.23            | 24.35 | 23.65 | 24.74 | 25.14 | 23.23          | 24.35 | 23.65 | 24.74 | 25.14 |
|                 | 12H  | 23.23            | 24.31 | 23.66 | 24.69 | 25.12 | 23.23          | 24.31 | 23.66 | 24.69 | 25.12 |
| 4H              | 2H   | 23.15            | 24.43 | 23.55 | 24.78 | 25.16 | 23.15          | 24.43 | 23.55 | 24.78 | 25.16 |
|                 | 3H   | 23.44            | 24.49 | 23.85 | 24.89 | 25.29 | 23.44          | 24.49 | 23.85 | 24.89 | 25.29 |
|                 | 4H   | 23.47            | 24.42 | 23.91 | 24.83 | 25.27 | 23.47          | 24.42 | 23.91 | 24.83 | 25.27 |
|                 | 6H   | 23.54            | 24.36 | 24.00 | 24.80 | 25.26 | 23.54          | 24.36 | 24.00 | 24.80 | 25.26 |
|                 | 8H   | 23.57            | 24.33 | 24.03 | 24.77 | 25.24 | 23.57          | 24.33 | 24.03 | 24.77 | 25.24 |
|                 | 12H  | 23.60            | 24.28 | 24.08 | 24.75 | 25.23 | 23.60          | 24.28 | 24.08 | 24.75 | 25.23 |
| 8H              | 4H   | 23.43            | 24.20 | 23.90 | 24.64 | 25.11 | 23.43          | 24.20 | 23.90 | 24.64 | 25.11 |
|                 | 6H   | 23.53            | 24.16 | 24.03 | 24.65 | 25.13 | 23.53          | 24.16 | 24.03 | 24.65 | 25.13 |
|                 | 8H   | 23.59            | 24.15 | 24.10 | 24.66 | 25.15 | 23.59          | 24.15 | 24.10 | 24.66 | 25.15 |
|                 | 12H  | 23.65            | 24.15 | 24.16 | 24.65 | 25.21 | 23.65          | 24.15 | 24.16 | 24.65 | 25.21 |
| 12H             | 4H   | 23.41            | 24.09 | 23.90 | 24.57 | 25.04 | 23.41          | 24.09 | 23.90 | 24.57 | 25.04 |
|                 | 6H   | 23.51            | 24.07 | 24.02 | 24.58 | 25.07 | 23.51          | 24.07 | 24.02 | 24.58 | 25.07 |
|                 | 8H   | 23.60            | 24.10 | 24.11 | 24.59 | 25.15 | 23.60          | 24.10 | 24.11 | 24.59 | 25.15 |

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

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

SHAPER

Report Number: SP1-2203-582-2

Test Date: 05/25/2022

Luminaire Tested: 225-90-30K-27L-UNV-STD-X-X-WHHR-SR-X  
Data in this report applies to 200 Series families of products

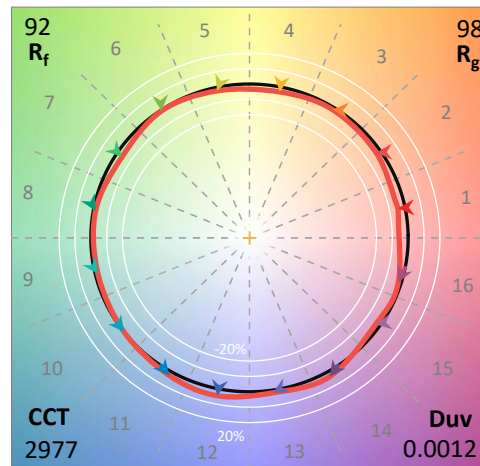


**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2203-582-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 05/25/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: SHAPER  
 Catalog Number: **225-90-30K-27L-UNV-STD-X-X-WHHR-SR-X**  
 Description: Shaper 3D PRINTED 200 Series Pendants

**Spectral Parameters**

|                           |        |           |      |      |      |
|---------------------------|--------|-----------|------|------|------|
| CCT (K):                  | 2977   | CRI (Ra): | 93.8 | R9:  | 64.0 |
| CIE u':                   | 0.2509 | R1:       | 93.9 | R10: | 92.1 |
| CIE v':                   | 0.5235 | R2:       | 97.0 | R11: | 94.8 |
| Duv:                      | 0.0012 | R3:       | 98.8 | R12: | 81.7 |
| CIE x:                    | 0.4402 | R4:       | 93.7 | R13: | 94.8 |
| CIE y:                    | 0.4082 | R5:       | 93.4 | R14: | 98.7 |
| CIE z:                    | 0.1515 | R6:       | 96.4 |      |      |
| Peak Wavelength (nm):     | 622    | R7:       | 93.1 |      |      |
| Dominant Wavelength (nm): | 582    | R8:       | 84.0 |      |      |
| Purity:                   | 54.9   |           |      |      |      |
| Rf:                       | 92.3   |           |      |      |      |
| Rg:                       | 97.8   |           |      |      |      |



**Test Conditions**

Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/43%  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2203-582-2

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 2/7/2022         | 8/7/2022             |
| Power Meter                    | XITRON 2801 IN0071    | 11/29/2021       | 11/29/2022           |
| AC Power Source                | CHROMA 61603 IN0063   | 11/29/2021       | 11/29/2022           |
| DC Power Source                | AGILENT E3634A IN0208 | 11/29/2021       | 11/29/2022           |
| Sphere Thermometer             | ONSET IN0085          | 11/29/2021       | 11/29/2022           |
| Room Thermometer               | ONSET IN0046          | 11/29/2021       | 11/29/2022           |

REPORT NUMBER: SP1-2203-582-2

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2203-582-2

**Photopic Flux vs. Wavelength**

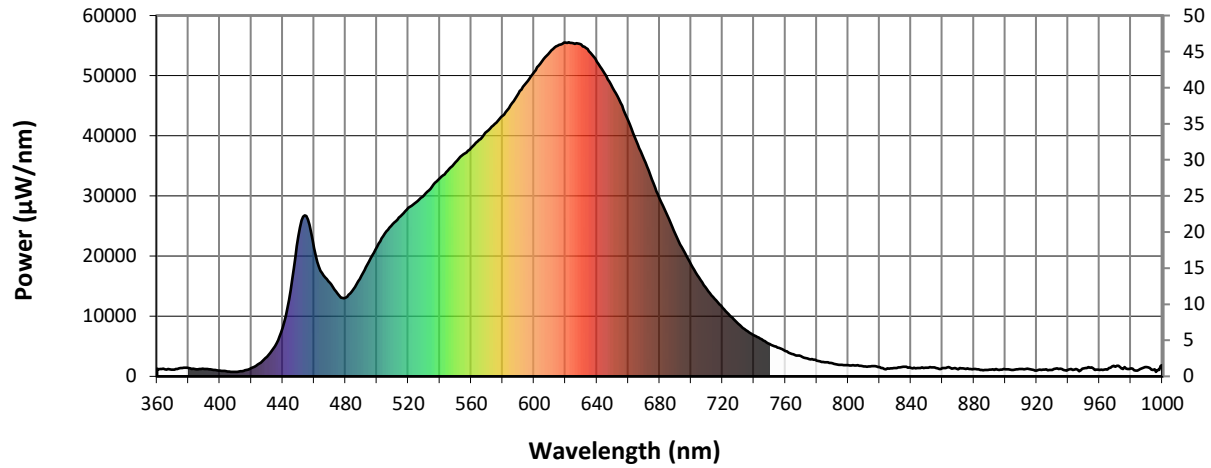


#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1256          | NR            | 490    | 16713         | NR            | 620    | 55488         | NR            | 750    | 5386          | NR            | 880    | 1232          | NR            |
| 365    | 1189          | NR            | 495    | 19116         | NR            | 625    | 55411         | NR            | 755    | 4806          | NR            | 885    | 1083          | NR            |
| 370    | 1111          | NR            | 500    | 21564         | NR            | 630    | 55189         | NR            | 760    | 4232          | NR            | 890    | 1127          | NR            |
| 375    | 1400          | NR            | 505    | 23751         | NR            | 635    | 54062         | NR            | 765    | 3663          | NR            | 895    | 1144          | NR            |
| 380    | 1360          | NR            | 510    | 25303         | NR            | 640    | 52304         | NR            | 770    | 3348          | NR            | 900    | 1167          | NR            |
| 385    | 1156          | NR            | 515    | 26615         | NR            | 645    | 50301         | NR            | 775    | 2859          | NR            | 905    | 1078          | NR            |
| 390    | 1201          | NR            | 520    | 28043         | NR            | 650    | 48008         | NR            | 780    | 2628          | NR            | 910    | 1246          | NR            |
| 395    | 1115          | NR            | 525    | 28969         | NR            | 655    | 45500         | NR            | 785    | 2352          | NR            | 915    | 1219          | NR            |
| 400    | 953           | NR            | 530    | 30127         | NR            | 660    | 42527         | NR            | 790    | 2172          | NR            | 920    | 941           | NR            |
| 405    | 814           | NR            | 535    | 31549         | NR            | 665    | 39145         | NR            | 795    | 1908          | NR            | 925    | 1132          | NR            |
| 410    | 755           | NR            | 540    | 32918         | NR            | 670    | 36112         | NR            | 800    | 1858          | NR            | 930    | 1076          | NR            |
| 415    | 915           | NR            | 545    | 34219         | NR            | 675    | 32740         | NR            | 805    | 1832          | NR            | 935    | 1285          | NR            |
| 420    | 1363          | NR            | 550    | 35624         | NR            | 680    | 29556         | NR            | 810    | 1648          | NR            | 940    | 1131          | NR            |
| 425    | 2118          | NR            | 555    | 36908         | NR            | 685    | 26682         | NR            | 815    | 1723          | NR            | 945    | 1200          | NR            |
| 430    | 3273          | NR            | 560    | 38001         | NR            | 690    | 23679         | NR            | 820    | 1549          | NR            | 950    | 1309          | NR            |
| 435    | 5028          | NR            | 565    | 39315         | NR            | 695    | 21005         | NR            | 825    | 1330          | NR            | 955    | 1517          | NR            |
| 440    | 8074          | NR            | 570    | 40713         | NR            | 700    | 18600         | NR            | 830    | 1388          | NR            | 960    | 1079          | NR            |
| 445    | 14325         | NR            | 575    | 41978         | NR            | 705    | 16437         | NR            | 835    | 1616          | NR            | 965    | 1117          | NR            |
| 450    | 23321         | NR            | 580    | 43289         | NR            | 710    | 14495         | NR            | 840    | 1375          | NR            | 970    | 1618          | NR            |
| 455    | 26653         | NR            | 585    | 45077         | NR            | 715    | 12890         | NR            | 845    | 1381          | NR            | 975    | 1214          | NR            |
| 460    | 21360         | NR            | 590    | 47036         | NR            | 720    | 11407         | NR            | 850    | 1451          | NR            | 980    | 1308          | NR            |
| 465    | 17172         | NR            | 595    | 48772         | NR            | 725    | 10022         | NR            | 855    | 1508          | NR            | 985    | 1082          | NR            |
| 470    | 15539         | NR            | 600    | 50601         | NR            | 730    | 8726          | NR            | 860    | 1391          | NR            | 990    | 1563          | NR            |
| 475    | 13714         | NR            | 605    | 52357         | NR            | 735    | 7674          | NR            | 865    | 1446          | NR            | 995    | 1194          | NR            |
| 480    | 13103         | NR            | 610    | 53915         | NR            | 740    | 6815          | NR            | 870    | 1157          | NR            | 1000   | 1844          | NR            |
| 485    | 14477         | NR            | 615    | 54990         | NR            | 745    | 6153          | NR            | 875    | 1251          | NR            |        |               |               |

REPORT NUMBER: SP1-2203-582-2

**Scotopic Flux vs. Wavelength**



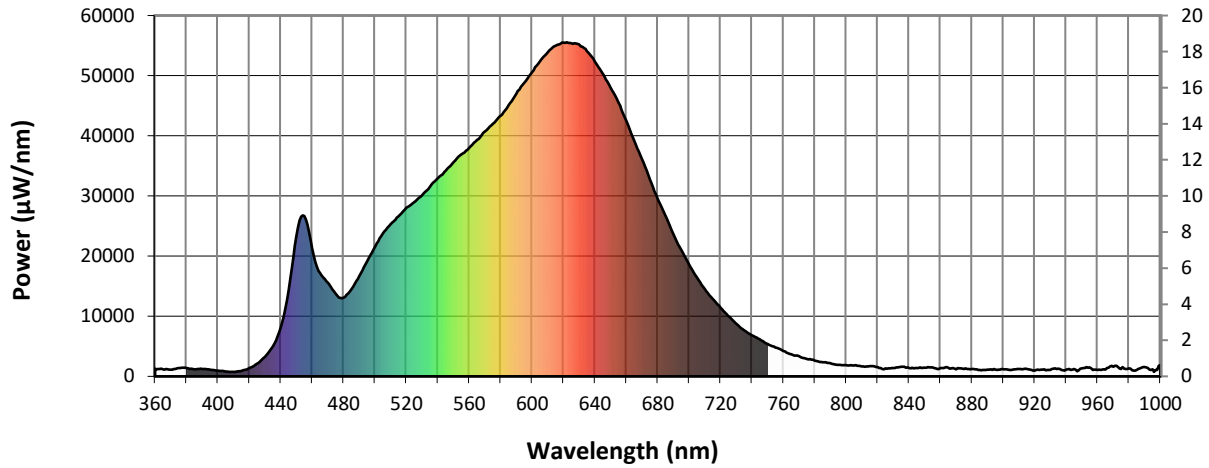
**Scotopic Lumens: 3917.4**

**S/P: 1.42**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1256          | NR            | 490    | 16713         | NR            | 620    | 55488         | NR            | 750    | 5386          | NR            | 880    | 1232          | NR            |
| 365    | 1189          | NR            | 495    | 19116         | NR            | 625    | 55411         | NR            | 755    | 4806          | NR            | 885    | 1083          | NR            |
| 370    | 1111          | NR            | 500    | 21564         | NR            | 630    | 55189         | NR            | 760    | 4232          | NR            | 890    | 1127          | NR            |
| 375    | 1400          | NR            | 505    | 23751         | NR            | 635    | 54062         | NR            | 765    | 3663          | NR            | 895    | 1144          | NR            |
| 380    | 1360          | NR            | 510    | 25303         | NR            | 640    | 52304         | NR            | 770    | 3348          | NR            | 900    | 1167          | NR            |
| 385    | 1156          | NR            | 515    | 26615         | NR            | 645    | 50301         | NR            | 775    | 2859          | NR            | 905    | 1078          | NR            |
| 390    | 1201          | NR            | 520    | 28043         | NR            | 650    | 48008         | NR            | 780    | 2628          | NR            | 910    | 1246          | NR            |
| 395    | 1115          | NR            | 525    | 28969         | NR            | 655    | 45500         | NR            | 785    | 2352          | NR            | 915    | 1219          | NR            |
| 400    | 953           | NR            | 530    | 30127         | NR            | 660    | 42527         | NR            | 790    | 2172          | NR            | 920    | 941           | NR            |
| 405    | 814           | NR            | 535    | 31549         | NR            | 665    | 39145         | NR            | 795    | 1908          | NR            | 925    | 1132          | NR            |
| 410    | 755           | NR            | 540    | 32918         | NR            | 670    | 36112         | NR            | 800    | 1858          | NR            | 930    | 1076          | NR            |
| 415    | 915           | NR            | 545    | 34219         | NR            | 675    | 32740         | NR            | 805    | 1832          | NR            | 935    | 1285          | NR            |
| 420    | 1363          | NR            | 550    | 35624         | NR            | 680    | 29556         | NR            | 810    | 1648          | NR            | 940    | 1131          | NR            |
| 425    | 2118          | NR            | 555    | 36908         | NR            | 685    | 26682         | NR            | 815    | 1723          | NR            | 945    | 1200          | NR            |
| 430    | 3273          | NR            | 560    | 38001         | NR            | 690    | 23679         | NR            | 820    | 1549          | NR            | 950    | 1309          | NR            |
| 435    | 5028          | NR            | 565    | 39315         | NR            | 695    | 21005         | NR            | 825    | 1330          | NR            | 955    | 1517          | NR            |
| 440    | 8074          | NR            | 570    | 40713         | NR            | 700    | 18600         | NR            | 830    | 1388          | NR            | 960    | 1079          | NR            |
| 445    | 14325         | NR            | 575    | 41978         | NR            | 705    | 16437         | NR            | 835    | 1616          | NR            | 965    | 1117          | NR            |
| 450    | 23321         | NR            | 580    | 43289         | NR            | 710    | 14495         | NR            | 840    | 1375          | NR            | 970    | 1618          | NR            |
| 455    | 26653         | NR            | 585    | 45077         | NR            | 715    | 12890         | NR            | 845    | 1381          | NR            | 975    | 1214          | NR            |
| 460    | 21360         | NR            | 590    | 47036         | NR            | 720    | 11407         | NR            | 850    | 1451          | NR            | 980    | 1308          | NR            |
| 465    | 17172         | NR            | 595    | 48772         | NR            | 725    | 10022         | NR            | 855    | 1508          | NR            | 985    | 1082          | NR            |
| 470    | 15539         | NR            | 600    | 50601         | NR            | 730    | 8726          | NR            | 860    | 1391          | NR            | 990    | 1563          | NR            |
| 475    | 13714         | NR            | 605    | 52357         | NR            | 735    | 7674          | NR            | 865    | 1446          | NR            | 995    | 1194          | NR            |
| 480    | 13103         | NR            | 610    | 53915         | NR            | 740    | 6815          | NR            | 870    | 1157          | NR            | 1000   | 1844          | NR            |
| 485    | 14477         | NR            | 615    | 54990         | NR            | 745    | 6153          | NR            | 875    | 1251          | NR            |        |               |               |

REPORT NUMBER: SP1-2203-582-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: 1507.9 S/P: 0.55

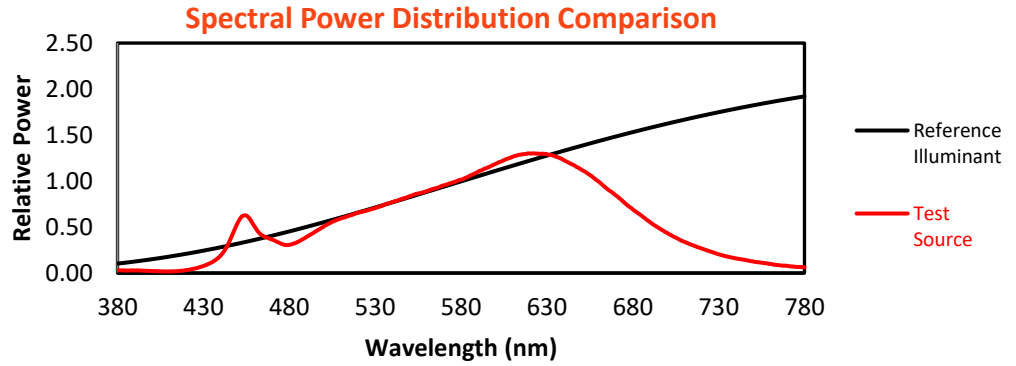
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1256          | NR            | 490    | 16713         | NR            | 620    | 55488         | NR            | 750    | 5386          | NR            | 880    | 1232          | NR            |
| 365    | 1189          | NR            | 495    | 19116         | NR            | 625    | 55411         | NR            | 755    | 4806          | NR            | 885    | 1083          | NR            |
| 370    | 1111          | NR            | 500    | 21564         | NR            | 630    | 55189         | NR            | 760    | 4232          | NR            | 890    | 1127          | NR            |
| 375    | 1400          | NR            | 505    | 23751         | NR            | 635    | 54062         | NR            | 765    | 3663          | NR            | 895    | 1144          | NR            |
| 380    | 1360          | NR            | 510    | 25303         | NR            | 640    | 52304         | NR            | 770    | 3348          | NR            | 900    | 1167          | NR            |
| 385    | 1156          | NR            | 515    | 26615         | NR            | 645    | 50301         | NR            | 775    | 2859          | NR            | 905    | 1078          | NR            |
| 390    | 1201          | NR            | 520    | 28043         | NR            | 650    | 48008         | NR            | 780    | 2628          | NR            | 910    | 1246          | NR            |
| 395    | 1115          | NR            | 525    | 28969         | NR            | 655    | 45500         | NR            | 785    | 2352          | NR            | 915    | 1219          | NR            |
| 400    | 953           | NR            | 530    | 30127         | NR            | 660    | 42527         | NR            | 790    | 2172          | NR            | 920    | 941           | NR            |
| 405    | 814           | NR            | 535    | 31549         | NR            | 665    | 39145         | NR            | 795    | 1908          | NR            | 925    | 1132          | NR            |
| 410    | 755           | NR            | 540    | 32918         | NR            | 670    | 36112         | NR            | 800    | 1858          | NR            | 930    | 1076          | NR            |
| 415    | 915           | NR            | 545    | 34219         | NR            | 675    | 32740         | NR            | 805    | 1832          | NR            | 935    | 1285          | NR            |
| 420    | 1363          | NR            | 550    | 35624         | NR            | 680    | 29556         | NR            | 810    | 1648          | NR            | 940    | 1131          | NR            |
| 425    | 2118          | NR            | 555    | 36908         | NR            | 685    | 26682         | NR            | 815    | 1723          | NR            | 945    | 1200          | NR            |
| 430    | 3273          | NR            | 560    | 38001         | NR            | 690    | 23679         | NR            | 820    | 1549          | NR            | 950    | 1309          | NR            |
| 435    | 5028          | NR            | 565    | 39315         | NR            | 695    | 21005         | NR            | 825    | 1330          | NR            | 955    | 1517          | NR            |
| 440    | 8074          | NR            | 570    | 40713         | NR            | 700    | 18600         | NR            | 830    | 1388          | NR            | 960    | 1079          | NR            |
| 445    | 14325         | NR            | 575    | 41978         | NR            | 705    | 16437         | NR            | 835    | 1616          | NR            | 965    | 1117          | NR            |
| 450    | 23321         | NR            | 580    | 43289         | NR            | 710    | 14495         | NR            | 840    | 1375          | NR            | 970    | 1618          | NR            |
| 455    | 26653         | NR            | 585    | 45077         | NR            | 715    | 12890         | NR            | 845    | 1381          | NR            | 975    | 1214          | NR            |
| 460    | 21360         | NR            | 590    | 47036         | NR            | 720    | 11407         | NR            | 850    | 1451          | NR            | 980    | 1308          | NR            |
| 465    | 17172         | NR            | 595    | 48772         | NR            | 725    | 10022         | NR            | 855    | 1508          | NR            | 985    | 1082          | NR            |
| 470    | 15539         | NR            | 600    | 50601         | NR            | 730    | 8726          | NR            | 860    | 1391          | NR            | 990    | 1563          | NR            |
| 475    | 13714         | NR            | 605    | 52357         | NR            | 735    | 7674          | NR            | 865    | 1446          | NR            | 995    | 1194          | NR            |
| 480    | 13103         | NR            | 610    | 53915         | NR            | 740    | 6815          | NR            | 870    | 1157          | NR            | 1000   | 1844          | NR            |
| 485    | 14477         | NR            | 615    | 54990         | NR            | 745    | 6153          | NR            | 875    | 1251          | NR            |        |               |               |

REPORT NUMBER: SP1-2203-582-2

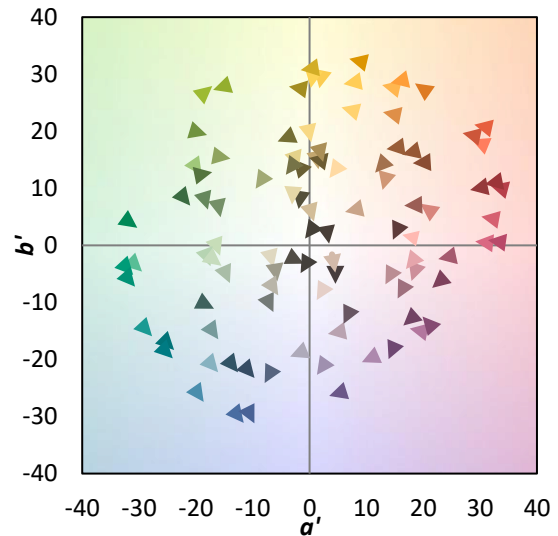
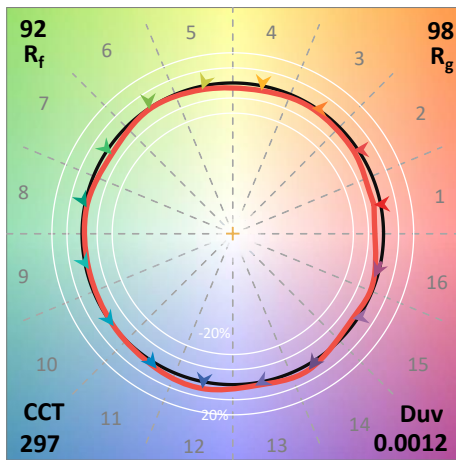
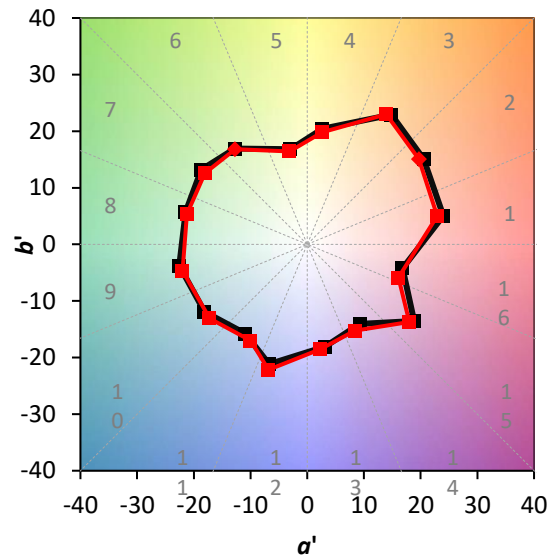
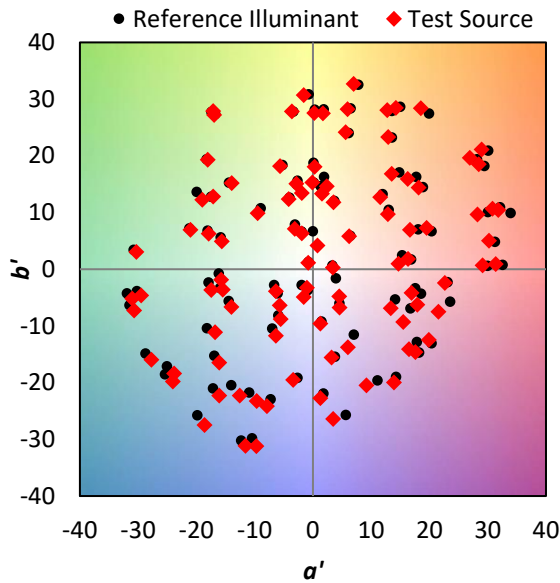
TM-30-18

**Summary**

$R_f = 92.3$   
 $R_g = 97.8$   
 CIE  $R_a = 93.8$   
 $R_9 = 64.0$



**Color Vector Graphics**

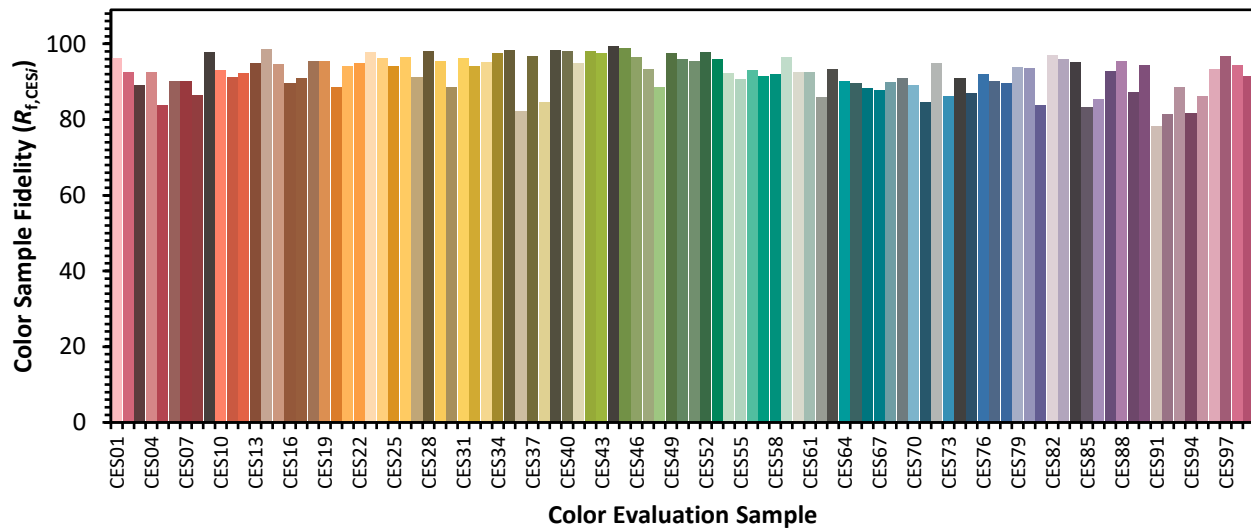


REPORT NUMBER: SP1-2203-582-2

TM-30-18

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 96 | CES51 = 95 | CES76 = 92 |
| CES02 = 63 | CES27 = 91 | CES52 = 98 | CES77 = 90 |
| CES03 = 32 | CES28 = 98 | CES53 = 96 | CES78 = 90 |
| CES04 = 70 | CES29 = 95 | CES54 = 92 | CES79 = 94 |
| CES05 = 51 | CES30 = 89 | CES55 = 91 | CES80 = 93 |
| CES06 = 51 | CES31 = 96 | CES56 = 93 | CES81 = 84 |
| CES07 = 43 | CES32 = 94 | CES57 = 91 | CES82 = 97 |
| CES08 = 42 | CES33 = 95 | CES58 = 92 | CES83 = 96 |
| CES09 = 29 | CES34 = 98 | CES59 = 97 | CES84 = 95 |
| CES10 = 76 | CES35 = 98 | CES60 = 93 | CES85 = 83 |
| CES11 = 59 | CES36 = 82 | CES61 = 93 | CES86 = 85 |
| CES12 = 65 | CES37 = 97 | CES62 = 86 | CES87 = 93 |
| CES13 = 44 | CES38 = 85 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 98 | CES64 = 90 | CES89 = 87 |
| CES15 = 72 | CES40 = 98 | CES65 = 90 | CES90 = 94 |
| CES16 = 48 | CES41 = 95 | CES66 = 88 | CES91 = 78 |
| CES17 = 50 | CES42 = 98 | CES67 = 88 | CES92 = 81 |
| CES18 = 57 | CES43 = 98 | CES68 = 90 | CES93 = 88 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 82 |
| CES20 = 67 | CES45 = 99 | CES70 = 89 | CES95 = 86 |
| CES21 = 86 | CES46 = 97 | CES71 = 85 | CES96 = 93 |
| CES22 = 79 | CES47 = 93 | CES72 = 95 | CES97 = 97 |
| CES23 = 92 | CES48 = 89 | CES73 = 86 | CES98 = 94 |
| CES24 = 91 | CES49 = 98 | CES74 = 91 | CES99 = 91 |
| CES25 = 72 | CES50 = 96 | CES75 = 87 |            |





REPORT NUMBER: SP1-2203-582-2

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-2203-582-2

TM-30-18

Measure Comparisons



(END OF REPORT)