

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: CORELITE

Report Number: P1215673

Luminaire Tested: 24-ID2-40-CFR2-L830-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1215673  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2508-510-7)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 24-ID2-40-CFR2-L830-U  
Description: 2X4 IN DEPTH TROFFER WITH 2INCH CUBE REGRESS LENS  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

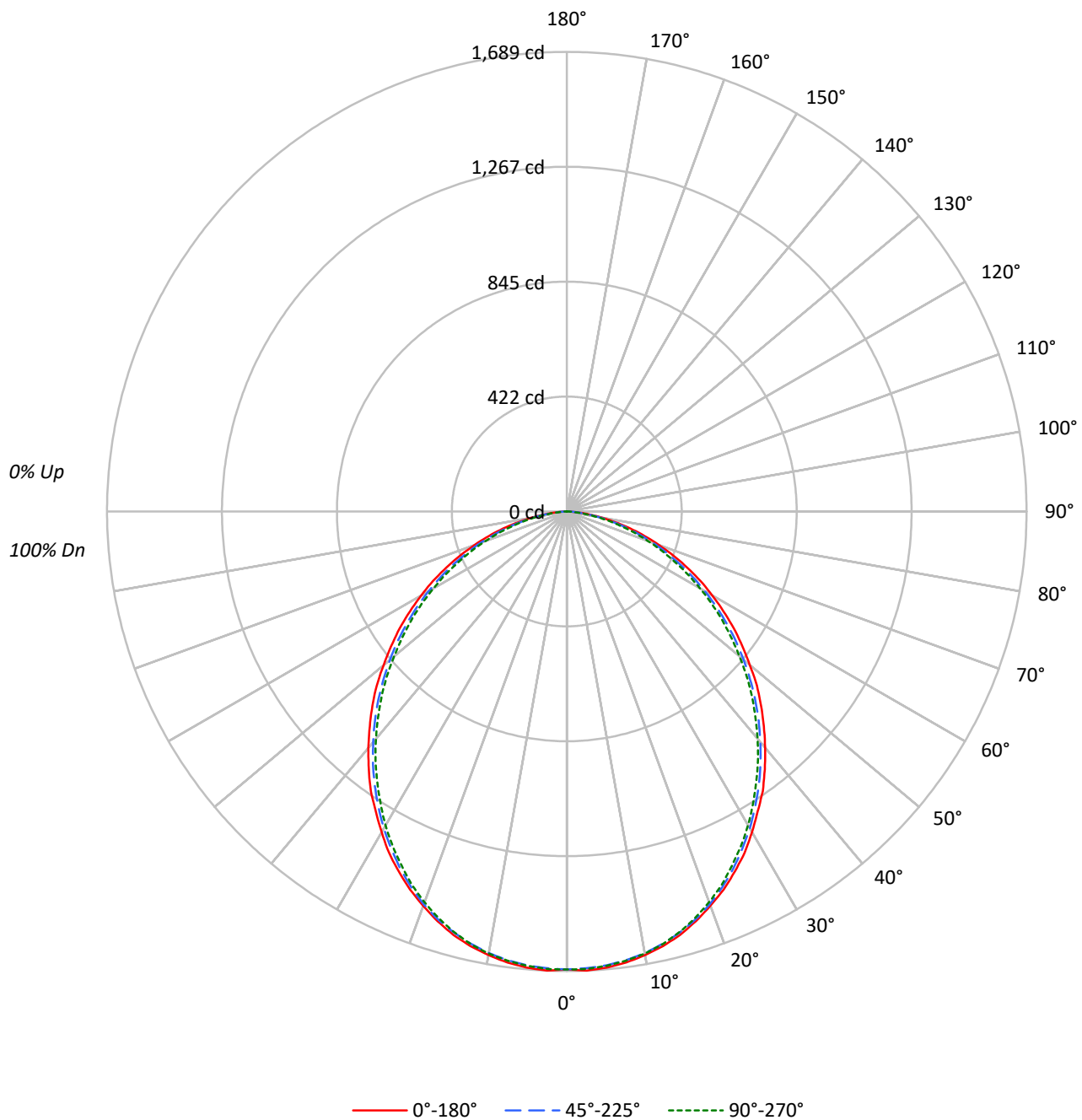
Lumens per Lamp: N/A  
Luminaire Lumens: 4189.1 lumens  
Efficiency: N/A  
Efficacy: 120.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.18 / 1.29  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 34.7  
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



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### Luminous Intensity Polar Plot



TEST NUMBER: P1215673

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

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 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 |  | 100 |
| 1   | 109 | 105 | 101 | 97  | 107 | 103 | 99  | 96  | 98  | 95  | 93  |  | 95  | 92  | 90  |  | 85  |
| 2   | 100 | 92  | 86  | 80  | 97  | 90  | 84  | 79  | 87  | 82  | 77  |  | 83  | 79  | 76  |  | 72  |
| 3   | 91  | 81  | 74  | 67  | 89  | 80  | 73  | 67  | 77  | 71  | 65  |  | 74  | 69  | 64  |  | 61  |
| 4   | 84  | 72  | 64  | 57  | 82  | 71  | 63  | 57  | 69  | 62  | 56  |  | 66  | 60  | 55  |  | 53  |
| 5   | 77  | 65  | 56  | 50  | 75  | 64  | 56  | 49  | 62  | 54  | 49  |  | 60  | 53  | 48  |  | 46  |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 49  | 43  | 56  | 49  | 43  |  | 54  | 48  | 43  |  | 40  |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 44  | 39  | 51  | 44  | 38  |  | 50  | 43  | 38  |  | 36  |
| 8   | 62  | 49  | 40  | 35  | 60  | 48  | 40  | 35  | 47  | 40  | 34  |  | 46  | 39  | 34  |  | 32  |
| 9   | 58  | 45  | 37  | 31  | 57  | 44  | 37  | 31  | 43  | 36  | 31  |  | 42  | 36  | 31  |  | 29  |
| 10  | 54  | 41  | 34  | 29  | 53  | 41  | 33  | 28  | 40  | 33  | 28  |  | 39  | 33  | 28  |  | 26  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2265 | 2265 | 2265 |
| 5°  | 2273 | 2261 | 2264 |
| 10° | 2262 | 2251 | 2254 |
| 15° | 2244 | 2232 | 2229 |
| 20° | 2208 | 2200 | 2188 |
| 25° | 2168 | 2149 | 2131 |
| 30° | 2114 | 2089 | 2070 |
| 35° | 2061 | 2020 | 1994 |
| 40° | 1991 | 1943 | 1916 |
| 45° | 1921 | 1862 | 1831 |
| 50° | 1838 | 1774 | 1732 |
| 55° | 1758 | 1678 | 1635 |
| 60° | 1662 | 1574 | 1519 |
| 65° | 1553 | 1458 | 1391 |
| 70° | 1417 | 1325 | 1253 |
| 75° | 1255 | 1142 | 1058 |
| 80° | 1010 | 900  | 824  |
| 85° | 672  | 574  | 468  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1921 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 159.1  | 3.8       |
| 10°-20°   | 451.5  | 10.8      |
| 20°-30°   | 666.2  | 15.9      |
| 30°-40°   | 770.4  | 18.4      |
| 40°-50°   | 757.7  | 18.1      |
| 50°-60°   | 643.5  | 15.4      |
| 60°-70°   | 456.1  | 10.9      |
| 70°-80°   | 235.1  | 5.6       |
| 80°-90°   | 49.5   | 1.2       |
| 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°    | 1276.8 | 30.5      |
| 0°-40°    | 2047.2 | 48.9      |
| 0°-60°    | 3448.3 | 82.3      |
| 0°-90°    | 4189.1 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 4189.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1683 | 1683  | 1683 | 1683  | 1683 |      |
| 5°  | 1683 | 1676  | 1674 | 1672  | 1676 | 160  |
| 15° | 1611 | 1604  | 1602 | 1599  | 1600 | 454  |
| 25° | 1460 | 1455  | 1448 | 1438  | 1436 | 672  |
| 35° | 1255 | 1248  | 1230 | 1219  | 1214 | 783  |
| 45° | 1010 | 1001  | 979  | 965   | 962  | 778  |
| 55° | 749  | 738   | 716  | 703   | 697  | 669  |
| 65° | 488  | 476   | 458  | 443   | 437  | 483  |
| 75° | 241  | 231   | 220  | 207   | 204  | 255  |
| 85° | 44   | 41    | 37   | 33    | 30   | 55   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1683.3 | 1683.3 | 1683.3 | 1683.3 | 1683.3 |
| 2.5°  | 1689.0 | 1683.3 | 1679.9 | 1678.7 | 1682.7 |
| 5°    | 1682.7 | 1676.4 | 1674.1 | 1672.4 | 1675.9 |
| 7.5°  | 1671.9 | 1665.6 | 1663.3 | 1661.6 | 1665.0 |
| 10°   | 1655.8 | 1650.1 | 1647.8 | 1646.1 | 1650.1 |
| 12.5° | 1635.8 | 1630.1 | 1627.2 | 1625.5 | 1628.4 |
| 15°   | 1610.7 | 1604.4 | 1602.1 | 1598.6 | 1600.4 |
| 17.5° | 1578.6 | 1574.0 | 1572.3 | 1566.0 | 1566.6 |
| 20°   | 1542.0 | 1538.6 | 1536.3 | 1527.1 | 1528.3 |
| 22.5° | 1504.3 | 1499.7 | 1494.0 | 1486.0 | 1486.0 |
| 25°   | 1460.2 | 1455.1 | 1447.6 | 1438.5 | 1435.6 |
| 27.5° | 1414.5 | 1408.8 | 1396.7 | 1388.7 | 1385.9 |
| 30°   | 1360.7 | 1357.3 | 1344.7 | 1334.4 | 1332.1 |
| 32.5° | 1305.8 | 1303.5 | 1287.5 | 1278.9 | 1273.2 |
| 35°   | 1254.9 | 1248.0 | 1229.7 | 1218.9 | 1213.7 |
| 37.5° | 1194.8 | 1188.5 | 1169.1 | 1159.4 | 1153.7 |
| 40°   | 1133.6 | 1125.6 | 1106.2 | 1098.2 | 1090.7 |
| 42.5° | 1071.3 | 1065.6 | 1043.3 | 1030.7 | 1025.5 |
| 45°   | 1009.5 | 1000.9 | 978.6  | 964.9  | 962.0  |
| 47.5° | 947.2  | 935.2  | 913.4  | 899.1  | 896.3  |
| 50°   | 878.0  | 869.4  | 847.7  | 832.8  | 827.6  |
| 52.5° | 812.8  | 802.5  | 783.0  | 768.7  | 761.9  |
| 55°   | 749.3  | 737.8  | 715.5  | 702.9  | 697.2  |
| 57.5° | 682.4  | 672.1  | 652.0  | 636.0  | 631.5  |
| 60°   | 617.7  | 604.6  | 585.1  | 572.0  | 564.5  |
| 62.5° | 554.2  | 541.1  | 522.2  | 505.6  | 502.2  |
| 65°   | 487.9  | 475.9  | 458.1  | 443.3  | 437.0  |
| 67.5° | 423.8  | 411.8  | 394.7  | 383.2  | 377.5  |
| 70°   | 360.3  | 350.6  | 336.9  | 322.0  | 318.6  |
| 72.5° | 299.7  | 290.6  | 276.3  | 263.7  | 260.8  |
| 75°   | 241.4  | 231.1  | 219.6  | 207.1  | 203.6  |
| 77.5° | 182.5  | 177.3  | 165.3  | 158.4  | 154.4  |
| 80°   | 130.4  | 124.1  | 116.1  | 109.8  | 106.4  |
| 82.5° | 81.2   | 78.9   | 73.8   | 68.1   | 64.6   |
| 85°   | 43.5   | 41.2   | 37.2   | 33.2   | 30.3   |
| 87.5° | 12.0   | 13.2   | 13.2   | 12.6   | 12.6   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 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 | 13.96            | 15.54 | 14.32 | 15.86 | 16.17 | 13.54          | 15.13 | 13.91 | 15.44 | 15.76 |
|                 | 3H   | 15.58            | 17.01 | 15.96 | 17.34 | 17.70 | 15.06          | 16.49 | 15.44 | 16.82 | 17.18 |
|                 | 4H   | 16.15            | 17.49 | 16.55 | 17.84 | 18.21 | 15.56          | 16.90 | 15.96 | 17.25 | 17.63 |
|                 | 6H   | 16.51            | 17.75 | 16.92 | 18.12 | 18.51 | 15.86          | 17.10 | 16.27 | 17.47 | 17.86 |
|                 | 8H   | 16.60            | 17.78 | 17.02 | 18.17 | 18.57 | 15.93          | 17.11 | 16.35 | 17.50 | 17.90 |
|                 | 12H  | 16.64            | 17.77 | 17.07 | 18.15 | 18.58 | 15.95          | 17.08 | 16.38 | 17.46 | 17.89 |
| 4H              | 2H   | 14.47            | 15.81 | 14.87 | 16.16 | 16.54 | 14.14          | 15.48 | 14.54 | 15.83 | 16.21 |
|                 | 3H   | 16.31            | 17.42 | 16.72 | 17.82 | 18.22 | 15.86          | 16.98 | 16.27 | 17.38 | 17.78 |
|                 | 4H   | 16.99            | 17.99 | 17.42 | 18.41 | 18.84 | 16.46          | 17.47 | 16.89 | 17.88 | 18.32 |
|                 | 6H   | 17.45            | 18.33 | 17.91 | 18.77 | 19.23 | 16.86          | 17.74 | 17.32 | 18.18 | 18.64 |
|                 | 8H   | 17.57            | 18.39 | 18.04 | 18.84 | 19.30 | 16.95          | 17.77 | 17.41 | 18.21 | 18.68 |
|                 | 12H  | 17.64            | 18.37 | 18.12 | 18.85 | 19.32 | 16.99          | 17.73 | 17.47 | 18.20 | 18.67 |
| 8H              | 4H   | 17.19            | 18.01 | 17.65 | 18.46 | 18.92 | 16.72          | 17.54 | 17.18 | 17.98 | 18.45 |
|                 | 6H   | 17.75            | 18.42 | 18.24 | 18.91 | 19.39 | 17.20          | 17.88 | 17.70 | 18.37 | 18.85 |
|                 | 8H   | 17.91            | 18.52 | 18.42 | 19.03 | 19.51 | 17.33          | 17.94 | 17.84 | 18.45 | 18.94 |
|                 | 12H  | 18.02            | 18.56 | 18.53 | 19.05 | 19.61 | 17.41          | 17.94 | 17.91 | 18.43 | 19.00 |
| 12H             | 4H   | 17.20            | 17.93 | 17.68 | 18.41 | 18.88 | 16.74          | 17.47 | 17.22 | 17.95 | 18.42 |
|                 | 6H   | 17.76            | 18.37 | 18.27 | 18.87 | 19.36 | 17.23          | 17.84 | 17.74 | 18.35 | 18.83 |
|                 | 8H   | 17.96            | 18.50 | 18.47 | 18.99 | 19.56 | 17.40          | 17.94 | 17.91 | 18.43 | 18.99 |

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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-3

Test Date: 07/24/2025

Luminaire Tested: 22ID2-55-CFR1-L830-U

Data in this report applies to families of products including 22ID2-55-CFR1-L830-U

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L830-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 3000K 80CRI

### Spectral Parameters

CCT (K): 3031  
 CIE  $u'$ : 0.2493  
 CIE  $v'$ : 0.5215  
 Duv: 0.0005  
 CIE x: 0.4355  
 CIE y: 0.4049  
 CIE z: 0.1596  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 582  
 Purity: 52.24762  
 Rf: 84.8  
 Rg: 95.8

CRI (Ra): 82.5  
 R1: 80.7  
 R2: 90.5  
 R3: 96.7  
 R4: 80.7  
 R5: 80.9  
 R6: 88.5  
 R7: 83.0  
 R8: 58.8  
 R9: 5.8  
 R10: 78.6  
 R11: 80.2  
 R12: 69.8  
 R13: 83.0  
 R14: 98.8  
 R15: 73.0



### Test Conditions

Stabilization Time: 38M  
 Operation Time: 1H 38M  
 Sphere Temperature (°C): 24.0

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| 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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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 229                                  | NR                             | 620               | 922                                  | NR                             | 750               | 29                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 275                                  | NR                             | 625               | 875                                  | NR                             | 755               | 25                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 326                                  | NR                             | 630               | 822                                  | NR                             | 760               | 21                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 372                                  | NR                             | 635               | 764                                  | NR                             | 765               | 18                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 411                                  | NR                             | 640               | 704                                  | NR                             | 770               | 15                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 447                                  | NR                             | 645               | 638                                  | NR                             | 775               | 13                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 473                                  | NR                             | 650               | 577                                  | NR                             | 780               | 11                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 1                                    | NR                             | 525               | 495                                  | NR                             | 655               | 517                                  | NR                             | 785               | 10                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 3                                    | NR                             | 530               | 515                                  | NR                             | 660               | 457                                  | NR                             | 790               | 8                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 4                                    | NR                             | 535               | 537                                  | NR                             | 665               | 404                                  | NR                             | 795               | 7                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 7                                    | NR                             | 540               | 559                                  | NR                             | 670               | 353                                  | NR                             | 800               | 6                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 12                                   | NR                             | 545               | 584                                  | NR                             | 675               | 307                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 22                                   | NR                             | 550               | 612                                  | NR                             | 680               | 267                                  | NR                             | 810               | 5                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 40                                   | NR                             | 555               | 648                                  | NR                             | 685               | 230                                  | NR                             | 815               | 4                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 69                                   | NR                             | 560               | 688                                  | NR                             | 690               | 199                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 120                                  | NR                             | 565               | 730                                  | NR                             | 695               | 170                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 212                                  | NR                             | 570               | 777                                  | NR                             | 700               | 145                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 400                                  | NR                             | 575               | 824                                  | NR                             | 705               | 124                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 578                                  | NR                             | 580               | 873                                  | NR                             | 710               | 106                                  | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 478                                  | NR                             | 585               | 918                                  | NR                             | 715               | 90                                   | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 332                                  | NR                             | 590               | 958                                  | NR                             | 720               | 76                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 295                                  | NR                             | 595               | 983                                  | NR                             | 725               | 65                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 231                                  | NR                             | 600               | 997                                  | NR                             | 730               | 55                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 183                                  | NR                             | 605               | 998                                  | NR                             | 735               | 47                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 184                                  | NR                             | 610               | 982                                  | NR                             | 740               | 40                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 201                                  | NR                             | 615               | 958                                  | NR                             | 745               | 34                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-2506-458-3

### Scotopic Flux vs. Wavelength



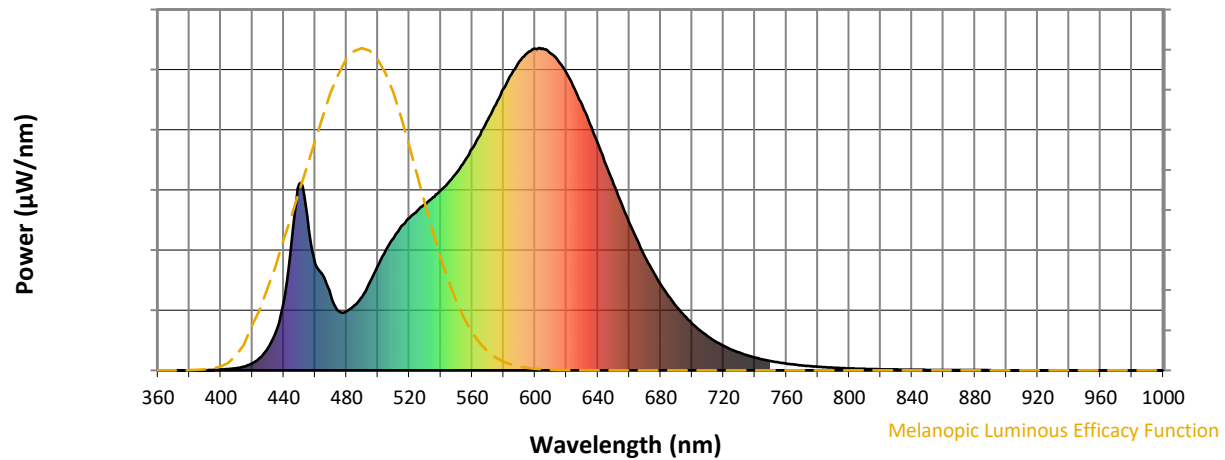
Scotopic Lumens: NR

S/P: 1.35

| 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       | 229                         | NR               | 620       | 922                         | NR               | 750       | 29                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 275                         | NR               | 625       | 875                         | NR               | 755       | 25                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 326                         | NR               | 630       | 822                         | NR               | 760       | 21                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 372                         | NR               | 635       | 764                         | NR               | 765       | 18                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 411                         | NR               | 640       | 704                         | NR               | 770       | 15                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 447                         | NR               | 645       | 638                         | NR               | 775       | 13                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 473                         | NR               | 650       | 577                         | NR               | 780       | 11                          | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 495                         | NR               | 655       | 517                         | NR               | 785       | 10                          | NR               | 915       | 0                           | NR               |
| 400       | 3                           | NR               | 530       | 515                         | NR               | 660       | 457                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 4                           | NR               | 535       | 537                         | NR               | 665       | 404                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 7                           | NR               | 540       | 559                         | NR               | 670       | 353                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 12                          | NR               | 545       | 584                         | NR               | 675       | 307                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 22                          | NR               | 550       | 612                         | NR               | 680       | 267                         | NR               | 810       | 5                           | NR               | 940       | 0                           | NR               |
| 425       | 40                          | NR               | 555       | 648                         | NR               | 685       | 230                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 69                          | NR               | 560       | 688                         | NR               | 690       | 199                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 120                         | NR               | 565       | 730                         | NR               | 695       | 170                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 212                         | NR               | 570       | 777                         | NR               | 700       | 145                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 400                         | NR               | 575       | 824                         | NR               | 705       | 124                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 578                         | NR               | 580       | 873                         | NR               | 710       | 106                         | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 478                         | NR               | 585       | 918                         | NR               | 715       | 90                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 332                         | NR               | 590       | 958                         | NR               | 720       | 76                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 295                         | NR               | 595       | 983                         | NR               | 725       | 65                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 231                         | NR               | 600       | 997                         | NR               | 730       | 55                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 183                         | NR               | 605       | 998                         | NR               | 735       | 47                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 184                         | NR               | 610       | 982                         | NR               | 740       | 40                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 201                         | NR               | 615       | 958                         | NR               | 745       | 34                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.59

| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 229                                    | NR                             | 620               | 922                                    | NR                             | 750               | 29                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 275                                    | NR                             | 625               | 875                                    | NR                             | 755               | 25                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 326                                    | NR                             | 630               | 822                                    | NR                             | 760               | 21                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 372                                    | NR                             | 635               | 764                                    | NR                             | 765               | 18                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 411                                    | NR                             | 640               | 704                                    | NR                             | 770               | 15                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 447                                    | NR                             | 645               | 638                                    | NR                             | 775               | 13                                     | NR                             | 905               | 0                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 473                                    | NR                             | 650               | 577                                    | NR                             | 780               | 11                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 1                                      | NR                             | 525               | 495                                    | NR                             | 655               | 517                                    | NR                             | 785               | 10                                     | NR                             | 915               | 0                                      | NR                             |
| 400               | 3                                      | NR                             | 530               | 515                                    | NR                             | 660               | 457                                    | NR                             | 790               | 8                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 4                                      | NR                             | 535               | 537                                    | NR                             | 665               | 404                                    | NR                             | 795               | 7                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 7                                      | NR                             | 540               | 559                                    | NR                             | 670               | 353                                    | NR                             | 800               | 6                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 12                                     | NR                             | 545               | 584                                    | NR                             | 675               | 307                                    | NR                             | 805               | 5                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 22                                     | NR                             | 550               | 612                                    | NR                             | 680               | 267                                    | NR                             | 810               | 5                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 40                                     | NR                             | 555               | 648                                    | NR                             | 685               | 230                                    | NR                             | 815               | 4                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 69                                     | NR                             | 560               | 688                                    | NR                             | 690               | 199                                    | NR                             | 820               | 3                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 120                                    | NR                             | 565               | 730                                    | NR                             | 695               | 170                                    | NR                             | 825               | 3                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 212                                    | NR                             | 570               | 777                                    | NR                             | 700               | 145                                    | NR                             | 830               | 3                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 400                                    | NR                             | 575               | 824                                    | NR                             | 705               | 124                                    | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 578                                    | NR                             | 580               | 873                                    | NR                             | 710               | 106                                    | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 478                                    | NR                             | 585               | 918                                    | NR                             | 715               | 90                                     | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 332                                    | NR                             | 590               | 958                                    | NR                             | 720               | 76                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 295                                    | NR                             | 595               | 983                                    | NR                             | 725               | 65                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 231                                    | NR                             | 600               | 997                                    | NR                             | 730               | 55                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 183                                    | NR                             | 605               | 998                                    | NR                             | 735               | 47                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 184                                    | NR                             | 610               | 982                                    | NR                             | 740               | 40                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 201                                    | NR                             | 615               | 958                                    | NR                             | 745               | 34                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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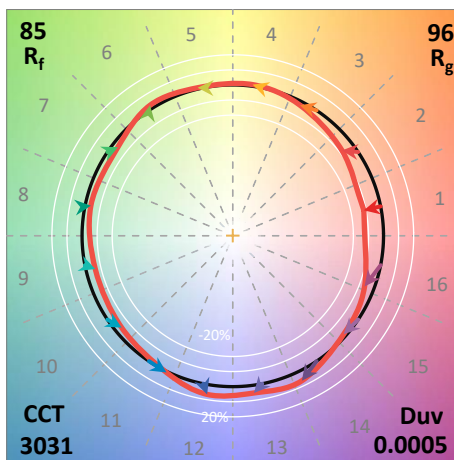
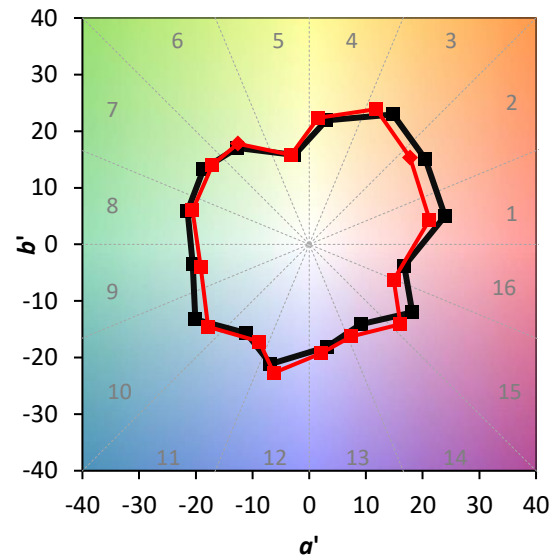
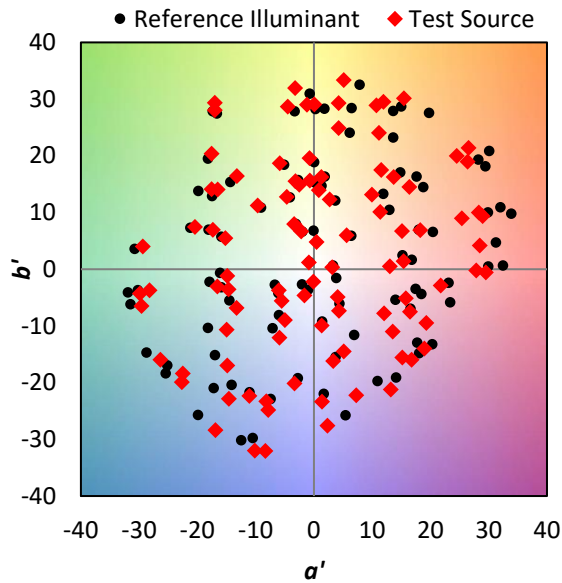
TM-30-18

### Summary

$R_f = 84.8$   
 $R_g = 95.8$   
 $CIE R_a = 82.5$   
 $R_9 = 5.8$



### Color Vector Graphics



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

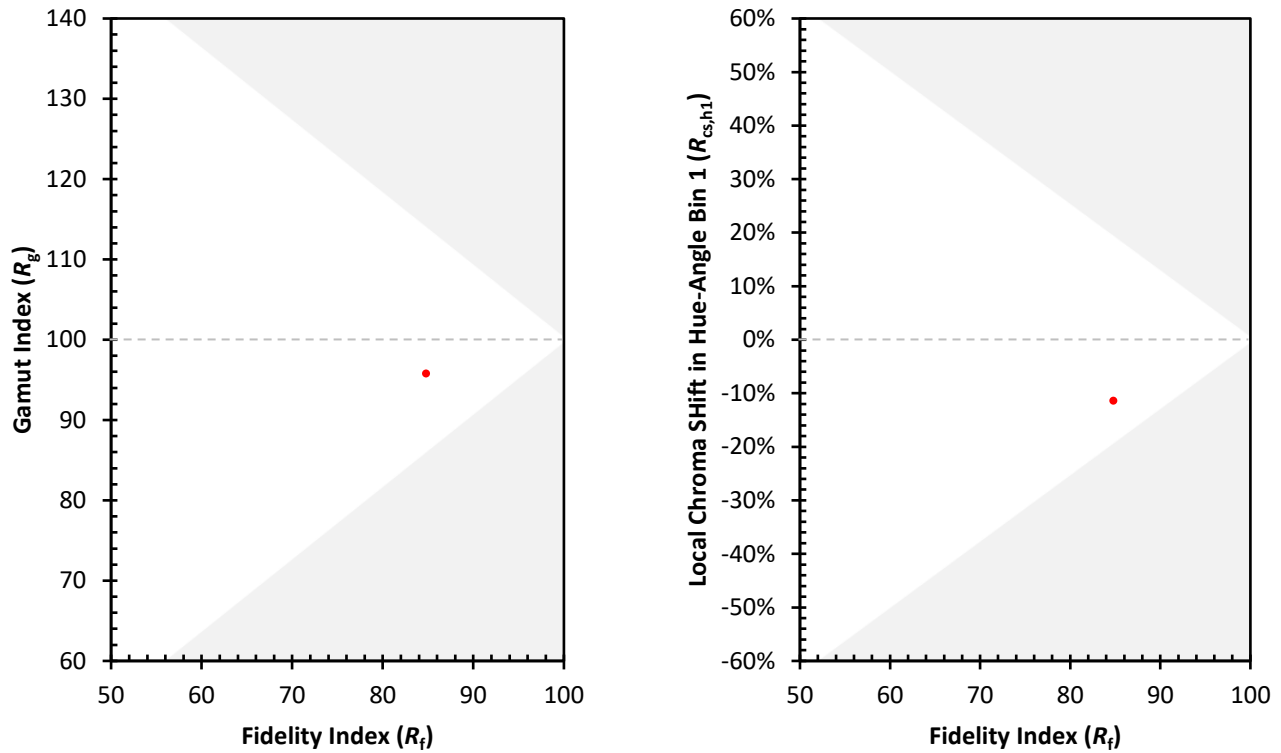
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 94 | CES76 = 80 |
| CES02 = 63 | CES27 = 94 | CES52 = 94 | CES77 = 85 |
| CES03 = 31 | CES28 = 93 | CES53 = 89 | CES78 = 79 |
| CES04 = 70 | CES29 = 87 | CES54 = 91 | CES79 = 91 |
| CES05 = 50 | CES30 = 96 | CES55 = 90 | CES80 = 90 |
| CES06 = 51 | CES31 = 89 | CES56 = 87 | CES81 = 74 |
| CES07 = 42 | CES32 = 82 | CES57 = 86 | CES82 = 95 |
| CES08 = 41 | CES33 = 92 | CES58 = 87 | CES83 = 94 |
| CES09 = 29 | CES34 = 90 | CES59 = 91 | CES84 = 92 |
| CES10 = 76 | CES35 = 94 | CES60 = 92 | CES85 = 77 |
| CES11 = 59 | CES36 = 86 | CES61 = 88 | CES86 = 69 |
| CES12 = 65 | CES37 = 94 | CES62 = 90 | CES87 = 84 |
| CES13 = 43 | CES38 = 95 | CES63 = 87 | CES88 = 88 |
| CES14 = 74 | CES39 = 98 | CES64 = 81 | CES89 = 75 |
| CES15 = 72 | CES40 = 95 | CES65 = 79 | CES90 = 89 |
| CES16 = 47 | CES41 = 97 | CES66 = 79 | CES91 = 77 |
| CES17 = 50 | CES42 = 95 | CES67 = 78 | CES92 = 65 |
| CES18 = 56 | CES43 = 90 | CES68 = 81 | CES93 = 79 |
| CES19 = 72 | CES44 = 99 | CES69 = 86 | CES94 = 62 |
| CES20 = 67 | CES45 = 93 | CES70 = 78 | CES95 = 74 |
| CES21 = 87 | CES46 = 90 | CES71 = 75 | CES96 = 84 |
| CES22 = 79 | CES47 = 94 | CES72 = 91 | CES97 = 89 |
| CES23 = 92 | CES48 = 85 | CES73 = 73 | CES98 = 85 |
| CES24 = 91 | CES49 = 90 | CES74 = 92 | CES99 = 77 |
| CES25 = 72 | CES50 = 94 | CES75 = 78 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)