

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



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

Test Report Prepared for  
Cooper Lighting Solutions

Brand: METALUX

Report Number: P976419

Luminaire Tested: 24SR-LD2-39-C-UNV-L935-CD1-U

Issue Date: 03/18/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P976419  
Test Lab: INNOVATION CENTER(P3)  
Issue Date: 03/18/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: METALUX  
Catalog Number: 24SR-LD2-39-C-UNV-L935-CD1-U  
Description: METALUX SKYRIDGE 2x4 3900LM PACKAGE 90CRI 3500K CURVED REFLECTOR TROFFER  
Light Source: 3500K CCT, 90+ CRI LEDS  
Ballast/Driver: -

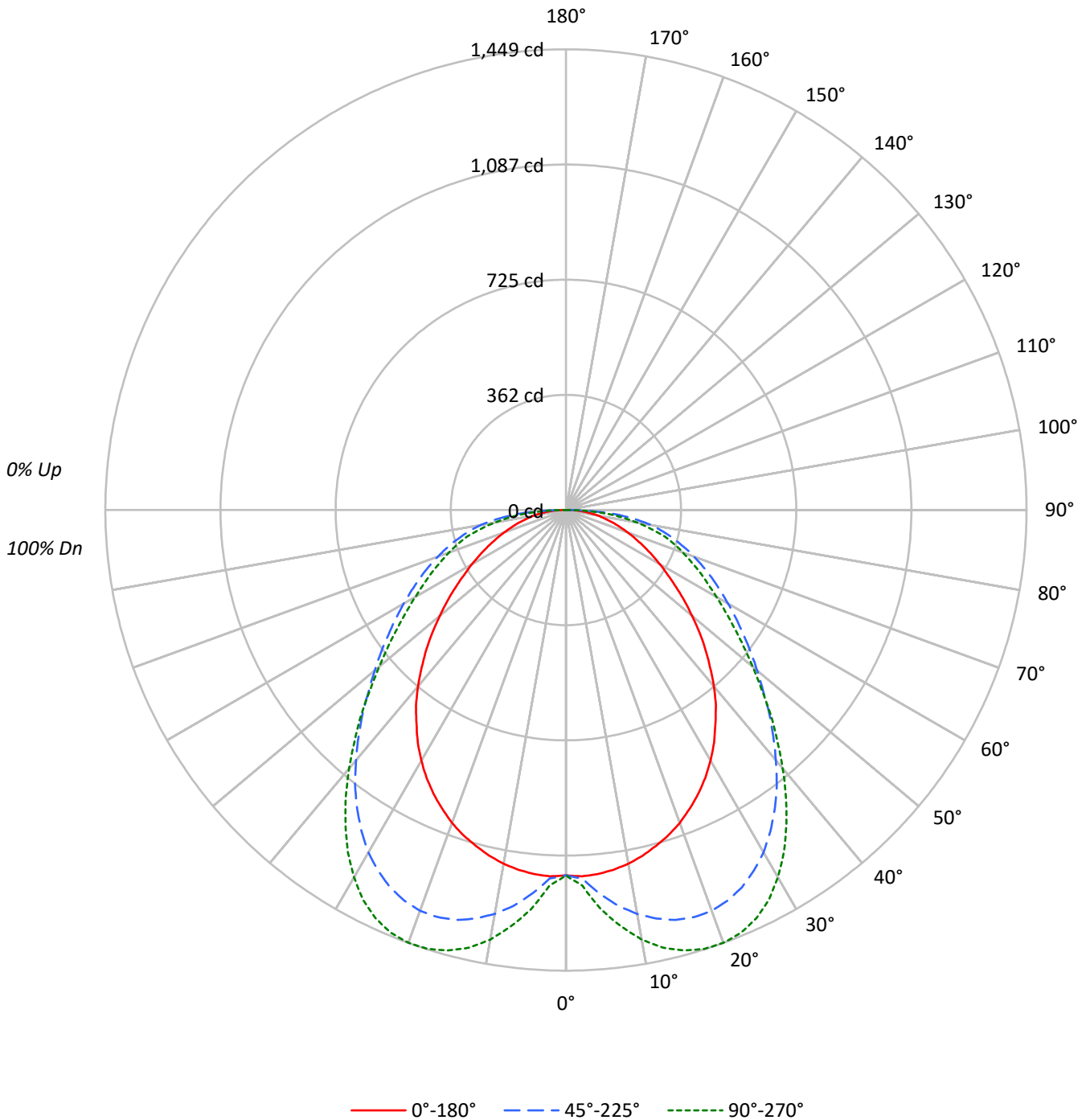
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3876.9 lumens  
Efficiency: N/A  
Efficacy: 140.0 lumens/watt  
Spacing Criteria (0/90/45): 1.18 / 1.52 / 1.48  
Luminous Opening: Rectangular (W 2' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 27.7  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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: 28.75 FT

TEST NUMBER: P976419  
CATALOG NUMBER: 24SR-LD2-39-C-UNV-L935-CD1-U

### Luminous Intensity Polar Plot





TEST NUMBER: P976419  
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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |     | 20  |     |     |     | 20  |     |    |    | 20 |     |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |     | 30  |     |     |     | 10  |     |    |    | 0  |     |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30 | 10 | 0  |     |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |    | 100 |
| 1   | 108 | 103 | 98  | 94  | 105 | 101 | 96  | 93  | 96  | 93  | 90  | 92  | 89  | 87  | 89  | 86  | 84  | 82  |    |    |    | 82  |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 81  | 75  | 84  | 78  | 74  | 81  | 76  | 72  | 78  | 74  | 70  | 68  |    |    |    | 68  |
| 3   | 89  | 78  | 70  | 63  | 87  | 77  | 69  | 63  | 74  | 67  | 62  | 71  | 65  | 61  | 68  | 64  | 60  | 57  |    |    |    | 57  |
| 4   | 82  | 70  | 61  | 54  | 79  | 68  | 60  | 53  | 66  | 58  | 53  | 63  | 57  | 52  | 61  | 56  | 51  | 49  |    |    |    | 49  |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 53  | 46  | 59  | 51  | 46  | 57  | 50  | 45  | 55  | 49  | 45  | 42  |    |    |    | 42  |
| 6   | 70  | 56  | 47  | 41  | 68  | 55  | 47  | 40  | 53  | 46  | 40  | 52  | 45  | 40  | 50  | 44  | 39  | 37  |    |    |    | 37  |
| 7   | 65  | 51  | 42  | 36  | 63  | 50  | 42  | 36  | 49  | 41  | 35  | 47  | 40  | 35  | 46  | 40  | 35  | 33  |    |    |    | 33  |
| 8   | 60  | 46  | 38  | 32  | 59  | 46  | 38  | 32  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 31  | 29  |    |    |    | 29  |
| 9   | 56  | 43  | 34  | 29  | 55  | 42  | 34  | 29  | 41  | 34  | 29  | 40  | 33  | 28  | 39  | 33  | 28  | 26  |    |    |    | 26  |
| 10  | 53  | 39  | 31  | 26  | 51  | 39  | 31  | 26  | 38  | 31  | 26  | 37  | 30  | 26  | 36  | 30  | 26  | 24  |    |    |    | 24  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1546 | 1546 | 1546 |
| 5°  | 1552 | 1635 | 1703 |
| 10° | 1543 | 1762 | 1874 |
| 15° | 1523 | 1859 | 1997 |
| 20° | 1500 | 1921 | 2074 |
| 25° | 1462 | 1944 | 2103 |
| 30° | 1413 | 1932 | 2072 |
| 35° | 1346 | 1881 | 1986 |
| 40° | 1272 | 1805 | 1863 |
| 45° | 1182 | 1721 | 1733 |
| 50° | 1084 | 1644 | 1605 |
| 55° | 994  | 1597 | 1516 |
| 60° | 919  | 1586 | 1472 |
| 65° | 860  | 1614 | 1484 |
| 70° | 818  | 1688 | 1542 |
| 75° | 792  | 1831 | 1673 |
| 80° | 800  | 2103 | 1764 |
| 85° | 838  | 2453 | 1922 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 22.5°  
 Vertical Angle: 87.5°  
 Luminance: 2983 cd/sqm



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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 117.5  | 3.0       |
| 10°-20°   | 369.9  | 9.5       |
| 20°-30°   | 583.7  | 15.1      |
| 30°-40°   | 684.1  | 17.6      |
| 40°-50°   | 654.4  | 16.9      |
| 50°-60°   | 557.6  | 14.4      |
| 60°-70°   | 447.5  | 11.5      |
| 70°-80°   | 323.9  | 8.4       |
| 80°-90°   | 138.3  | 3.6       |
| 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°    | 1071.1 | 27.6      |
| 0°-40°    | 1755.1 | 45.3      |
| 0°-60°    | 2967.2 | 76.5      |
| 0°-90°    | 3876.9 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3876.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1149 | 1149  | 1149 | 1149  | 1149 |      |
| 5°  | 1149 | 1170  | 1210 | 1253  | 1261 | 109  |
| 15° | 1094 | 1225  | 1335 | 1414  | 1434 | 308  |
| 25° | 985  | 1174  | 1310 | 1398  | 1417 | 453  |
| 35° | 820  | 1021  | 1145 | 1206  | 1209 | 513  |
| 45° | 621  | 802   | 904  | 916   | 911  | 479  |
| 55° | 424  | 604   | 681  | 662   | 646  | 381  |
| 65° | 270  | 454   | 507  | 474   | 466  | 269  |
| 75° | 152  | 322   | 352  | 324   | 322  | 162  |
| 85° | 54   | 162   | 159  | 131   | 124  | 58   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |



TEST NUMBER: P976419

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1149.3 | 1149.3 | 1149.3 | 1149.3 | 1149.3 |
| 2.5°  | 1153.3 | 1154.6 | 1159.9 | 1182.4 | 1182.4 |
| 5°    | 1149.3 | 1170.5 | 1210.2 | 1252.6 | 1260.6 |
| 7.5°  | 1141.4 | 1189.1 | 1255.3 | 1309.5 | 1320.1 |
| 10°   | 1129.5 | 1208.9 | 1289.7 | 1355.9 | 1371.8 |
| 12.5° | 1113.6 | 1220.8 | 1316.2 | 1391.6 | 1410.2 |
| 15°   | 1093.7 | 1224.8 | 1334.7 | 1414.2 | 1434.0 |
| 17.5° | 1072.5 | 1223.5 | 1342.6 | 1427.4 | 1447.3 |
| 20°   | 1047.4 | 1212.9 | 1341.3 | 1430.0 | 1448.6 |
| 22.5° | 1016.9 | 1198.3 | 1329.4 | 1419.4 | 1439.3 |
| 25°   | 985.1  | 1174.5 | 1309.5 | 1398.3 | 1416.8 |
| 27.5° | 949.4  | 1146.7 | 1279.1 | 1365.2 | 1382.4 |
| 30°   | 909.7  | 1110.9 | 1243.3 | 1320.1 | 1333.4 |
| 32.5° | 867.3  | 1068.6 | 1197.0 | 1267.2 | 1276.4 |
| 35°   | 819.6  | 1020.9 | 1145.4 | 1206.3 | 1208.9 |
| 37.5° | 774.6  | 969.2  | 1089.7 | 1138.7 | 1137.4 |
| 40°   | 724.3  | 913.6  | 1027.5 | 1067.2 | 1060.6 |
| 42.5° | 671.3  | 858.0  | 965.3  | 993.1  | 983.8  |
| 45°   | 621.0  | 802.4  | 904.4  | 916.3  | 911.0  |
| 47.5° | 569.4  | 746.8  | 840.8  | 850.1  | 834.2  |
| 50°   | 517.7  | 696.5  | 785.2  | 781.2  | 766.7  |
| 52.5° | 470.1  | 650.1  | 732.2  | 720.3  | 704.4  |
| 55°   | 423.7  | 603.8  | 680.6  | 662.1  | 646.2  |
| 57.5° | 380.0  | 562.7  | 634.2  | 609.1  | 594.5  |
| 60°   | 341.6  | 523.0  | 589.2  | 560.1  | 546.9  |
| 62.5° | 304.5  | 487.3  | 546.9  | 516.4  | 503.2  |
| 65°   | 270.1  | 454.2  | 507.1  | 474.0  | 466.1  |
| 67.5° | 237.0  | 421.1  | 467.4  | 435.6  | 426.4  |
| 70°   | 207.9  | 386.6  | 429.0  | 397.2  | 391.9  |
| 72.5° | 178.8  | 354.9  | 390.6  | 361.5  | 357.5  |
| 75°   | 152.3  | 321.8  | 352.2  | 324.4  | 321.8  |
| 77.5° | 125.8  | 286.0  | 313.8  | 280.7  | 274.1  |
| 80°   | 103.3  | 250.3  | 271.4  | 233.0  | 227.7  |
| 82.5° | 78.1   | 206.6  | 217.2  | 182.7  | 180.1  |
| 85°   | 54.3   | 161.5  | 158.9  | 131.1  | 124.5  |
| 87.5° | 29.1   | 96.7   | 84.7   | 67.5   | 64.9   |
| 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 | 12.5             | 14.1 | 12.9 | 14.4 | 14.8 | 13.4           | 15.1 | 13.8 | 15.4 | 15.7 |
|                 | 3H   | 14.2             | 15.7 | 14.6 | 16.0 | 16.4 | 15.5           | 17.0 | 15.9 | 17.4 | 17.7 |
|                 | 4H   | 14.9             | 16.3 | 15.2 | 16.6 | 17.0 | 16.5           | 18.0 | 16.9 | 18.3 | 18.7 |
|                 | 6H   | 15.4             | 16.7 | 15.8 | 17.1 | 17.5 | 17.4           | 18.7 | 17.8 | 19.1 | 19.5 |
|                 | 8H   | 15.6             | 16.9 | 16.0 | 17.2 | 17.6 | 17.8           | 19.1 | 18.2 | 19.4 | 19.8 |
|                 | 12H  | 15.8             | 17.0 | 16.2 | 17.3 | 17.8 | 18.1           | 19.3 | 18.5 | 19.7 | 20.1 |
| 4H              | 2H   | 13.6             | 15.0 | 14.0 | 15.3 | 15.7 | 14.2           | 15.6 | 14.6 | 16.0 | 16.4 |
|                 | 3H   | 15.7             | 16.9 | 16.1 | 17.3 | 17.7 | 16.6           | 17.8 | 17.0 | 18.2 | 18.6 |
|                 | 4H   | 16.7             | 17.8 | 17.1 | 18.2 | 18.6 | 17.8           | 18.9 | 18.2 | 19.3 | 19.7 |
|                 | 6H   | 17.5             | 18.5 | 18.0 | 18.9 | 19.4 | 18.8           | 19.8 | 19.3 | 20.2 | 20.7 |
|                 | 8H   | 17.8             | 18.7 | 18.3 | 19.2 | 19.6 | 19.2           | 20.1 | 19.7 | 20.6 | 21.0 |
|                 | 12H  | 18.1             | 18.9 | 18.5 | 19.3 | 19.8 | 19.6           | 20.4 | 20.1 | 20.9 | 21.4 |
| 8H              | 4H   | 17.5             | 18.4 | 17.9 | 18.8 | 19.3 | 18.3           | 19.2 | 18.8 | 19.7 | 20.1 |
|                 | 6H   | 18.6             | 19.4 | 19.1 | 19.9 | 20.4 | 19.6           | 20.3 | 20.0 | 20.8 | 21.3 |
|                 | 8H   | 19.2             | 19.8 | 19.7 | 20.4 | 20.8 | 20.1           | 20.8 | 20.6 | 21.3 | 21.8 |
|                 | 12H  | 19.6             | 20.2 | 20.1 | 20.7 | 21.3 | 20.6           | 21.2 | 21.1 | 21.7 | 22.2 |
| 12H             | 4H   | 17.6             | 18.4 | 18.1 | 18.9 | 19.3 | 18.4           | 19.2 | 18.9 | 19.7 | 20.2 |
|                 | 6H   | 18.9             | 19.6 | 19.4 | 20.0 | 20.6 | 19.7           | 20.4 | 20.3 | 20.9 | 21.4 |
|                 | 8H   | 19.5             | 20.1 | 20.0 | 20.6 | 21.2 | 20.4           | 21.0 | 20.9 | 21.5 | 22.0 |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-457-6

Test Date: 07/01/2025

Luminaire Tested: 24SR-LD2-64-C-UNV-L935-CD1-U

Data in this report applies to families of products including 24SR-LD2-64-C-UNV-L935-CD1-U

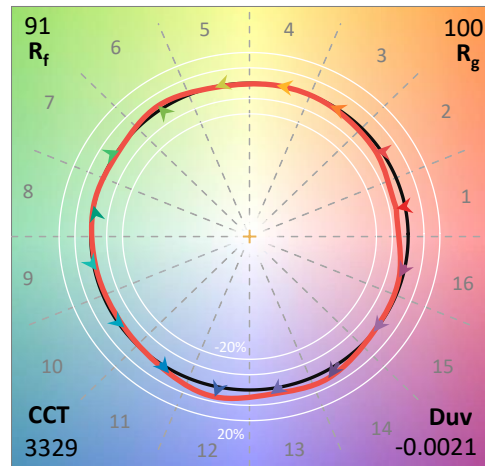
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2506-457-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 07/02/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Metalux  
 Catalog Number: **24SR-LD2-64-C-UNV-L935-CD1-U**  
 Description: 2X4 SKYRIDGE 6400LM Fixture with new LTN chip

**Spectral Parameters**

CCT (K): 3329  
 CIE u': 0.2411  
 CIE v': 0.5118  
 Duv: -0.0021  
 CIE x: 0.4128  
 CIE y: 0.3894  
 CIE z: 0.1979  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 582  
 Purity: 40.74075  
 Rf: 91.4  
 Rg: 100.2

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 93.9 |      |      |
| R1:       | 95.4 | R9:  | 60.5 |
| R2:       | 97.4 | R10: | 92.5 |
| R3:       | 97.7 | R11: | 95.9 |
| R4:       | 94.9 | R12: | 82.0 |
| R5:       | 95.1 | R13: | 96.0 |
| R6:       | 95.7 | R14: | 98.0 |
| R7:       | 91.7 | R15: | 91.5 |
| R8:       | 83.2 |      |      |



**Test Conditions**

Stabilization Time: 48M  
 Operation Time: 1H 48M  
 Sphere Temperature (°C): 24.0

REPORT NUMBER: SP1-2506-457-6

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

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3500K 7-step quadrangle

REPORT NUMBER: SP1-2506-457-6

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 143                         | NR                      | 620               | 358                         | NR                      | 750               | 9                           | NR                      | 880               | 0                           | NR                      |
| 365               | 0                           | NR                      | 495               | 166                         | NR                      | 625               | 357                         | NR                      | 755               | 7                           | NR                      | 885               | 0                           | NR                      |
| 370               | 0                           | NR                      | 500               | 191                         | NR                      | 630               | 1000                        | NR                      | 760               | 6                           | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 210                         | NR                      | 635               | 705                         | NR                      | 765               | 5                           | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 223                         | NR                      | 640               | 239                         | NR                      | 770               | 5                           | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 233                         | NR                      | 645               | 226                         | NR                      | 775               | 4                           | NR                      | 905               | 0                           | NR                      |
| 390               | 1                           | NR                      | 520               | 240                         | NR                      | 650               | 201                         | NR                      | 780               | 3                           | NR                      | 910               | 0                           | NR                      |
| 395               | 2                           | NR                      | 525               | 246                         | NR                      | 655               | 170                         | NR                      | 785               | 3                           | NR                      | 915               | 0                           | NR                      |
| 400               | 3                           | NR                      | 530               | 251                         | NR                      | 660               | 145                         | NR                      | 790               | 2                           | NR                      | 920               | 0                           | NR                      |
| 405               | 4                           | NR                      | 535               | 260                         | NR                      | 665               | 123                         | NR                      | 795               | 2                           | NR                      | 925               | 0                           | NR                      |
| 410               | 6                           | NR                      | 540               | 267                         | NR                      | 670               | 113                         | NR                      | 800               | 2                           | NR                      | 930               | 0                           | NR                      |
| 415               | 9                           | NR                      | 545               | 276                         | NR                      | 675               | 93                          | NR                      | 805               | 2                           | NR                      | 935               | 0                           | NR                      |
| 420               | 16                          | NR                      | 550               | 284                         | NR                      | 680               | 80                          | NR                      | 810               | 1                           | NR                      | 940               | 0                           | NR                      |
| 425               | 28                          | NR                      | 555               | 294                         | NR                      | 685               | 69                          | NR                      | 815               | 1                           | NR                      | 945               | 0                           | NR                      |
| 430               | 46                          | NR                      | 560               | 303                         | NR                      | 690               | 59                          | NR                      | 820               | 1                           | NR                      | 950               | 0                           | NR                      |
| 435               | 75                          | NR                      | 565               | 313                         | NR                      | 695               | 51                          | NR                      | 825               | 1                           | NR                      | 955               | 0                           | NR                      |
| 440               | 120                         | NR                      | 570               | 319                         | NR                      | 700               | 43                          | NR                      | 830               | 1                           | NR                      | 960               | 0                           | NR                      |
| 445               | 203                         | NR                      | 575               | 327                         | NR                      | 705               | 37                          | NR                      | 835               | 1                           | NR                      | 965               | 0                           | NR                      |
| 450               | 311                         | NR                      | 580               | 336                         | NR                      | 710               | 31                          | NR                      | 840               | 1                           | NR                      | 970               | 0                           | NR                      |
| 455               | 290                         | NR                      | 585               | 344                         | NR                      | 715               | 26                          | NR                      | 845               | 1                           | NR                      | 975               | 0                           | NR                      |
| 460               | 197                         | NR                      | 590               | 349                         | NR                      | 720               | 22                          | NR                      | 850               | 0                           | NR                      | 980               | 0                           | NR                      |
| 465               | 163                         | NR                      | 595               | 350                         | NR                      | 725               | 18                          | NR                      | 855               | 0                           | NR                      | 985               | 0                           | NR                      |
| 470               | 135                         | NR                      | 600               | 355                         | NR                      | 730               | 15                          | NR                      | 860               | 0                           | NR                      | 990               | 0                           | NR                      |
| 475               | 110                         | NR                      | 605               | 357                         | NR                      | 735               | 13                          | NR                      | 865               | 0                           | NR                      | 995               | 0                           | NR                      |
| 480               | 108                         | NR                      | 610               | 391                         | NR                      | 740               | 11                          | NR                      | 870               | 0                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 123                         | NR                      | 615               | 421                         | NR                      | 745               | 10                          | NR                      | 875               | 0                           | NR                      |                   |                             |                         |

REPORT NUMBER: SP1-2506-457-6

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.57**

| 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    | 143                      | NR            | 620    | 358                      | NR            | 750    | 9                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 166                      | NR            | 625    | 357                      | NR            | 755    | 7                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 191                      | NR            | 630    | 1000                     | NR            | 760    | 6                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 210                      | NR            | 635    | 705                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 223                      | NR            | 640    | 239                      | NR            | 770    | 5                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 233                      | NR            | 645    | 226                      | NR            | 775    | 4                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 240                      | NR            | 650    | 201                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 246                      | NR            | 655    | 170                      | NR            | 785    | 3                        | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 251                      | NR            | 660    | 145                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 4                        | NR            | 535    | 260                      | NR            | 665    | 123                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 6                        | NR            | 540    | 267                      | NR            | 670    | 113                      | NR            | 800    | 2                        | NR            | 930    | 0                        | NR            |
| 415    | 9                        | NR            | 545    | 276                      | NR            | 675    | 93                       | NR            | 805    | 2                        | NR            | 935    | 0                        | NR            |
| 420    | 16                       | NR            | 550    | 284                      | NR            | 680    | 80                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 28                       | NR            | 555    | 294                      | NR            | 685    | 69                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 46                       | NR            | 560    | 303                      | NR            | 690    | 59                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 75                       | NR            | 565    | 313                      | NR            | 695    | 51                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 120                      | NR            | 570    | 319                      | NR            | 700    | 43                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 203                      | NR            | 575    | 327                      | NR            | 705    | 37                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 311                      | NR            | 580    | 336                      | NR            | 710    | 31                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 290                      | NR            | 585    | 344                      | NR            | 715    | 26                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 197                      | NR            | 590    | 349                      | NR            | 720    | 22                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 163                      | NR            | 595    | 350                      | NR            | 725    | 18                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 135                      | NR            | 600    | 355                      | NR            | 730    | 15                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 110                      | NR            | 605    | 357                      | NR            | 735    | 13                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 108                      | NR            | 610    | 391                      | NR            | 740    | 11                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 123                      | NR            | 615    | 421                      | NR            | 745    | 10                       | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-457-6

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.17

| 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    | 143                      | NR            | 620    | 358                      | NR            | 750    | 9                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 166                      | NR            | 625    | 357                      | NR            | 755    | 7                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 191                      | NR            | 630    | 1000                     | NR            | 760    | 6                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 210                      | NR            | 635    | 705                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 223                      | NR            | 640    | 239                      | NR            | 770    | 5                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 233                      | NR            | 645    | 226                      | NR            | 775    | 4                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 240                      | NR            | 650    | 201                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 246                      | NR            | 655    | 170                      | NR            | 785    | 3                        | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 251                      | NR            | 660    | 145                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 4                        | NR            | 535    | 260                      | NR            | 665    | 123                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 6                        | NR            | 540    | 267                      | NR            | 670    | 113                      | NR            | 800    | 2                        | NR            | 930    | 0                        | NR            |
| 415    | 9                        | NR            | 545    | 276                      | NR            | 675    | 93                       | NR            | 805    | 2                        | NR            | 935    | 0                        | NR            |
| 420    | 16                       | NR            | 550    | 284                      | NR            | 680    | 80                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 28                       | NR            | 555    | 294                      | NR            | 685    | 69                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 46                       | NR            | 560    | 303                      | NR            | 690    | 59                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 75                       | NR            | 565    | 313                      | NR            | 695    | 51                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 120                      | NR            | 570    | 319                      | NR            | 700    | 43                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 203                      | NR            | 575    | 327                      | NR            | 705    | 37                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 311                      | NR            | 580    | 336                      | NR            | 710    | 31                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 290                      | NR            | 585    | 344                      | NR            | 715    | 26                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 197                      | NR            | 590    | 349                      | NR            | 720    | 22                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 163                      | NR            | 595    | 350                      | NR            | 725    | 18                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 135                      | NR            | 600    | 355                      | NR            | 730    | 15                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 110                      | NR            | 605    | 357                      | NR            | 735    | 13                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 108                      | NR            | 610    | 391                      | NR            | 740    | 11                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 123                      | NR            | 615    | 421                      | NR            | 745    | 10                       | NR            | 875    | 0                        | NR            |        |                          |               |

**Summary**

$R_f = 91.4$   
 $R_g = 100.2$   
 $CIE R_a = 93.9$   
 $R_9 = 60.5$



**Color Vector Graphics**

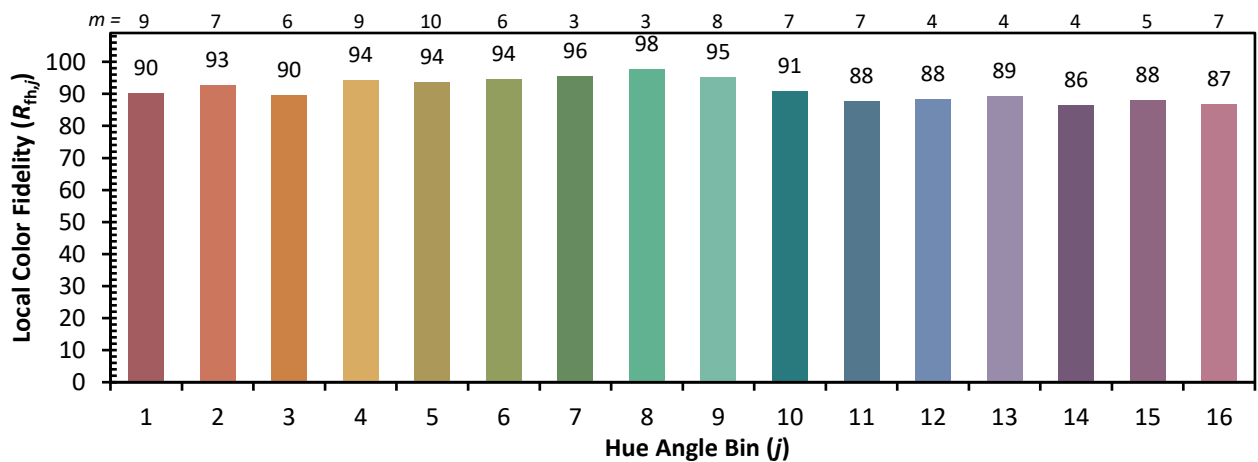


Individual Sample Fidelity Index ( $R_{f,i}$ )

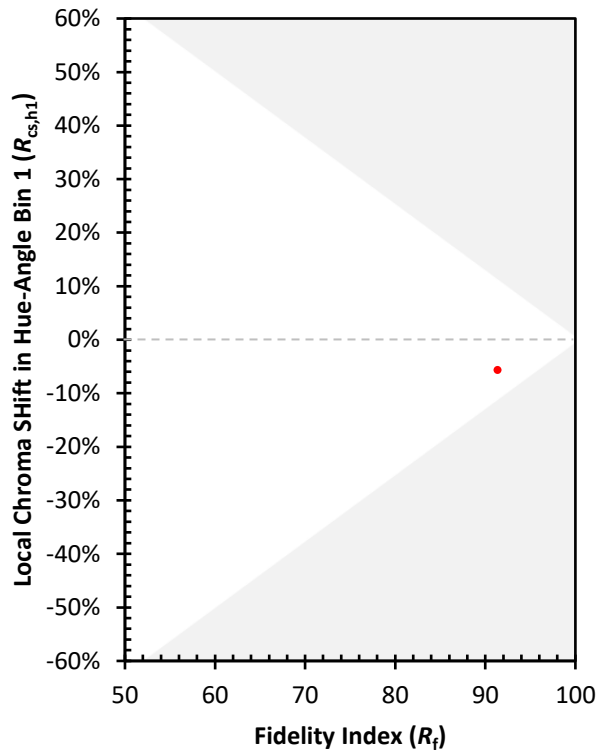
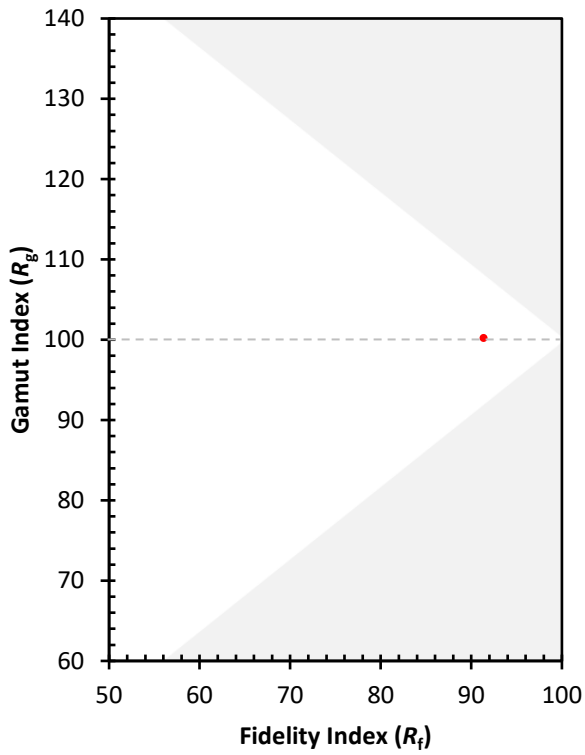
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 98 | CES76 = 88 |
| CES02 = 63 | CES27 = 93 | CES52 = 98 | CES77 = 87 |
| CES03 = 31 | CES28 = 96 | CES53 = 97 | CES78 = 85 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 91 |
| CES05 = 50 | CES30 = 96 | CES55 = 94 | CES80 = 92 |
| CES06 = 51 | CES31 = 95 | CES56 = 96 | CES81 = 75 |
| CES07 = 43 | CES32 = 87 | CES57 = 95 | CES82 = 96 |
| CES08 = 42 | CES33 = 97 | CES58 = 96 | CES83 = 94 |
| CES09 = 29 | CES34 = 94 | CES59 = 98 | CES84 = 95 |
| CES10 = 75 | CES35 = 96 | CES60 = 94 | CES85 = 80 |
| CES11 = 58 | CES36 = 84 | CES61 = 93 | CES86 = 79 |
| CES12 = 64 | CES37 = 95 | CES62 = 89 | CES87 = 91 |
| CES13 = 44 | CES38 = 91 | CES63 = 94 | CES88 = 97 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 83 |
| CES15 = 72 | CES40 = 97 | CES65 = 90 | CES90 = 98 |
| CES16 = 48 | CES41 = 97 | CES66 = 90 | CES91 = 77 |
| CES17 = 49 | CES42 = 93 | CES67 = 89 | CES92 = 77 |
| CES18 = 56 | CES43 = 92 | CES68 = 89 | CES93 = 86 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 74 |
| CES20 = 67 | CES45 = 96 | CES70 = 88 | CES95 = 84 |
| CES21 = 86 | CES46 = 96 | CES71 = 84 | CES96 = 92 |
| CES22 = 78 | CES47 = 91 | CES72 = 94 | CES97 = 95 |
| CES23 = 91 | CES48 = 94 | CES73 = 83 | CES98 = 94 |
| CES24 = 90 | CES49 = 94 | CES74 = 91 | CES99 = 92 |
| CES25 = 71 | CES50 = 98 | CES75 = 86 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)