

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: P1214771

Luminaire Tested: 22-ID2-50-CFD1-L840-U

Issue Date: 12/4/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1214771  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2506-458-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/4/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 22-ID2-50-CFD1-L840-U  
Description: 2X2 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

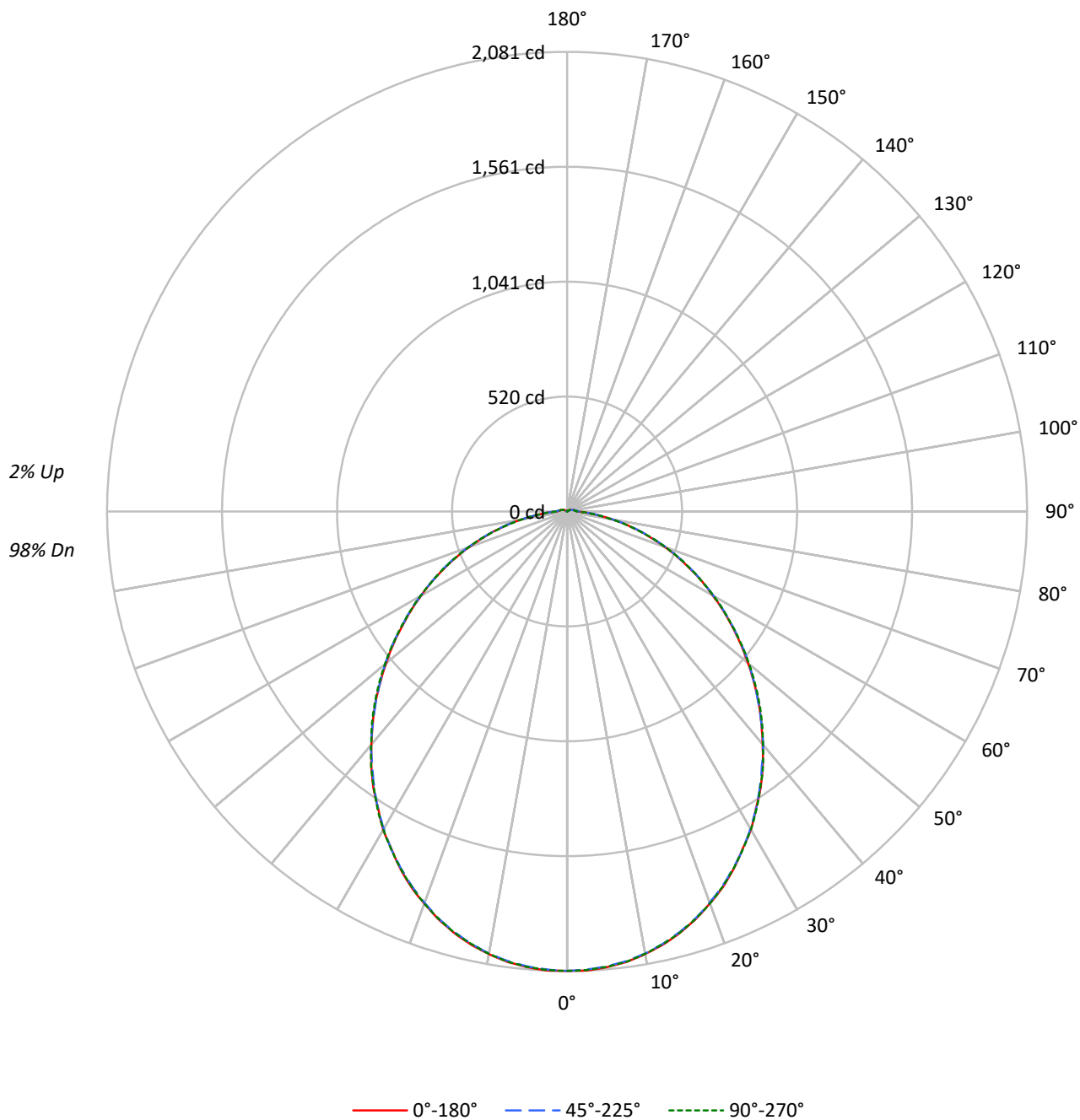
Lumens per Lamp: N/A  
Luminaire Lumens: 5486.8 lumens  
Efficiency: N/A  
Efficacy: 122.5 lumens/watt  
Spacing Criteria (0/90/45): 1.19 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 2' x L: 2' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 44.8  
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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CATALOG NUMBER: 22-ID2-50-CFD1-L840-U

### Luminous Intensity Polar Plot



TEST NUMBER: P1214771

CATALOG NUMBER: 22-ID2-50-CFD1-L840-U

**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 | 110 | 110 | 110 |  | 105 | 105 | 105 |  | 98 |
| 1   | 108 | 104 | 99  | 95  | 105 | 101 | 97  | 94  | 97  | 93  | 90  |  | 92  | 90  | 87  |  | 82 |
| 2   | 99  | 91  | 84  | 78  | 96  | 88  | 82  | 77  | 85  | 79  | 75  |  | 81  | 77  | 73  |  | 69 |
| 3   | 90  | 80  | 72  | 65  | 88  | 78  | 71  | 64  | 75  | 68  | 63  |  | 72  | 66  | 62  |  | 58 |
| 4   | 83  | 71  | 62  | 55  | 80  | 69  | 61  | 55  | 67  | 60  | 54  |  | 64  | 58  | 53  |  | 50 |
| 5   | 76  | 63  | 55  | 48  | 74  | 62  | 54  | 48  | 60  | 53  | 47  |  | 58  | 51  | 46  |  | 43 |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  | 54  | 47  | 41  |  | 52  | 46  | 41  |  | 38 |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  | 49  | 42  | 37  |  | 48  | 41  | 36  |  | 34 |
| 8   | 61  | 48  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  |  | 44  | 37  | 33  |  | 30 |
| 9   | 57  | 44  | 36  | 30  | 55  | 43  | 35  | 30  | 42  | 35  | 30  |  | 41  | 34  | 29  |  | 27 |
| 10  | 53  | 40  | 33  | 27  | 52  | 40  | 32  | 27  | 39  | 32  | 27  |  | 38  | 31  | 27  |  | 25 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5598 | 5598 | 5598 |
| 5°  | 5575 | 5558 | 5571 |
| 10° | 5522 | 5499 | 5519 |
| 15° | 5445 | 5409 | 5439 |
| 20° | 5332 | 5291 | 5334 |
| 25° | 5203 | 5152 | 5197 |
| 30° | 5053 | 4991 | 5051 |
| 35° | 4882 | 4808 | 4871 |
| 40° | 4679 | 4629 | 4684 |
| 45° | 4486 | 4408 | 4503 |
| 50° | 4270 | 4210 | 4300 |
| 55° | 4057 | 3986 | 4079 |
| 60° | 3834 | 3755 | 3859 |
| 65° | 3602 | 3516 | 3631 |
| 70° | 3338 | 3249 | 3358 |
| 75° | 3050 | 2918 | 3006 |
| 80° | 2639 | 2492 | 2603 |
| 85° | 2293 | 2121 | 2191 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 45°

Luminance: 4503 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 196.4  | 3.6       |
| 10°-20°   | 555.8  | 10.1      |
| 20°-30°   | 820.5  | 15.0      |
| 30°-40°   | 952.7  | 17.4      |
| 40°-50°   | 946.2  | 17.2      |
| 50°-60°   | 821.8  | 15.0      |
| 60°-70°   | 612.9  | 11.2      |
| 70°-80°   | 358.8  | 6.5       |
| 80°-90°   | 128.3  | 2.3       |
| 90°-100°  | 43.7   | 0.8       |
| 100°-110° | 27.2   | 0.5       |
| 110°-120° | 14.4   | 0.3       |
| 120°-130° | 6.2    | 0.1       |
| 130°-140° | 1.7    | 0.0       |
| 140°-150° | 0.3    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 1572.7 | 28.7      |
| 0°-40°    | 2525.4 | 46.0      |
| 0°-60°    | 4293.4 | 78.2      |
| 0°-90°    | 5393.3 | 98.3      |
| 90°-120°  | 85.2   | 1.6       |
| 90°-150°  | 93.5   | 1.7       |
| 90°-180°  | 93.0   | 1.7       |
| 0°-180°   | 5486.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2080 | 2080  | 2080 | 2080  | 2080 |      |
| 5°   | 2071 | 2070  | 2068 | 2067  | 2070 | 197  |
| 15°  | 1975 | 1973  | 1971 | 1972  | 1973 | 556  |
| 25°  | 1785 | 1784  | 1781 | 1782  | 1783 | 821  |
| 35°  | 1528 | 1523  | 1522 | 1524  | 1524 | 954  |
| 45°  | 1226 | 1226  | 1224 | 1228  | 1231 | 945  |
| 55°  | 914  | 918   | 918  | 920   | 919  | 818  |
| 65°  | 614  | 620   | 619  | 618   | 619  | 609  |
| 75°  | 337  | 339   | 340  | 339   | 332  | 356  |
| 85°  | 108  | 112   | 113  | 110   | 103  | 109  |
| 90°  | 46   | 50    | 51   | 50    | 45   | 28   |
| 95°  | 39   | 40    | 41   | 40    | 38   | 30   |
| 105° | 26   | 26    | 26   | 25    | 26   | 28   |
| 115° | 16   | 14    | 14   | 13    | 16   | 16   |
| 125° | 8    | 7     | 5    | 7     | 8    | 8    |
| 135° | 3    | 2     | 1    | 2     | 3    | 2    |
| 145° | 1    | 1     | 1    | 1     | 1    | 0    |
| 155° | 0    | 0     | 0    | 0     | 0    | 0    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2080.1 | 2080.1 | 2080.1 | 2080.1 | 2080.1 |
| 2.5°   | 2080.8 | 2078.0 | 2075.9 | 2075.9 | 2078.0 |
| 5°     | 2071.1 | 2069.7 | 2067.7 | 2067.0 | 2069.7 |
| 7.5°   | 2057.3 | 2055.3 | 2053.2 | 2053.2 | 2055.9 |
| 10°    | 2035.3 | 2033.9 | 2032.5 | 2033.2 | 2033.9 |
| 12.5°  | 2009.1 | 2006.3 | 2004.9 | 2004.9 | 2005.6 |
| 15°    | 1975.3 | 1973.2 | 1971.1 | 1971.8 | 1973.2 |
| 17.5°  | 1935.3 | 1934.6 | 1932.5 | 1933.2 | 1933.9 |
| 20°    | 1889.1 | 1887.7 | 1885.6 | 1887.0 | 1889.8 |
| 22.5°  | 1841.5 | 1837.4 | 1836.0 | 1836.7 | 1838.8 |
| 25°    | 1785.0 | 1783.6 | 1780.9 | 1782.2 | 1782.9 |
| 27.5°  | 1721.6 | 1726.4 | 1722.9 | 1722.2 | 1723.6 |
| 30°    | 1663.6 | 1659.5 | 1658.8 | 1658.8 | 1663.0 |
| 32.5°  | 1591.9 | 1591.9 | 1592.6 | 1593.3 | 1596.1 |
| 35°    | 1527.8 | 1523.0 | 1521.6 | 1523.7 | 1524.4 |
| 37.5°  | 1454.1 | 1453.4 | 1448.5 | 1452.7 | 1456.1 |
| 40°    | 1376.8 | 1376.1 | 1380.3 | 1377.5 | 1378.2 |
| 42.5°  | 1301.0 | 1301.7 | 1301.0 | 1304.4 | 1306.5 |
| 45°    | 1225.8 | 1226.5 | 1223.8 | 1227.9 | 1230.7 |
| 47.5°  | 1146.6 | 1149.3 | 1147.9 | 1149.3 | 1153.5 |
| 50°    | 1068.6 | 1072.1 | 1073.5 | 1073.5 | 1076.2 |
| 52.5°  | 992.1  | 994.9  | 996.9  | 997.6  | 996.9  |
| 55°    | 914.2  | 918.3  | 918.3  | 919.7  | 919.0  |
| 57.5°  | 838.4  | 843.2  | 842.5  | 843.2  | 841.8  |
| 60°    | 761.8  | 765.3  | 766.0  | 767.4  | 766.7  |
| 62.5°  | 690.1  | 691.5  | 692.2  | 692.2  | 689.5  |
| 65°    | 614.3  | 619.8  | 619.1  | 618.4  | 619.1  |
| 67.5°  | 542.6  | 546.0  | 548.8  | 546.7  | 546.0  |
| 70°    | 470.9  | 477.1  | 477.1  | 476.4  | 473.7  |
| 72.5°  | 400.6  | 406.1  | 406.1  | 406.1  | 405.4  |
| 75°    | 337.1  | 339.2  | 339.9  | 339.2  | 332.3  |
| 77.5°  | 271.0  | 273.0  | 275.8  | 275.1  | 269.6  |
| 80°    | 208.9  | 213.0  | 212.4  | 211.7  | 206.1  |
| 82.5°  | 153.1  | 157.9  | 159.3  | 157.2  | 153.1  |
| 85°    | 108.2  | 111.7  | 113.1  | 109.6  | 103.4  |
| 87.5°  | 71.7   | 75.2   | 75.8   | 74.5   | 70.3   |
| 90°    | 46.2   | 49.6   | 51.0   | 49.6   | 44.8   |
| 92.5°  | 42.1   | 44.1   | 45.5   | 44.1   | 40.7   |
| 95°    | 38.6   | 40.0   | 41.4   | 40.0   | 37.9   |
| 97.5°  | 35.2   | 35.9   | 37.2   | 35.9   | 34.5   |
| 100°   | 32.4   | 31.7   | 33.1   | 31.7   | 31.7   |
| 102.5° | 29.0   | 28.3   | 29.6   | 28.3   | 29.0   |
| 105°   | 26.2   | 25.5   | 26.2   | 24.8   | 25.5   |
| 107.5° | 23.4   | 22.1   | 22.8   | 21.4   | 23.4   |
| 110°   | 20.7   | 19.3   | 19.3   | 17.9   | 20.7   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°  | 67.5° | 90°  |
|--------|------|-------|------|-------|------|
| 112.5° | 18.6 | 16.5  | 16.5 | 15.9  | 17.9 |
| 115°   | 15.9 | 13.8  | 13.8 | 13.1  | 15.9 |
| 117.5° | 13.8 | 11.7  | 11.0 | 11.7  | 13.8 |
| 120°   | 11.7 | 9.7   | 9.0  | 9.7   | 11.7 |
| 122.5° | 10.3 | 8.3   | 6.9  | 8.3   | 10.3 |
| 125°   | 8.3  | 6.9   | 4.8  | 6.9   | 8.3  |
| 127.5° | 6.9  | 4.8   | 2.8  | 5.5   | 6.9  |
| 130°   | 5.5  | 4.1   | 2.1  | 4.8   | 5.5  |
| 132.5° | 4.1  | 2.8   | 0.7  | 3.4   | 4.8  |
| 135°   | 2.8  | 2.1   | 0.7  | 2.1   | 3.4  |
| 137.5° | 2.1  | 1.4   | 0.7  | 1.4   | 2.8  |
| 140°   | 1.4  | 0.7   | 0.7  | 0.7   | 1.4  |
| 142.5° | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 145°   | 0.7  | 0.7   | 0.7  | 0.7   | 0.7  |
| 147.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 150°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 152.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 155°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 157.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 160°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 162.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 165°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 167.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 170°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 172.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 175°   | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 177.5° | 0.0  | 0.0   | 0.0  | 0.0   | 0.0  |
| 180°   | 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 | 16.61            | 18.19 | 17.00 | 18.54 | 18.90 | 16.62          | 18.19 | 17.01 | 18.55 | 18.90 |
|                 | 3H   | 18.32            | 19.75 | 18.73 | 20.11 | 20.51 | 18.34          | 19.76 | 18.74 | 20.12 | 20.53 |
|                 | 4H   | 18.96            | 20.31 | 19.39 | 20.69 | 21.11 | 18.97          | 20.31 | 19.40 | 20.70 | 21.11 |
|                 | 6H   | 19.44            | 20.68 | 19.87 | 21.08 | 21.51 | 19.44          | 20.68 | 19.88 | 21.08 | 21.51 |
|                 | 8H   | 19.59            | 20.78 | 20.04 | 21.20 | 21.64 | 19.59          | 20.78 | 20.04 | 21.20 | 21.64 |
|                 | 12H  | 19.71            | 20.85 | 20.17 | 21.26 | 21.73 | 19.70          | 20.84 | 20.16 | 21.26 | 21.73 |
| 4H              | 2H   | 17.20            | 18.54 | 17.63 | 18.92 | 19.34 | 17.20          | 18.55 | 17.63 | 18.93 | 19.35 |
|                 | 3H   | 19.13            | 20.26 | 19.57 | 20.69 | 21.13 | 19.14          | 20.27 | 19.58 | 20.70 | 21.14 |
|                 | 4H   | 19.90            | 20.92 | 20.36 | 21.36 | 21.84 | 19.90          | 20.92 | 20.36 | 21.37 | 21.85 |
|                 | 6H   | 20.50            | 21.39 | 20.98 | 21.86 | 22.36 | 20.50          | 21.39 | 20.98 | 21.86 | 22.36 |
|                 | 8H   | 20.70            | 21.54 | 21.19 | 22.01 | 22.52 | 20.70          | 21.54 | 21.19 | 22.01 | 22.52 |
|                 | 12H  | 20.87            | 21.62 | 21.38 | 22.13 | 22.64 | 20.86          | 21.61 | 21.37 | 22.12 | 22.63 |
| 8H              | 4H   | 20.19            | 21.02 | 20.68 | 21.50 | 22.00 | 20.19          | 21.03 | 20.68 | 21.50 | 22.01 |
|                 | 6H   | 20.91            | 21.60 | 21.43 | 22.12 | 22.64 | 20.91          | 21.60 | 21.43 | 22.12 | 22.64 |
|                 | 8H   | 21.19            | 21.81 | 21.72 | 22.35 | 22.88 | 21.18          | 21.81 | 21.72 | 22.35 | 22.87 |
|                 | 12H  | 21.44            | 21.99 | 21.97 | 22.51 | 23.11 | 21.42          | 21.98 | 21.96 | 22.50 | 23.10 |
| 12H             | 4H   | 20.22            | 20.97 | 20.73 | 21.48 | 21.99 | 20.22          | 20.97 | 20.73 | 21.48 | 21.99 |
|                 | 6H   | 20.96            | 21.59 | 21.50 | 22.12 | 22.65 | 20.96          | 21.59 | 21.50 | 22.12 | 22.65 |
|                 | 8H   | 21.30            | 21.86 | 21.83 | 22.38 | 22.97 | 21.30          | 21.85 | 21.83 | 22.37 | 22.97 |

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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-5

Test Date: 08/26/2025

Luminaire Tested: 22ID2-55-CFR1-L840-U

Data in this report applies to families of products including 22ID2-55-CFR1-L840-U

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-5  
 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-L840-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 4000K 80CRI

### Spectral Parameters

CCT (K): 3915  
 CIE  $u'$ : 0.2259  
 CIE  $v'$ : 0.5051  
 Duv: 0.0015  
 CIE x: 0.3854  
 CIE y: 0.3830  
 CIE z: 0.2316  
 Peak Wavelength (nm): 453  
 Dominant Wavelength (nm): 578  
 Purity: 30.6207  
 R<sub>f</sub>: 83.2  
 R<sub>g</sub>: 94.6

CRI (Ra): 82.3  
 R1: 80.6  
 R2: 88.9  
 R3: 94.6  
 R4: 80.5  
 R5: 80.0  
 R6: 84.0  
 R7: 86.1  
 R8: 64.0  
 R9: 7.6  
 R10: 72.9  
 R11: 78.7  
 R12: 57.3  
 R13: 82.7  
 R14: 97.1  
 R15: 74.3



### Test Conditions

Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

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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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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

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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               | 266                                  | NR                             | 620               | 755                                  | NR                             | 750               | 24                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 307                                  | NR                             | 625               | 710                                  | NR                             | 755               | 21                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 366                                  | NR                             | 630               | 663                                  | NR                             | 760               | 18                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 430                                  | NR                             | 635               | 612                                  | NR                             | 765               | 15                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 486                                  | NR                             | 640               | 561                                  | NR                             | 770               | 13                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 536                                  | NR                             | 645               | 509                                  | NR                             | 775               | 11                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 571                                  | NR                             | 650               | 458                                  | NR                             | 780               | 10                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 3                                    | NR                             | 525               | 600                                  | NR                             | 655               | 410                                  | NR                             | 785               | 8                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 5                                    | NR                             | 530               | 624                                  | NR                             | 660               | 363                                  | NR                             | 790               | 7                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 645                                  | NR                             | 665               | 321                                  | NR                             | 795               | 6                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 10                                   | NR                             | 540               | 661                                  | NR                             | 670               | 280                                  | NR                             | 800               | 5                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 16                                   | NR                             | 545               | 681                                  | NR                             | 675               | 244                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 30                                   | NR                             | 550               | 701                                  | NR                             | 680               | 213                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 53                                   | NR                             | 555               | 724                                  | NR                             | 685               | 183                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 95                                   | NR                             | 560               | 747                                  | NR                             | 690               | 159                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 170                                  | NR                             | 565               | 772                                  | NR                             | 695               | 136                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 289                                  | NR                             | 570               | 795                                  | NR                             | 700               | 117                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 522                                  | NR                             | 575               | 817                                  | NR                             | 705               | 100                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 895                                  | NR                             | 580               | 841                                  | NR                             | 710               | 85                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 957                                  | NR                             | 585               | 857                                  | NR                             | 715               | 72                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 642                                  | NR                             | 590               | 871                                  | NR                             | 720               | 62                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 487                                  | NR                             | 595               | 875                                  | NR                             | 725               | 53                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 397                                  | NR                             | 600               | 866                                  | NR                             | 730               | 45                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 289                                  | NR                             | 605               | 852                                  | NR                             | 735               | 39                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 241                                  | NR                             | 610               | 827                                  | NR                             | 740               | 33                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 245                                  | NR                             | 615               | 796                                  | NR                             | 745               | 28                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.65

| 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    | 266                      | NR            | 620    | 755                      | NR            | 750    | 24                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 307                      | NR            | 625    | 710                      | NR            | 755    | 21                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 366                      | NR            | 630    | 663                      | NR            | 760    | 18                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 430                      | NR            | 635    | 612                      | NR            | 765    | 15                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 486                      | NR            | 640    | 561                      | NR            | 770    | 13                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 536                      | NR            | 645    | 509                      | NR            | 775    | 11                       | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 571                      | NR            | 650    | 458                      | NR            | 780    | 10                       | NR            | 910    | 0                        | NR            |
| 395    | 3                        | NR            | 525    | 600                      | NR            | 655    | 410                      | NR            | 785    | 8                        | NR            | 915    | 0                        | NR            |
| 400    | 5                        | NR            | 530    | 624                      | NR            | 660    | 363                      | NR            | 790    | 7                        | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 645                      | NR            | 665    | 321                      | NR            | 795    | 6                        | NR            | 925    | 0                        | NR            |
| 410    | 10                       | NR            | 540    | 661                      | NR            | 670    | 280                      | NR            | 800    | 5                        | NR            | 930    | 0                        | NR            |
| 415    | 16                       | NR            | 545    | 681                      | NR            | 675    | 244                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 30                       | NR            | 550    | 701                      | NR            | 680    | 213                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 53                       | NR            | 555    | 724                      | NR            | 685    | 183                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 95                       | NR            | 560    | 747                      | NR            | 690    | 159                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 170                      | NR            | 565    | 772                      | NR            | 695    | 136                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 289                      | NR            | 570    | 795                      | NR            | 700    | 117                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 522                      | NR            | 575    | 817                      | NR            | 705    | 100                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 895                      | NR            | 580    | 841                      | NR            | 710    | 85                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 957                      | NR            | 585    | 857                      | NR            | 715    | 72                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 642                      | NR            | 590    | 871                      | NR            | 720    | 62                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 487                      | NR            | 595    | 875                      | NR            | 725    | 53                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 397                      | NR            | 600    | 866                      | NR            | 730    | 45                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 289                      | NR            | 605    | 852                      | NR            | 735    | 39                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 241                      | NR            | 610    | 827                      | NR            | 740    | 33                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 245                      | NR            | 615    | 796                      | NR            | 745    | 28                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.36

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 266                         | NR               | 620       | 755                         | NR               | 750       | 24                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 307                         | NR               | 625       | 710                         | NR               | 755       | 21                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 366                         | NR               | 630       | 663                         | NR               | 760       | 18                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 430                         | NR               | 635       | 612                         | NR               | 765       | 15                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 486                         | NR               | 640       | 561                         | NR               | 770       | 13                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 536                         | NR               | 645       | 509                         | NR               | 775       | 11                          | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 571                         | NR               | 650       | 458                         | NR               | 780       | 10                          | NR               | 910       | 0                           | NR               |
| 395       | 3                           | NR               | 525       | 600                         | NR               | 655       | 410                         | NR               | 785       | 8                           | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 624                         | NR               | 660       | 363                         | NR               | 790       | 7                           | NR               | 920       | 0                           | NR               |
| 405       | 7                           | NR               | 535       | 645                         | NR               | 665       | 321                         | NR               | 795       | 6                           | NR               | 925       | 0                           | NR               |
| 410       | 10                          | NR               | 540       | 661                         | NR               | 670       | 280                         | NR               | 800       | 5                           | NR               | 930       | 0                           | NR               |
| 415       | 16                          | NR               | 545       | 681                         | NR               | 675       | 244                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 30                          | NR               | 550       | 701                         | NR               | 680       | 213                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 53                          | NR               | 555       | 724                         | NR               | 685       | 183                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 95                          | NR               | 560       | 747                         | NR               | 690       | 159                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 170                         | NR               | 565       | 772                         | NR               | 695       | 136                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 289                         | NR               | 570       | 795                         | NR               | 700       | 117                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 522                         | NR               | 575       | 817                         | NR               | 705       | 100                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 895                         | NR               | 580       | 841                         | NR               | 710       | 85                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 957                         | NR               | 585       | 857                         | NR               | 715       | 72                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 642                         | NR               | 590       | 871                         | NR               | 720       | 62                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 487                         | NR               | 595       | 875                         | NR               | 725       | 53                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 397                         | NR               | 600       | 866                         | NR               | 730       | 45                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 289                         | NR               | 605       | 852                         | NR               | 735       | 39                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 241                         | NR               | 610       | 827                         | NR               | 740       | 33                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 245                         | NR               | 615       | 796                         | NR               | 745       | 28                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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TM-30-18

### Summary

$R_f = 83.2$   
 $R_g = 94.6$   
 $CIE R_a = 82.3$   
 $R_9 = 7.6$



### Color Vector Graphics

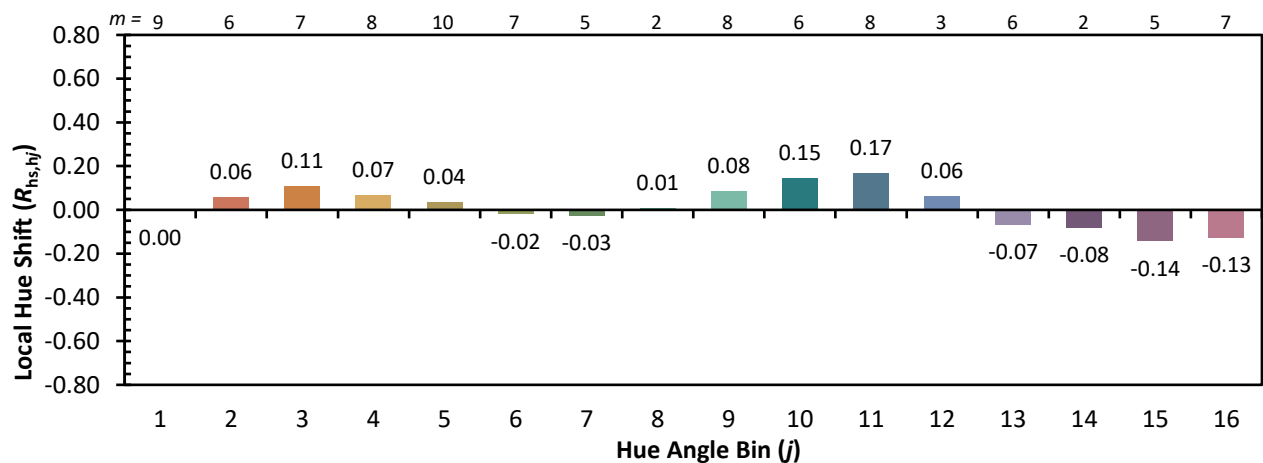


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 83 | CES51 = 92 | CES76 = 75 |
| CES02 = 61 | CES27 = 91 | CES52 = 93 | CES77 = 82 |
| CES03 = 31 | CES28 = 91 | CES53 = 88 | CES78 = 74 |
| CES04 = 70 | CES29 = 90 | CES54 = 88 | CES79 = 92 |
| CES05 = 48 | CES30 = 90 | CES55 = 85 | CES80 = 89 |
| CES06 = 50 | CES31 = 91 | CES56 = 83 | CES81 = 81 |
| CES07 = 41 | CES32 = 83 | CES57 = 82 | CES82 = 95 |
| CES08 = 40 | CES33 = 97 | CES58 = 82 | CES83 = 96 |
| CES09 = 29 | CES34 = 87 | CES59 = 90 | CES84 = 90 |
| CES10 = 74 | CES35 = 92 | CES60 = 88 | CES85 = 77 |
| CES11 = 57 | CES36 = 78 | CES61 = 85 | CES86 = 75 |
| CES12 = 63 | CES37 = 91 | CES62 = 79 | CES87 = 84 |
| CES13 = 42 | CES38 = 84 | CES63 = 82 | CES88 = 89 |
| CES14 = 74 | CES39 = 98 | CES64 = 75 | CES89 = 77 |
| CES15 = 71 | CES40 = 96 | CES65 = 74 | CES90 = 90 |
| CES16 = 47 | CES41 = 95 | CES66 = 70 | CES91 = 67 |
| CES17 = 49 | CES42 = 93 | CES67 = 69 | CES92 = 64 |
| CES18 = 56 | CES43 = 91 | CES68 = 76 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 80 | CES94 = 63 |
| CES20 = 65 | CES45 = 94 | CES70 = 72 | CES95 = 72 |
| CES21 = 86 | CES46 = 91 | CES71 = 64 | CES96 = 84 |
| CES22 = 78 | CES47 = 95 | CES72 = 88 | CES97 = 91 |
| CES23 = 91 | CES48 = 83 | CES73 = 66 | CES98 = 86 |
| CES24 = 90 | CES49 = 90 | CES74 = 90 | CES99 = 77 |
| CES25 = 71 | CES50 = 93 | CES75 = 68 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)