

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: P1216932

Luminaire Tested: 14-ID2-35-CFD1-L830-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1216932  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-35-CFD1-L830-U  
Description: 1X4 IN DEPTH TROFFER WITH 1INCH CUBE DROP LENS  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

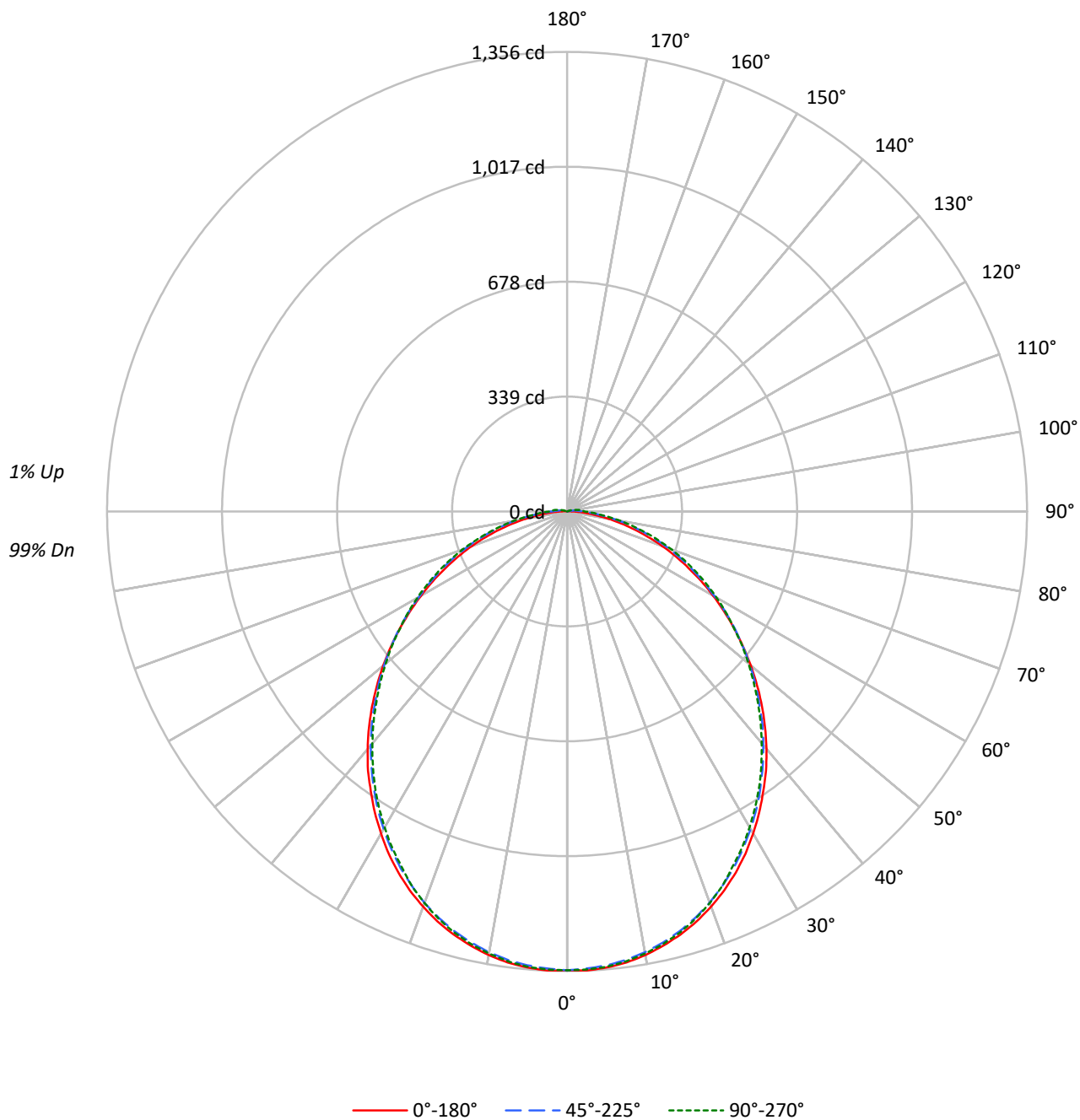
Lumens per Lamp: N/A  
Luminaire Lumens: 3579.8 lumens  
Efficiency: N/A  
Efficacy: 117.0 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.19 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 1' x L: 4' x H: 0.08')  
CIE Type: Direct

Input Watts (W): 30.6  
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: P1216932

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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  |  | 50  | 30  | 10  |
| RCR |     |     |     |     |     |     |     |     |  |     |     |     |  |     |     |     |  |     |     |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 |  | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 101 | 101 | 101 |
| 1   | 108 | 104 | 99  | 95  | 106 | 101 | 97  | 94  |  | 97  | 93  | 90  |  | 93  | 90  | 88  |  | 89  | 87  | 85  |
| 2   | 99  | 90  | 84  | 78  | 96  | 88  | 82  | 77  |  | 85  | 79  | 75  |  | 81  | 77  | 73  |  | 78  | 74  | 71  |
| 3   | 90  | 80  | 71  | 65  | 88  | 78  | 70  | 64  |  | 75  | 68  | 63  |  | 72  | 66  | 62  |  | 69  | 65  | 61  |
| 4   | 83  | 71  | 62  | 55  | 80  | 69  | 61  | 55  |  | 67  | 60  | 54  |  | 64  | 58  | 53  |  | 62  | 57  | 52  |
| 5   | 76  | 63  | 54  | 48  | 74  | 62  | 54  | 47  |  | 60  | 52  | 47  |  | 58  | 51  | 46  |  | 56  | 50  | 46  |
| 6   | 70  | 57  | 48  | 42  | 68  | 56  | 48  | 42  |  | 54  | 47  | 41  |  | 52  | 46  | 41  |  | 51  | 45  | 40  |
| 7   | 65  | 52  | 43  | 37  | 64  | 51  | 43  | 37  |  | 49  | 42  | 37  |  | 48  | 41  | 36  |  | 46  | 40  | 36  |
| 8   | 61  | 47  | 39  | 33  | 59  | 47  | 39  | 33  |  | 45  | 38  | 33  |  | 44  | 37  | 32  |  | 43  | 37  | 32  |
| 9   | 57  | 44  | 35  | 30  | 55  | 43  | 35  | 30  |  | 42  | 35  | 30  |  | 41  | 34  | 29  |  | 39  | 34  | 29  |
| 10  | 53  | 40  | 32  | 27  | 52  | 40  | 32  | 27  |  | 39  | 32  | 27  |  | 38  | 31  | 27  |  | 37  | 31  | 27  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3643 | 3643 | 3643 |
| 5°  | 3642 | 3608 | 3617 |
| 10° | 3619 | 3564 | 3568 |
| 15° | 3581 | 3505 | 3508 |
| 20° | 3528 | 3429 | 3421 |
| 25° | 3459 | 3337 | 3307 |
| 30° | 3369 | 3230 | 3196 |
| 35° | 3267 | 3111 | 3073 |
| 40° | 3159 | 2984 | 2938 |
| 45° | 3031 | 2847 | 2801 |
| 50° | 2893 | 2714 | 2667 |
| 55° | 2744 | 2573 | 2528 |
| 60° | 2586 | 2416 | 2407 |
| 65° | 2414 | 2262 | 2270 |
| 70° | 2225 | 2096 | 2115 |
| 75° | 2000 | 1908 | 1911 |
| 80° | 1704 | 1700 | 1696 |
| 85° | 1395 | 1503 | 1516 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3031 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 127.8  | 3.6       |
| 10°-20°   | 362.1  | 10.1      |
| 20°-30°   | 535.1  | 14.9      |
| 30°-40°   | 622.1  | 17.4      |
| 40°-50°   | 618.8  | 17.3      |
| 50°-60°   | 538.3  | 15.0      |
| 60°-70°   | 404.1  | 11.3      |
| 70°-80°   | 241.6  | 6.7       |
| 80°-90°   | 93.8   | 2.6       |
| 90°-100°  | 28.9   | 0.8       |
| 100°-110° | 7.0    | 0.2       |
| 110°-120° | 0.1    | 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°    | 1025.1 | 28.6      |
| 0°-40°    | 1647.2 | 46.0      |
| 0°-60°    | 2804.2 | 78.3      |
| 0°-90°    | 3543.7 | 99.0      |
| 90°-120°  | 36.1   | 1.0       |
| 90°-150°  | 36.1   | 1.0       |
| 90°-180°  | 36.0   | 1.0       |
| 0°-180°   | 3579.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1354 | 1354  | 1354 | 1354  | 1354 |      |
| 5°   | 1351 | 1349  | 1344 | 1345  | 1348 | 128  |
| 15°  | 1292 | 1287  | 1282 | 1282  | 1286 | 364  |
| 25°  | 1176 | 1169  | 1161 | 1153  | 1155 | 541  |
| 35°  | 1008 | 1004  | 994  | 984   | 988  | 631  |
| 45°  | 812  | 808   | 801  | 794   | 795  | 627  |
| 55°  | 602  | 602   | 604  | 600   | 600  | 538  |
| 65°  | 395  | 401   | 409  | 414   | 418  | 392  |
| 75°  | 207  | 218   | 232  | 238   | 239  | 219  |
| 85°  | 56   | 71    | 88   | 93    | 94   | 60   |
| 90°  | 15   | 28    | 44   | 51    | 52   | 10   |
| 95°  | 10   | 14    | 28   | 37    | 40   | 7    |
| 105° | 2    | 1     | 2    | 12    | 15   | 2    |
| 115° | 0    | 0     | 0    | 0     | 0    | 0    |
| 125° | 0    | 0     | 0    | 0     | 0    | 0    |
| 135° | 0    | 0     | 0    | 0     | 0    | 0    |
| 145° | 0    | 0     | 0    | 0     | 0    | 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    | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1353.7 | 1353.7 | 1353.7 | 1353.7 | 1353.7 |
| 2.5°   | 1355.5 | 1354.3 | 1349.5 | 1350.7 | 1352.5 |
| 5°     | 1350.7 | 1348.9 | 1344.1 | 1344.7 | 1348.3 |
| 7.5°   | 1342.3 | 1338.6 | 1334.4 | 1335.0 | 1338.6 |
| 10°    | 1329.0 | 1326.0 | 1320.6 | 1321.2 | 1324.2 |
| 12.5°  | 1312.1 | 1308.5 | 1303.1 | 1303.7 | 1307.3 |
| 15°    | 1292.2 | 1287.4 | 1282.0 | 1282.0 | 1286.2 |
| 17.5°  | 1268.7 | 1263.3 | 1257.3 | 1255.5 | 1259.7 |
| 20°    | 1241.0 | 1235.6 | 1228.3 | 1224.7 | 1229.5 |
| 22.5°  | 1210.3 | 1204.2 | 1195.8 | 1190.4 | 1195.8 |
| 25°    | 1175.9 | 1169.3 | 1160.8 | 1153.0 | 1155.4 |
| 27.5°  | 1138.5 | 1131.9 | 1122.3 | 1114.4 | 1117.4 |
| 30°    | 1096.9 | 1091.5 | 1081.9 | 1073.4 | 1075.9 |
| 32.5°  | 1054.2 | 1048.7 | 1039.1 | 1029.4 | 1032.5 |
| 35°    | 1008.3 | 1004.1 | 993.9  | 984.2  | 987.9  |
| 37.5°  | 963.7  | 957.1  | 947.5  | 937.2  | 940.8  |
| 40°    | 914.3  | 908.9  | 899.9  | 889.0  | 892.6  |
| 42.5°  | 864.3  | 859.5  | 852.2  | 842.0  | 844.4  |
| 45°    | 812.5  | 808.2  | 801.0  | 793.8  | 795.0  |
| 47.5°  | 760.0  | 757.0  | 752.8  | 745.0  | 746.2  |
| 50°    | 707.6  | 705.8  | 702.8  | 696.1  | 697.9  |
| 52.5°  | 653.9  | 652.7  | 652.7  | 647.3  | 650.3  |
| 55°    | 601.5  | 601.5  | 603.9  | 599.7  | 600.3  |
| 57.5°  | 548.5  | 550.9  | 554.5  | 552.1  | 555.7  |
| 60°    | 497.2  | 499.1  | 503.9  | 505.7  | 509.3  |
| 62.5°  | 446.0  | 450.2  | 456.3  | 459.3  | 462.9  |
| 65°    | 395.4  | 400.8  | 409.2  | 413.5  | 417.7  |
| 67.5°  | 346.6  | 352.6  | 364.6  | 368.9  | 372.5  |
| 70°    | 298.3  | 306.8  | 318.2  | 324.3  | 327.9  |
| 72.5°  | 251.3  | 261.6  | 274.8  | 280.9  | 281.5  |
| 75°    | 206.7  | 218.2  | 232.0  | 238.1  | 238.7  |
| 77.5°  | 163.9  | 174.8  | 191.1  | 197.1  | 197.1  |
| 80°    | 122.4  | 135.0  | 153.7  | 158.5  | 159.1  |
| 82.5°  | 86.2   | 100.1  | 117.5  | 123.0  | 123.0  |
| 85°    | 55.5   | 71.1   | 88.0   | 93.4   | 94.0   |
| 87.5°  | 32.5   | 47.6   | 63.9   | 69.9   | 70.5   |
| 90°    | 15.1   | 27.7   | 44.0   | 51.2   | 51.8   |
| 92.5°  | 12.7   | 21.1   | 36.2   | 44.0   | 45.8   |
| 95°    | 10.2   | 13.9   | 28.3   | 37.4   | 40.4   |
| 97.5°  | 7.8    | 7.8    | 21.1   | 30.7   | 33.8   |
| 100°   | 5.4    | 4.2    | 13.9   | 24.1   | 27.7   |
| 102.5° | 3.6    | 2.4    | 7.2    | 17.5   | 21.1   |
| 105°   | 1.8    | 1.2    | 2.4    | 12.1   | 15.1   |
| 107.5° | 0.6    | 0.0    | 0.0    | 6.0    | 9.6    |
| 110°   | 0.0    | 0.0    | 0.0    | 1.2    | 4.2    |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|-----|
| 112.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 115°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 117.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 120°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 122.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 125°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 127.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 130°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 132.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 135°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 137.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 140°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 142.5° | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 145°   | 0.0 | 0.0   | 0.0 | 0.0   | 0.0 |
| 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 | 15.00            | 16.60 | 15.38 | 16.93 | 17.27 | 15.22          | 16.82 | 15.60 | 17.16 | 17.50 |
|                 | 3H   | 16.61            | 18.06 | 17.00 | 18.40 | 18.79 | 17.08          | 18.52 | 17.47 | 18.87 | 19.26 |
|                 | 4H   | 17.18            | 18.54 | 17.60 | 18.91 | 19.31 | 17.81          | 19.17 | 18.22 | 19.54 | 19.94 |
|                 | 6H   | 17.57            | 18.83 | 18.00 | 19.22 | 19.63 | 18.40          | 19.67 | 18.83 | 20.05 | 20.47 |
|                 | 8H   | 17.68            | 18.88 | 18.12 | 19.29 | 19.72 | 18.63          | 19.84 | 19.07 | 20.25 | 20.67 |
|                 | 12H  | 17.74            | 18.90 | 18.19 | 19.30 | 19.75 | 18.84          | 20.00 | 19.28 | 20.40 | 20.85 |
| 4H              | 2H   | 15.62            | 16.98 | 16.03 | 17.35 | 17.75 | 15.79          | 17.16 | 16.21 | 17.53 | 17.93 |
|                 | 3H   | 17.45            | 18.60 | 17.88 | 19.02 | 19.44 | 17.87          | 19.01 | 18.29 | 19.43 | 19.85 |
|                 | 4H   | 18.15            | 19.19 | 18.60 | 19.63 | 20.09 | 18.73          | 19.77 | 19.18 | 20.20 | 20.66 |
|                 | 6H   | 18.66            | 19.57 | 19.13 | 20.03 | 20.51 | 19.47          | 20.38 | 19.94 | 20.84 | 21.32 |
|                 | 8H   | 18.81            | 19.66 | 19.29 | 20.13 | 20.61 | 19.76          | 20.61 | 20.24 | 21.07 | 21.56 |
|                 | 12H  | 18.92            | 19.68 | 19.41 | 20.18 | 20.67 | 20.03          | 20.80 | 20.53 | 21.29 | 21.79 |
| 8H              | 4H   | 18.50            | 19.35 | 18.97 | 19.81 | 20.30 | 19.01          | 19.86 | 19.49 | 20.32 | 20.81 |
|                 | 6H   | 19.13            | 19.84 | 19.64 | 20.35 | 20.85 | 19.88          | 20.59 | 20.39 | 21.10 | 21.60 |
|                 | 8H   | 19.35            | 19.99 | 19.88 | 20.52 | 21.02 | 20.26          | 20.90 | 20.79 | 21.43 | 21.94 |
|                 | 12H  | 19.53            | 20.09 | 20.05 | 20.60 | 21.18 | 20.65          | 21.22 | 21.17 | 21.72 | 22.31 |
| 12H             | 4H   | 18.55            | 19.31 | 19.04 | 19.81 | 20.30 | 19.03          | 19.80 | 19.53 | 20.29 | 20.79 |
|                 | 6H   | 19.21            | 19.85 | 19.74 | 20.38 | 20.89 | 19.93          | 20.57 | 20.45 | 21.09 | 21.60 |
|                 | 8H   | 19.50            | 20.07 | 20.02 | 20.58 | 21.16 | 20.38          | 20.94 | 20.90 | 21.45 | 22.03 |

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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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

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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                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



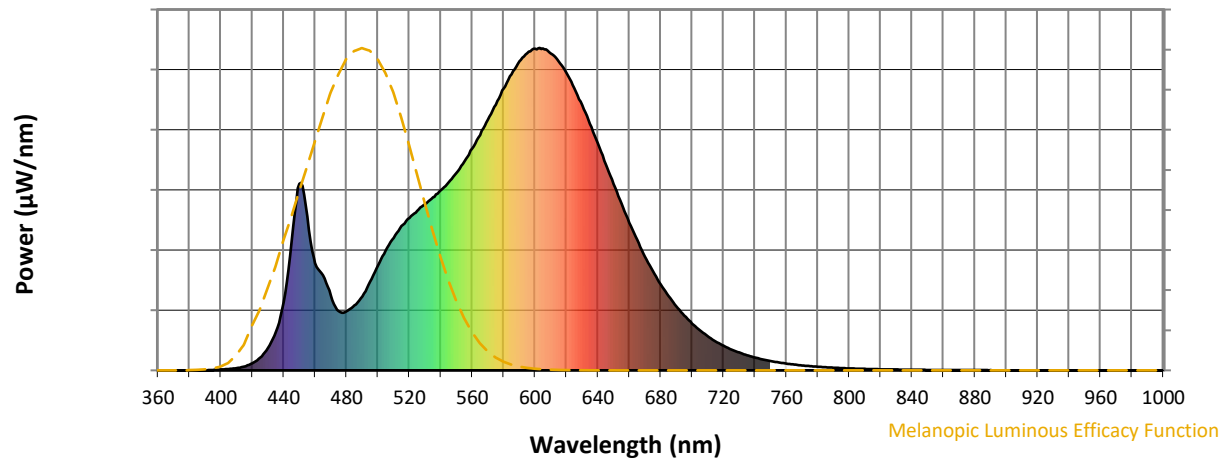
Scotopic Lumens: NR

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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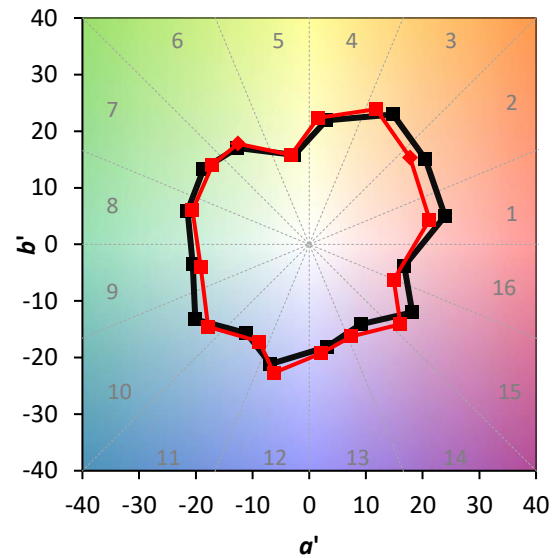
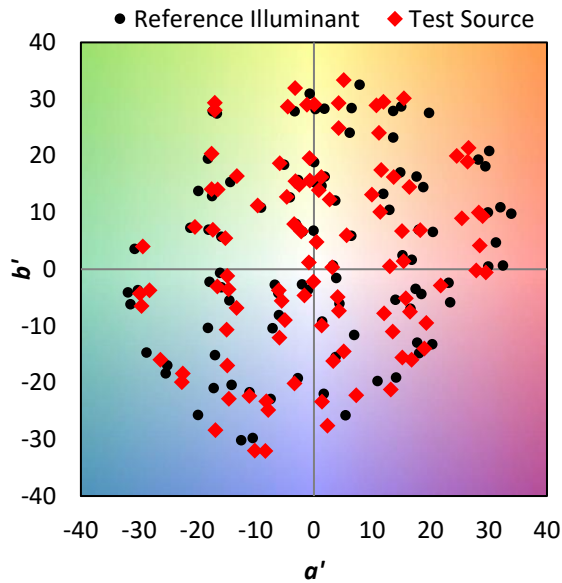
TM-30-18

### 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 ( $R_{f,i}$ )**

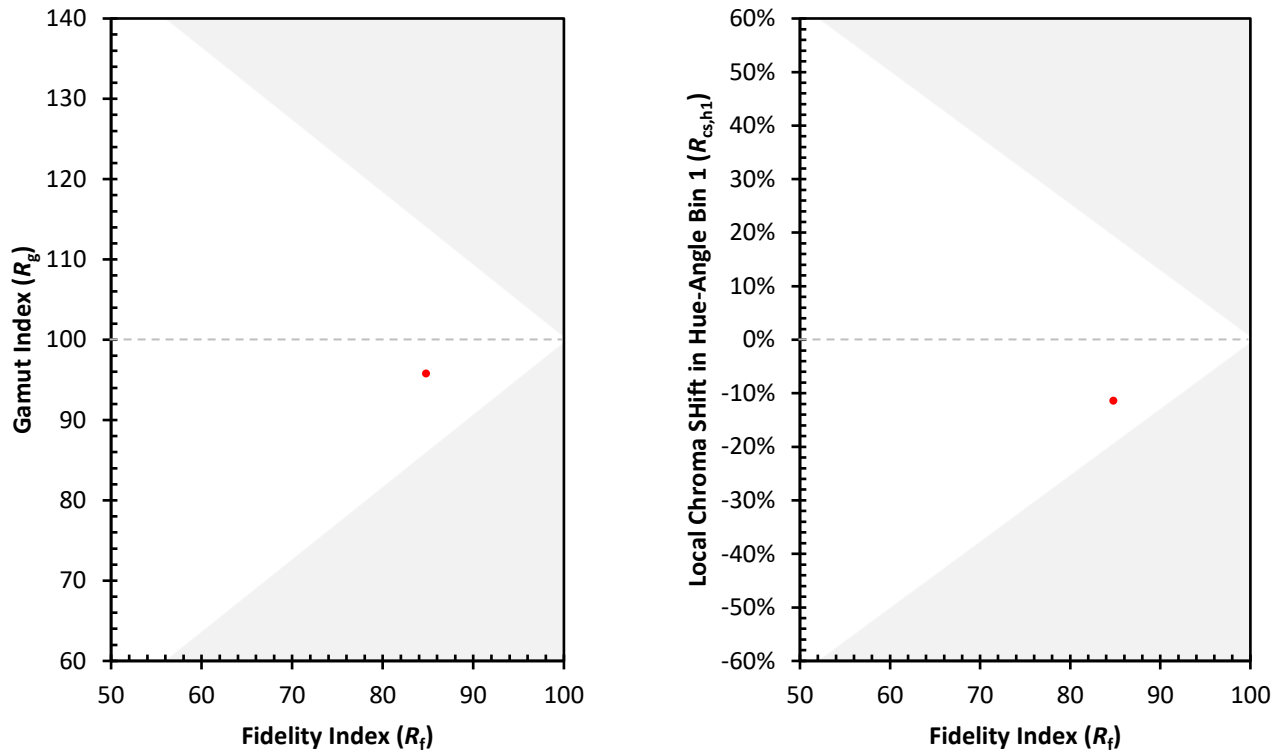
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 94 | CES76 = 80 |
| CES02 = 63 | CES27 = 94 | CES52 = 94 | CES77 = 85 |
| CES03 = 31 | CES28 = 93 | CES53 = 89 | CES78 = 79 |
| CES04 = 70 | CES29 = 87 | CES54 = 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)