

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1211922

Luminaire Tested: **GKO-PB1E-840-U-T2R**

Issue Date: 11/5/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P1211922  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 11/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GKO-PB1E-840-U-T2R  
Description: GEKKO WALL PACK 5000LM PACKAGE 80CRI 4000K FIXTURE w/ TYPE II  
ROADWAY DISTRIBUTION OPTIC  
Light Source: (10) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

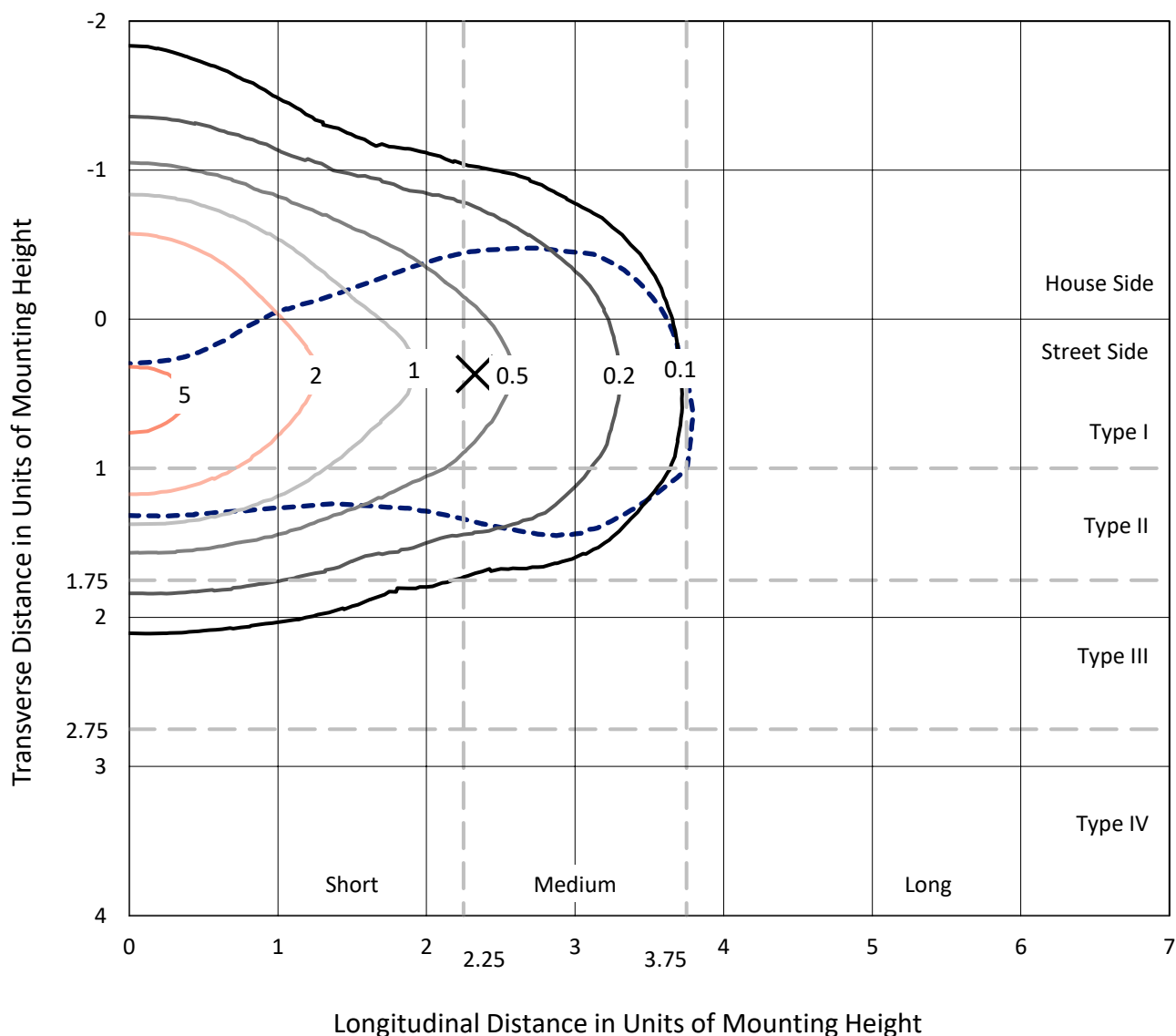
Lumens per Lamp: N/A  
Luminaire Lumens: 4828.8 lumens  
Efficiency: N/A  
Efficacy: 124.8 lumens/watt  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B1 - U0 - G1

Input Watts (W): 38.7  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): 9%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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## Iso-Footcandle Lines of Horizontal Illumination

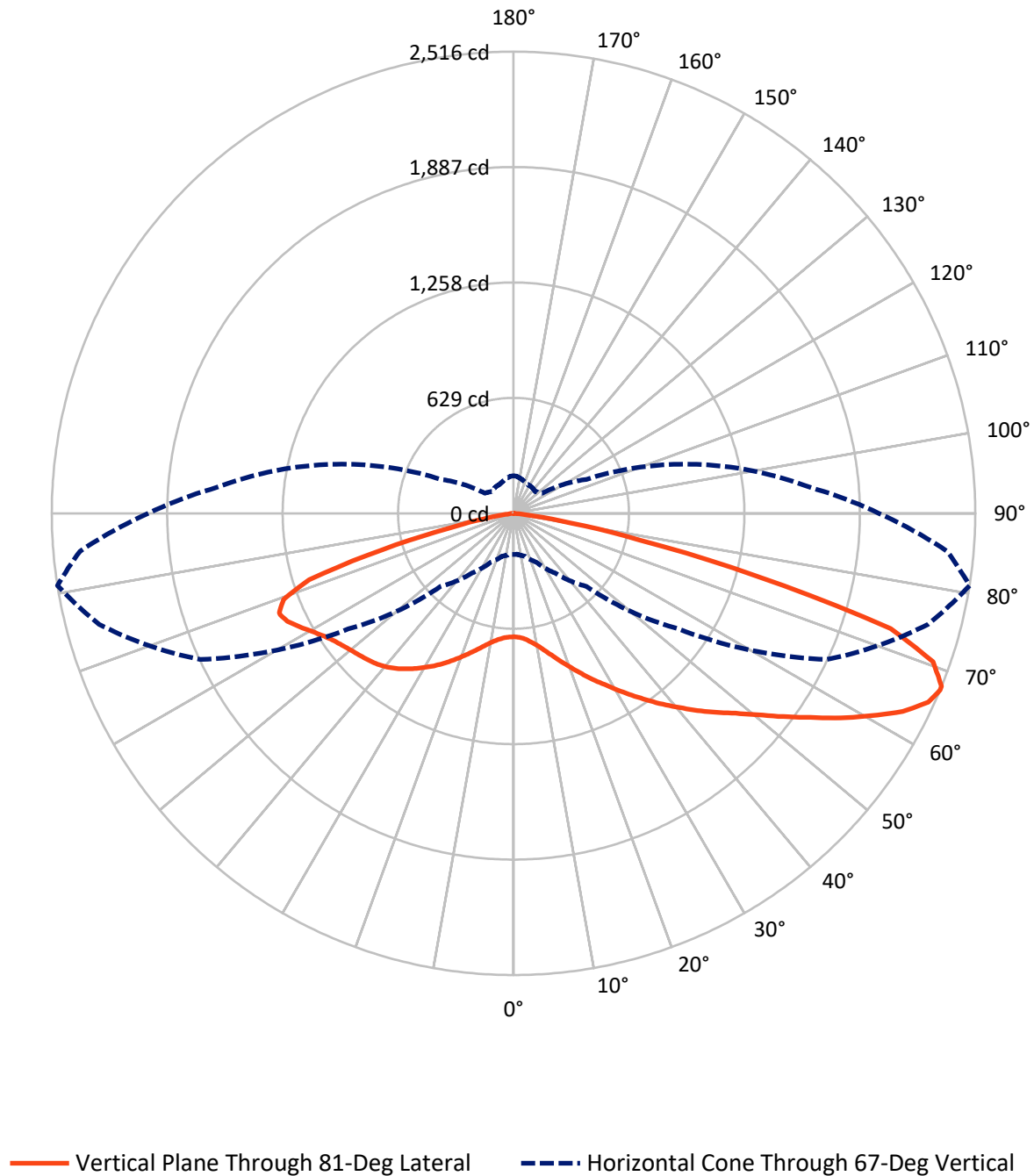
✕ Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 5.8 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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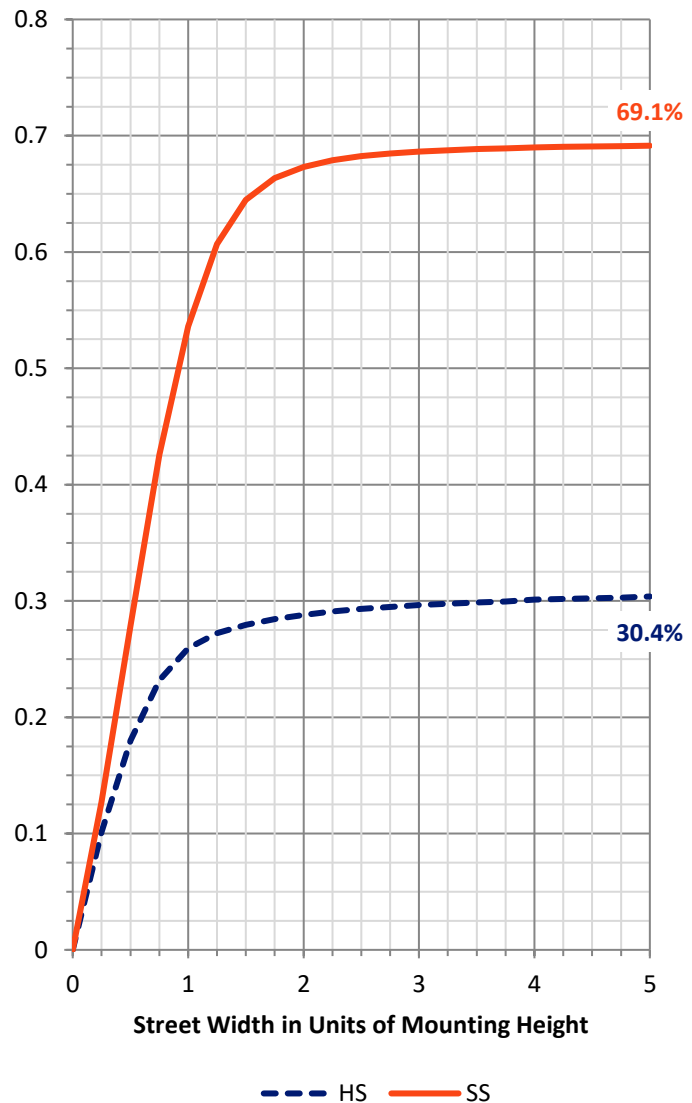
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1491.1   | 0.0    | 1491.1 |
|                    | % Fixture | 30.9     | 0.0    | 30.9   |
| <b>Street Side</b> | Lumens    | 3337.7   | 0.0    | 3337.7 |
|                    | % Fixture | 69.1     | 0.0    | 69.1   |
| <b>Total</b>       | Lumens    | 4828.8   | 0.0    | 4828.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 69.7   | 1.4       |
| 10°-20°   | 252.2  | 5.2       |
| 20°-30°   | 510.9  | 10.6      |
| 30°-40°   | 805.6  | 16.7      |
| 40°-50°   | 989.4  | 20.5      |
| 50°-60°   | 945.2  | 19.6      |
| 60°-70°   | 792.6  | 16.4      |
| 70°-80°   | 419.9  | 8.7       |
| 80°-90°   | 43.4   | 0.9       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 4828.8 | 100.0     |
| 0°-180°   | 4828.8 | 100.0     |

**Coefficient of Utilization**



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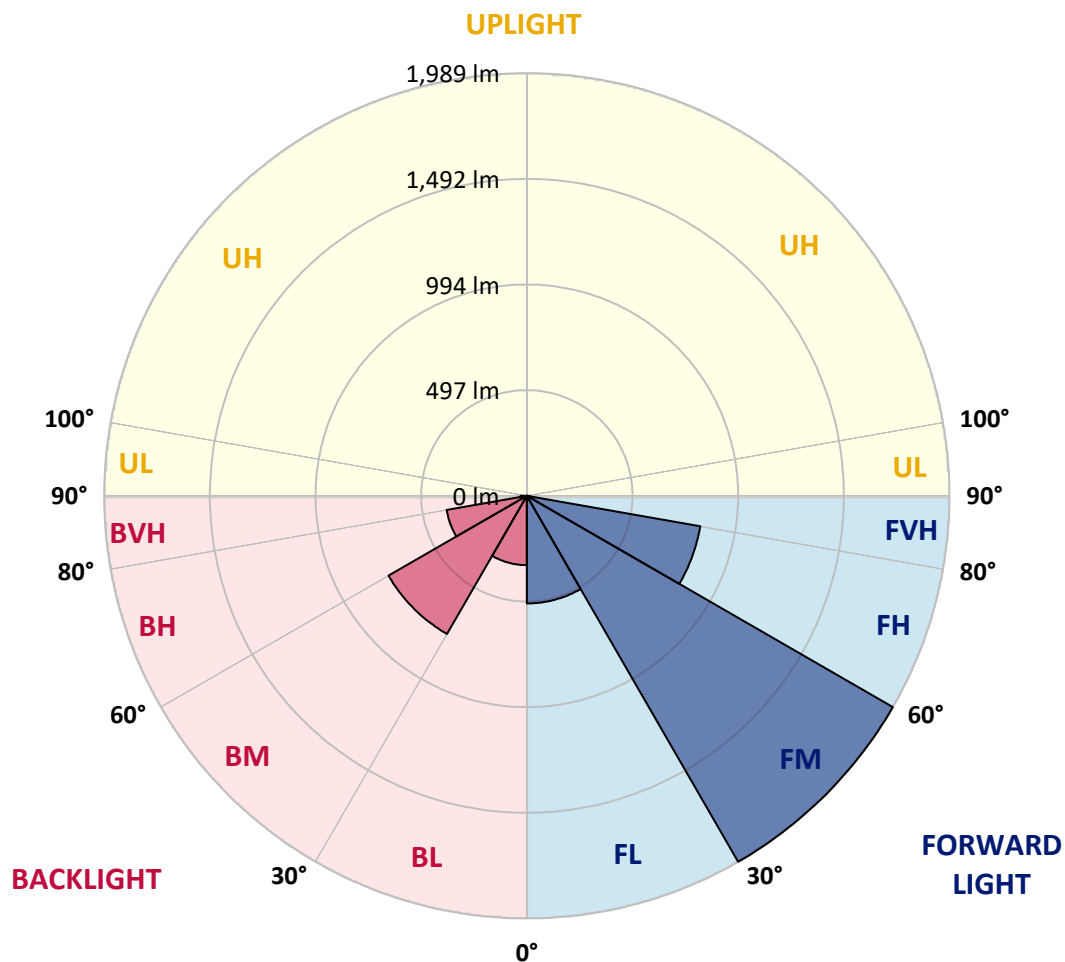
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 506.5  | 10.5      |                         |      |         |
| FM   | (30°-60°)   | 1988.8 | 41.2      |                         |      |         |
| FH   | (60°-80°)   | 828.9  | 17.2      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 13.5   | 0.3       |                         |      | G1/100  |
| BL   | (0°-30°)    | 326.3  | 6.8       | B1/500                  |      |         |
| BM   | (30°-60°)   | 751.3  | 15.6      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 383.6  | 7.9       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 29.9   | 0.6       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**

Type II Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 81°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  | 672.6  |
| 2.5°  | 711.5  | 713.3  | 709.6  | 708.7  | 705.0  | 699.4  | 693.0  | 688.4  | 681.0  | 677.3  | 675.4  |
| 5°    | 778.9  | 775.2  | 772.4  | 767.8  | 754.9  | 743.8  | 725.3  | 712.4  | 698.5  | 689.3  | 686.5  |
| 7.5°  | 861.1  | 863.0  | 853.7  | 841.7  | 823.3  | 801.1  | 771.5  | 747.5  | 721.6  | 709.6  | 704.1  |
| 10°   | 950.8  | 958.2  | 948.9  | 934.1  | 899.0  | 865.8  | 829.7  | 788.1  | 753.0  | 734.6  | 727.2  |
| 12.5° | 1059.8 | 1064.4 | 1052.4 | 1033.0 | 990.5  | 940.6  | 889.8  | 838.0  | 791.8  | 768.7  | 755.8  |
| 15°   | 1181.8 | 1178.1 | 1166.0 | 1137.4 | 1082.9 | 1027.5 | 958.2  | 890.7  | 836.2  | 807.5  | 789.1  |
| 17.5° | 1307.4 | 1302.8 | 1287.1 | 1250.1 | 1188.2 | 1118.9 | 1036.7 | 951.7  | 883.3  | 851.9  | 827.0  |
| 20°   | 1427.5 | 1422.9 | 1411.8 | 1370.2 | 1295.4 | 1210.4 | 1114.3 | 1021.9 | 936.9  | 898.1  | 870.4  |
| 22.5° | 1560.6 | 1556.9 | 1539.3 | 1488.5 | 1408.1 | 1314.8 | 1203.0 | 1093.1 | 995.1  | 948.9  | 915.7  |
| 25°   | 1704.7 | 1705.6 | 1686.2 | 1615.1 | 1524.5 | 1415.5 | 1298.2 | 1173.4 | 1060.7 | 1002.5 | 964.6  |
| 27.5° | 1872.9 | 1872.0 | 1838.7 | 1762.0 | 1648.4 | 1522.7 | 1392.4 | 1257.5 | 1125.4 | 1057.0 | 1013.6 |
| 30°   | 2025.3 | 2021.6 | 1984.7 | 1908.0 | 1776.8 | 1635.4 | 1492.2 | 1338.8 | 1198.4 | 1117.1 | 1064.4 |
| 32.5° | 2138.1 | 2139.0 | 2108.5 | 2024.4 | 1896.0 | 1745.4 | 1585.5 | 1430.3 | 1268.6 | 1181.8 | 1123.5 |
| 35°   | 2219.4 | 2220.3 | 2190.7 | 2118.7 | 1998.5 | 1847.9 | 1684.4 | 1516.2 | 1347.1 | 1248.3 | 1185.5 |
| 37.5° | 2245.2 | 2245.2 | 2225.8 | 2169.5 | 2071.5 | 1940.3 | 1781.4 | 1614.2 | 1425.7 | 1320.3 | 1248.3 |
| 40°   | 2210.1 | 2212.9 | 2212.0 | 2175.0 | 2107.6 | 2004.1 | 1871.0 | 1708.4 | 1513.5 | 1391.5 | 1312.0 |
| 42.5° | 2130.7 | 2132.5 | 2135.3 | 2121.4 | 2100.2 | 2038.3 | 1943.1 | 1804.5 | 1601.2 | 1469.1 | 1374.9 |
| 45°   | 1999.5 | 2006.9 | 2020.7 | 2026.3 | 2034.6 | 2030.0 | 1987.5 | 1894.1 | 1699.2 | 1546.7 | 1436.8 |
| 47.5° | 1833.2 | 1845.2 | 1863.6 | 1896.9 | 1943.1 | 1980.1 | 1998.5 | 1963.4 | 1794.3 | 1627.1 | 1506.1 |
| 50°   | 1602.2 | 1615.1 | 1665.0 | 1734.3 | 1825.8 | 1897.8 | 1968.1 | 2015.2 | 1900.6 | 1725.0 | 1583.7 |
| 52.5° | 1282.5 | 1310.2 | 1394.3 | 1527.3 | 1684.4 | 1791.6 | 1903.4 | 2040.1 | 2008.7 | 1840.5 | 1676.1 |
| 55°   | 975.7  | 985.9  | 1094.0 | 1253.8 | 1495.9 | 1677.0 | 1814.7 | 2027.2 | 2110.3 | 1961.6 | 1781.4 |
| 57.5° | 681.9  | 693.0  | 787.2  | 961.9  | 1229.8 | 1527.3 | 1726.0 | 1983.8 | 2202.7 | 2103.9 | 1902.4 |
| 60°   | 484.2  | 496.2  | 566.4  | 695.7  | 955.4  | 1309.3 | 1643.7 | 1928.3 | 2283.1 | 2238.8 | 2042.0 |
| 62.5° | 352.0  | 358.5  | 395.5  | 504.5  | 690.2  | 1023.8 | 1526.4 | 1892.3 | 2339.5 | 2379.2 | 2185.2 |
| 65°   | 269.8  | 276.3  | 297.5  | 365.9  | 510.0  | 748.4  | 1315.7 | 1891.4 | 2354.3 | 2482.7 | 2309.0 |
| 67°   | 224.5  | 223.6  | 242.1  | 293.8  | 398.2  | 562.7  | 1098.6 | 1884.0 | 2337.6 | 2516.0 | 2371.8 |
| 67.5° | 212.5  | 216.2  | 231.0  | 274.4  | 376.1  | 518.3  | 1051.5 | 1872.0 | 2332.1 | 2515.0 | 2376.4 |
| 70°   | 169.1  | 170.0  | 182.9  | 217.1  | 282.7  | 376.1  | 756.7  | 1753.7 | 2248.0 | 2424.5 | 2324.7 |
| 72.5° | 123.8  | 122.9  | 142.3  | 164.5  | 216.2  | 273.5  | 507.3  | 1472.8 | 2066.0 | 2148.2 | 2066.9 |
| 75°   | 91.5   | 90.5   | 100.7  | 125.7  | 154.3  | 204.2  | 328.9  | 960.9  | 1398.9 | 1366.5 | 1262.1 |
| 77.5° | 61.0   | 62.8   | 72.1   | 92.4   | 110.0  | 126.6  | 164.5  | 442.6  | 770.6  | 696.7  | 670.8  |
| 80°   | 37.0   | 34.2   | 40.7   | 52.7   | 63.8   | 64.7   | 70.2   | 191.3  | 330.8  | 315.1  | 295.7  |
| 82.5° | 12.9   | 12.9   | 15.7   | 21.3   | 21.3   | 21.3   | 25.9   | 46.2   | 65.6   | 60.1   | 57.3   |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 1.8    | 2.8    | 1.8    | 3.7    | 6.5    | 7.4    | 7.4    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.9    | 0.9    | 1.8    | 2.8    | 3.7    | 3.7    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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CATALOG NUMBER: GKO-PB1E-840-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 672.6  | 672.6  | 672.6  | 672.6 | 672.6 | 672.6 | 672.6 | 672.6 | 672.6 | 672.6 | 672.6 |
| 2.5°  | 675.4  | 675.4  | 672.6  | 669.0 | 667.1 | 666.2 | 663.4 | 659.7 | 662.5 | 665.3 | 665.3 |
| 5°    | 684.7  | 682.8  | 677.3  | 673.6 | 670.8 | 670.8 | 667.1 | 666.2 | 669.0 | 671.7 | 670.8 |
| 7.5°  | 699.4  | 695.7  | 689.3  | 683.7 | 684.7 | 685.6 | 680.0 | 680.0 | 682.8 | 685.6 | 685.6 |
| 10°   | 719.8  | 713.3  | 706.8  | 702.2 | 703.1 | 704.1 | 698.5 | 696.7 | 699.4 | 702.2 | 704.1 |
| 12.5° | 745.6  | 737.3  | 729.9  | 725.3 | 724.4 | 725.3 | 719.8 | 717.9 | 717.9 | 719.8 | 719.8 |
| 15°   | 776.1  | 766.9  | 757.7  | 751.2 | 749.3 | 748.4 | 741.0 | 734.6 | 734.6 | 735.5 | 735.5 |
| 17.5° | 811.2  | 798.3  | 786.3  | 778.9 | 774.3 | 767.8 | 759.5 | 750.3 | 747.5 | 748.4 | 748.4 |
| 20°   | 846.4  | 832.5  | 816.8  | 806.6 | 797.4 | 786.3 | 773.4 | 761.3 | 755.8 | 755.8 | 754.9 |
| 22.5° | 887.0  | 868.5  | 847.3  | 833.4 | 816.8 | 798.3 | 779.8 | 764.1 | 758.6 | 756.7 | 756.7 |
| 25°   | 928.6  | 907.3  | 876.8  | 855.6 | 831.6 | 804.8 | 780.8 | 759.5 | 750.3 | 746.6 | 746.6 |
| 27.5° | 971.1  | 946.1  | 906.4  | 875.9 | 840.8 | 803.9 | 771.5 | 744.7 | 731.8 | 727.2 | 725.3 |
| 30°   | 1019.1 | 983.1  | 932.3  | 890.7 | 842.7 | 795.5 | 754.0 | 722.5 | 703.1 | 692.1 | 693.0 |
| 32.5° | 1069.0 | 1023.8 | 956.3  | 899.9 | 839.9 | 779.8 | 727.2 | 687.4 | 662.5 | 652.3 | 648.6 |
| 35°   | 1119.8 | 1062.6 | 977.6  | 904.6 | 830.6 | 755.8 | 693.0 | 648.6 | 620.9 | 606.1 | 606.1 |
| 37.5° | 1171.6 | 1103.2 | 992.3  | 903.6 | 814.0 | 724.4 | 653.2 | 606.1 | 573.8 | 555.3 | 550.7 |
| 40°   | 1222.4 | 1141.1 | 1003.4 | 896.2 | 789.1 | 686.5 | 610.7 | 559.9 | 516.5 | 492.5 | 488.8 |
| 42.5° | 1272.3 | 1172.5 | 1009.0 | 884.2 | 759.5 | 644.9 | 562.7 | 494.3 | 452.7 | 430.6 | 429.6 |
| 45°   | 1317.6 | 1197.5 | 1009.9 | 868.5 | 720.7 | 597.8 | 498.0 | 432.4 | 390.8 | 367.7 | 367.7 |
| 47.5° | 1361.9 | 1225.2 | 1009.0 | 848.2 | 678.2 | 536.8 | 429.6 | 365.9 | 328.0 | 313.2 | 308.6 |
| 50°   | 1415.5 | 1252.9 | 1008.0 | 823.3 | 623.7 | 463.8 | 363.1 | 308.6 | 276.3 | 261.5 | 261.5 |
| 52.5° | 1470.0 | 1285.2 | 1009.9 | 788.1 | 559.0 | 392.7 | 304.0 | 255.9 | 234.7 | 225.4 | 224.5 |
| 55°   | 1540.3 | 1319.4 | 1014.5 | 746.6 | 491.6 | 323.4 | 253.2 | 220.8 | 206.0 | 201.4 | 202.3 |
| 57.5° | 1625.3 | 1366.5 | 1023.8 | 697.6 | 413.0 | 265.2 | 217.1 | 199.6 | 195.9 | 197.7 | 198.7 |
| 60°   | 1722.3 | 1424.8 | 1036.7 | 642.2 | 343.7 | 220.8 | 195.9 | 192.2 | 195.9 | 203.3 | 204.2 |
| 62.5° | 1835.0 | 1495.0 | 1053.3 | 580.3 | 275.3 | 194.0 | 186.6 | 189.4 | 192.2 | 204.2 | 205.1 |
| 65°   | 1934.8 | 1570.7 | 1057.0 | 507.3 | 223.6 | 176.5 | 181.1 | 182.9 | 190.3 | 204.2 | 205.1 |
| 67°   | 1991.1 | 1622.5 | 1032.1 | 438.0 | 191.3 | 167.2 | 173.7 | 175.6 | 188.5 | 202.3 | 204.2 |
| 67.5° | 1997.6 | 1633.6 | 1015.4 | 420.4 | 184.8 | 165.4 | 171.9 | 175.6 | 188.5 | 202.3 | 203.3 |
| 70°   | 1978.2 | 1626.2 | 904.6  | 316.9 | 152.5 | 152.5 | 159.8 | 168.2 | 181.1 | 195.9 | 202.3 |
| 72.5° | 1805.4 | 1483.0 | 700.4  | 215.3 | 129.4 | 137.7 | 148.8 | 160.8 | 172.8 | 190.3 | 201.4 |
| 75°   | 1141.1 | 954.5  | 428.7  | 144.1 | 108.1 | 122.9 | 140.4 | 154.3 | 164.5 | 177.4 | 184.8 |
| 77.5° | 609.8  | 472.1  | 184.8  | 85.0  | 85.0  | 109.0 | 130.3 | 143.2 | 148.8 | 153.4 | 158.0 |
| 80°   | 288.3  | 219.9  | 89.6   | 50.8  | 59.1  | 85.0  | 115.5 | 129.4 | 131.2 | 136.7 | 138.6 |
| 82.5° | 57.3   | 49.9   | 29.6   | 26.8  | 38.8  | 61.0  | 96.1  | 111.8 | 112.7 | 122.0 | 123.8 |
| 85°   | 7.4    | 6.5    | 4.6    | 10.2  | 24.9  | 45.3  | 73.9  | 96.1  | 97.9  | 97.9  | 96.1  |
| 87.5° | 3.7    | 2.8    | 2.8    | 7.4   | 18.5  | 34.2  | 61.0  | 80.4  | 81.3  | 63.8  | 61.9  |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP3-2511-595-3

Test Date: 11/12/2025

Luminaire Tested: GKO-PB1C-840-U-T4W

Data in this report applies to families of products including GKO-PB1C-840\*

### Test Information

Test Method: LM-79-2019  
 Report Number: SP3-2511-595-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP3 - 3M SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 01/27/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GKO-PB1C-840-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

CCT (K): 3958  
 CIE  $u'$ : 0.2251  
 CIE  $v'$ : 0.5041  
 Duv: 0.0014  
 CIE x: 0.3833  
 CIE y: 0.3816  
 CIE z: 0.2351  
 Peak Wavelength (nm): 450  
 Dominant Wavelength (nm): 578  
 Purity: 29.56261  
 R<sub>f</sub>: 82.9  
 R<sub>g</sub>: 94.7

CRI (Ra): 80.8  
 R1: 78.3  
 R2: 87.6  
 R3: 95.0  
 R4: 79.6  
 R5: 78.8  
 R6: 83.3  
 R7: 84.3  
 R8: 59.4  
 R9: -5.1  
 R10: 71.4  
 R11: 78.5  
 R12: 60.5  
 R13: 80.5  
 R14: 97.5  
 R15: 70.7



### Test Conditions

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP3-2511-595-3

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 3M SPHERE IN02505     | 7/1/2025         | 1/1/2026             |
| Power Meter                    | XITRON INXT2011006    | 10/21/2025       | 10/21/2026           |
| AC Power Source                | CHROMA 61604 IN6064A  | 10/20/2025       | 10/20/2026           |
| DC Power Source                | EYSIGHT N5770A IN0534 | 10/20/2025       | 10/20/2026           |
| Sphere Thermometer             | TANDD IN4036E         | 10/21/2025       | 10/21/2026           |
|                                |                       |                  |                      |



REPORT NUMBER: SP3-2511-595-3

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| 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       | 296                         | NR               | 620       | 736                         | NR               | 750       | 18                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 355                         | NR               | 625       | 683                         | NR               | 755       | 15                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 415                         | NR               | 630       | 628                         | NR               | 760       | 13                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 468                         | NR               | 635       | 571                         | NR               | 765       | 11                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 511                         | NR               | 640       | 515                         | NR               | 770       | 9                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 545                         | NR               | 645       | 460                         | NR               | 775       | 8                           | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 570                         | NR               | 650       | 408                         | NR               | 780       | 7                           | NR               | 910       | 0                           | NR               |
| 395       | 3                           | NR               | 525       | 590                         | NR               | 655       | 359                         | NR               | 785       | 6                           | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 606                         | NR               | 660       | 313                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 7                           | NR               | 535       | 623                         | NR               | 665       | 273                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 641                         | NR               | 670       | 236                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 22                          | NR               | 545       | 664                         | NR               | 675       | 204                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 40                          | NR               | 550       | 690                         | NR               | 680       | 175                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 73                          | NR               | 555       | 715                         | NR               | 685       | 151                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 133                         | NR               | 560       | 747                         | NR               | 690       | 128                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 236                         | NR               | 565       | 781                         | NR               | 695       | 109                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 416                         | NR               | 570       | 809                         | NR               | 700       | 93                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 757                         | NR               | 575       | 840                         | NR               | 705       | 78                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 1000                        | NR               | 580       | 863                         | NR               | 710       | 67                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 730                         | NR               | 585       | 880                         | NR               | 715       | 57                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 494                         | NR               | 590       | 890                         | NR               | 720       | 48                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 419                         | NR               | 595       | 890                         | NR               | 725       | 41                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 305                         | NR               | 600       | 879                         | NR               | 730       | 35                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 235                         | NR               | 605       | 856                         | NR               | 735       | 29                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 237                         | NR               | 610       | 824                         | NR               | 740       | 25                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 257                         | NR               | 615       | 783                         | NR               | 745       | 21                          | 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    | 296                      | NR            | 620    | 736                      | NR            | 750    | 18                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 355                      | NR            | 625    | 683                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 415                      | NR            | 630    | 628                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 468                      | NR            | 635    | 571                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 511                      | NR            | 640    | 515                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 545                      | NR            | 645    | 460                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 570                      | NR            | 650    | 408                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 3                        | NR            | 525    | 590                      | NR            | 655    | 359                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 5                        | NR            | 530    | 606                      | NR            | 660    | 313                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 623                      | NR            | 665    | 273                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 641                      | NR            | 670    | 236                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 22                       | NR            | 545    | 664                      | NR            | 675    | 204                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 40                       | NR            | 550    | 690                      | NR            | 680    | 175                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 73                       | NR            | 555    | 715                      | NR            | 685    | 151                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 133                      | NR            | 560    | 747                      | NR            | 690    | 128                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 236                      | NR            | 565    | 781                      | NR            | 695    | 109                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 416                      | NR            | 570    | 809                      | NR            | 700    | 93                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 757                      | NR            | 575    | 840                      | NR            | 705    | 78                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 1000                     | NR            | 580    | 863                      | NR            | 710    | 67                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 730                      | NR            | 585    | 880                      | NR            | 715    | 57                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 494                      | NR            | 590    | 890                      | NR            | 720    | 48                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 419                      | NR            | 595    | 890                      | NR            | 725    | 41                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 305                      | NR            | 600    | 879                      | NR            | 730    | 35                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 235                      | NR            | 605    | 856                      | NR            | 735    | 29                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 237                      | NR            | 610    | 824                      | NR            | 740    | 25                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 257                      | NR            | 615    | 783                      | NR            | 745    | 21                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.36

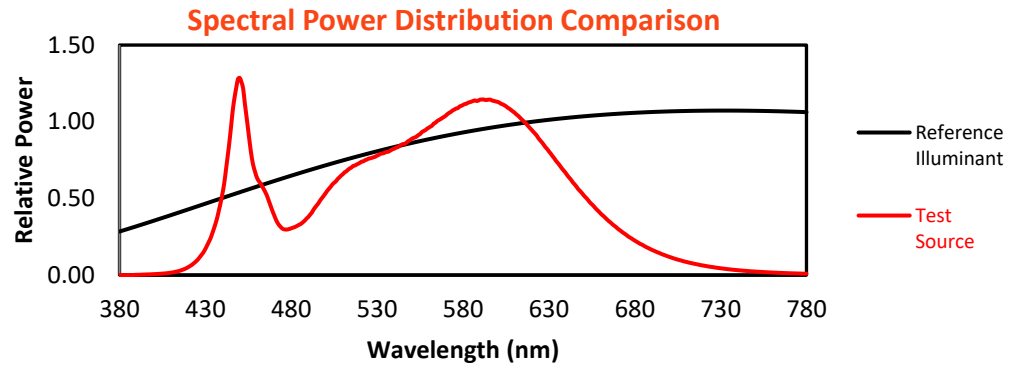
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 296                                    | NR                             | 620               | 736                                    | NR                             | 750               | 18                                     | NR                             | 880               | 0                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 355                                    | NR                             | 625               | 683                                    | NR                             | 755               | 15                                     | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 415                                    | NR                             | 630               | 628                                    | NR                             | 760               | 13                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 468                                    | NR                             | 635               | 571                                    | NR                             | 765               | 11                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 511                                    | NR                             | 640               | 515                                    | NR                             | 770               | 9                                      | NR                             | 900               | 0                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 545                                    | NR                             | 645               | 460                                    | NR                             | 775               | 8                                      | NR                             | 905               | 0                                      | NR                             |
| 390               | 1                                      | NR                             | 520               | 570                                    | NR                             | 650               | 408                                    | NR                             | 780               | 7                                      | NR                             | 910               | 0                                      | NR                             |
| 395               | 3                                      | NR                             | 525               | 590                                    | NR                             | 655               | 359                                    | NR                             | 785               | 6                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 5                                      | NR                             | 530               | 606                                    | NR                             | 660               | 313                                    | NR                             | 790               | 5                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 7                                      | NR                             | 535               | 623                                    | NR                             | 665               | 273                                    | NR                             | 795               | 4                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 12                                     | NR                             | 540               | 641                                    | NR                             | 670               | 236                                    | NR                             | 800               | 4                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 22                                     | NR                             | 545               | 664                                    | NR                             | 675               | 204                                    | NR                             | 805               | 3                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 40                                     | NR                             | 550               | 690                                    | NR                             | 680               | 175                                    | NR                             | 810               | 3                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 73                                     | NR                             | 555               | 715                                    | NR                             | 685               | 151                                    | NR                             | 815               | 2                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 133                                    | NR                             | 560               | 747                                    | NR                             | 690               | 128                                    | NR                             | 820               | 2                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 236                                    | NR                             | 565               | 781                                    | NR                             | 695               | 109                                    | NR                             | 825               | 2                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 416                                    | NR                             | 570               | 809                                    | NR                             | 700               | 93                                     | NR                             | 830               | 1                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 757                                    | NR                             | 575               | 840                                    | NR                             | 705               | 78                                     | NR                             | 835               | 1                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 1000                                   | NR                             | 580               | 863                                    | NR                             | 710               | 67                                     | NR                             | 840               | 1                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 730                                    | NR                             | 585               | 880                                    | NR                             | 715               | 57                                     | NR                             | 845               | 1                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 494                                    | NR                             | 590               | 890                                    | NR                             | 720               | 48                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 419                                    | NR                             | 595               | 890                                    | NR                             | 725               | 41                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 305                                    | NR                             | 600               | 879                                    | NR                             | 730               | 35                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 235                                    | NR                             | 605               | 856                                    | NR                             | 735               | 29                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 237                                    | NR                             | 610               | 824                                    | NR                             | 740               | 25                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 257                                    | NR                             | 615               | 783                                    | NR                             | 745               | 21                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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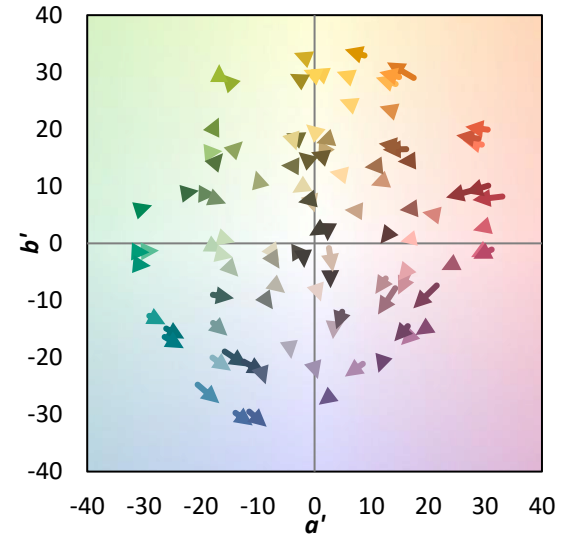
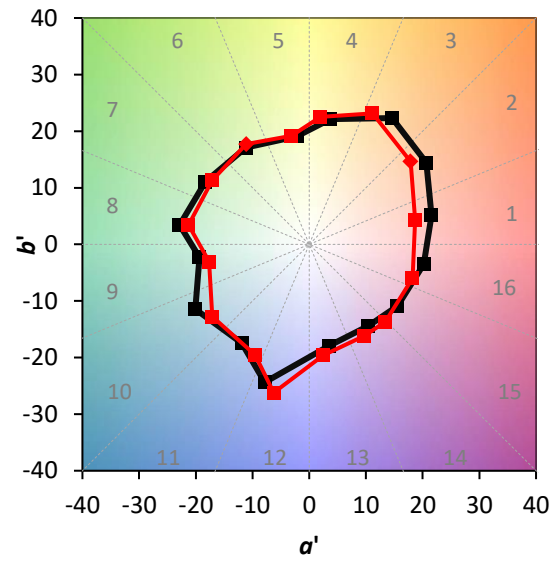
TM-30-18

### Summary

$R_f = 82.9$   
 $R_g = 94.7$   
 $CIE R_a = 80.8$   
 $R_g = -5.1$

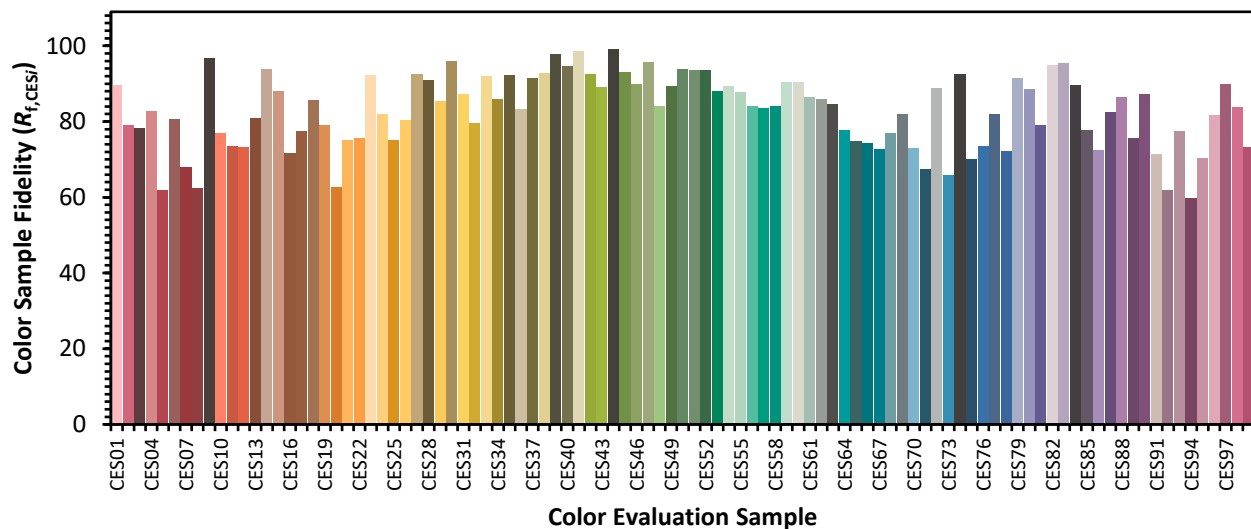


### Color Vector Graphics



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

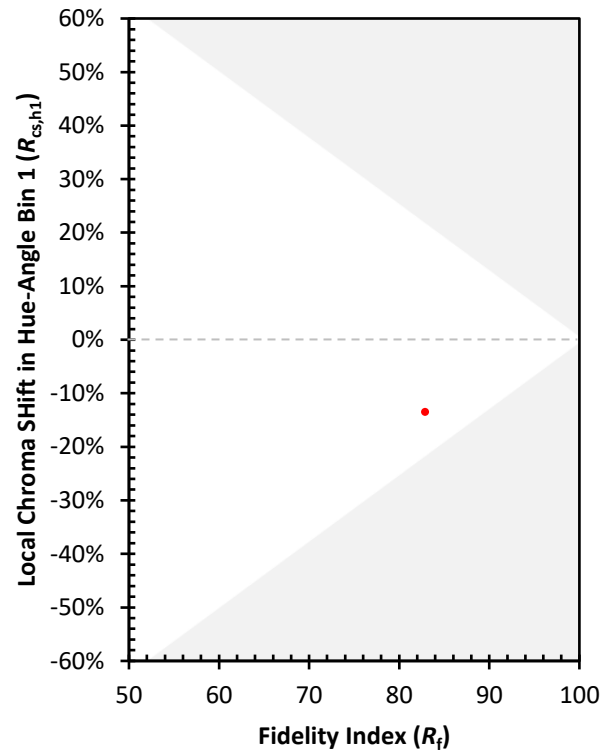
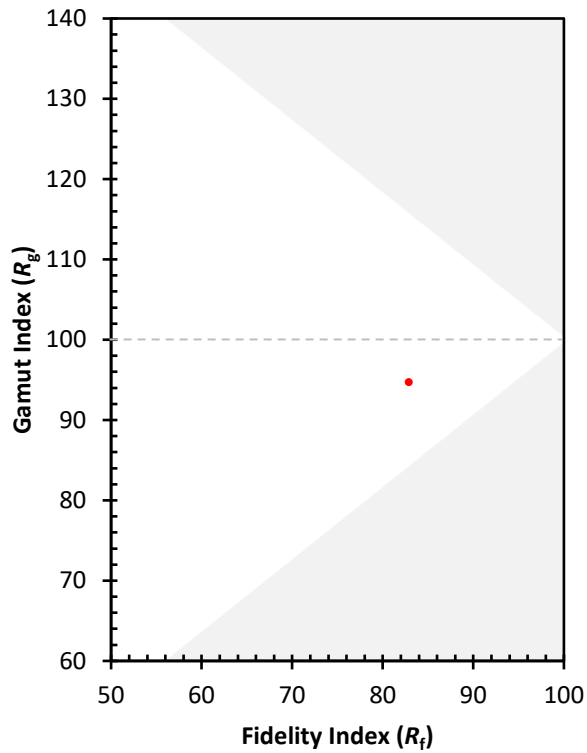
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 80 | CES51 = 94 | CES76 = 73 |
| CES02 = 61 | CES27 = 93 | CES52 = 94 | CES77 = 82 |
| CES03 = 31 | CES28 = 91 | CES53 = 88 | CES78 = 72 |
| CES04 = 70 | CES29 = 85 | CES54 = 89 | CES79 = 91 |
| CES05 = 48 | CES30 = 96 | CES55 = 88 | CES80 = 89 |
| CES06 = 50 | CES31 = 87 | CES56 = 84 | CES81 = 79 |
| CES07 = 40 | CES32 = 80 | CES57 = 83 | CES82 = 95 |
| CES08 = 39 | CES33 = 92 | CES58 = 84 | CES83 = 95 |
| CES09 = 29 | CES34 = 86 | CES59 = 90 | CES84 = 90 |
| CES10 = 74 | CES35 = 92 | CES60 = 90 | CES85 = 78 |
| CES11 = 57 | CES36 = 83 | CES61 = 86 | CES86 = 72 |
| CES12 = 63 | CES37 = 91 | CES62 = 86 | CES87 = 83 |
| CES13 = 42 | CES38 = 93 | CES63 = 85 | CES88 = 87 |
| CES14 = 74 | CES39 = 98 | CES64 = 78 | CES89 = 76 |
| CES15 = 71 | CES40 = 95 | CES65 = 75 | CES90 = 87 |
| CES16 = 47 | CES41 = 99 | CES66 = 74 | CES91 = 71 |
| CES17 = 49 | CES42 = 93 | CES67 = 73 | CES92 = 62 |
| CES18 = 56 | CES43 = 89 | CES68 = 77 | CES93 = 77 |
| CES19 = 71 | CES44 = 99 | CES69 = 82 | CES94 = 60 |
| CES20 = 65 | CES45 = 93 | CES70 = 73 | CES95 = 70 |
| CES21 = 86 | CES46 = 90 | CES71 = 67 | CES96 = 82 |
| CES22 = 78 | CES47 = 96 | CES72 = 89 | CES97 = 90 |
| CES23 = 91 | CES48 = 84 | CES73 = 66 | CES98 = 84 |
| CES24 = 90 | CES49 = 89 | CES74 = 93 | CES99 = 73 |
| CES25 = 71 | CES50 = 94 | CES75 = 70 |            |



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)