

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: P972192

Luminaire Tested: **GKO-PB1E-722-U-T4W**

Issue Date: 02/27/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P972192  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 02/27/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GKO-PB1E-722-U-T4W  
Description: GEKKO WALL PACK 5000LM PACKAGE 70CRI 2200K FIXTURE w/ TYPE IV WIDE DISTRIBUTION OPTIC  
Light Source: (10) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4146.6 lumens  
Efficiency: N/A  
Efficacy: 107.1 lumens/watt  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G1

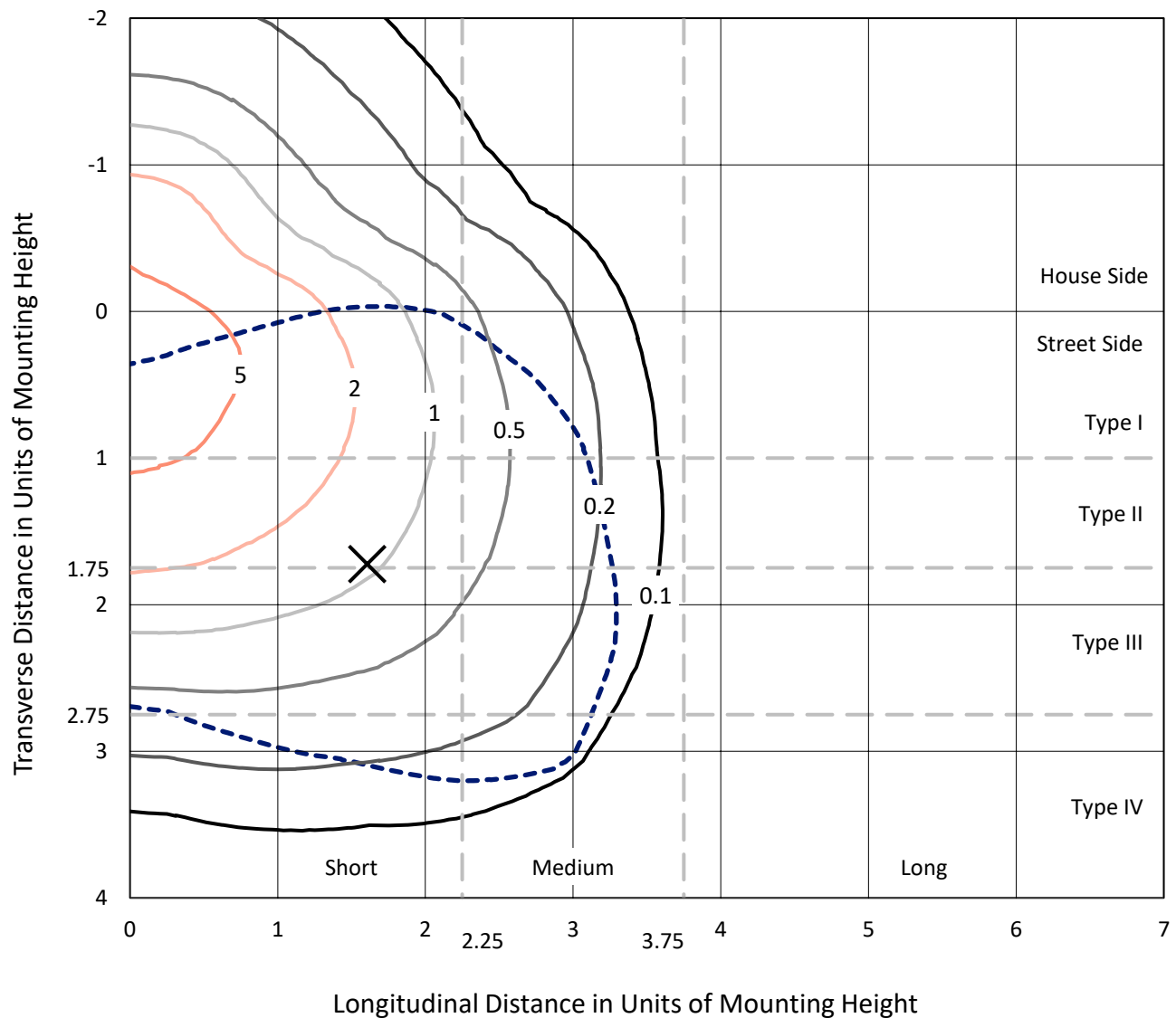
Input Watts (W): 38.7  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): 9%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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CATALOG NUMBER: GKO-PB1E-722-U-T4W

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

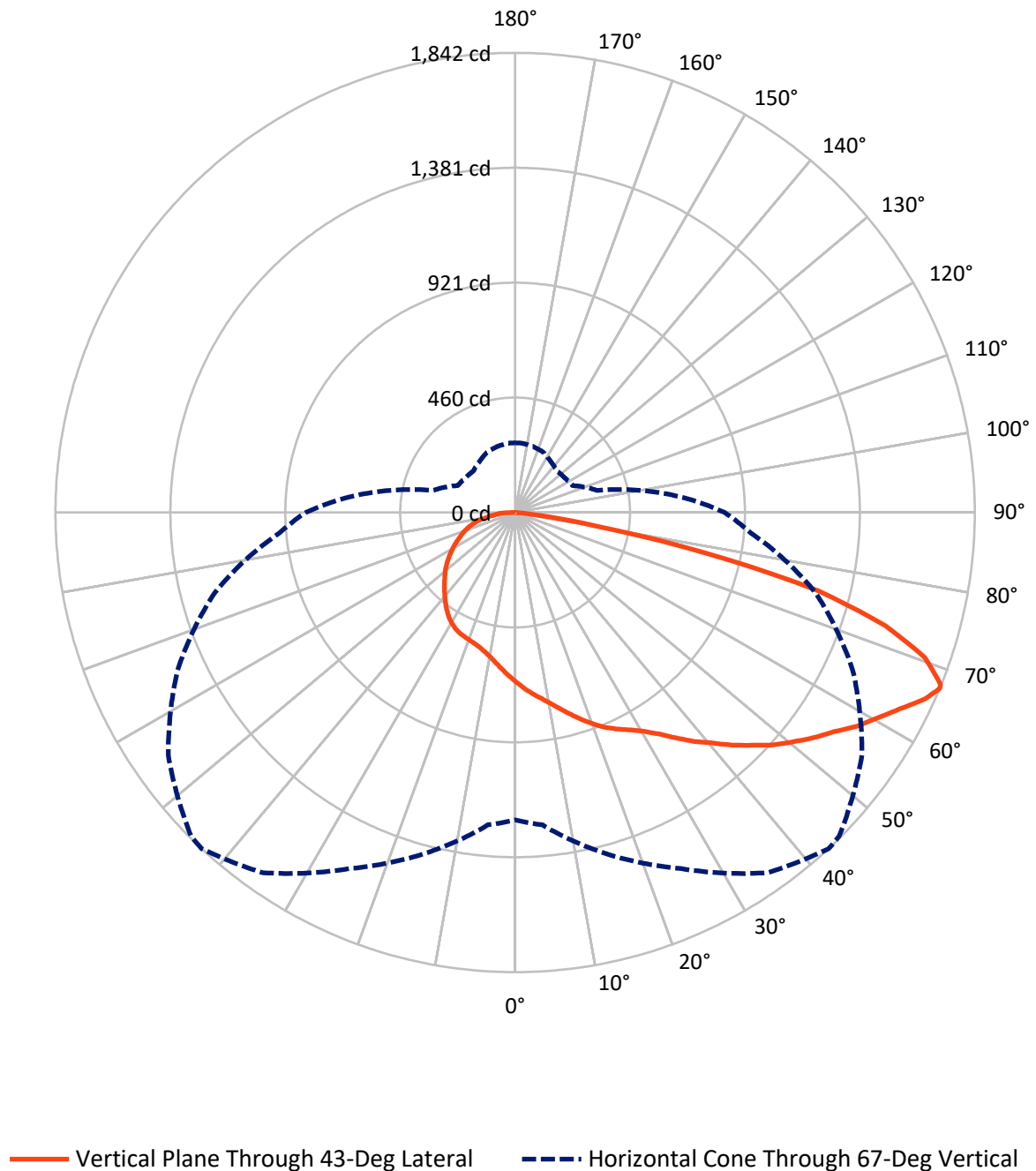


Based on 10 foot mounting height. Maximum calculated value = 7.9 fc  
 Type IV - Short - N/A

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CATALOG NUMBER: GKO-PB1E-722-U-T4W

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GKO-PB1E-722-U-T4W

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1115.3   | 0.0    | 1115.3 |
|                    | % Fixture | 26.9     | 0.0    | 26.9   |
| <b>Street Side</b> | Lumens    | 3031.3   | 0.0    | 3031.3 |
|                    | % Fixture | 73.1     | 0.0    | 73.1   |
| <b>Total</b>       | Lumens    | 4146.6   | 0.0    | 4146.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 65.1   | 1.6       |
| 10°-20°   | 199.9  | 4.8       |
| 20°-30°   | 346.2  | 8.3       |
| 30°-40°   | 513.7  | 12.4      |
| 40°-50°   | 697.9  | 16.8      |
| 50°-60°   | 856.7  | 20.7      |
| 60°-70°   | 903.0  | 21.8      |
| 70°-80°   | 498.4  | 12.0      |
| 80°-90°   | 65.6   | 1.6       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 4146.6 | 100.0     |
| 0°-180°   | 4146.6 | 100.0     |



REPORT NUMBER: P972192

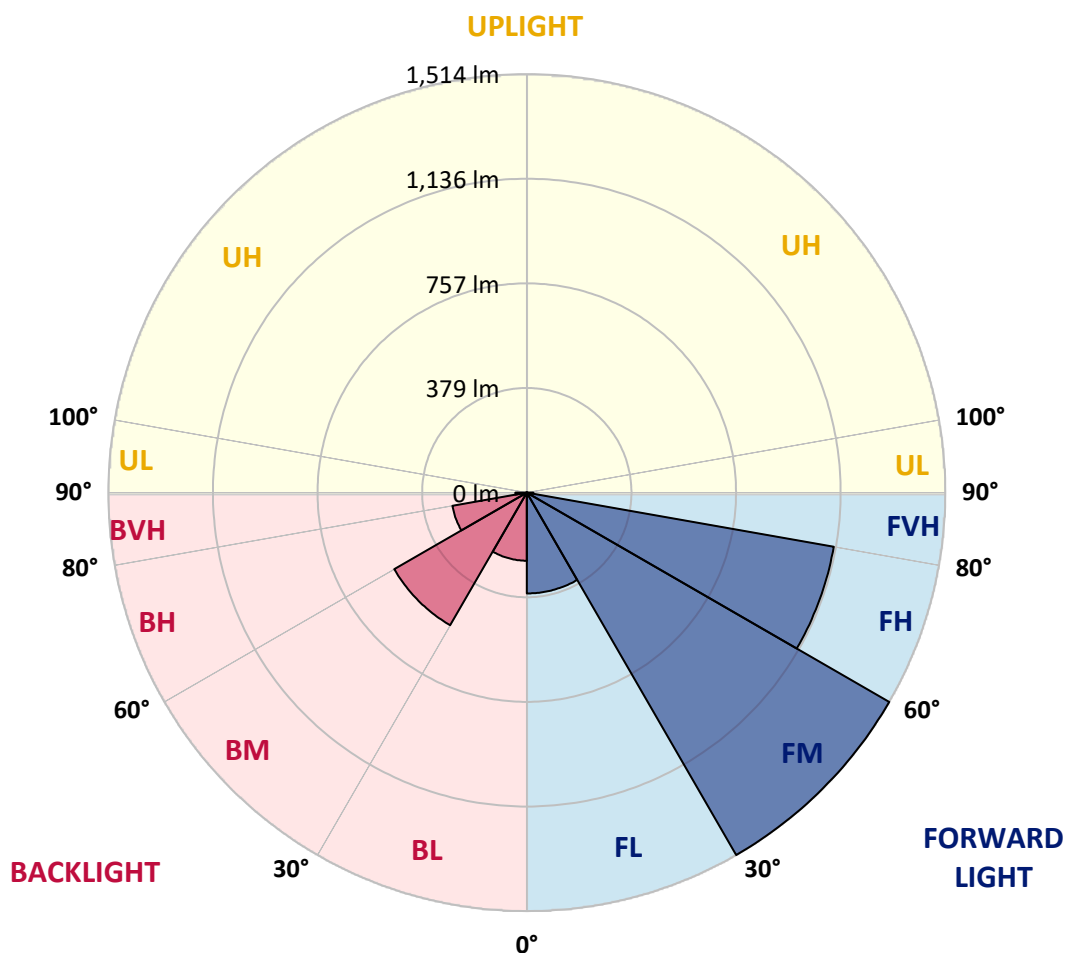
CATALOG NUMBER: GKO-PB1E-722-U-T4W

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 364.8  | 8.8       |                         |      |         |
| FM   | (30°-60°)   | 1514.4 | 36.5      |                         |      |         |
| FH   | (60°-80°)   | 1128.1 | 27.2      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 24.0   | 0.6       |                         |      | G1/100  |
| BL   | (0°-30°)    | 246.4  | 5.9       | B1/500                  |      |         |
| BM   | (30°-60°)   | 553.9  | 13.4      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 273.3  | 6.6       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 41.7   | 1.0       |                         |      | 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 IV Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 43°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  | 680.6  |
| 2.5°  | 712.1  | 713.8  | 712.1  | 710.5  | 707.2  | 705.5  | 703.8  | 699.7  | 694.7  | 687.2  | 681.4  |
| 5°    | 743.7  | 743.7  | 741.2  | 739.5  | 734.5  | 729.6  | 727.1  | 717.1  | 706.3  | 693.9  | 682.3  |
| 7.5°  | 772.7  | 776.0  | 771.9  | 767.7  | 760.3  | 752.0  | 750.3  | 735.4  | 720.4  | 703.8  | 686.4  |
| 10°   | 809.2  | 811.7  | 805.9  | 802.6  | 788.5  | 777.7  | 774.4  | 756.1  | 736.2  | 715.5  | 693.0  |
| 12.5° | 846.6  | 848.3  | 844.1  | 836.6  | 821.7  | 808.4  | 803.4  | 779.4  | 753.6  | 728.7  | 700.5  |
| 15°   | 879.0  | 880.6  | 879.0  | 870.7  | 856.6  | 840.0  | 833.3  | 806.8  | 775.2  | 742.8  | 709.6  |
| 17.5° | 903.0  | 906.4  | 906.4  | 902.2  | 889.8  | 874.0  | 869.8  | 836.6  | 800.1  | 759.4  | 720.4  |
| 20°   | 923.8  | 925.4  | 928.8  | 926.3  | 919.6  | 906.4  | 900.5  | 869.0  | 825.0  | 778.5  | 731.2  |
| 22.5° | 940.4  | 942.0  | 947.9  | 947.0  | 942.9  | 936.2  | 930.4  | 901.4  | 854.1  | 797.6  | 741.2  |
| 25°   | 969.4  | 968.6  | 971.9  | 969.4  | 964.5  | 962.0  | 958.6  | 932.9  | 883.1  | 820.0  | 754.5  |
| 27.5° | 1020.1 | 1018.4 | 1015.1 | 1002.6 | 990.2  | 986.9  | 984.4  | 966.1  | 917.1  | 845.8  | 769.4  |
| 30°   | 1094.8 | 1096.4 | 1080.7 | 1052.4 | 1027.5 | 1017.6 | 1014.3 | 1001.8 | 955.3  | 875.6  | 786.0  |
| 32.5° | 1183.6 | 1182.7 | 1157.0 | 1117.2 | 1078.2 | 1058.2 | 1051.6 | 1038.3 | 993.5  | 905.5  | 805.1  |
| 35°   | 1247.5 | 1245.8 | 1232.5 | 1196.9 | 1156.2 | 1108.9 | 1096.4 | 1075.7 | 1034.2 | 939.6  | 824.2  |
| 37.5° | 1333.8 | 1331.3 | 1305.6 | 1268.2 | 1231.7 | 1163.7 | 1149.5 | 1121.3 | 1073.2 | 972.8  | 845.8  |
| 40°   | 1432.6 | 1416.8 | 1374.5 | 1336.3 | 1286.5 | 1214.3 | 1202.7 | 1166.1 | 1118.0 | 1013.4 | 870.7  |
| 42.5° | 1522.2 | 1499.0 | 1444.2 | 1396.1 | 1333.8 | 1274.0 | 1259.1 | 1215.9 | 1161.2 | 1050.8 | 896.4  |
| 45°   | 1656.7 | 1600.2 | 1521.4 | 1493.2 | 1385.3 | 1330.5 | 1318.0 | 1264.9 | 1208.5 | 1091.4 | 922.1  |
| 47.5° | 1640.1 | 1600.2 | 1574.5 | 1571.2 | 1439.2 | 1391.9 | 1373.6 | 1318.9 | 1259.1 | 1134.6 | 948.7  |
| 50°   | 1672.4 | 1640.9 | 1642.6 | 1601.9 | 1488.2 | 1444.2 | 1430.9 | 1375.3 | 1310.6 | 1176.9 | 976.9  |
| 52.5° | 1665.8 | 1674.9 | 1670.0 | 1606.9 | 1535.5 | 1499.0 | 1489.0 | 1433.4 | 1359.5 | 1217.6 | 1001.8 |
| 55°   | 1718.9 | 1713.9 | 1703.2 | 1640.9 | 1587.8 | 1550.4 | 1542.1 | 1494.0 | 1409.3 | 1252.5 | 1023.4 |
| 57.5° | 1757.9 | 1732.2 | 1731.4 | 1679.1 | 1645.9 | 1615.2 | 1601.9 | 1556.2 | 1455.8 | 1283.2 | 1040.0 |
| 60°   | 1733.9 | 1703.2 | 1725.6 | 1684.9 | 1681.6 | 1670.0 | 1662.5 | 1611.0 | 1497.3 | 1306.4 | 1046.6 |
| 62.5° | 1605.2 | 1612.7 | 1679.1 | 1676.6 | 1720.6 | 1731.4 | 1723.1 | 1649.2 | 1524.7 | 1314.7 | 1041.6 |
| 65°   | 1435.1 | 1457.5 | 1559.6 | 1646.7 | 1766.2 | 1803.6 | 1795.3 | 1676.6 | 1522.2 | 1295.6 | 1008.4 |
| 67°   | 1232.5 | 1256.6 | 1416.0 | 1574.5 | 1762.1 | 1841.8 | 1836.0 | 1696.5 | 1492.3 | 1246.7 | 948.7  |
| 67.5° | 1187.7 | 1215.1 | 1374.5 | 1541.3 | 1747.1 | 1838.4 | 1834.3 | 1698.2 | 1482.4 | 1223.4 | 925.4  |
| 70°   | 874.0  | 906.4  | 1131.3 | 1354.6 | 1627.6 | 1742.2 | 1741.3 | 1635.9 | 1379.5 | 1097.3 | 802.6  |
| 72.5° | 544.5  | 573.5  | 806.8  | 1056.6 | 1410.2 | 1551.3 | 1545.5 | 1425.1 | 1187.7 | 895.6  | 633.3  |
| 75°   | 333.7  | 351.9  | 508.0  | 688.9  | 1022.6 | 1255.8 | 1264.1 | 1113.9 | 810.1  | 532.0  | 357.7  |
| 77.5° | 204.2  | 224.1  | 320.4  | 425.0  | 625.0  | 781.0  | 782.7  | 617.5  | 415.8  | 289.7  | 195.9  |
| 80°   | 113.7  | 118.7  | 166.8  | 222.4  | 320.4  | 322.0  | 308.8  | 272.2  | 215.8  | 139.4  | 100.4  |
| 82.5° | 44.8   | 48.1   | 72.2   | 89.6   | 91.3   | 95.4   | 88.8   | 80.5   | 68.1   | 44.8   | 31.5   |
| 85°   | 0.0    | 0.0    | 0.0    | 1.7    | 5.8    | 11.6   | 11.6   | 8.3    | 3.3    | 2.5    | 2.5    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    |
| 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-722-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 | 680.6 |
| 2.5°  | 679.8 | 678.9 | 673.1 | 666.5 | 661.5 | 657.4 | 653.2 | 648.2 | 648.2 | 649.9 | 649.1 |
| 5°    | 678.1 | 674.0 | 663.2 | 651.5 | 642.4 | 634.1 | 626.6 | 620.0 | 619.2 | 620.0 | 620.8 |
| 7.5°  | 678.9 | 671.5 | 654.9 | 637.4 | 622.5 | 611.7 | 600.9 | 595.9 | 595.1 | 595.1 | 595.1 |
| 10°   | 682.3 | 671.5 | 649.1 | 625.0 | 606.7 | 591.0 | 579.3 | 574.4 | 575.2 | 576.0 | 576.8 |
| 12.5° | 688.1 | 673.1 | 644.9 | 614.2 | 591.0 | 575.2 | 563.6 | 559.4 | 562.7 | 566.9 | 567.7 |
| 15°   | 693.9 | 676.4 | 640.8 | 605.1 | 578.5 | 561.1 | 552.8 | 551.9 | 557.8 | 565.2 | 566.9 |
| 17.5° | 700.5 | 678.9 | 635.8 | 593.4 | 565.2 | 551.1 | 547.0 | 549.5 | 558.6 | 570.2 | 572.7 |
| 20°   | 707.2 | 682.3 | 630.0 | 582.7 | 552.8 | 542.8 | 545.3 | 552.8 | 564.4 | 578.5 | 581.0 |
| 22.5° | 713.8 | 684.7 | 622.5 | 569.4 | 539.5 | 536.2 | 545.3 | 557.8 | 569.4 | 585.1 | 588.5 |
| 25°   | 721.3 | 688.1 | 613.4 | 552.8 | 526.2 | 528.7 | 544.5 | 559.4 | 571.9 | 588.5 | 592.6 |
| 27.5° | 732.9 | 693.0 | 604.2 | 537.8 | 511.3 | 519.6 | 540.3 | 558.6 | 571.9 | 587.6 | 592.6 |
| 30°   | 744.5 | 698.0 | 596.8 | 522.1 | 496.3 | 507.1 | 532.0 | 554.4 | 567.7 | 581.8 | 588.5 |
| 32.5° | 757.8 | 704.7 | 590.1 | 506.3 | 479.7 | 493.0 | 520.4 | 545.3 | 561.1 | 573.5 | 580.2 |
| 35°   | 771.9 | 714.6 | 585.1 | 492.2 | 463.1 | 474.8 | 503.0 | 533.7 | 549.5 | 561.1 | 566.9 |
| 37.5° | 790.2 | 725.4 | 581.8 | 478.1 | 445.7 | 455.7 | 484.7 | 517.1 | 535.3 | 544.5 | 551.9 |
| 40°   | 810.1 | 741.2 | 581.8 | 466.5 | 429.1 | 435.7 | 465.6 | 500.5 | 518.7 | 526.2 | 533.7 |
| 42.5° | 830.0 | 757.0 | 581.0 | 454.8 | 411.7 | 416.7 | 446.5 | 482.2 | 499.7 | 505.5 | 511.3 |
| 45°   | 853.2 | 775.2 | 580.2 | 441.6 | 392.6 | 397.6 | 428.3 | 464.0 | 480.6 | 485.5 | 490.5 |
| 47.5° | 878.1 | 793.5 | 576.8 | 425.0 | 375.2 | 379.3 | 410.0 | 443.2 | 459.8 | 465.6 | 470.6 |
| 50°   | 900.5 | 810.9 | 568.5 | 405.9 | 359.4 | 363.5 | 390.9 | 418.3 | 433.3 | 439.9 | 444.9 |
| 52.5° | 920.5 | 823.4 | 555.3 | 384.3 | 342.0 | 346.9 | 367.7 | 391.8 | 403.4 | 408.4 | 411.7 |
| 55°   | 936.2 | 830.0 | 533.7 | 363.5 | 325.4 | 327.8 | 344.4 | 366.0 | 375.2 | 376.0 | 378.5 |
| 57.5° | 947.0 | 829.2 | 504.6 | 339.5 | 308.8 | 309.6 | 321.2 | 340.3 | 346.9 | 346.1 | 347.8 |
| 60°   | 949.5 | 818.4 | 469.8 | 317.1 | 292.2 | 289.7 | 301.3 | 314.6 | 318.7 | 322.0 | 326.2 |
| 62.5° | 939.6 | 792.6 | 429.9 | 294.6 | 275.6 | 271.4 | 279.7 | 291.3 | 298.0 | 299.6 | 301.3 |
| 65°   | 903.0 | 745.3 | 381.8 | 271.4 | 259.0 | 251.5 | 260.6 | 277.2 | 288.0 | 291.3 | 290.5 |
| 67°   | 839.1 | 678.9 | 340.3 | 254.0 | 242.4 | 235.7 | 249.0 | 266.4 | 273.9 | 278.9 | 278.9 |
| 67.5° | 818.4 | 654.9 | 326.2 | 248.2 | 238.2 | 232.4 | 244.8 | 261.4 | 271.4 | 277.2 | 277.2 |
| 70°   | 694.7 | 537.0 | 275.6 | 219.1 | 214.1 | 215.0 | 229.9 | 248.2 | 260.6 | 266.4 | 266.4 |
| 72.5° | 529.5 | 415.8 | 224.1 | 190.9 | 189.2 | 195.0 | 214.1 | 230.7 | 246.5 | 256.5 | 255.6 |
| 75°   | 300.5 | 239.9 | 163.5 | 156.0 | 162.7 | 174.3 | 198.4 | 216.6 | 230.7 | 240.7 | 239.9 |
| 77.5° | 175.1 | 144.4 | 112.9 | 107.1 | 126.2 | 152.7 | 177.6 | 200.9 | 210.8 | 214.1 | 211.6 |
| 80°   | 88.8  | 75.5  | 70.5  | 73.0  | 84.7  | 113.7 | 155.2 | 182.6 | 190.1 | 192.6 | 190.1 |
| 82.5° | 28.2  | 25.7  | 28.2  | 37.3  | 56.4  | 89.6  | 125.3 | 165.2 | 174.3 | 174.3 | 173.5 |
| 85°   | 1.7   | 1.7   | 1.7   | 16.6  | 39.0  | 66.4  | 97.9  | 144.4 | 163.5 | 161.8 | 159.4 |
| 87.5° | 0.8   | 0.8   | 0.8   | 10.8  | 30.7  | 55.6  | 86.3  | 131.1 | 156.0 | 144.4 | 136.1 |
| 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: SP2-2501-321-2

Test Date: 04/09/2025

Luminaire Tested: GKO-PB1E-722-U-T4W

Data in this report applies to families of products including GKO-PB1E-722-U-T4W

### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2501-321-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP2 - 165CM SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 04/10/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GKO-PB1E-722-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2281     | CRI (Ra): | 70.6 |      |       |
| CIE u':                   | 0.2851   | R1:       | 68.4 | R9:  | -35.1 |
| CIE v':                   | 0.5324   | R2:       | 88.7 | R10: | 78.0  |
| Duv:                      | -0.0016  | R3:       | 85.7 | R11: | 60.2  |
| CIE x:                    | 0.4942   | R4:       | 63.2 | R12: | 73.8  |
| CIE y:                    | 0.4102   | R5:       | 69.0 | R13: | 72.8  |
| CIE z:                    | 0.0956   | R6:       | 88.6 | R14: | 92.4  |
| Peak Wavelength (nm):     | 602      | R7:       | 68.8 | R15: | 58.4  |
| Dominant Wavelength (nm): | 587      | R8:       | 32.6 |      |       |
| Purity:                   | 71.48321 |           |      |      |       |
| Rf:                       | 76.9     |           |      |      |       |
| Rg:                       | 92.6     |           |      |      |       |



### Test Conditions

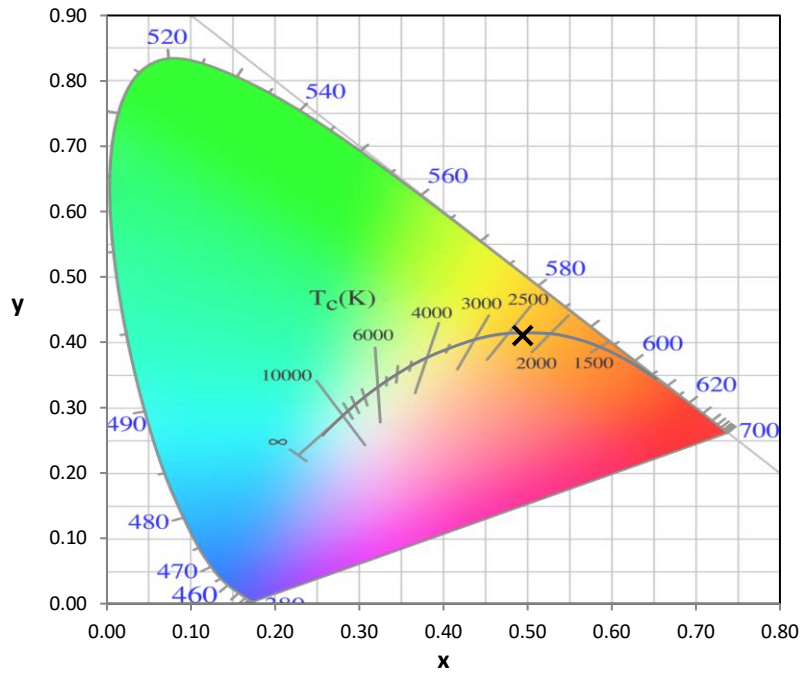
Stabilization Time: 40M  
 Operation Time: 1H 40M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP2-2501-321-2

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN2187                | 1/6/2025         | 7/6/2025             |
| Power Meter                    | INXT2011002           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0458                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0212                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN4036B               | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | 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 2200K 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               | 124                                  | NR                             | 620               | 894                                  | NR                             | 750               | 22                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 141                                  | NR                             | 625               | 837                                  | NR                             | 755               | 19                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 163                                  | NR                             | 630               | 774                                  | NR                             | 760               | 16                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 184                                  | NR                             | 635               | 706                                  | NR                             | 765               | 13                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 204                                  | NR                             | 640               | 638                                  | NR                             | 770               | 11                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 221                                  | NR                             | 645               | 570                                  | NR                             | 775               | 10                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 237                                  | NR                             | 650               | 505                                  | NR                             | 780               | 8                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 252                                  | NR                             | 655               | 446                                  | NR                             | 785               | 7                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 0                                    | NR                             | 530               | 268                                  | NR                             | 660               | 389                                  | NR                             | 790               | 6                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 1                                    | NR                             | 535               | 287                                  | NR                             | 665               | 339                                  | NR                             | 795               | 5                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 2                                    | NR                             | 540               | 310                                  | NR                             | 670               | 292                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 5                                    | NR                             | 545               | 339                                  | NR                             | 675               | 253                                  | NR                             | 805               | 4                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 9                                    | NR                             | 550               | 377                                  | NR                             | 680               | 217                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 15                                   | NR                             | 555               | 424                                  | NR                             | 685               | 186                                  | NR                             | 815               | 3                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 26                                   | NR                             | 560               | 482                                  | NR                             | 690               | 158                                  | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 43                                   | NR                             | 565               | 551                                  | NR                             | 695               | 135                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 71                                   | NR                             | 570               | 632                                  | NR                             | 700               | 114                                  | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 123                                  | NR                             | 575               | 714                                  | NR                             | 705               | 97                                   | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 210                                  | NR                             | 580               | 797                                  | NR                             | 710               | 82                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 245                                  | NR                             | 585               | 873                                  | NR                             | 715               | 70                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 190                                  | NR                             | 590               | 934                                  | NR                             | 720               | 59                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 161                                  | NR                             | 595               | 975                                  | NR                             | 725               | 50                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 145                                  | NR                             | 600               | 996                                  | NR                             | 730               | 43                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 117                                  | NR                             | 605               | 997                                  | NR                             | 735               | 36                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 107                                  | NR                             | 610               | 978                                  | NR                             | 740               | 30                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 113                                  | NR                             | 615               | 945                                  | NR                             | 745               | 26                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



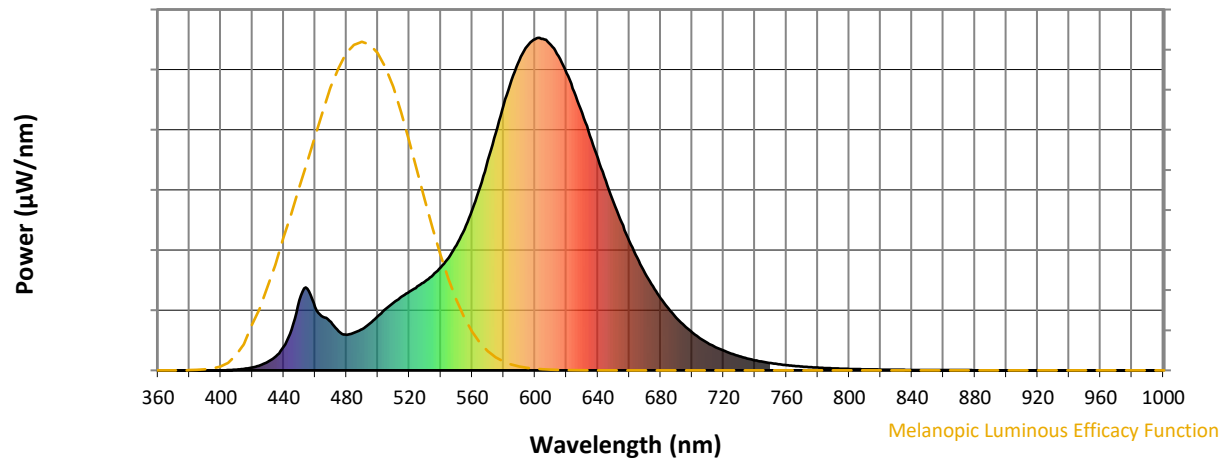
Scotopic Lumens: NR

S/P: 0.98

| 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       | 124                         | NR               | 620       | 894                         | NR               | 750       | 22                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 141                         | NR               | 625       | 837                         | NR               | 755       | 19                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 163                         | NR               | 630       | 774                         | NR               | 760       | 16                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 184                         | NR               | 635       | 706                         | NR               | 765       | 13                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 204                         | NR               | 640       | 638                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 221                         | NR               | 645       | 570                         | NR               | 775       | 10                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 237                         | NR               | 650       | 505                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 0                           | NR               | 525       | 252                         | NR               | 655       | 446                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 0                           | NR               | 530       | 268                         | NR               | 660       | 389                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 1                           | NR               | 535       | 287                         | NR               | 665       | 339                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 2                           | NR               | 540       | 310                         | NR               | 670       | 292                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 5                           | NR               | 545       | 339                         | NR               | 675       | 253                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 9                           | NR               | 550       | 377                         | NR               | 680       | 217                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 15                          | NR               | 555       | 424                         | NR               | 685       | 186                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 26                          | NR               | 560       | 482                         | NR               | 690       | 158                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 43                          | NR               | 565       | 551                         | NR               | 695       | 135                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 71                          | NR               | 570       | 632                         | NR               | 700       | 114                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 123                         | NR               | 575       | 714                         | NR               | 705       | 97                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 210                         | NR               | 580       | 797                         | NR               | 710       | 82                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 245                         | NR               | 585       | 873                         | NR               | 715       | 70                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 190                         | NR               | 590       | 934                         | NR               | 720       | 59                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 161                         | NR               | 595       | 975                         | NR               | 725       | 50                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 145                         | NR               | 600       | 996                         | NR               | 730       | 43                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 117                         | NR               | 605       | 997                         | NR               | 735       | 36                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 107                         | NR               | 610       | 978                         | NR               | 740       | 30                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 113                         | NR               | 615       | 945                         | NR               | 745       | 26                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.75

| 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       | 124                         | NR               | 620       | 894                         | NR               | 750       | 22                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 141                         | NR               | 625       | 837                         | NR               | 755       | 19                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 163                         | NR               | 630       | 774                         | NR               | 760       | 16                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 184                         | NR               | 635       | 706                         | NR               | 765       | 13                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 204                         | NR               | 640       | 638                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 221                         | NR               | 645       | 570                         | NR               | 775       | 10                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 237                         | NR               | 650       | 505                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 0                           | NR               | 525       | 252                         | NR               | 655       | 446                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 0                           | NR               | 530       | 268                         | NR               | 660       | 389                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 1                           | NR               | 535       | 287                         | NR               | 665       | 339                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 2                           | NR               | 540       | 310                         | NR               | 670       | 292                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 5                           | NR               | 545       | 339                         | NR               | 675       | 253                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 9                           | NR               | 550       | 377                         | NR               | 680       | 217                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 15                          | NR               | 555       | 424                         | NR               | 685       | 186                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 26                          | NR               | 560       | 482                         | NR               | 690       | 158                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 43                          | NR               | 565       | 551                         | NR               | 695       | 135                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 71                          | NR               | 570       | 632                         | NR               | 700       | 114                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 123                         | NR               | 575       | 714                         | NR               | 705       | 97                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 210                         | NR               | 580       | 797                         | NR               | 710       | 82                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 245                         | NR               | 585       | 873                         | NR               | 715       | 70                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 190                         | NR               | 590       | 934                         | NR               | 720       | 59                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 161                         | NR               | 595       | 975                         | NR               | 725       | 50                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 145                         | NR               | 600       | 996                         | NR               | 730       | 43                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 117                         | NR               | 605       | 997                         | NR               | 735       | 36                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 107                         | NR               | 610       | 978                         | NR               | 740       | 30                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 113                         | NR               | 615       | 945                         | NR               | 745       | 26                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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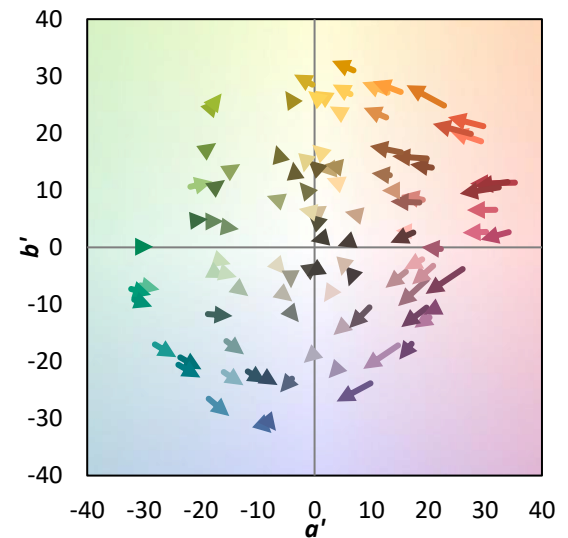
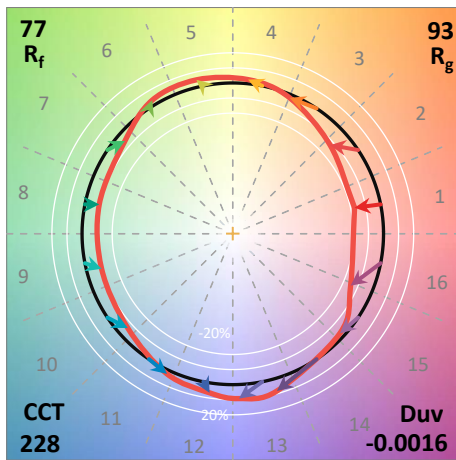
TM-30-18

### Summary

$R_f = 76.9$   
 $R_g = 92.6$   
 $CIE R_a = 70.6$   
 $R_g = -35.1$

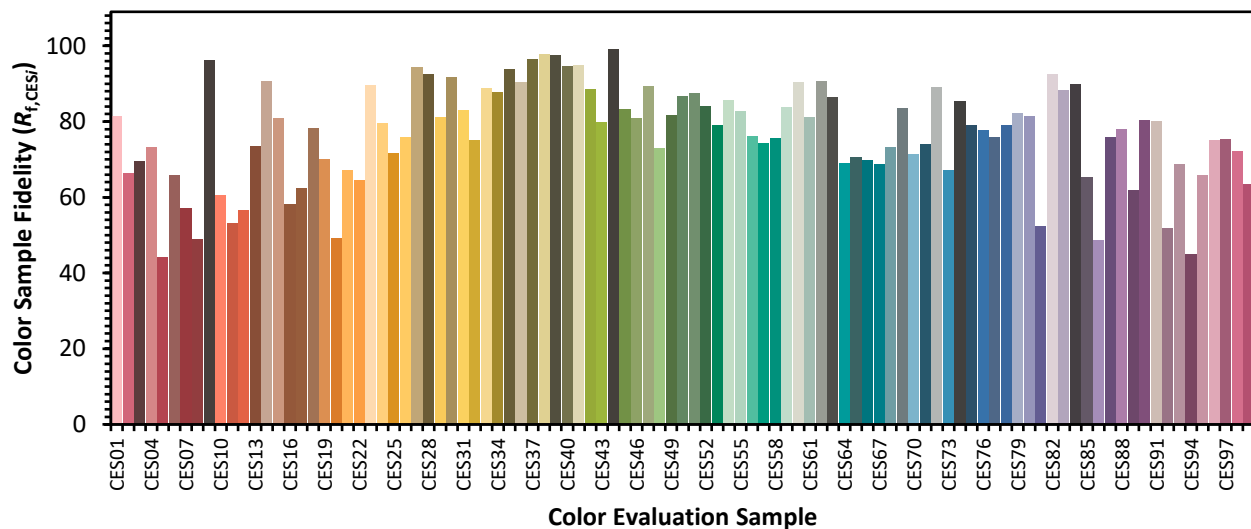


### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 76 | CES51 = 88 | CES76 = 78 |
| CES02 = 65 | CES27 = 94 | CES52 = 84 | CES77 = 76 |
| CES03 = 32 | CES28 = 93 | CES53 = 79 | CES78 = 79 |
| CES04 = 72 | CES29 = 81 | CES54 = 86 | CES79 = 82 |
| CES05 = 51 | CES30 = 92 | CES55 = 83 | CES80 = 81 |
| CES06 = 52 | CES31 = 83 | CES56 = 76 | CES81 = 52 |
| CES07 = 44 | CES32 = 75 | CES57 = 74 | CES82 = 92 |
| CES08 = 42 | CES33 = 89 | CES58 = 76 | CES83 = 88 |
| CES09 = 29 | CES34 = 88 | CES59 = 84 | CES84 = 90 |
| CES10 = 79 | CES35 = 94 | CES60 = 91 | CES85 = 65 |
| CES11 = 62 | CES36 = 90 | CES61 = 81 | CES86 = 49 |
| CES12 = 68 | CES37 = 96 | CES62 = 91 | CES87 = 76 |
| CES13 = 44 | CES38 = 98 | CES63 = 86 | CES88 = 78 |
| CES14 = 75 | CES39 = 98 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 95 | CES65 = 71 | CES90 = 80 |
| CES16 = 48 | CES41 = 95 | CES66 = 70 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 69 | CES92 = 52 |
| CES18 = 57 | CES43 = 80 | CES68 = 73 | CES93 = 69 |
| CES19 = 74 | CES44 = 99 | CES69 = 84 | CES94 = 45 |
| CES20 = 68 | CES45 = 83 | CES70 = 71 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 74 | CES96 = 75 |
| CES22 = 81 | CES47 = 89 | CES72 = 89 | CES97 = 75 |
| CES23 = 92 | CES48 = 73 | CES73 = 67 | CES98 = 72 |
| CES24 = 92 | CES49 = 82 | CES74 = 85 | CES99 = 64 |
| CES25 = 73 | CES50 = 87 | CES75 = 79 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)