

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: P437438

Luminaire Tested: **ISC-SA1D-722-U-SL2-HSS**

Issue Date: 12/9/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P437438  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/9/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: ISC-SA1D-722-U-SL2-HSS  
Description: IMPACT ELITE LED CYLINDER LUMINAIRE  
(1) 70 CRI, 2200K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE II SPILL LIGHT  
ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

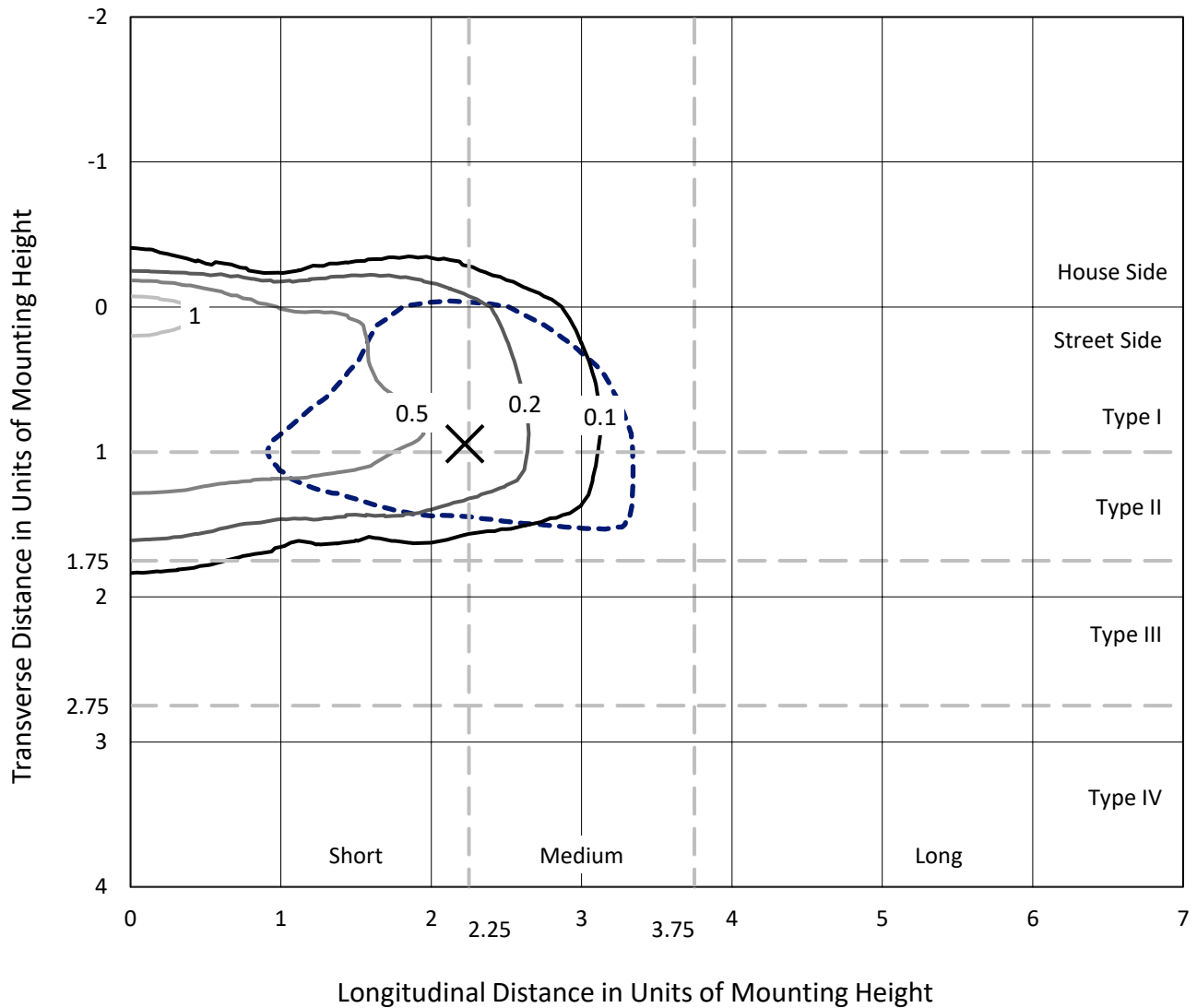
Lumens per Lamp: N/A  
Luminaire Lumens: 3455 lumens  
Efficiency: N/A  
Efficacy: 76.4 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 45.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

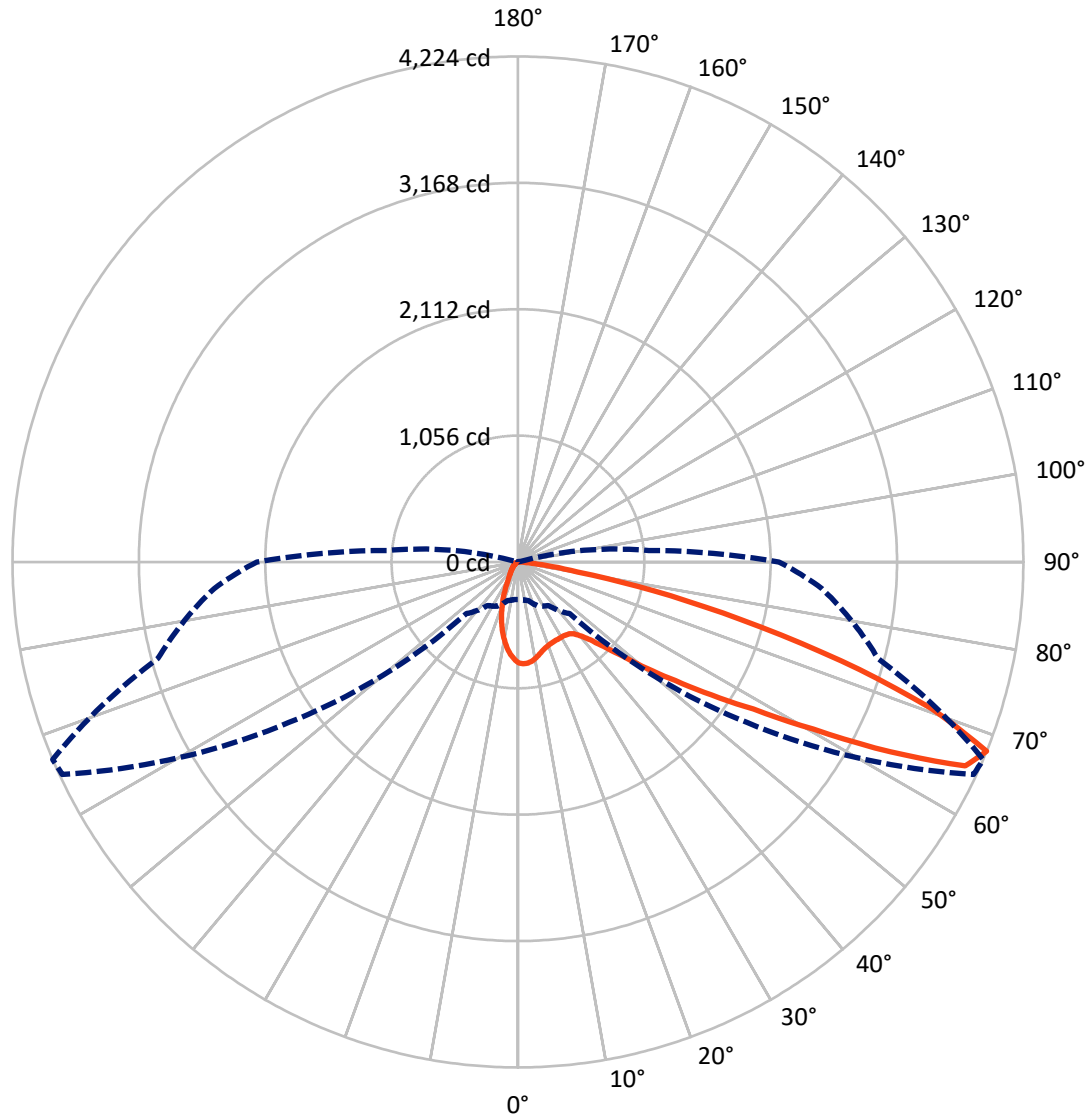
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.3 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 67-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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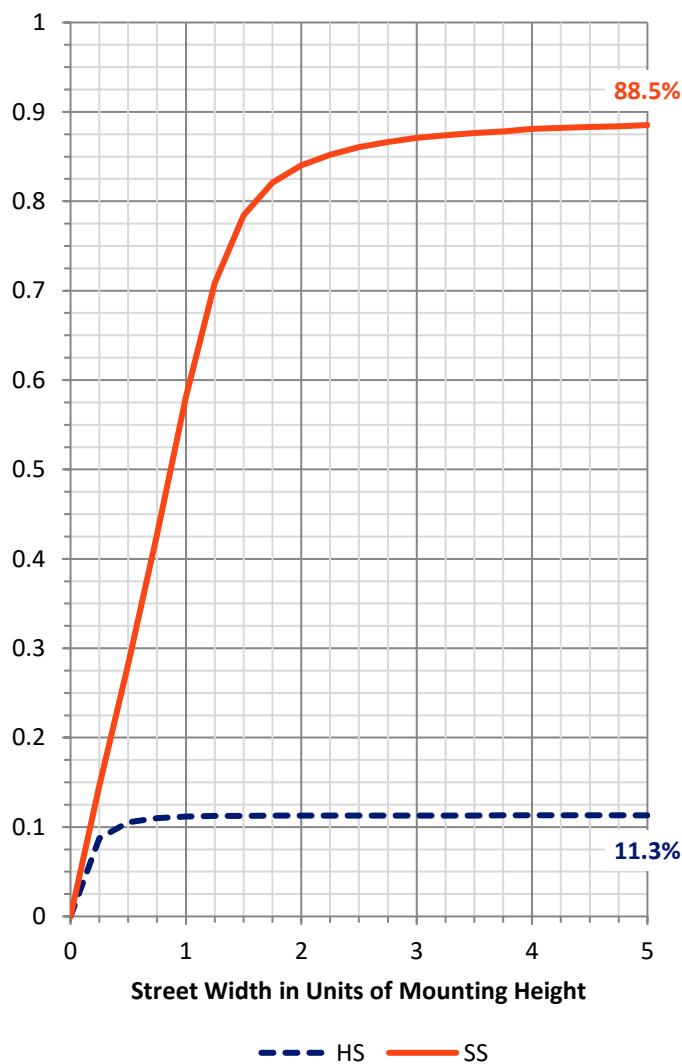
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 394.3    | 0.0    | 394.3  |
|                    | % Fixture | 11.4     | 0.0    | 11.4   |
| <b>Street Side</b> | Lumens    | 3060.7   | 0.0    | 3060.7 |
|                    | % Fixture | 88.6     | 0.0    | 88.6   |
| <b>Total</b>       | Lumens    | 3455.0   | 0.0    | 3455.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 68.7   | 2.0       |
| 10°-20°   | 148.9  | 4.3       |
| 20°-30°   | 213.3  | 6.2       |
| 30°-40°   | 314.0  | 9.1       |
| 40°-50°   | 518.7  | 15.0      |
| 50°-60°   | 834.3  | 24.1      |
| 60°-70°   | 909.7  | 26.3      |
| 70°-80°   | 414.0  | 12.0      |
| 80°-90°   | 33.3   | 1.0       |
| 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°    | 3455.0 | 100.0     |
| 0°-180°   | 3455.0 | 100.0     |

**Coefficient of Utilization**



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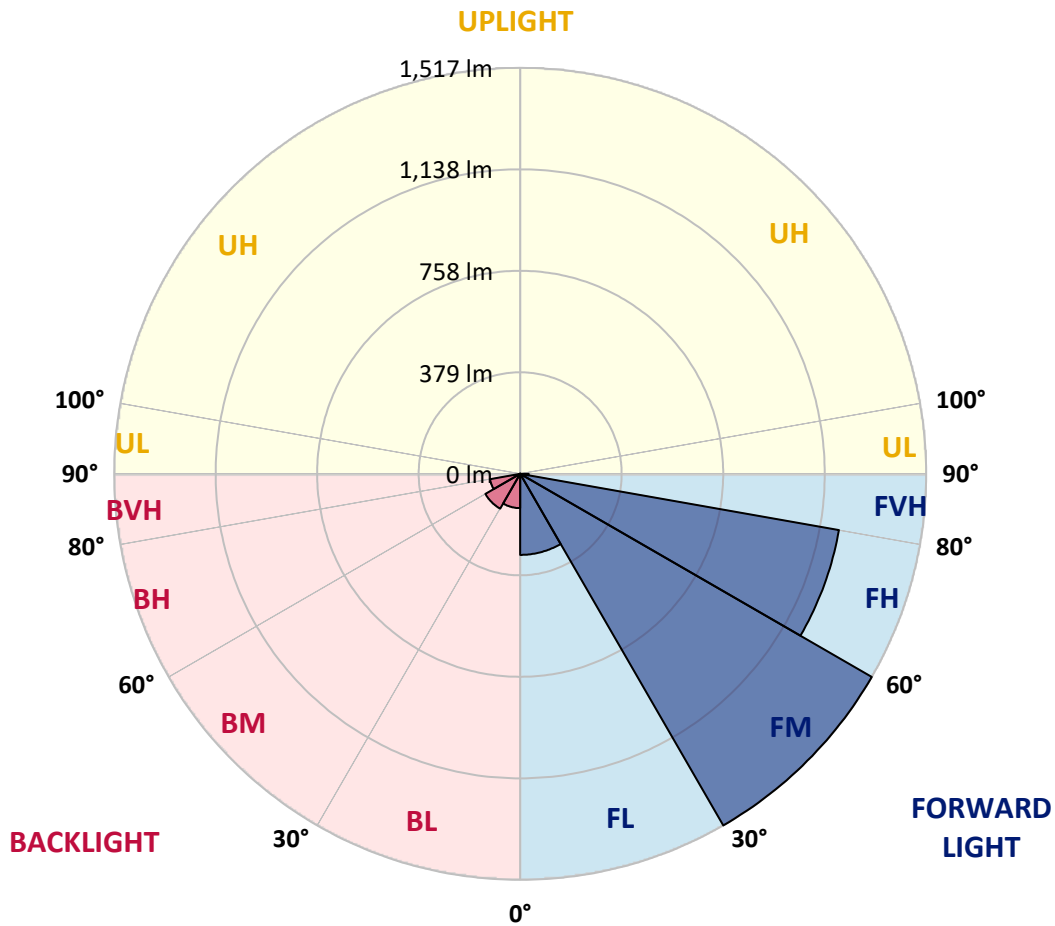
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 302.9  | 8.8       |                         |      |         |
| FM (30°-60°)   | 1516.9 | 43.9      |                         |      |         |
| FH (60°-80°)   | 1209.3 | 35.0      |                         |      | G1/1800 |
| FVH (80°-90°)  | 31.6   | 0.9       |                         |      | G1/100  |
| BL (0°-30°)    | 128.1  | 3.7       | B1/500                  |      |         |
| BM (30°-60°)   | 150.1  | 4.3       | B0/220                  |      |         |
| BH (60°-80°)   | 114.4  | 3.3       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 1.6    | 0.0       |                         |      | G0/10   |
| 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 Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 67°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  | 843.0  |
| 2.5°  | 832.4  | 840.0  | 841.5  | 844.6  | 844.6  | 849.1  | 850.6  | 853.7  | 852.1  | 853.7  | 850.6  |
| 5°    | 774.8  | 780.9  | 777.8  | 793.0  | 802.1  | 818.8  | 835.5  | 849.1  | 849.1  | 853.7  | 852.1  |
| 7.5°  | 717.2  | 723.3  | 723.3  | 735.4  | 750.6  | 774.8  | 802.1  | 833.9  | 837.0  | 852.1  | 847.6  |
| 10°   | 671.7  | 674.7  | 677.8  | 691.4  | 709.6  | 733.9  | 770.3  | 811.2  | 817.3  | 843.0  | 844.6  |
| 12.5° | 635.3  | 639.9  | 644.4  | 658.1  | 674.7  | 699.0  | 733.9  | 780.9  | 791.5  | 827.9  | 841.5  |
| 15°   | 617.1  | 617.1  | 621.7  | 633.8  | 649.0  | 674.7  | 706.6  | 761.2  | 770.3  | 818.8  | 840.0  |
| 17.5° | 608.0  | 609.5  | 612.6  | 618.6  | 630.8  | 652.0  | 686.9  | 739.9  | 752.1  | 811.2  | 840.0  |
| 20°   | 620.2  | 620.2  | 615.6  | 618.6  | 624.7  | 641.4  | 673.2  | 724.8  | 739.9  | 806.7  | 847.6  |
| 22.5° | 645.9  | 645.9  | 638.3  | 633.8  | 629.3  | 635.3  | 664.1  | 718.7  | 732.4  | 806.7  | 852.1  |
| 25°   | 685.4  | 685.4  | 680.8  | 667.2  | 647.4  | 642.9  | 665.6  | 717.2  | 727.8  | 808.2  | 858.2  |
| 27.5° | 732.4  | 733.9  | 729.3  | 714.2  | 683.8  | 658.1  | 670.2  | 714.2  | 726.3  | 806.7  | 861.2  |
| 30°   | 794.5  | 800.6  | 794.5  | 773.3  | 736.9  | 688.4  | 680.8  | 712.6  | 724.8  | 803.6  | 862.8  |
| 32.5° | 856.7  | 861.2  | 867.3  | 853.7  | 802.1  | 735.4  | 703.5  | 718.7  | 729.3  | 805.1  | 859.7  |
| 35°   | 917.3  | 929.5  | 940.1  | 944.6  | 891.6  | 802.1  | 741.5  | 732.4  | 736.9  | 809.7  | 859.7  |
| 37.5° | 982.5  | 994.7  | 1017.4 | 1040.2 | 996.2  | 876.4  | 797.6  | 762.7  | 762.7  | 824.9  | 868.8  |
| 40°   | 1065.9 | 1072.0 | 1116.0 | 1143.3 | 1122.0 | 996.2  | 877.9  | 814.2  | 812.7  | 867.3  | 894.6  |
| 42.5° | 1146.3 | 1163.0 | 1220.6 | 1261.5 | 1247.9 | 1137.2 | 975.0  | 905.2  | 890.1  | 935.5  | 941.6  |
| 45°   | 1263.1 | 1288.8 | 1334.3 | 1395.0 | 1408.6 | 1294.9 | 1125.1 | 1022.0 | 1006.8 | 1037.1 | 1020.5 |
| 47.5° | 1372.2 | 1390.4 | 1434.4 | 1511.7 | 1590.6 | 1498.1 | 1294.9 | 1185.7 | 1172.1 | 1184.2 | 1156.9 |
| 50°   | 1407.1 | 1416.2 | 1466.2 | 1561.8 | 1748.3 | 1789.2 | 1528.4 | 1398.0 | 1396.5 | 1387.4 | 1341.9 |
| 52.5° | 1346.4 | 1348.0 | 1405.6 | 1522.3 | 1813.5 | 2107.6 | 1858.9 | 1672.4 | 1646.7 | 1627.0 | 1566.3 |
| 55°   | 1161.5 | 1175.1 | 1223.6 | 1369.2 | 1749.8 | 2291.1 | 2388.1 | 2004.5 | 1962.1 | 1890.8 | 1815.0 |
| 57.5° | 908.2  | 902.2  | 941.6  | 1075.0 | 1554.2 | 2363.9 | 2909.7 | 2426.0 | 2319.9 | 2106.1 | 2004.5 |
| 60°   | 661.1  | 645.9  | 671.7  | 747.5  | 1129.6 | 2221.3 | 3211.5 | 3020.4 | 2838.5 | 2338.1 | 2238.0 |
| 62.5° | 491.3  | 491.3  | 518.6  | 553.4  | 692.9  | 1733.1 | 3258.5 | 3701.2 | 3496.5 | 2632.2 | 2485.2 |
| 65°   | 392.7  | 391.2  | 413.9  | 467.0  | 494.3  | 1075.0 | 3021.9 | 4186.4 | 4109.1 | 2938.5 | 2647.4 |
| 67.5° | 313.9  | 313.9  | 333.6  | 406.4  | 444.3  | 611.1  | 2338.1 | 4201.6 | 4224.3 | 3114.4 | 2548.9 |
| 70°   | 221.4  | 229.0  | 253.2  | 339.6  | 429.1  | 467.0  | 1417.7 | 3608.7 | 3667.9 | 3061.4 | 2286.5 |
| 72.5° | 124.3  | 130.4  | 174.4  | 251.7  | 412.4  | 448.8  | 793.0  | 2726.3 | 2826.3 | 2565.5 | 1865.0 |
| 75°   | 59.1   | 65.2   | 101.6  | 172.9  | 344.2  | 427.6  | 482.2  | 1933.2 | 1919.6 | 1666.4 | 1158.4 |
| 77.5° | 25.8   | 28.8   | 45.5   | 100.1  | 244.1  | 398.8  | 353.3  | 1208.5 | 1153.9 | 782.4  | 486.7  |
| 80°   | 9.1    | 10.6   | 19.7   | 57.6   | 138.0  | 326.0  | 294.2  | 558.0  | 504.9  | 216.8  | 127.4  |
| 82.5° | 1.5    | 1.5    | 7.6    | 27.3   | 62.2   | 182.0  | 242.6  | 266.9  | 230.5  | 54.6   | 54.6   |
| 85°   | 0.0    | 0.0    | 1.5    | 9.1    | 15.2   | 16.7   | 109.2  | 107.7  | 89.5   | 18.2   | 27.3   |
| 87.5° | 0.0    | 0.0    | 0.0    | 1.5    | 1.5    | 3.0    | 3.0    | 3.0    | 3.0    | 3.0    | 4.5    |
| 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: ISC-SA1D-722-U-SL2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 843.0  | 843.0  | 843.0 | 843.0 | 843.0 | 843.0 | 843.0 | 843.0 | 843.0 | 843.0 | 843.0 |
| 2.5°  | 843.0  | 841.5  | 826.4 | 812.7 | 794.5 | 779.4 | 765.7 | 752.1 | 746.0 | 747.5 | 750.6 |
| 5°    | 844.6  | 835.5  | 803.6 | 768.7 | 732.4 | 696.0 | 661.1 | 639.9 | 623.2 | 617.1 | 623.2 |
| 7.5°  | 837.0  | 821.8  | 773.3 | 717.2 | 659.6 | 595.9 | 542.8 | 503.4 | 474.6 | 456.4 | 464.0 |
| 10°   | 830.9  | 808.2  | 736.9 | 652.0 | 570.1 | 486.7 | 410.9 | 354.8 | 315.4 | 292.6 | 288.1 |
| 12.5° | 820.3  | 793.0  | 694.5 | 586.8 | 473.1 | 359.4 | 268.4 | 209.2 | 177.4 | 160.7 | 165.3 |
| 15°   | 817.3  | 774.8  | 652.0 | 511.0 | 370.0 | 242.6 | 162.2 | 128.9 | 115.2 | 112.2 | 112.2 |
| 17.5° | 814.2  | 762.7  | 606.5 | 436.7 | 265.3 | 151.6 | 112.2 | 103.1 | 100.1 | 98.6  | 100.1 |
| 20°   | 811.2  | 746.0  | 561.0 | 356.3 | 178.9 | 109.2 | 97.0  | 92.5  | 89.5  | 89.5  | 87.9  |
| 22.5° | 814.2  | 735.4  | 518.6 | 280.5 | 122.8 | 92.5  | 84.9  | 81.9  | 78.8  | 77.3  | 77.3  |
| 25°   | 811.2  | 721.7  | 467.0 | 206.2 | 95.5  | 81.9  | 75.8  | 69.7  | 66.7  | 65.2  | 63.7  |
| 27.5° | 806.7  | 705.1  | 418.5 | 148.6 | 83.4  | 72.8  | 65.2  | 59.1  | 54.6  | 53.1  | 53.1  |
| 30°   | 802.1  | 683.8  | 362.4 | 109.2 | 75.8  | 65.2  | 56.1  | 50.0  | 45.5  | 42.5  | 42.5  |
| 32.5° | 790.0  | 664.1  | 307.8 | 87.9  | 68.2  | 57.6  | 48.5  | 40.9  | 37.9  | 36.4  | 36.4  |
| 35°   | 782.4  | 641.4  | 250.2 | 75.8  | 62.2  | 50.0  | 40.9  | 34.9  | 31.8  | 30.3  | 30.3  |
| 37.5° | 780.9  | 617.1  | 198.6 | 68.2  | 56.1  | 44.0  | 34.9  | 30.3  | 27.3  | 25.8  | 25.8  |
| 40°   | 786.9  | 605.0  | 153.1 | 62.2  | 48.5  | 37.9  | 30.3  | 25.8  | 22.7  | 21.2  | 21.2  |
| 42.5° | 811.2  | 603.5  | 116.8 | 56.1  | 44.0  | 33.4  | 27.3  | 21.2  | 18.2  | 16.7  | 16.7  |
| 45°   | 865.8  | 612.6  | 92.5  | 51.6  | 37.9  | 28.8  | 22.7  | 18.2  | 15.2  | 13.6  | 13.6  |
| 47.5° | 955.3  | 650.5  | 77.3  | 47.0  | 31.8  | 24.3  | 18.2  | 15.2  | 10.6  | 10.6  | 10.6  |
| 50°   | 1100.8 | 730.8  | 68.2  | 40.9  | 27.3  | 19.7  | 15.2  | 10.6  | 7.6   | 7.6   | 7.6   |
| 52.5° | 1316.1 | 853.7  | 62.2  | 36.4  | 22.7  | 16.7  | 12.1  | 7.6   | 6.1   | 6.1   | 6.1   |
| 55°   | 1539.0 | 1006.8 | 57.6  | 30.3  | 19.7  | 13.6  | 9.1   | 6.1   | 4.5   | 4.5   | 3.0   |
| 57.5° | 1742.2 | 1132.7 | 51.6  | 25.8  | 15.2  | 10.6  | 6.1   | 4.5   | 3.0   | 3.0   | 3.0   |
| 60°   | 1983.3 | 1258.5 | 44.0  | 19.7  | 12.1  | 7.6   | 4.5   | 3.0   | 1.5   | 1.5   | 1.5   |
| 62.5° | 2216.8 | 1329.8 | 36.4  | 15.2  | 9.1   | 6.1   | 3.0   | 1.5   | 1.5   | 1.5   | 1.5   |
| 65°   | 2318.4 | 1296.4 | 28.8  | 12.1  | 7.6   | 4.5   | 1.5   | 1.5   | 1.5   | 0.0   | 0.0   |
| 67.5° | 2181.9 | 1096.3 | 22.7  | 9.1   | 6.1   | 3.0   | 1.5   | 1.5   | 0.0   | 0.0   | 0.0   |
| 70°   | 1878.7 | 887.0  | 18.2  | 7.6   | 4.5   | 1.5   | 1.5   | 1.5   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1475.3 | 653.5  | 15.2  | 6.1   | 3.0   | 1.5   | 1.5   | 1.5   | 0.0   | 0.0   | 0.0   |
| 75°   | 897.6  | 329.0  | 13.6  | 4.5   | 3.0   | 3.0   | 1.5   | 1.5   | 1.5   | 0.0   | 0.0   |
| 77.5° | 304.8  | 103.1  | 9.1   | 4.5   | 3.0   | 3.0   | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   |
| 80°   | 89.5   | 33.4   | 7.6   | 3.0   | 3.0   | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   |
| 82.5° | 47.0   | 15.2   | 4.5   | 3.0   | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   |
| 85°   | 25.8   | 7.6    | 3.0   | 1.5   | 1.5   | 1.5   | 0.0   | 0.0   | 1.5   | 1.5   | 1.5   |
| 87.5° | 4.5    | 3.0    | 3.0   | 1.5   | 1.5   | 1.5   | 0.0   | 0.0   | 0.0   | 1.5   | 1.5   |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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



**Test Information**

Test Method: LM-79-2008 Report  
 Number: SP1-1908-441-10-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGRAW-EDISON  
 Catalog Number: **SA1C-722-U-5WQ**  
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

CCT (K): 2237  
 CIE u': 0.2876  
 CIE v': 0.5346  
 Duv: -0.0006  
 CIE x: 0.5005  
 CIE y: 0.4134  
 CIE z: 0.0860  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 587  
 Purity: 74.5  
 R<sub>f</sub>: 69.8  
 R<sub>g</sub>: 99.2

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 72.0 |      |       |
| R1:       | 68.9 | R9:  | -17.4 |
| R2:       | 83.0 | R10: | 61.3  |
| R3:       | 95.2 | R11: | 59.8  |
| R4:       | 66.2 | R12: | 50.5  |
| R5:       | 65.9 | R13: | 71.1  |
| R6:       | 76.3 | R14: | 96.9  |
| R7:       | 76.7 |      |       |
| R8:       | 43.8 |      |       |



**Test Conditions**

Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/41%  
 Sphere Temperature (°C): 25.6

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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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**



#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1768          | NR            | 490    | 5206          | NR            | 620    | 130919        | NR            | 750    | 8553          | NR            | 880    | 2713          | NR            |
| 365    | 1569          | NR            | 495    | 7286          | NR            | 625    | 125335        | NR            | 755    | 7696          | NR            | 885    | 2316          | NR            |
| 370    | 1594          | NR            | 500    | 10654         | NR            | 630    | 118388        | NR            | 760    | 6978          | NR            | 890    | 2539          | NR            |
| 375    | 1744          | NR            | 505    | 15189         | NR            | 635    | 111855        | NR            | 765    | 6377          | NR            | 895    | 1933          | NR            |
| 380    | 1659          | NR            | 510    | 20541         | NR            | 640    | 104062        | NR            | 770    | 5600          | NR            | 900    | 2216          | NR            |
| 385    | 1504          | NR            | 515    | 26492         | NR            | 645    | 96365         | NR            | 775    | 5000          | NR            | 905    | 2067          | NR            |
| 390    | 1541          | NR            | 520    | 32294         | NR            | 650    | 88651         | NR            | 780    | 4709          | NR            | 910    | 1959          | NR            |
| 395    | 1355          | NR            | 525    | 38123         | NR            | 655    | 81152         | NR            | 785    | 4305          | NR            | 915    | 1874          | NR            |
| 400    | 1243          | NR            | 530    | 43232         | NR            | 660    | 73523         | NR            | 790    | 4040          | NR            | 920    | 1484          | NR            |
| 405    | 1417          | NR            | 535    | 48012         | NR            | 665    | 66123         | NR            | 795    | 3642          | NR            | 925    | 1914          | NR            |
| 410    | 2147          | NR            | 540    | 52623         | NR            | 670    | 58677         | NR            | 800    | 3594          | NR            | 930    | 1948          | NR            |
| 415    | 3837          | NR            | 545    | 57516         | NR            | 675    | 52349         | NR            | 805    | 3190          | NR            | 935    | 2079          | NR            |
| 420    | 7159          | NR            | 550    | 62613         | NR            | 680    | 46159         | NR            | 810    | 3241          | NR            | 940    | 2263          | NR            |
| 425    | 12599         | NR            | 555    | 68554         | NR            | 685    | 40525         | NR            | 815    | 2732          | NR            | 945    | 1688          | NR            |
| 430    | 19019         | NR            | 560    | 75325         | NR            | 690    | 35615         | NR            | 820    | 2612          | NR            | 950    | 1560          | NR            |
| 435    | 24875         | NR            | 565    | 82533         | NR            | 695    | 31158         | NR            | 825    | 2966          | NR            | 955    | 2826          | NR            |
| 440    | 29103         | NR            | 570    | 90909         | NR            | 700    | 27409         | NR            | 830    | 2574          | NR            | 960    | 1477          | NR            |
| 445    | 29901         | NR            | 575    | 99621         | NR            | 705    | 24204         | NR            | 835    | 2633          | NR            | 965    | 1568          | NR            |
| 450    | 24862         | NR            | 580    | 108484        | NR            | 710    | 21558         | NR            | 840    | 2526          | NR            | 970    | 2030          | NR            |
| 455    | 15942         | NR            | 585    | 116679        | NR            | 715    | 19222         | NR            | 845    | 2631          | NR            | 975    | 1986          | NR            |
| 460    | 9916          | NR            | 590    | 123752        | NR            | 720    | 17310         | NR            | 850    | 2079          | NR            | 980    | 2540          | NR            |
| 465    | 7051          | NR            | 595    | 129324        | NR            | 725    | 15280         | NR            | 855    | 2309          | NR            | 985    | 1139          | NR            |
| 470    | 5227          | NR            | 600    | 134082        | NR            | 730    | 13282         | NR            | 860    | 2528          | NR            | 990    | 2018          | NR            |
| 475    | 4257          | NR            | 605    | 135698        | NR            | 735    | 11753         | NR            | 865    | 2121          | NR            | 995    | 3445          | NR            |
| 480    | 4052          | NR            | 610    | 135144        | NR            | 740    | 10654         | NR            | 870    | 2751          | NR            | 1000   | 3704          | NR            |
| 485    | 4298          | NR            | 615    | 134180        | NR            | 745    | 9451          | NR            | 875    | 2317          | NR            |        |               |               |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9

S/P: 0.85

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1768          | NR            | 490    | 5206          | NR            | 620    | 130919        | NR            | 750    | 8553          | NR            | 880    | 2713          | NR            |
| 365    | 1569          | NR            | 495    | 7286          | NR            | 625    | 125335        | NR            | 755    | 7696          | NR            | 885    | 2316          | NR            |
| 370    | 1594          | NR            | 500    | 10654         | NR            | 630    | 118388        | NR            | 760    | 6978          | NR            | 890    | 2539          | NR            |
| 375    | 1744          | NR            | 505    | 15189         | NR            | 635    | 111855        | NR            | 765    | 6377          | NR            | 895    | 1933          | NR            |
| 380    | 1659          | NR            | 510    | 20541         | NR            | 640    | 104062        | NR            | 770    | 5600          | NR            | 900    | 2216          | NR            |
| 385    | 1504          | NR            | 515    | 26492         | NR            | 645    | 96365         | NR            | 775    | 5000          | NR            | 905    | 2067          | NR            |
| 390    | 1541          | NR            | 520    | 32294         | NR            | 650    | 88651         | NR            | 780    | 4709          | NR            | 910    | 1959          | NR            |
| 395    | 1355          | NR            | 525    | 38123         | NR            | 655    | 81152         | NR            | 785    | 4305          | NR            | 915    | 1874          | NR            |
| 400    | 1243          | NR            | 530    | 43232         | NR            | 660    | 73523         | NR            | 790    | 4040          | NR            | 920    | 1484          | NR            |
| 405    | 1417          | NR            | 535    | 48012         | NR            | 665    | 66123         | NR            | 795    | 3642          | NR            | 925    | 1914          | NR            |
| 410    | 2147          | NR            | 540    | 52623         | NR            | 670    | 58677         | NR            | 800    | 3594          | NR            | 930    | 1948          | NR            |
| 415    | 3837          | NR            | 545    | 57516         | NR            | 675    | 52349         | NR            | 805    | 3190          | NR            | 935    | 2079          | NR            |
| 420    | 7159          | NR            | 550    | 62613         | NR            | 680    | 46159         | NR            | 810    | 3241          | NR            | 940    | 2263          | NR            |
| 425    | 12599         | NR            | 555    | 68554         | NR            | 685    | 40525         | NR            | 815    | 2732          | NR            | 945    | 1688          | NR            |
| 430    | 19019         | NR            | 560    | 75325         | NR            | 690    | 35615         | NR            | 820    | 2612          | NR            | 950    | 1560          | NR            |
| 435    | 24875         | NR            | 565    | 82533         | NR            | 695    | 31158         | NR            | 825    | 2966          | NR            | 955    | 2826          | NR            |
| 440    | 29103         | NR            | 570    | 90909         | NR            | 700    | 27409         | NR            | 830    | 2574          | NR            | 960    | 1477          | NR            |
| 445    | 29901         | NR            | 575    | 99621         | NR            | 705    | 24204         | NR            | 835    | 2633          | NR            | 965    | 1568          | NR            |
| 450    | 24862         | NR            | 580    | 108484        | NR            | 710    | 21558         | NR            | 840    | 2526          | NR            | 970    | 2030          | NR            |
| 455    | 15942         | NR            | 585    | 116679        | NR            | 715    | 19222         | NR            | 845    | 2631          | NR            | 975    | 1986          | NR            |
| 460    | 9916          | NR            | 590    | 123752        | NR            | 720    | 17310         | NR            | 850    | 2079          | NR            | 980    | 2540          | NR            |
| 465    | 7051          | NR            | 595    | 129324        | NR            | 725    | 15280         | NR            | 855    | 2309          | NR            | 985    | 1139          | NR            |
| 470    | 5227          | NR            | 600    | 134082        | NR            | 730    | 13282         | NR            | 860    | 2528          | NR            | 990    | 2018          | NR            |
| 475    | 4257          | NR            | 605    | 135698        | NR            | 735    | 11753         | NR            | 865    | 2121          | NR            | 995    | 3445          | NR            |
| 480    | 4052          | NR            | 610    | 135144        | NR            | 740    | 10654         | NR            | 870    | 2751          | NR            | 1000   | 3704          | NR            |
| 485    | 4298          | NR            | 615    | 134180        | NR            | 745    | 9451          | NR            | 875    | 2317          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1470.8 M/P: 0.27**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 1768          | NR            | 490    | 5206          | NR            | 620    | 130919        | NR            | 750    | 8553          | NR            | 880    | 2713          | NR            |
| 365    | 1569          | NR            | 495    | 7286          | NR            | 625    | 125335        | NR            | 755    | 7696          | NR            | 885    | 2316          | NR            |
| 370    | 1594          | NR            | 500    | 10654         | NR            | 630    | 118388        | NR            | 760    | 6978          | NR            | 890    | 2539          | NR            |
| 375    | 1744          | NR            | 505    | 15189         | NR            | 635    | 111855        | NR            | 765    | 6377          | NR            | 895    | 1933          | NR            |
| 380    | 1659          | NR            | 510    | 20541         | NR            | 640    | 104062        | NR            | 770    | 5600          | NR            | 900    | 2216          | NR            |
| 385    | 1504          | NR            | 515    | 26492         | NR            | 645    | 96365         | NR            | 775    | 5000          | NR            | 905    | 2067          | NR            |
| 390    | 1541          | NR            | 520    | 32294         | NR            | 650    | 88651         | NR            | 780    | 4709          | NR            | 910    | 1959          | NR            |
| 395    | 1355          | NR            | 525    | 38123         | NR            | 655    | 81152         | NR            | 785    | 4305          | NR            | 915    | 1874          | NR            |
| 400    | 1243          | NR            | 530    | 43232         | NR            | 660    | 73523         | NR            | 790    | 4040          | NR            | 920    | 1484          | NR            |
| 405    | 1417          | NR            | 535    | 48012         | NR            | 665    | 66123         | NR            | 795    | 3642          | NR            | 925    | 1914          | NR            |
| 410    | 2147          | NR            | 540    | 52623         | NR            | 670    | 58677         | NR            | 800    | 3594          | NR            | 930    | 1948          | NR            |
| 415    | 3837          | NR            | 545    | 57516         | NR            | 675    | 52349         | NR            | 805    | 3190          | NR            | 935    | 2079          | NR            |
| 420    | 7159          | NR            | 550    | 62613         | NR            | 680    | 46159         | NR            | 810    | 3241          | NR            | 940    | 2263          | NR            |
| 425    | 12599         | NR            | 555    | 68554         | NR            | 685    | 40525         | NR            | 815    | 2732          | NR            | 945    | 1688          | NR            |
| 430    | 19019         | NR            | 560    | 75325         | NR            | 690    | 35615         | NR            | 820    | 2612          | NR            | 950    | 1560          | NR            |
| 435    | 24875         | NR            | 565    | 82533         | NR            | 695    | 31158         | NR            | 825    | 2966          | NR            | 955    | 2826          | NR            |
| 440    | 29103         | NR            | 570    | 90909         | NR            | 700    | 27409         | NR            | 830    | 2574          | NR            | 960    | 1477          | NR            |
| 445    | 29901         | NR            | 575    | 99621         | NR            | 705    | 24204         | NR            | 835    | 2633          | NR            | 965    | 1568          | NR            |
| 450    | 24862         | NR            | 580    | 108484        | NR            | 710    | 21558         | NR            | 840    | 2526          | NR            | 970    | 2030          | NR            |
| 455    | 15942         | NR            | 585    | 116679        | NR            | 715    | 19222         | NR            | 845    | 2631          | NR            | 975    | 1986          | NR            |
| 460    | 9916          | NR            | 590    | 123752        | NR            | 720    | 17310         | NR            | 850    | 2079          | NR            | 980    | 2540          | NR            |
| 465    | 7051          | NR            | 595    | 129324        | NR            | 725    | 15280         | NR            | 855    | 2309          | NR            | 985    | 1139          | NR            |
| 470    | 5227          | NR            | 600    | 134082        | NR            | 730    | 13282         | NR            | 860    | 2528          | NR            | 990    | 2018          | NR            |
| 475    | 4257          | NR            | 605    | 135698        | NR            | 735    | 11753         | NR            | 865    | 2121          | NR            | 995    | 3445          | NR            |
| 480    | 4052          | NR            | 610    | 135144        | NR            | 740    | 10654         | NR            | 870    | 2751          | NR            | 1000   | 3704          | NR            |
| 485    | 4298          | NR            | 615    | 134180        | NR            | 745    | 9451          | NR            | 875    | 2317          | NR            |        |               |               |

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**Summary**

$R_f = 69.8$   
 $R_g = 99.2$   
 $CIE R_a = 72.0$   
 $R_9 = -17.4$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)