

Classified  
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: P459684

Luminaire Tested: **GLEON-SA2A-AMB-U-SL3-HSS**

Issue Date: 1/6/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P459684  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2003-697-7)  
Test Lab: INNOVATION CENTER  
Issue Date: 1/6/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA2A-AMB-U-SL3-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(2) NARROW BAND AMBER, 500mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1856 lumens  
Efficiency: N/A  
Efficacy: 44.5 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium - Non-Cutoff  
BUG Rating: B0 - U0 - G1

Input Watts (W): 41.7  
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

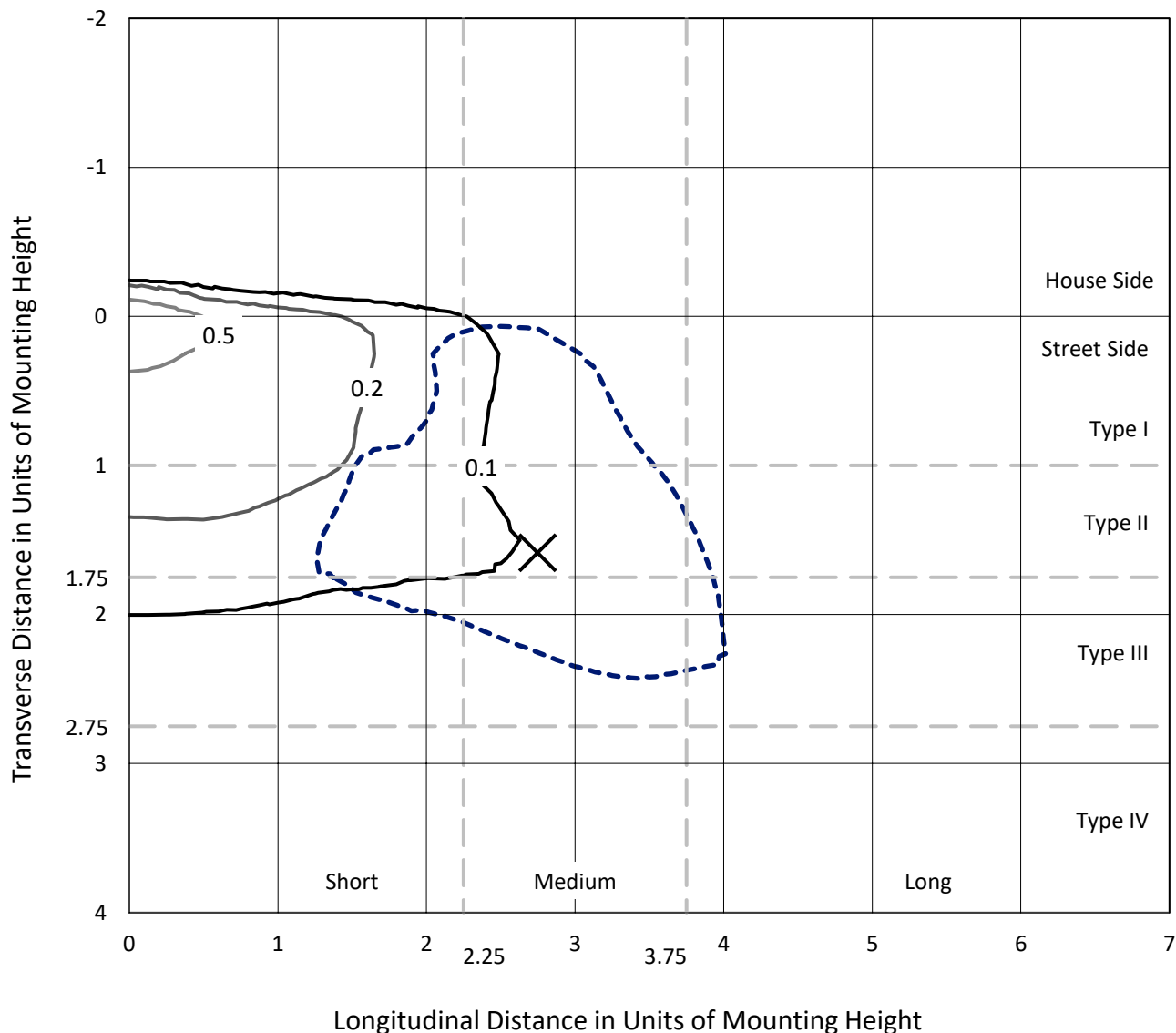




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### Iso-Footcandle Lines of Horizontal Illumination

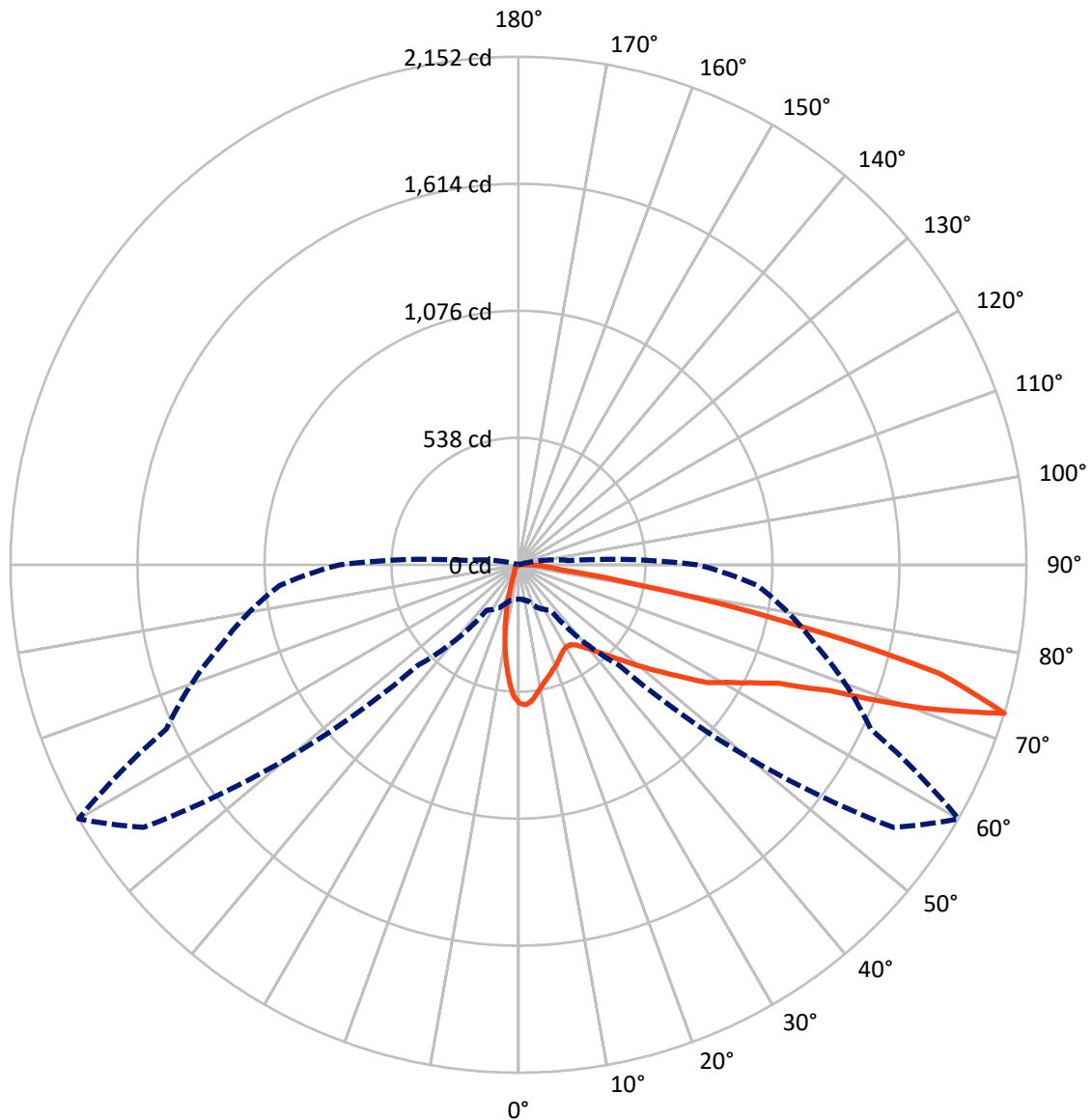
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.9 fc  
 Type III - Medium - Non-Cutoff

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### Luminous Intensity Polar Plot



— Vertical Plane Through 60-Deg Lateral      - - - Horizontal Cone Through 72.5-Deg Vertical



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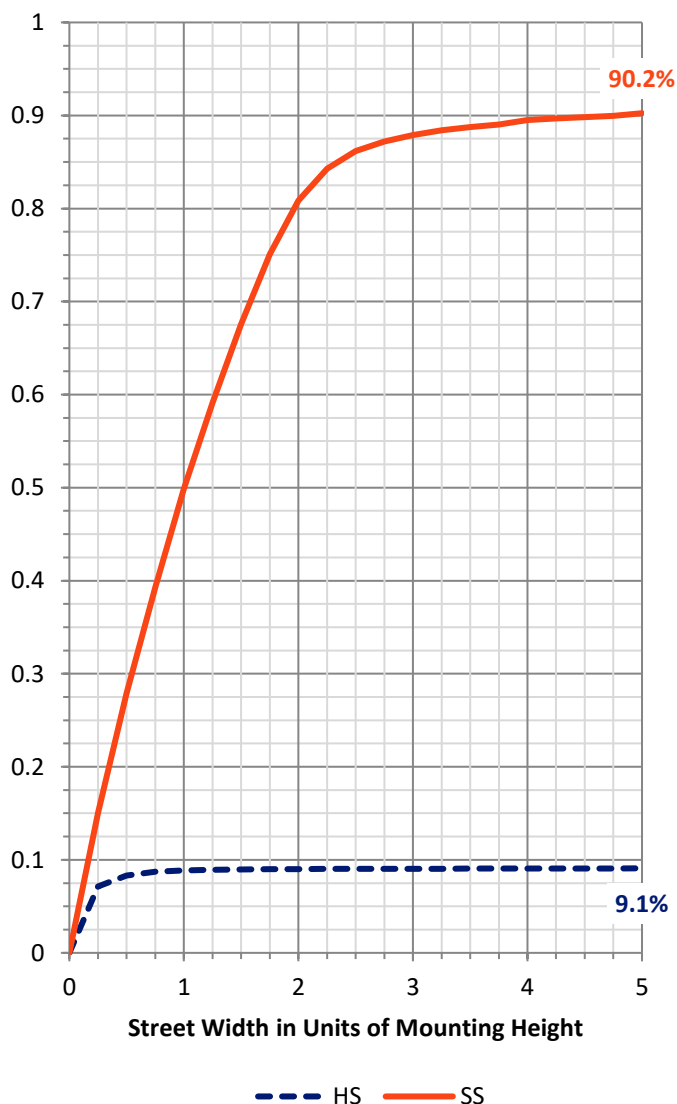
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 170.4    | 0.0    | 170.4  |
|                    | % Fixture | 9.2      | 0.0    | 9.2    |
| <b>Street Side</b> | Lumens    | 1685.6   | 0.0    | 1685.6 |
|                    | % Fixture | 90.8     | 0.0    | 90.8   |
| <b>Total</b>       | Lumens    | 1856.0   | 0.0    | 1856.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 45.6   | 2.5       |
| 10°-20°   | 89.2   | 4.8       |
| 20°-30°   | 117.1  | 6.3       |
| 30°-40°   | 157.8  | 8.5       |
| 40°-50°   | 235.0  | 12.7      |
| 50°-60°   | 364.5  | 19.6      |
| 60°-70°   | 500.0  | 26.9      |
| 70°-80°   | 315.2  | 17.0      |
| 80°-90°   | 31.6   | 1.7       |
| 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°    | 1856.0 | 100.0     |
| 0°-180°   | 1856.0 | 100.0     |

**Coefficient of Utilization**



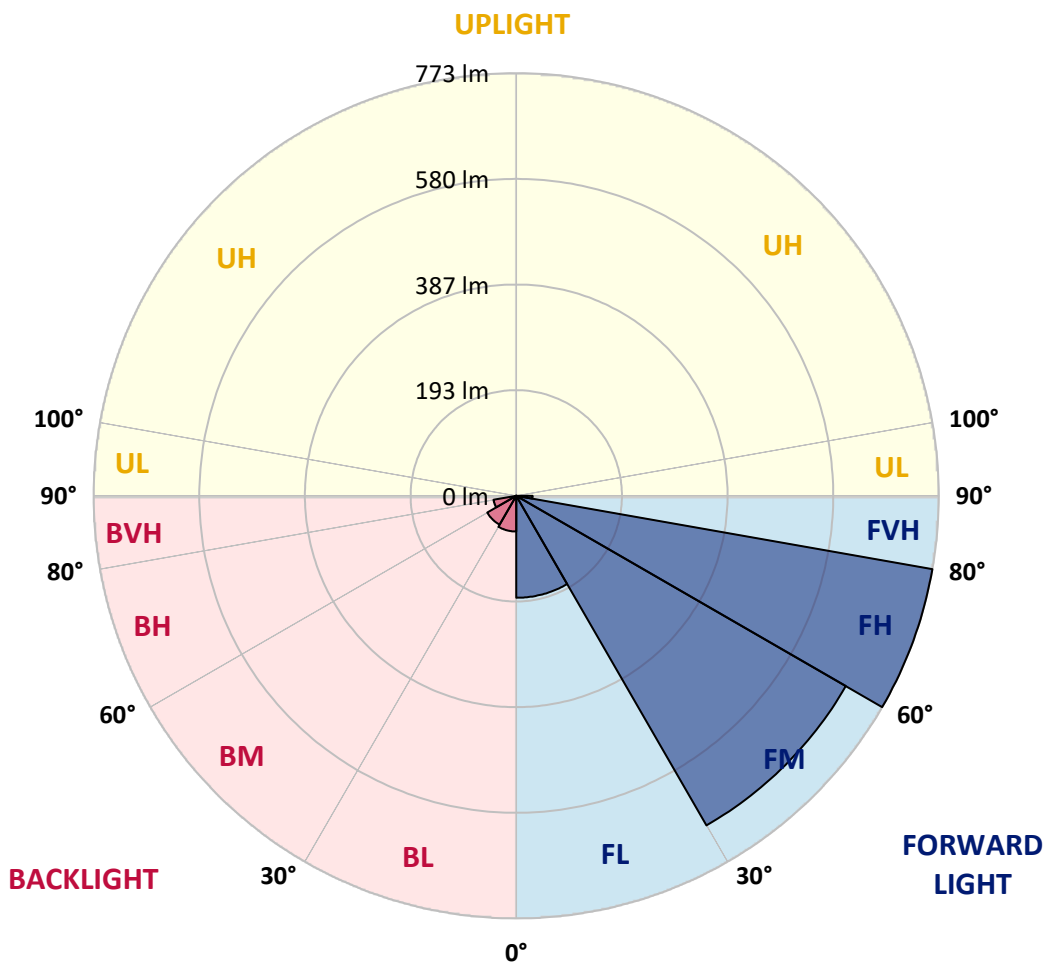


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 186.5  | 10.0      |                         |      |         |
| FM (30°-60°)   | 696.2  | 37.5      |                         |      |         |
| FH (60°-80°)   | 773.1  | 41.7      |                         |      | G1/1800 |
| FVH (80°-90°)  | 29.9   | 1.6       |                         |      | G1/100  |
| BL (0°-30°)    | 65.4   | 3.5       | B0/110                  |      |         |
| BM (30°-60°)   | 61.2   | 3.3       | B0/220                  |      |         |
| BH (60°-80°)   | 42.2   | 2.3       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 1.7    | 0.1       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**  
 Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°    | 45°    | 55°    | 60°    | 65°    | 75°    | 85°    |
|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 586.9 | 586.9 | 586.9 | 586.9 | 586.9  | 586.9  | 586.9  | 586.9  | 586.9  | 586.9  | 586.9  |
| 2.5°  | 596.9 | 595.9 | 595.9 | 596.9 | 597.9  | 594.9  | 594.9  | 593.9  | 590.9  | 589.9  | 583.9  |
| 5°    | 558.9 | 561.9 | 561.9 | 565.9 | 569.9  | 571.9  | 579.9  | 579.9  | 578.9  | 578.9  | 569.9  |
| 7.5°  | 512.9 | 512.9 | 519.9 | 526.9 | 536.9  | 539.9  | 548.9  | 552.9  | 554.9  | 559.9  | 551.9  |
| 10°   | 471.9 | 474.9 | 475.9 | 485.9 | 494.9  | 505.9  | 520.9  | 525.9  | 530.9  | 540.9  | 532.9  |
| 12.5° | 440.9 | 442.9 | 445.9 | 454.9 | 465.9  | 477.9  | 495.9  | 504.9  | 509.9  | 523.9  | 517.9  |
| 15°   | 409.0 | 411.0 | 417.0 | 425.0 | 439.9  | 454.9  | 474.9  | 486.9  | 495.9  | 511.9  | 506.9  |
| 17.5° | 388.0 | 389.0 | 390.0 | 397.0 | 412.0  | 432.0  | 456.9  | 468.9  | 480.9  | 500.9  | 498.9  |
| 20°   | 378.0 | 379.0 | 378.0 | 382.0 | 391.0  | 408.0  | 438.0  | 453.9  | 466.9  | 495.9  | 492.9  |
| 22.5° | 375.0 | 376.0 | 374.0 | 373.0 | 377.0  | 392.0  | 419.0  | 437.0  | 454.9  | 494.9  | 490.9  |
| 25°   | 377.0 | 377.0 | 374.0 | 371.0 | 371.0  | 379.0  | 402.0  | 421.0  | 442.9  | 496.9  | 488.9  |
| 27.5° | 385.0 | 384.0 | 381.0 | 375.0 | 370.0  | 373.0  | 391.0  | 408.0  | 432.0  | 499.9  | 488.9  |
| 30°   | 395.0 | 394.0 | 393.0 | 388.0 | 379.0  | 373.0  | 386.0  | 402.0  | 426.0  | 506.9  | 489.9  |
| 32.5° | 406.0 | 407.0 | 407.0 | 403.0 | 393.0  | 380.0  | 389.0  | 404.0  | 427.0  | 516.9  | 492.9  |
| 35°   | 426.0 | 424.0 | 427.0 | 425.0 | 414.0  | 397.0  | 404.0  | 417.0  | 437.0  | 527.9  | 499.9  |
| 37.5° | 444.9 | 444.9 | 448.9 | 449.9 | 439.9  | 419.0  | 428.0  | 440.9  | 452.9  | 545.9  | 512.9  |
| 40°   | 466.9 | 465.9 | 471.9 | 477.9 | 469.9  | 451.9  | 460.9  | 471.9  | 482.9  | 572.9  | 534.9  |
| 42.5° | 484.9 | 486.9 | 495.9 | 505.9 | 508.9  | 483.9  | 498.9  | 510.9  | 515.9  | 602.9  | 567.9  |
| 45°   | 501.9 | 504.9 | 521.9 | 537.9 | 547.9  | 527.9  | 544.9  | 557.9  | 562.9  | 640.9  | 607.9  |
| 47.5° | 519.9 | 523.9 | 544.9 | 569.9 | 587.9  | 577.9  | 596.9  | 612.9  | 615.9  | 687.9  | 667.9  |
| 50°   | 538.9 | 542.9 | 566.9 | 600.9 | 630.9  | 636.9  | 660.9  | 679.9  | 676.9  | 734.9  | 728.9  |
| 52.5° | 562.9 | 567.9 | 600.9 | 638.9 | 679.9  | 697.9  | 734.9  | 751.9  | 742.9  | 795.9  | 784.9  |
| 55°   | 625.9 | 627.9 | 650.9 | 689.9 | 731.9  | 767.9  | 821.9  | 836.9  | 813.9  | 840.9  | 841.9  |
| 57.5° | 732.9 | 732.9 | 737.9 | 749.9 | 788.9  | 841.9  | 927.9  | 940.9  | 897.9  | 886.9  | 891.9  |
| 60°   | 796.9 | 806.9 | 827.9 | 850.9 | 868.9  | 921.9  | 1011.9 | 1011.9 | 950.9  | 934.9  | 936.9  |
| 62.5° | 780.9 | 788.9 | 850.9 | 902.9 | 983.9  | 1051.9 | 1102.9 | 1100.9 | 1010.9 | 979.9  | 993.9  |
| 65°   | 571.9 | 585.9 | 665.9 | 828.9 | 1028.9 | 1231.9 | 1254.9 | 1210.9 | 1084.9 | 1047.9 | 1104.9 |
| 67.5° | 307.0 | 318.0 | 385.0 | 530.9 | 811.9  | 1354.8 | 1566.8 | 1422.8 | 1217.9 | 1186.9 | 1217.9 |
| 70°   | 202.0 | 200.0 | 205.0 | 261.0 | 443.9  | 1122.9 | 1984.8 | 1820.8 | 1438.8 | 1297.9 | 1218.9 |
| 72.5° | 146.0 | 146.0 | 159.0 | 202.0 | 235.0  | 602.9  | 1939.8 | 2151.8 | 1645.8 | 1300.9 | 1015.9 |
| 75°   | 98.0  | 100.0 | 121.0 | 163.0 | 219.0  | 198.0  | 1508.8 | 1843.8 | 1617.8 | 976.9  | 529.9  |
| 77.5° | 51.0  | 54.0  | 80.0  | 129.0 | 201.0  | 177.0  | 844.9  | 1141.9 | 950.9  | 448.9  | 118.0  |
| 80°   | 23.0  | 24.0  | 35.0  | 97.0  | 184.0  | 164.0  | 276.0  | 508.9  | 301.0  | 54.0   | 20.0   |
| 82.5° | 11.0  | 11.0  | 15.0  | 48.0  | 152.0  | 141.0  | 170.0  | 181.0  | 71.0   | 17.0   | 14.0   |
| 85°   | 4.0   | 4.0   | 8.0   | 27.0  | 90.0   | 85.0   | 145.0  | 121.0  | 40.0   | 11.0   | 10.0   |
| 87.5° | 2.0   | 2.0   | 3.0   | 8.0   | 24.0   | 69.0   | 100.0  | 80.0   | 17.0   | 4.0    | 4.0    |
| 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: GLEON-SA2A-AMB-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 | 586.9 |
| 2.5°  | 580.9 | 577.9 | 569.9 | 562.9 | 553.9 | 541.9 | 539.9 | 527.9 | 517.9 | 516.9 | 513.9 |
| 5°    | 564.9 | 555.9 | 535.9 | 506.9 | 479.9 | 457.9 | 434.0 | 419.0 | 411.0 | 402.0 | 408.0 |
| 7.5°  | 542.9 | 527.9 | 487.9 | 442.9 | 399.0 | 361.0 | 324.0 | 297.0 | 286.0 | 270.0 | 273.0 |
| 10°   | 519.9 | 498.9 | 440.9 | 373.0 | 316.0 | 260.0 | 212.0 | 172.0 | 151.0 | 144.0 | 144.0 |
| 12.5° | 503.9 | 473.9 | 393.0 | 308.0 | 233.0 | 161.0 | 117.0 | 85.0  | 64.0  | 57.0  | 57.0  |
| 15°   | 487.9 | 450.9 | 349.0 | 246.0 | 154.0 | 93.0  | 56.0  | 48.0  | 47.0  | 47.0  | 47.0  |
| 17.5° | 473.9 | 424.0 | 303.0 | 188.0 | 101.0 | 52.0  | 46.0  | 45.0  | 44.0  | 44.0  | 44.0  |
| 20°   | 459.9 | 400.0 | 264.0 | 135.0 | 56.0  | 44.0  | 42.0  | 42.0  | 42.0  | 42.0  | 41.0  |
| 22.5° | 446.9 | 379.0 | 222.0 | 93.0  | 43.0  | 40.0  | 39.0  | 39.0  | 39.0  | 38.0  | 38.0  |
| 25°   | 437.0 | 360.0 | 184.0 | 59.0  | 38.0  | 37.0  | 36.0  | 35.0  | 34.0  | 34.0  | 34.0  |
| 27.5° | 427.0 | 342.0 | 144.0 | 41.0  | 35.0  | 33.0  | 32.0  | 31.0  | 29.0  | 29.0  | 28.0  |
| 30°   | 420.0 | 324.0 | 115.0 | 35.0  | 32.0  | 30.0  | 28.0  | 26.0  | 24.0  | 23.0  | 23.0  |
| 32.5° | 416.0 | 310.0 | 86.0  | 32.0  | 29.0  | 26.0  | 24.0  | 22.0  | 20.0  | 18.0  | 18.0  |
| 35°   | 413.0 | 296.0 | 59.0  | 29.0  | 26.0  | 23.0  | 21.0  | 18.0  | 15.0  | 14.0  | 14.0  |
| 37.5° | 418.0 | 286.0 | 40.0  | 27.0  | 24.0  | 21.0  | 17.0  | 15.0  | 13.0  | 12.0  | 12.0  |
| 40°   | 429.0 | 278.0 | 32.0  | 25.0  | 22.0  | 18.0  | 15.0  | 12.0  | 10.0  | 9.0   | 9.0   |
| 42.5° | 447.9 | 275.0 | 28.0  | 24.0  | 20.0  | 16.0  | 12.0  | 10.0  | 9.0   | 8.0   | 8.0   |
| 45°   | 482.9 | 274.0 | 26.0  | 22.0  | 18.0  | 13.0  | 10.0  | 8.0   | 7.0   | 6.0   | 6.0   |
| 47.5° | 521.9 | 276.0 | 25.0  | 21.0  | 16.0  | 12.0  | 9.0   | 7.0   | 6.0   | 5.0   | 5.0   |
| 50°   | 569.9 | 284.0 | 23.0  | 19.0  | 15.0  | 10.0  | 7.0   | 6.0   | 4.0   | 4.0   | 4.0   |
| 52.5° | 615.9 | 292.0 | 22.0  | 18.0  | 13.0  | 9.0   | 6.0   | 4.0   | 4.0   | 3.0   | 3.0   |
| 55°   | 660.9 | 310.0 | 20.0  | 18.0  | 12.0  | 7.0   | 5.0   | 4.0   | 3.0   | 2.0   | 2.0   |
| 57.5° | 705.9 | 323.0 | 19.0  | 16.0  | 10.0  | 6.0   | 4.0   | 3.0   | 2.0   | 2.0   | 2.0   |
| 60°   | 751.9 | 335.0 | 17.0  | 14.0  | 8.0   | 5.0   | 3.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| 62.5° | 809.9 | 355.0 | 15.0  | 12.0  | 7.0   | 4.0   | 3.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 65°   | 918.9 | 389.0 | 13.0  | 10.0  | 5.0   | 4.0   | 3.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 67.5° | 988.9 | 384.0 | 11.0  | 8.0   | 5.0   | 3.0   | 2.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 70°   | 974.9 | 347.0 | 9.0   | 7.0   | 4.0   | 3.0   | 2.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 72.5° | 757.9 | 211.0 | 8.0   | 6.0   | 4.0   | 3.0   | 2.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 75°   | 346.0 | 47.0  | 7.0   | 5.0   | 3.0   | 3.0   | 2.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 77.5° | 61.0  | 12.0  | 6.0   | 4.0   | 4.0   | 3.0   | 3.0   | 2.0   | 1.0   | 1.0   | 1.0   |
| 80°   | 16.0  | 8.0   | 6.0   | 4.0   | 4.0   | 5.0   | 4.0   | 3.0   | 1.0   | 1.0   | 1.0   |
| 82.5° | 11.0  | 6.0   | 6.0   | 5.0   | 5.0   | 6.0   | 5.0   | 3.0   | 1.0   | 1.0   | 1.0   |
| 85°   | 8.0   | 5.0   | 6.0   | 6.0   | 4.0   | 5.0   | 5.0   | 3.0   | 1.0   | 1.0   | 1.0   |
| 87.5° | 4.0   | 2.0   | 2.0   | 2.0   | 2.0   | 3.0   | 3.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| 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



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

Report Prepared for

Cooper Lighting Solutions

STREETWORKS

Report Number: SP1-2005-791-1-R5

Test Date: 05/26/2020

Luminaire Tested: Light Squares Family Amber Color

Data in this report applies to families of products including Light Squares Family Amber Color

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2005-791-1-R5  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 02/07/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: STREETWORKS  
 Catalog Number: **Light Squares Family Amber Color**  
 Description: Light Squares Family Amber Color

**Spectral Parameters**

CCT (K): 1525  
 CIE u': 0.3546  
 CIE v': 0.5459  
 Duv: 0.0116  
 CIE x: 0.5918  
 CIE y: 0.4049  
 CIE z: 0.0033  
 Peak Wavelength (nm): 597  
 Dominant Wavelength (nm): 593  
 Purity: 99.6  
 Rf: 8.4  
 Rg: 12.9

|           |        |      |        |
|-----------|--------|------|--------|
| CRI (Ra): | -20.7  |      |        |
| R1:       | -32.5  | R9:  | -382.8 |
| R2:       | 55.0   | R10: | 34.9   |
| R3:       | 15.4   | R11: | -92.4  |
| R4:       | -67.7  | R12: | 2.7    |
| R5:       | -38.7  | R13: | -12.7  |
| R6:       | 47.4   | R14: | 45.0   |
| R7:       | -9.2   |      |        |
| R8:       | -135.0 |      |        |

**Test Conditions**  
 Stabilization Time: 65M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.6/42%  
 Sphere Temperature (°C): 25.2



REPORT NUMBER: SP1-2005-791-1-R5

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 1/17/2020        | 7/17/2020            |
| Power Meter                    | XITRON 2801 IN0071    | 12/3/2019        | 12/3/2020            |
| AC Power Source                | CHROMA 61603 IN0063   | 12/3/2019        | 12/3/2020            |
| DC Power Source                | AGILENT E3634A IN0208 | 12/3/2019        | 12/3/2020            |
| Sphere Thermometer             | ONSET IN0085          | 12/3/2019        | 12/3/2020            |
| Room Thermometer               | ONSET IN0046          | 12/3/2019        | 12/3/2020            |

REPORT NUMBER: SP1-2005-791-1-R5

CIE 1931 Chromaticity Diagram



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



Point lies outside the range

REPORT NUMBER: SP1-2005-791-1-R5

**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    | 818           | NR            | 490    | 224           | NR            | 620    | 13485         | NR            | 750    | 666           | NR            | 880    | 467           | NR            |
| 365    | 765           | NR            | 495    | 377           | NR            | 625    | 6667          | NR            | 755    | 63            | NR            | 885    | 232           | NR            |
| 370    | 529           | NR            | 500    | 342           | NR            | 630    | 3617          | NR            | 760    | 170           | NR            | 890    | 396           | NR            |
| 375    | 859           | NR            | 505    | 327           | NR            | 635    | 2624          | NR            | 765    | 772           | NR            | 895    | 250           | NR            |
| 380    | 838           | NR            | 510    | 403           | NR            | 640    | 2321          | NR            | 770    | 684           | NR            | 900    | 194           | NR            |
| 385    | 931           | NR            | 515    | 396           | NR            | 645    | 2019          | NR            | 775    | 1108          | NR            | 905    | 303           | NR            |
| 390    | 814           | NR            | 520    | 478           | NR            | 650    | 1694          | NR            | 780    | 562           | NR            | 910    | 335           | NR            |
| 395    | 695           | NR            | 525    | 468           | NR            | 655    | 1437          | NR            | 785    | 582           | NR            | 915    | 255           | NR            |
| 400    | 338           | NR            | 530    | 527           | NR            | 660    | 1541          | NR            | 790    | 675           | NR            | 920    | 182           | NR            |
| 405    | 555           | NR            | 535    | 574           | NR            | 665    | 1318          | NR            | 795    | 578           | NR            | 925    | 228           | NR            |
| 410    | 491           | NR            | 540    | 823           | NR            | 670    | 1092          | NR            | 800    | 147           | NR            | 930    | 239           | NR            |
| 415    | 563           | NR            | 545    | 1340          | NR            | 675    | 936           | NR            | 805    | 559           | NR            | 935    | 148           | NR            |
| 420    | 360           | NR            | 550    | 2313          | NR            | 680    | 727           | NR            | 810    | 727           | NR            | 940    | 308           | NR            |
| 425    | 598           | NR            | 555    | 4294          | NR            | 685    | 833           | NR            | 815    | 444           | NR            | 945    | 313           | NR            |
| 430    | 464           | NR            | 560    | 8017          | NR            | 690    | 1005          | NR            | 820    | 479           | NR            | 950    | 345           | NR            |
| 435    | 440           | NR            | 565    | 14123         | NR            | 695    | 1012          | NR            | 825    | 224           | NR            | 955    | 229           | NR            |
| 440    | 368           | NR            | 570    | 25560         | NR            | 700    | 962           | NR            | 830    | 333           | NR            | 960    | 363           | NR            |
| 445    | 428           | NR            | 575    | 45938         | NR            | 705    | 994           | NR            | 835    | 379           | NR            | 965    | 412           | NR            |
| 450    | 279           | NR            | 580    | 84007         | NR            | 710    | 1014          | NR            | 840    | 285           | NR            | 970    | 272           | NR            |
| 455    | 407           | NR            | 585    | 155807        | NR            | 715    | 1458          | NR            | 845    | 333           | NR            | 975    | 345           | NR            |
| 460    | 365           | NR            | 590    | 275552        | NR            | 720    | 1076          | NR            | 850    | 385           | NR            | 980    | 449           | NR            |
| 465    | 328           | NR            | 595    | 421402        | NR            | 725    | 1113          | NR            | 855    | 558           | NR            | 985    | 501           | NR            |
| 470    | 249           | NR            | 600    | 396839        | NR            | 730    | 1144          | NR            | 860    | 663           | NR            | 990    | 343           | NR            |
| 475    | 277           | NR            | 605    | 193475        | NR            | 735    | 799           | NR            | 865    | 591           | NR            | 995    | 152           | NR            |
| 480    | 229           | NR            | 610    | 75719         | NR            | 740    | 692           | NR            | 870    | 2634          | NR            | 1000   | 132           | NR            |
| 485    | 185           | NR            | 615    | 30466         | NR            | 745    | 414           | NR            | 875    | 2146          | NR            |        |               |               |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 939.9

S/P: 0.23

| 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    | 818           | NR            | 490    | 224           | NR            | 620    | 13485         | NR            | 750    | 666           | NR            | 880    | 467           | NR            |
| 365    | 765           | NR            | 495    | 377           | NR            | 625    | 6667          | NR            | 755    | 63            | NR            | 885    | 232           | NR            |
| 370    | 529           | NR            | 500    | 342           | NR            | 630    | 3617          | NR            | 760    | 170           | NR            | 890    | 396           | NR            |
| 375    | 859           | NR            | 505    | 327           | NR            | 635    | 2624          | NR            | 765    | 772           | NR            | 895    | 250           | NR            |
| 380    | 838           | NR            | 510    | 403           | NR            | 640    | 2321          | NR            | 770    | 684           | NR            | 900    | 194           | NR            |
| 385    | 931           | NR            | 515    | 396           | NR            | 645    | 2019          | NR            | 775    | 1108          | NR            | 905    | 303           | NR            |
| 390    | 814           | NR            | 520    | 478           | NR            | 650    | 1694          | NR            | 780    | 562           | NR            | 910    | 335           | NR            |
| 395    | 695           | NR            | 525    | 468           | NR            | 655    | 1437          | NR            | 785    | 582           | NR            | 915    | 255           | NR            |
| 400    | 338           | NR            | 530    | 527           | NR            | 660    | 1541          | NR            | 790    | 675           | NR            | 920    | 182           | NR            |
| 405    | 555           | NR            | 535    | 574           | NR            | 665    | 1318          | NR            | 795    | 578           | NR            | 925    | 228           | NR            |
| 410    | 491           | NR            | 540    | 823           | NR            | 670    | 1092          | NR            | 800    | 147           | NR            | 930    | 239           | NR            |
| 415    | 563           | NR            | 545    | 1340          | NR            | 675    | 936           | NR            | 805    | 559           | NR            | 935    | 148           | NR            |
| 420    | 360           | NR            | 550    | 2313          | NR            | 680    | 727           | NR            | 810    | 727           | NR            | 940    | 308           | NR            |
| 425    | 598           | NR            | 555    | 4294          | NR            | 685    | 833           | NR            | 815    | 444           | NR            | 945    | 313           | NR            |
| 430    | 464           | NR            | 560    | 8017          | NR            | 690    | 1005          | NR            | 820    | 479           | NR            | 950    | 345           | NR            |
| 435    | 440           | NR            | 565    | 14123         | NR            | 695    | 1012          | NR            | 825    | 224           | NR            | 955    | 229           | NR            |
| 440    | 368           | NR            | 570    | 25560         | NR            | 700    | 962           | NR            | 830    | 333           | NR            | 960    | 363           | NR            |
| 445    | 428           | NR            | 575    | 45938         | NR            | 705    | 994           | NR            | 835    | 379           | NR            | 965    | 412           | NR            |
| 450    | 279           | NR            | 580    | 84007         | NR            | 710    | 1014          | NR            | 840    | 285           | NR            | 970    | 272           | NR            |
| 455    | 407           | NR            | 585    | 155807        | NR            | 715    | 1458          | NR            | 845    | 333           | NR            | 975    | 345           | NR            |
| 460    | 365           | NR            | 590    | 275552        | NR            | 720    | 1076          | NR            | 850    | 385           | NR            | 980    | 449           | NR            |
| 465    | 328           | NR            | 595    | 421402        | NR            | 725    | 1113          | NR            | 855    | 558           | NR            | 985    | 501           | NR            |
| 470    | 249           | NR            | 600    | 396839        | NR            | 730    | 1144          | NR            | 860    | 663           | NR            | 990    | 343           | NR            |
| 475    | 277           | NR            | 605    | 193475        | NR            | 735    | 799           | NR            | 865    | 591           | NR            | 995    | 152           | NR            |
| 480    | 229           | NR            | 610    | 75719         | NR            | 740    | 692           | NR            | 870    | 2634          | NR            | 1000   | 132           | NR            |
| 485    | 185           | NR            | 615    | 30466         | NR            | 745    | 414           | NR            | 875    | 2146          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 115.1 M/P: 0.03**

| 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    | 818           | NR            | 490    | 224           | NR            | 620    | 13485         | NR            | 750    | 666           | NR            | 880    | 467           | NR            |
| 365    | 765           | NR            | 495    | 377           | NR            | 625    | 6667          | NR            | 755    | 63            | NR            | 885    | 232           | NR            |
| 370    | 529           | NR            | 500    | 342           | NR            | 630    | 3617          | NR            | 760    | 170           | NR            | 890    | 396           | NR            |
| 375    | 859           | NR            | 505    | 327           | NR            | 635    | 2624          | NR            | 765    | 772           | NR            | 895    | 250           | NR            |
| 380    | 838           | NR            | 510    | 403           | NR            | 640    | 2321          | NR            | 770    | 684           | NR            | 900    | 194           | NR            |
| 385    | 931           | NR            | 515    | 396           | NR            | 645    | 2019          | NR            | 775    | 1108          | NR            | 905    | 303           | NR            |
| 390    | 814           | NR            | 520    | 478           | NR            | 650    | 1694          | NR            | 780    | 562           | NR            | 910    | 335           | NR            |
| 395    | 695           | NR            | 525    | 468           | NR            | 655    | 1437          | NR            | 785    | 582           | NR            | 915    | 255           | NR            |
| 400    | 338           | NR            | 530    | 527           | NR            | 660    | 1541          | NR            | 790    | 675           | NR            | 920    | 182           | NR            |
| 405    | 555           | NR            | 535    | 574           | NR            | 665    | 1318          | NR            | 795    | 578           | NR            | 925    | 228           | NR            |
| 410    | 491           | NR            | 540    | 823           | NR            | 670    | 1092          | NR            | 800    | 147           | NR            | 930    | 239           | NR            |
| 415    | 563           | NR            | 545    | 1340          | NR            | 675    | 936           | NR            | 805    | 559           | NR            | 935    | 148           | NR            |
| 420    | 360           | NR            | 550    | 2313          | NR            | 680    | 727           | NR            | 810    | 727           | NR            | 940    | 308           | NR            |
| 425    | 598           | NR            | 555    | 4294          | NR            | 685    | 833           | NR            | 815    | 444           | NR            | 945    | 313           | NR            |
| 430    | 464           | NR            | 560    | 8017          | NR            | 690    | 1005          | NR            | 820    | 479           | NR            | 950    | 345           | NR            |
| 435    | 440           | NR            | 565    | 14123         | NR            | 695    | 1012          | NR            | 825    | 224           | NR            | 955    | 229           | NR            |
| 440    | 368           | NR            | 570    | 25560         | NR            | 700    | 962           | NR            | 830    | 333           | NR            | 960    | 363           | NR            |
| 445    | 428           | NR            | 575    | 45938         | NR            | 705    | 994           | NR            | 835    | 379           | NR            | 965    | 412           | NR            |
| 450    | 279           | NR            | 580    | 84007         | NR            | 710    | 1014          | NR            | 840    | 285           | NR            | 970    | 272           | NR            |
| 455    | 407           | NR            | 585    | 155807        | NR            | 715    | 1458          | NR            | 845    | 333           | NR            | 975    | 345           | NR            |
| 460    | 365           | NR            | 590    | 275552        | NR            | 720    | 1076          | NR            | 850    | 385           | NR            | 980    | 449           | NR            |
| 465    | 328           | NR            | 595    | 421402        | NR            | 725    | 1113          | NR            | 855    | 558           | NR            | 985    | 501           | NR            |
| 470    | 249           | NR            | 600    | 396839        | NR            | 730    | 1144          | NR            | 860    | 663           | NR            | 990    | 343           | NR            |
| 475    | 277           | NR            | 605    | 193475        | NR            | 735    | 799           | NR            | 865    | 591           | NR            | 995    | 152           | NR            |
| 480    | 229           | NR            | 610    | 75719         | NR            | 740    | 692           | NR            | 870    | 2634          | NR            | 1000   | 132           | NR            |
| 485    | 185           | NR            | 615    | 30466         | NR            | 745    | 414           | NR            | 875    | 2146          | NR            |        |               |               |

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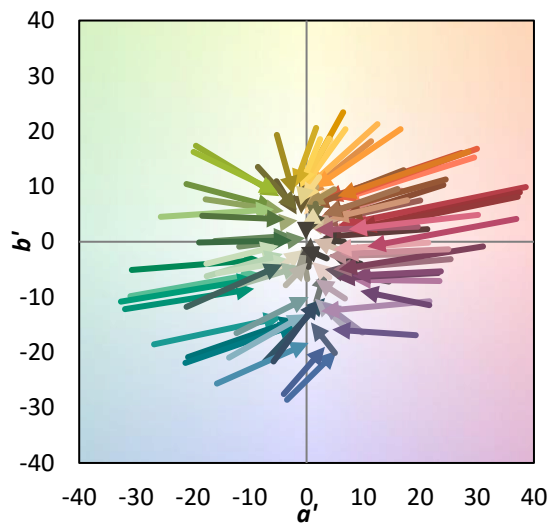
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**Summary**

$R_f = 8.4$   
 $R_g = 12.9$   
 CIE  $R_a = -20.7$   
 $R_9 = -382.8$



**Color Vector Graphics**



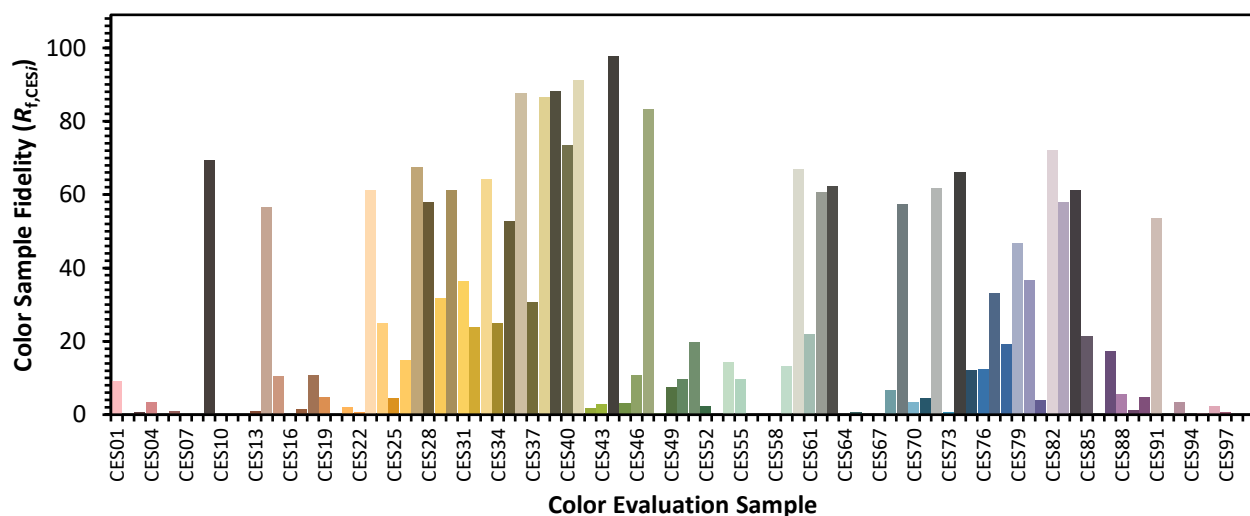


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 90 | CES26 = 15 | CES51 = 20 | CES76 = 12 |
| CES02 = 69 | CES27 = 67 | CES52 = 2  | CES77 = 33 |
| CES03 = 31 | CES28 = 58 | CES53 = 0  | CES78 = 19 |
| CES04 = 77 | CES29 = 32 | CES54 = 14 | CES79 = 47 |
| CES05 = 52 | CES30 = 61 | CES55 = 10 | CES80 = 37 |
| CES06 = 56 | CES31 = 36 | CES56 = 0  | CES81 = 4  |
| CES07 = 41 | CES32 = 24 | CES57 = 0  | CES82 = 72 |
| CES08 = 38 | CES33 = 64 | CES58 = 0  | CES83 = 58 |
| CES09 = 29 | CES34 = 25 | CES59 = 13 | CES84 = 61 |
| CES10 = 87 | CES35 = 53 | CES60 = 67 | CES85 = 21 |
| CES11 = 70 | CES36 = 88 | CES61 = 22 | CES86 = 0  |
| CES12 = 75 | CES37 = 31 | CES62 = 61 | CES87 = 17 |
| CES13 = 47 | CES38 = 86 | CES63 = 62 | CES88 = 5  |
| CES14 = 76 | CES39 = 88 | CES64 = 0  | CES89 = 1  |
| CES15 = 74 | CES40 = 74 | CES65 = 1  | CES90 = 5  |
| CES16 = 49 | CES41 = 91 | CES66 = 0  | CES91 = 54 |
| CES17 = 55 | CES42 = 2  | CES67 = 0  | CES92 = 0  |
| CES18 = 59 | CES43 = 3  | CES68 = 7  | CES93 = 3  |
| CES19 = 80 | CES44 = 98 | CES69 = 57 | CES94 = 0  |
| CES20 = 71 | CES45 = 3  | CES70 = 3  | CES95 = 0  |
| CES21 = 94 | CES46 = 11 | CES71 = 5  | CES96 = 2  |
| CES22 = 86 | CES47 = 83 | CES72 = 62 | CES97 = 1  |
| CES23 = 93 | CES48 = 0  | CES73 = 1  | CES98 = 0  |
| CES24 = 95 | CES49 = 7  | CES74 = 66 | CES99 = 0  |
| CES25 = 78 | CES50 = 10 | CES75 = 12 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)