

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



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P629014

Luminaire Tested: GWS-SA1A-827-U-SL2-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P629014
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-27)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA1A-827-U-SL2-W
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS
Light Source: (16) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2054.3 lumens
Efficiency: N/A
Efficacy: 104.3 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): 19.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT

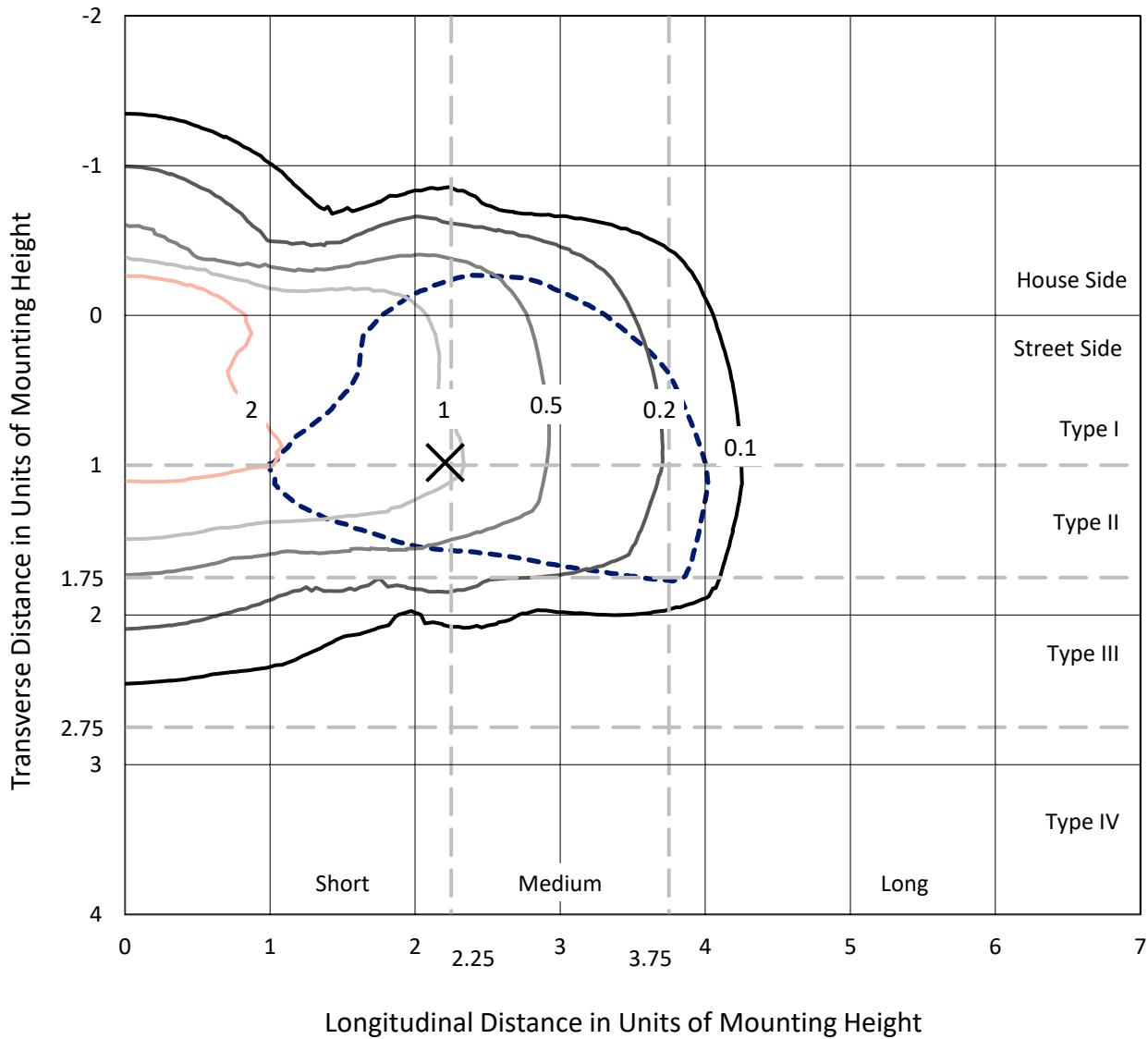


REPORT NUMBER: P629014

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Iso-Footcandle Lines of Horizontal Illumination

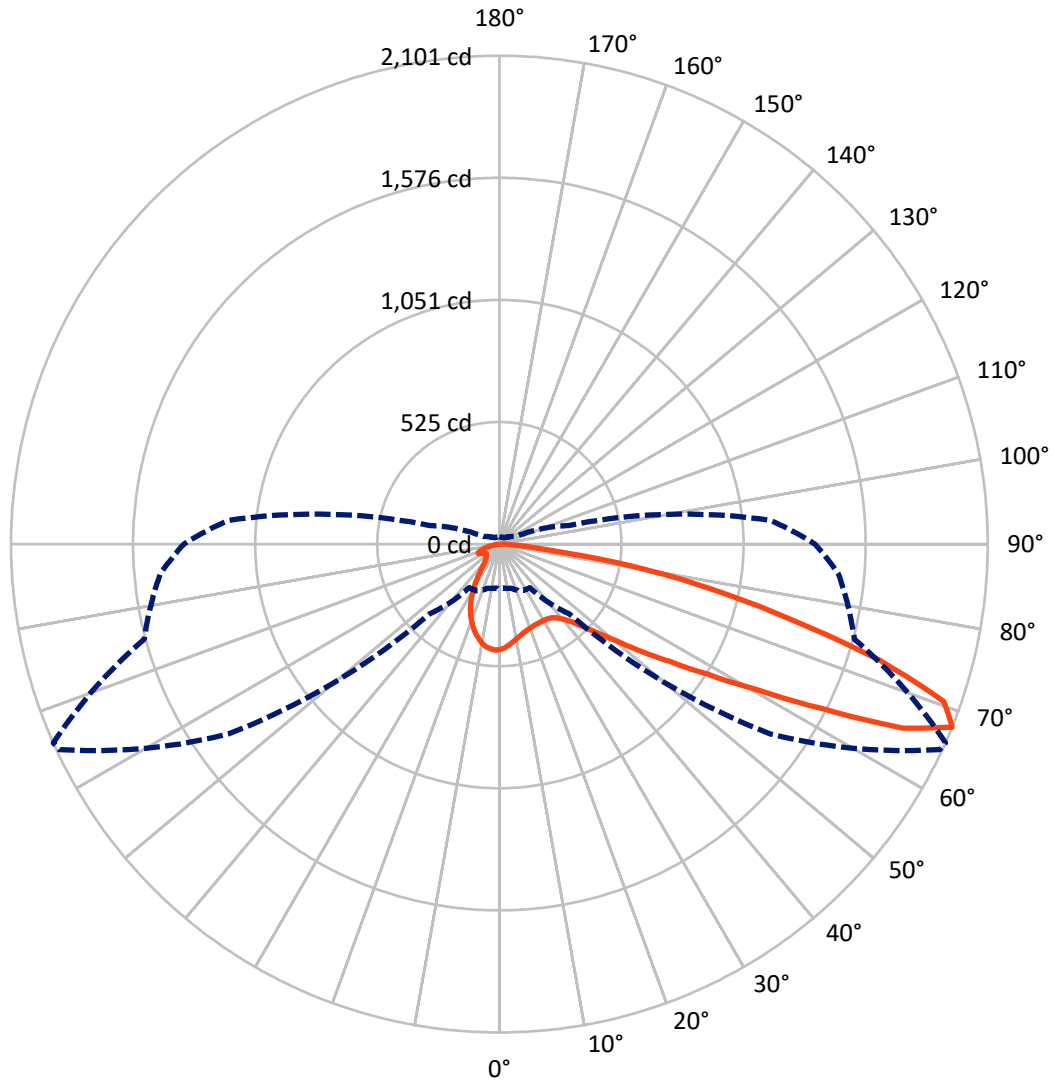
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 4.5 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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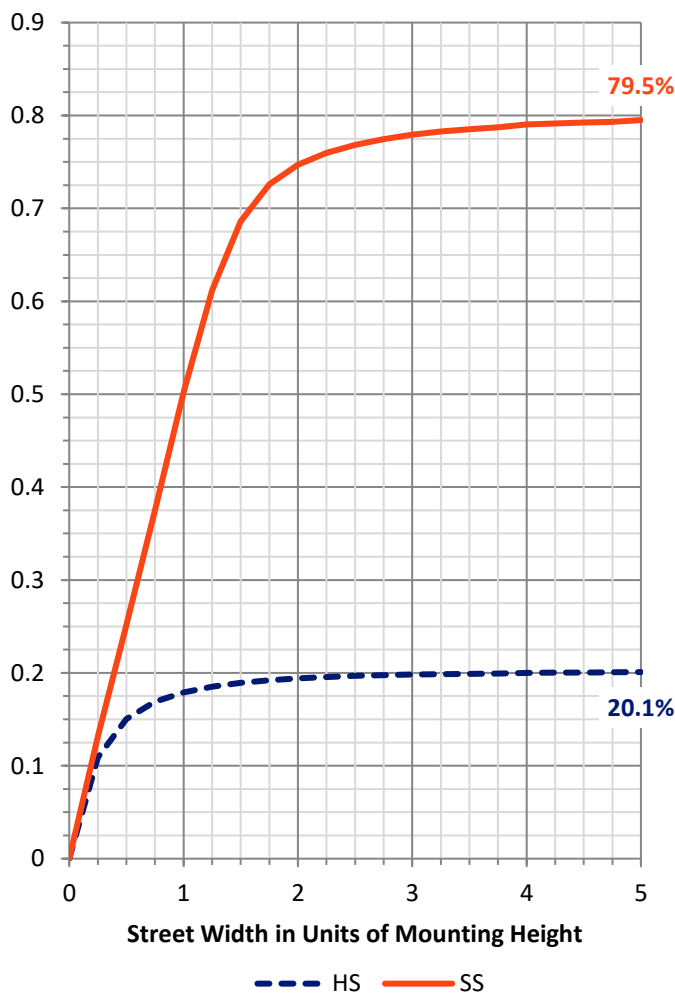
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 416.9 | 0.0 | 416.9 |
| | % Fixture | 20.3 | 0.0 | 20.3 |
| Street Side | Lumens | 1637.4 | 0.0 | 1637.4 |
| | % Fixture | 79.7 | 0.0 | 79.7 |
| Total | Lumens | 2054.3 | 0.0 | 2054.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 39.8 | 1.9 |
| 10°-20° | 97.9 | 4.8 |
| 20°-30° | 134.6 | 6.6 |
| 30°-40° | 184.0 | 9.0 |
| 40°-50° | 278.8 | 13.6 |
| 50°-60° | 433.4 | 21.1 |
| 60°-70° | 527.7 | 25.7 |
| 70°-80° | 321.4 | 15.6 |
| 80°-90° | 36.7 | 1.8 |
| 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° | 2054.3 | 100.0 |
| 0°-180° | 2054.3 | 100.0 |

Coefficient of Utilization



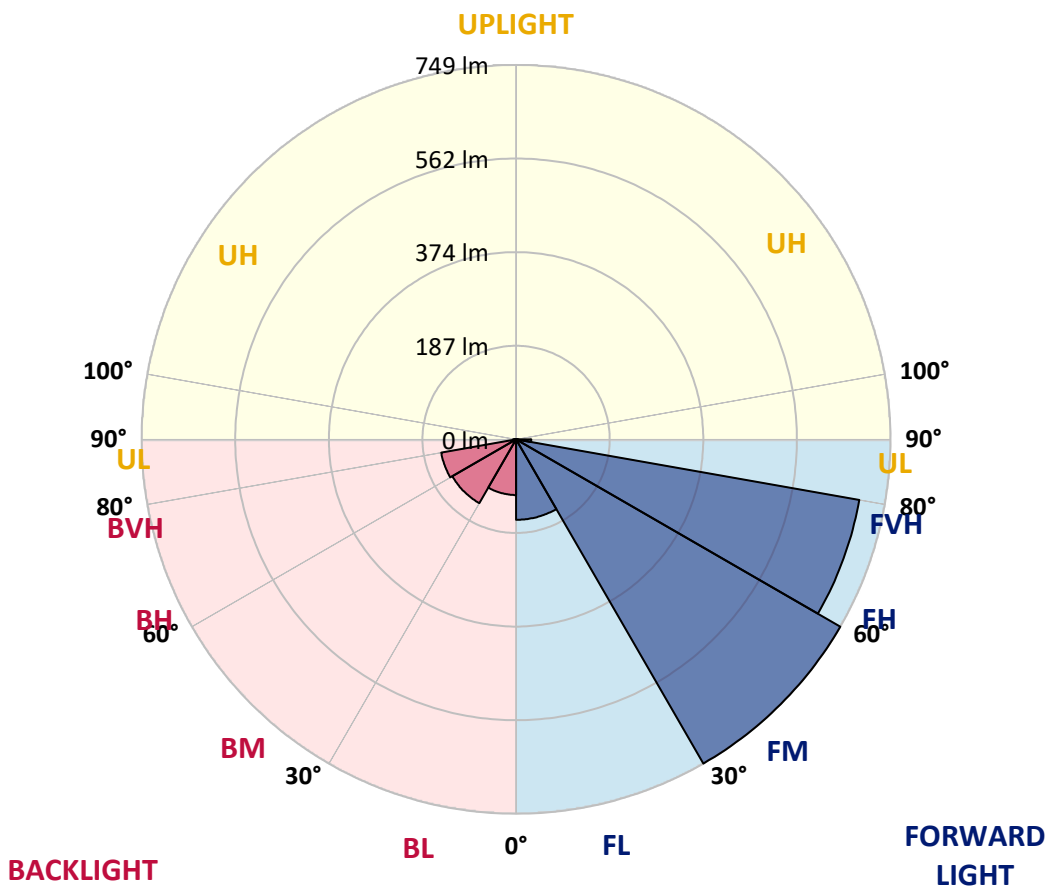
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 161.0 | 7.8 | | | |
| FM (30°-60°) | 748.9 | 36.5 | | | |
| FH (60°-80°) | 697.1 | 33.9 | | | G1/1800 |
| FVH (80°-90°) | 30.5 | 1.5 | | | G1/100 |
| BL (0°-30°) | 111.4 | 5.4 | B1/500 | | |
| BM (30°-60°) | 147.3 | 7.2 | B0/220 | | |
| BH (60°-80°) | 152.0 | 7.4 | B1/500 | | G1/500 |
| BVH (80°-90°) | 6.2 | 0.3 | | | 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





REPORT NUMBER: P629014
 CATALOG NUMBER: GWS-SA1A-827-U-SL2-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| 0° | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 |
| 2.5° | 425.2 | 426.7 | 425.8 | 431.5 | 431.8 | 439.0 | 443.0 | 446.4 | 446.7 | 451.2 | 454.2 |
| 5° | 396.1 | 397.0 | 397.0 | 402.4 | 406.0 | 415.6 | 424.9 | 434.8 | 435.5 | 446.3 | 454.5 |
| 7.5° | 372.6 | 373.5 | 372.9 | 380.1 | 384.7 | 395.3 | 407.2 | 422.3 | 423.8 | 441.2 | 455.6 |
| 10° | 354.1 | 353.8 | 355.3 | 361.9 | 367.9 | 380.7 | 393.8 | 411.1 | 413.3 | 435.4 | 456.8 |
| 12.5° | 341.5 | 341.8 | 342.7 | 349.6 | 356.1 | 368.7 | 382.3 | 401.0 | 403.4 | 428.6 | 456.2 |
| 15° | 335.5 | 334.9 | 335.7 | 342.0 | 348.1 | 359.2 | 373.3 | 392.6 | 395.0 | 422.6 | 456.3 |
| 17.5° | 334.2 | 333.8 | 333.6 | 338.1 | 342.7 | 353.1 | 366.6 | 386.2 | 388.8 | 418.7 | 457.2 |
| 20° | 338.4 | 337.8 | 336.1 | 338.1 | 340.0 | 348.7 | 361.8 | 381.6 | 384.4 | 416.2 | 459.0 |
| 22.5° | 349.9 | 348.9 | 346.3 | 343.9 | 341.4 | 346.6 | 358.8 | 378.1 | 381.0 | 414.5 | 460.8 |
| 25° | 367.5 | 366.6 | 363.9 | 358.5 | 349.2 | 348.3 | 358.2 | 376.6 | 379.5 | 413.3 | 461.6 |
| 27.5° | 391.6 | 390.2 | 387.6 | 379.8 | 364.6 | 354.4 | 360.4 | 376.5 | 379.2 | 412.0 | 460.8 |
| 30° | 420.2 | 419.3 | 417.8 | 408.4 | 388.2 | 367.5 | 365.5 | 377.7 | 379.8 | 411.2 | 459.3 |
| 32.5° | 449.3 | 448.4 | 449.6 | 445.1 | 420.2 | 389.1 | 376.6 | 381.0 | 382.5 | 411.1 | 458.0 |
| 35° | 474.9 | 476.0 | 484.7 | 485.4 | 461.0 | 418.3 | 394.1 | 388.6 | 388.9 | 414.1 | 458.6 |
| 37.5° | 501.7 | 505.8 | 517.2 | 526.9 | 506.5 | 456.9 | 420.2 | 403.0 | 402.7 | 421.7 | 462.3 |
| 40° | 537.3 | 539.1 | 553.6 | 571.9 | 559.1 | 510.0 | 457.2 | 426.5 | 424.4 | 437.3 | 472.4 |
| 42.5° | 571.9 | 576.2 | 599.5 | 620.4 | 616.2 | 569.8 | 503.8 | 461.7 | 458.0 | 464.9 | 493.1 |
| 45° | 615.9 | 620.1 | 646.2 | 673.2 | 680.8 | 637.4 | 563.5 | 511.8 | 508.0 | 506.4 | 531.0 |
| 47.5° | 660.0 | 664.4 | 687.7 | 726.7 | 753.5 | 721.9 | 641.1 | 577.9 | 571.7 | 565.3 | 588.2 |
| 50° | 689.7 | 694.8 | 717.1 | 763.9 | 826.8 | 827.4 | 733.1 | 664.5 | 656.7 | 646.5 | 668.8 |
| 52.5° | 688.6 | 691.9 | 713.2 | 767.2 | 879.6 | 948.6 | 856.3 | 774.8 | 768.5 | 746.3 | 765.8 |
| 55° | 634.5 | 639.5 | 660.9 | 728.3 | 885.3 | 1063.6 | 1037.4 | 904.9 | 893.6 | 853.9 | 875.4 |
| 57.5° | 525.9 | 530.1 | 551.7 | 634.8 | 834.7 | 1122.5 | 1267.3 | 1070.6 | 1055.2 | 971.1 | 995.9 |
| 60° | 397.0 | 391.9 | 402.1 | 474.9 | 714.0 | 1124.0 | 1470.2 | 1295.4 | 1269.7 | 1096.4 | 1117.1 |
| 62.5° | 297.9 | 292.8 | 295.1 | 315.6 | 484.1 | 1033.2 | 1585.9 | 1603.0 | 1560.4 | 1237.9 | 1233.8 |
| 65° | 235.4 | 232.6 | 239.0 | 253.1 | 282.2 | 786.8 | 1586.8 | 1935.5 | 1908.7 | 1401.8 | 1353.6 |
| 67.5° | 191.8 | 190.0 | 196.6 | 222.7 | 228.8 | 422.8 | 1422.8 | 2090.8 | 2101.3 | 1581.4 | 1464.6 |
| 70° | 154.5 | 151.8 | 162.2 | 196.5 | 212.8 | 255.8 | 1019.2 | 2011.6 | 2028.6 | 1688.4 | 1433.3 |
| 72.5° | 106.7 | 106.9 | 112.1 | 159.2 | 205.5 | 220.9 | 576.5 | 1675.0 | 1711.8 | 1591.4 | 1260.1 |
| 75° | 71.9 | 72.5 | 74.0 | 105.1 | 189.3 | 214.3 | 307.2 | 1268.2 | 1294.1 | 1315.4 | 1041.6 |
| 77.5° | 43.5 | 43.8 | 47.2 | 63.5 | 130.5 | 200.1 | 208.2 | 919.3 | 939.7 | 867.1 | 645.6 |
| 80° | 25.2 | 26.2 | 29.4 | 42.6 | 88.1 | 150.3 | 161.1 | 563.6 | 586.7 | 385.5 | 205.2 |
| 82.5° | 11.1 | 11.8 | 16.0 | 24.7 | 51.4 | 127.8 | 125.7 | 222.7 | 219.4 | 107.5 | 71.2 |
| 85° | 1.9 | 2.4 | 3.4 | 7.8 | 18.9 | 67.4 | 97.6 | 98.3 | 92.5 | 40.8 | 29.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 14.7 | 26.4 | 26.2 | 11.5 | 10.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P629014
 CATALOG NUMBER: GWS-SA1A-827-U-SL2-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 | 453.9 |
| 2.5° | 456.2 | 452.1 | 455.7 | 456.2 | 455.4 | 454.8 | 450.3 | 446.4 | 446.0 | 441.8 | 441.8 |
| 5° | 457.8 | 454.1 | 455.9 | 452.4 | 447.0 | 441.5 | 431.9 | 425.3 | 422.3 | 416.9 | 416.9 |
| 7.5° | 460.1 | 456.2 | 454.1 | 445.5 | 433.0 | 420.8 | 405.4 | 392.5 | 387.3 | 379.6 | 379.3 |
| 10° | 462.2 | 457.2 | 450.0 | 433.4 | 413.3 | 394.0 | 371.5 | 353.2 | 340.8 | 331.7 | 331.7 |
| 12.5° | 462.0 | 455.6 | 441.4 | 416.8 | 389.1 | 361.0 | 331.1 | 303.5 | 287.0 | 272.8 | 271.9 |
| 15° | 461.7 | 452.9 | 430.3 | 397.4 | 360.7 | 321.9 | 281.1 | 245.2 | 220.8 | 206.8 | 205.6 |
| 17.5° | 461.4 | 449.4 | 417.8 | 375.4 | 326.3 | 273.4 | 219.6 | 180.6 | 160.2 | 151.7 | 152.0 |
| 20° | 461.4 | 445.5 | 404.5 | 350.1 | 286.5 | 215.2 | 161.1 | 132.8 | 127.7 | 128.1 | 128.6 |
| 22.5° | 460.1 | 440.8 | 389.6 | 322.5 | 242.3 | 158.3 | 118.8 | 109.3 | 111.9 | 116.1 | 116.7 |
| 25° | 456.9 | 432.8 | 372.4 | 291.9 | 189.7 | 115.2 | 97.0 | 95.2 | 100.1 | 105.4 | 106.9 |
| 27.5° | 452.0 | 423.7 | 353.1 | 256.1 | 139.7 | 92.6 | 85.3 | 85.1 | 89.0 | 92.9 | 94.3 |
| 30° | 446.7 | 413.5 | 332.7 | 216.3 | 101.2 | 80.6 | 77.8 | 77.8 | 79.7 | 82.1 | 81.8 |
| 32.5° | 440.6 | 403.1 | 310.8 | 174.7 | 82.4 | 73.9 | 73.0 | 72.5 | 72.8 | 73.7 | 73.7 |
| 35° | 435.4 | 394.0 | 288.3 | 130.8 | 73.9 | 70.1 | 69.2 | 68.2 | 67.7 | 67.1 | 67.4 |
| 37.5° | 433.4 | 386.8 | 265.1 | 98.6 | 69.7 | 67.4 | 65.9 | 64.4 | 63.4 | 63.1 | 62.9 |
| 40° | 436.6 | 383.8 | 241.9 | 81.2 | 66.7 | 64.6 | 62.9 | 61.0 | 60.1 | 60.1 | 60.1 |
| 42.5° | 448.8 | 386.1 | 218.2 | 73.4 | 64.6 | 62.2 | 59.8 | 58.0 | 57.7 | 58.0 | 58.1 |
| 45° | 471.3 | 394.7 | 193.6 | 69.5 | 62.8 | 59.8 | 56.9 | 55.6 | 55.6 | 55.9 | 55.9 |
| 47.5° | 511.5 | 417.5 | 169.3 | 67.1 | 61.0 | 57.8 | 54.9 | 53.5 | 53.4 | 53.7 | 53.7 |
| 50° | 581.0 | 458.6 | 147.5 | 65.5 | 59.6 | 56.3 | 53.4 | 51.6 | 51.1 | 51.0 | 51.0 |
| 52.5° | 668.7 | 529.8 | 133.5 | 64.3 | 58.0 | 54.7 | 51.7 | 49.3 | 48.4 | 48.0 | 48.0 |
| 55° | 774.7 | 624.6 | 133.5 | 63.4 | 55.9 | 52.8 | 49.3 | 46.9 | 45.6 | 45.0 | 45.0 |
| 57.5° | 894.7 | 735.1 | 156.6 | 62.6 | 54.3 | 50.5 | 46.8 | 44.4 | 42.9 | 42.0 | 42.0 |
| 60° | 1016.8 | 851.8 | 213.7 | 61.6 | 52.8 | 47.7 | 43.9 | 41.7 | 39.7 | 38.7 | 38.5 |
| 62.5° | 1143.5 | 980.4 | 288.9 | 62.2 | 51.7 | 45.0 | 40.9 | 38.4 | 36.7 | 35.7 | 35.5 |
| 65° | 1259.5 | 1102.9 | 354.7 | 66.8 | 51.9 | 42.6 | 37.5 | 35.2 | 33.9 | 32.5 | 32.4 |
| 67.5° | 1357.9 | 1170.4 | 308.6 | 76.3 | 55.0 | 39.7 | 34.0 | 31.8 | 30.6 | 29.7 | 29.5 |
| 70° | 1289.0 | 1067.3 | 175.0 | 82.1 | 59.3 | 36.7 | 30.1 | 28.6 | 27.4 | 26.8 | 26.7 |
| 72.5° | 1102.3 | 903.7 | 117.0 | 72.5 | 54.1 | 32.8 | 26.5 | 25.3 | 24.4 | 23.7 | 23.5 |
| 75° | 892.9 | 716.7 | 89.5 | 59.5 | 42.1 | 26.7 | 22.8 | 21.9 | 21.0 | 20.2 | 20.1 |
| 77.5° | 528.3 | 414.1 | 65.9 | 47.1 | 29.7 | 20.8 | 18.9 | 18.1 | 17.2 | 16.6 | 16.5 |
| 80° | 168.6 | 143.9 | 41.8 | 32.4 | 19.6 | 16.0 | 14.5 | 13.9 | 13.0 | 12.3 | 12.1 |
| 82.5° | 64.3 | 55.6 | 22.2 | 16.5 | 13.0 | 10.9 | 9.7 | 9.1 | 8.5 | 7.8 | 7.6 |
| 85° | 28.5 | 26.7 | 12.3 | 8.8 | 7.0 | 5.4 | 4.8 | 4.5 | 3.7 | 3.1 | 3.0 |
| 87.5° | 10.0 | 10.0 | 5.2 | 2.5 | 1.5 | 0.7 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Invue
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 2764
 CIE u': 0.2591
 CIE v': 0.5290
 Duv: 0.0020
 CIE x: 0.4581
 CIE y: 0.4156
 CIE z: 0.1263
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 583
 Purity: 62.2537
 Rf: 84.7
 Rg: 94.6

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.9 | | |
| R1: | 78.8 | R9: | -1.5 |
| R2: | 89.9 | R10: | 77.9 |
| R3: | 96.2 | R11: | 78.9 |
| R4: | 79.1 | R12: | 71.6 |
| R5: | 79.1 | R13: | 81.2 |
| R6: | 88.8 | R14: | 98.5 |
| R7: | 81.3 | R15: | 69.9 |
| R8: | 54.3 | | |



Test Conditions

Stabilization Time: 81M
 Operation Time: 2H 21M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-157-9

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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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 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: 4337.9

| 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 | 0 | 0.0 | 490 | 18018 | 2.6 | 620 | 87426 | 22.8 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 3.9 | 625 | 83013 | 18.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 5.8 | 630 | 78077 | 14.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 8.5 | 635 | 72080 | 10.7 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 11.5 | 640 | 66249 | 7.9 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 15.2 | 645 | 59973 | 5.7 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 18.7 | 650 | 53972 | 3.9 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 21.9 | 655 | 48369 | 2.7 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 24.9 | 660 | 42641 | 1.8 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 27.6 | 665 | 37602 | 1.1 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 30.0 | 670 | 32798 | 0.7 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.0 | 545 | 48553 | 32.5 | 675 | 28558 | 0.5 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.0 | 550 | 51408 | 34.9 | 680 | 24782 | 0.3 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.0 | 555 | 54711 | 37.4 | 685 | 21386 | 0.2 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 0.0 | 560 | 58847 | 40.0 | 690 | 18413 | 0.1 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 0.1 | 565 | 63386 | 42.4 | 695 | 15721 | 0.1 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 0.2 | 570 | 68196 | 44.3 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 0.6 | 575 | 73613 | 46.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 0.9 | 580 | 79207 | 47.1 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 0.9 | 585 | 84248 | 47.0 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 0.9 | 590 | 88397 | 45.7 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 1.0 | 595 | 91428 | 43.4 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 0.9 | 600 | 93452 | 40.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 1.0 | 605 | 93959 | 36.4 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 1.3 | 610 | 93079 | 32.0 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 1.8 | 615 | 90707 | 27.3 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: 5286.7

S/P: 1.22

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 75.9 | 620 | 87426 | 0.4 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 93.2 | 625 | 83013 | 0.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 107.8 | 630 | 78077 | 0.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 118.7 | 635 | 72080 | 0.1 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 122.2 | 640 | 66249 | 0.1 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 120.8 | 645 | 59973 | 0.0 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 113.9 | 650 | 53972 | 0.0 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 104.1 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 92.4 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 80.5 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.1 | 540 | 46032 | 68.2 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.3 | 545 | 48553 | 57.1 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 1.1 | 550 | 51408 | 46.7 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 2.5 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 5.9 | 560 | 58847 | 29.4 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 12.5 | 565 | 63386 | 22.5 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 26.3 | 570 | 68196 | 16.9 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 55.2 | 575 | 73613 | 12.4 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 85.4 | 580 | 79207 | 9.0 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 75.1 | 585 | 84248 | 6.3 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 63.2 | 590 | 88397 | 4.4 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 63.2 | 595 | 91428 | 3.0 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 54.2 | 600 | 93452 | 2.0 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 48.8 | 605 | 93959 | 1.3 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 54.2 | 610 | 93079 | 0.9 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 63.3 | 615 | 90707 | 0.5 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: 9797

M/P: 2.26

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 27.7 | 620 | 87426 | 1.1 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 36.0 | 625 | 83013 | 0.7 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 44.2 | 630 | 78077 | 0.4 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 51.8 | 635 | 72080 | 0.3 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 57.0 | 640 | 66249 | 0.2 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 60.5 | 645 | 59973 | 0.1 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 61.4 | 650 | 53972 | 0.1 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 60.6 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 58.2 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 55.0 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 50.9 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.1 | 545 | 48553 | 46.6 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.3 | 550 | 51408 | 42.0 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.8 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 1.9 | 560 | 58847 | 32.9 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 4.1 | 565 | 63386 | 28.4 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 8.7 | 570 | 68196 | 24.1 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 18.5 | 575 | 73613 | 20.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 28.3 | 580 | 79207 | 16.3 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 24.7 | 585 | 84248 | 12.9 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 20.4 | 590 | 88397 | 9.8 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 20.1 | 595 | 91428 | 7.3 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 17.2 | 600 | 93452 | 5.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 15.7 | 605 | 93959 | 3.7 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 18.0 | 610 | 93079 | 2.5 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 21.9 | 615 | 90707 | 1.7 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

Summary

$R_f = 84.7$
 $R_g = 94.6$
 $CIE R_a = 80.9$
 $R_g = -1.5$



Color Vector Graphics

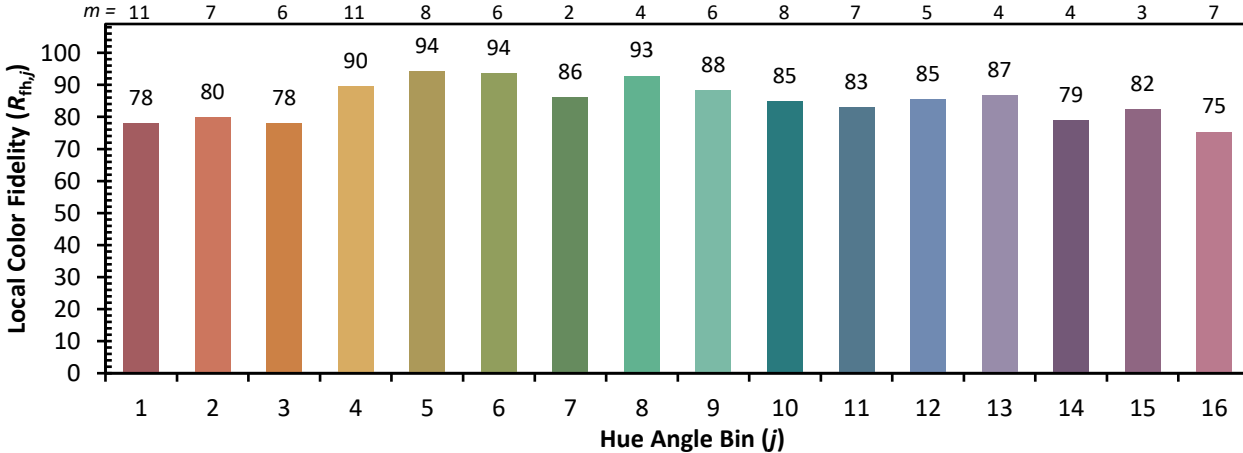


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 94 | CES55 = 90 | CES80 = 89 |
| CES06 = 52 | CES31 = 89 | CES56 = 86 | CES81 = 69 |
| CES07 = 43 | CES32 = 82 | CES57 = 85 | CES82 = 96 |
| CES08 = 41 | CES33 = 91 | CES58 = 86 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 92 |
| CES10 = 77 | CES35 = 96 | CES60 = 94 | CES85 = 76 |
| CES11 = 60 | CES36 = 90 | CES61 = 89 | CES86 = 65 |
| CES12 = 66 | CES37 = 96 | CES62 = 94 | CES87 = 84 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 82 | CES89 = 73 |
| CES15 = 72 | CES40 = 95 | CES65 = 78 | CES90 = 88 |
| CES16 = 48 | CES41 = 96 | CES66 = 81 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 80 | CES92 = 64 |
| CES18 = 57 | CES43 = 91 | CES68 = 83 | CES93 = 78 |
| CES19 = 73 | CES44 = 99 | CES69 = 88 | CES94 = 59 |
| CES20 = 67 | CES45 = 93 | CES70 = 80 | CES95 = 74 |
| CES21 = 87 | CES46 = 89 | CES71 = 79 | CES96 = 83 |
| CES22 = 79 | CES47 = 92 | CES72 = 92 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 75 | CES98 = 83 |
| CES24 = 91 | CES49 = 90 | CES74 = 91 | CES99 = 74 |
| CES25 = 72 | CES50 = 94 | CES75 = 81 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)