

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: P629043

Luminaire Tested: GWS-SA1A-827-U-T3R-W-GRSWH

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P629043
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-17)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA1A-827-U-T3R-W-GRSWH
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH
Light Source: (16) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1832.8 lumens
Efficiency: N/A
Efficacy: 93.0 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G0

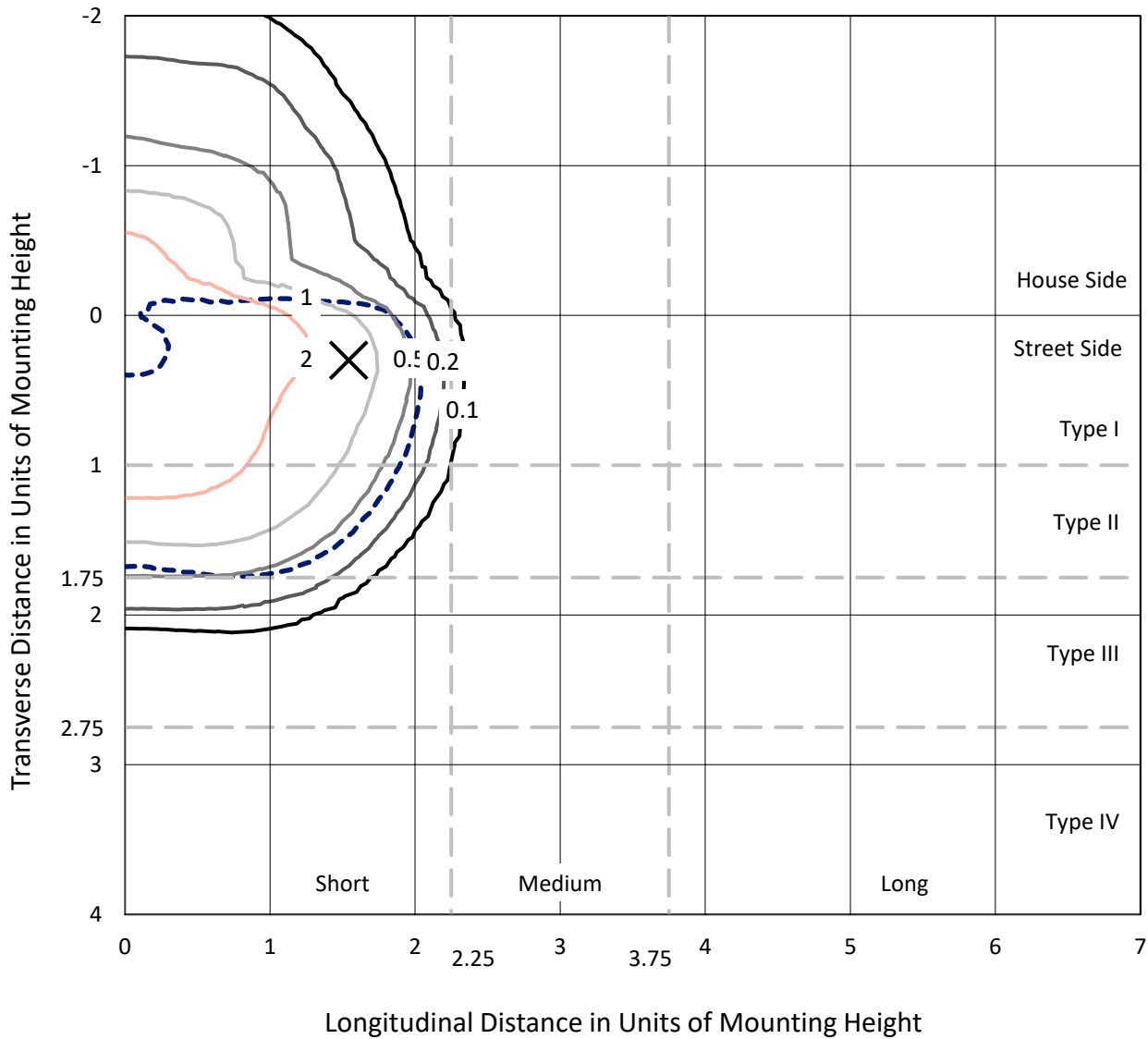
Input Watts (W): 19.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

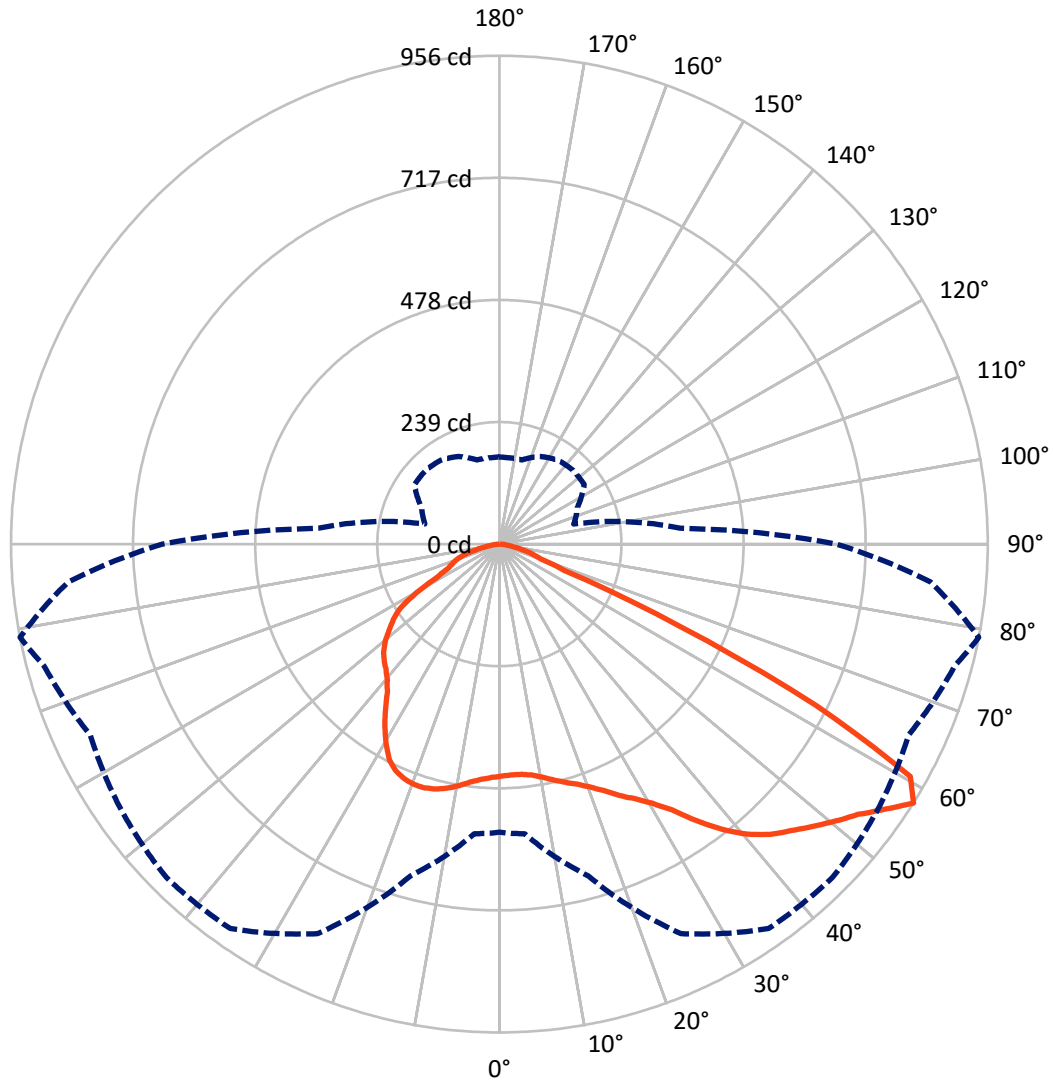
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 4.6 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 79-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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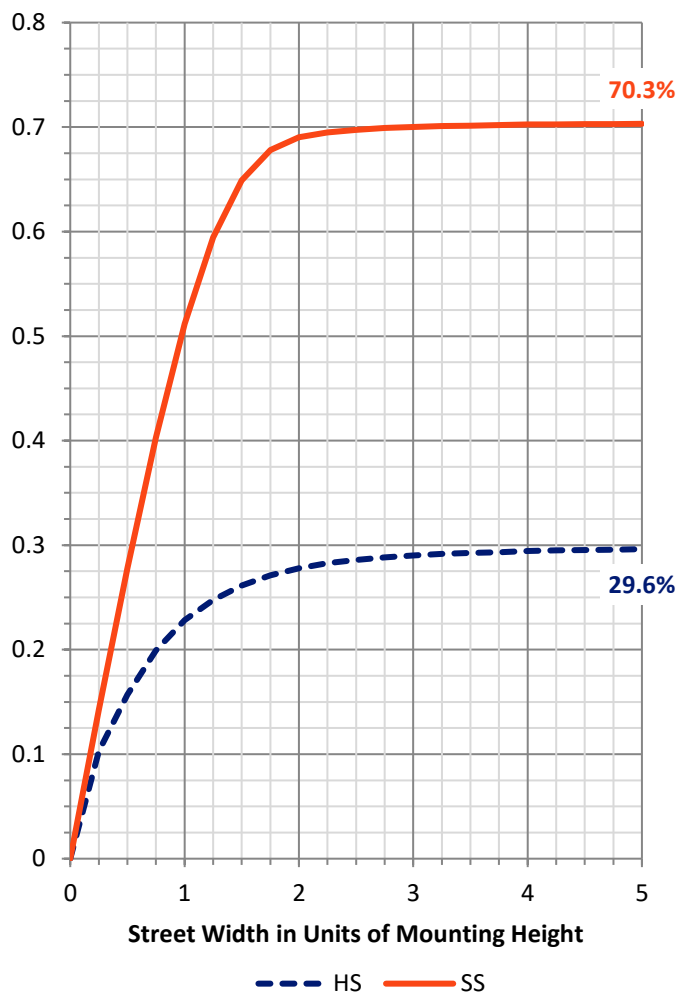
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 544.8 | 0.0 | 544.8 |
| | % Fixture | 29.7 | 0.0 | 29.7 |
| Street Side | Lumens | 1288.0 | 0.0 | 1288.0 |
| | % Fixture | 70.3 | 0.0 | 70.3 |
| Total | Lumens | 1832.8 | 0.0 | 1832.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 42.1 | 2.3 |
| 10°-20° | 116.9 | 6.4 |
| 20°-30° | 198.1 | 10.8 |
| 30°-40° | 303.3 | 16.5 |
| 40°-50° | 404.4 | 22.1 |
| 50°-60° | 467.1 | 25.5 |
| 60°-70° | 242.7 | 13.2 |
| 70°-80° | 51.6 | 2.8 |
| 80°-90° | 6.7 | 0.4 |
| 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° | 1832.8 | 100.0 |
| 0°-180° | 1832.8 | 100.0 |

Coefficient of Utilization



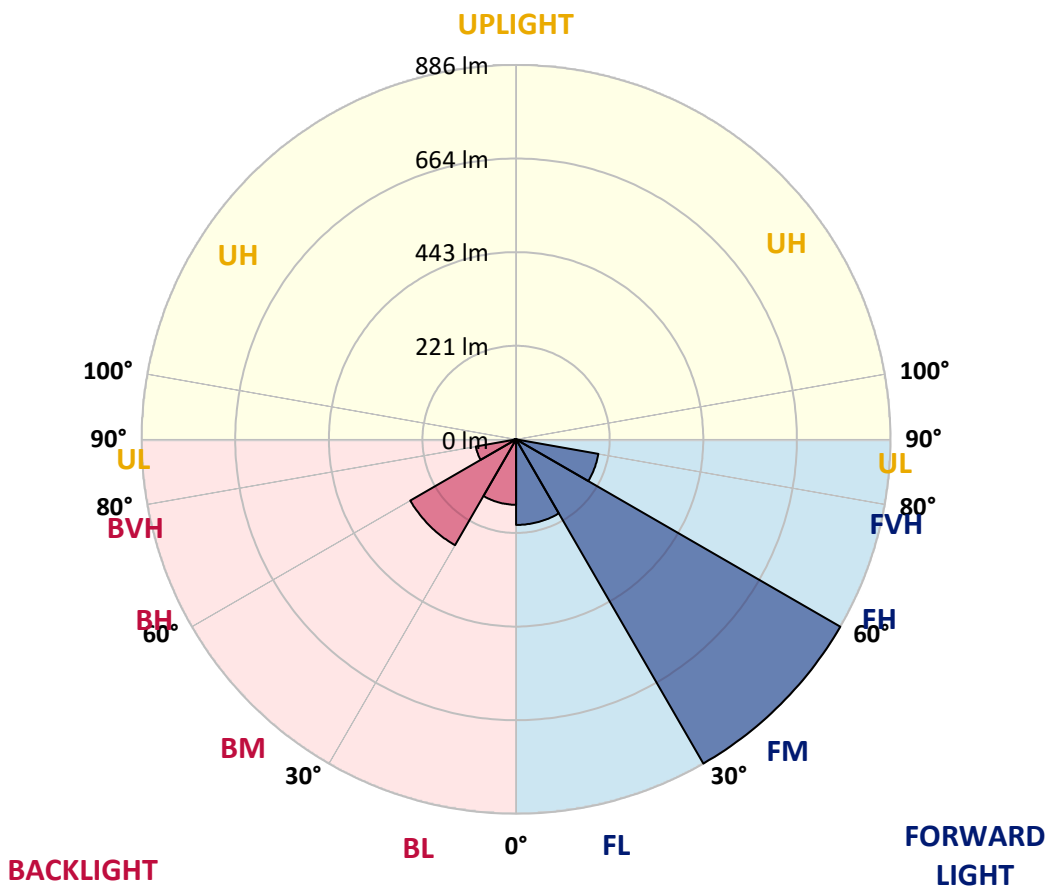
REPORT NUMBER: P629043

CATALOG NUMBER: GWS-SA1A-827-U-T3R-W-GRSWH

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 202.4 | 11.0 | | | |
| FM (30°-60°) | 885.7 | 48.3 | | | |
| FH (60°-80°) | 197.6 | 10.8 | | | G0/660 |
| FVH (80°-90°) | 2.3 | 0.1 | | | G0/10 |
| BL (0°-30°) | 154.7 | 8.4 | B1/500 | | |
| BM (30°-60°) | 289.1 | 15.8 | B1/1000 | | |
| BH (60°-80°) | 96.7 | 5.3 | B0/110 | | G0/110 |
| BVH (80°-90°) | 4.3 | 0.2 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G0
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 79° | 85° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 |
| 2.5° | 433.5 | 432.6 | 432.9 | 434.1 | 438.6 | 441.9 | 445.4 | 448.5 | 451.5 | 452.4 | 453.2 |
| 5° | 418.1 | 416.4 | 416.9 | 418.8 | 424.1 | 429.6 | 435.8 | 443.3 | 450.5 | 452.9 | 456.0 |
| 7.5° | 407.2 | 406.9 | 407.6 | 410.6 | 416.1 | 421.4 | 429.3 | 440.0 | 452.4 | 456.5 | 462.0 |
| 10° | 392.6 | 392.0 | 395.0 | 401.2 | 410.3 | 418.7 | 428.1 | 440.7 | 458.1 | 464.1 | 472.6 |
| 12.5° | 381.1 | 380.8 | 383.9 | 392.5 | 404.2 | 417.5 | 430.5 | 444.6 | 465.7 | 474.0 | 484.5 |
| 15° | 387.8 | 386.5 | 386.6 | 392.6 | 403.1 | 418.8 | 436.5 | 451.7 | 473.4 | 483.9 | 497.4 |
| 17.5° | 407.5 | 405.1 | 403.3 | 404.3 | 410.3 | 426.6 | 445.7 | 461.1 | 482.2 | 494.5 | 511.0 |
| 20° | 434.6 | 433.2 | 428.3 | 425.0 | 426.3 | 440.7 | 460.1 | 474.4 | 493.8 | 507.6 | 525.2 |
| 22.5° | 471.0 | 467.7 | 461.0 | 455.7 | 451.7 | 462.9 | 480.7 | 493.2 | 509.8 | 524.2 | 542.6 |
| 25° | 516.1 | 511.3 | 500.7 | 492.4 | 483.7 | 495.3 | 511.2 | 520.6 | 531.8 | 545.2 | 562.7 |
| 27.5° | 562.1 | 558.1 | 546.2 | 535.1 | 524.3 | 531.5 | 550.4 | 555.8 | 554.6 | 564.4 | 579.3 |
| 30° | 611.1 | 606.0 | 594.8 | 582.8 | 568.8 | 573.5 | 590.4 | 593.1 | 580.4 | 588.5 | 598.7 |
| 32.5° | 662.8 | 657.9 | 648.1 | 634.2 | 618.5 | 620.2 | 624.9 | 627.4 | 615.3 | 619.9 | 627.7 |
| 35° | 715.4 | 710.8 | 700.9 | 687.1 | 675.5 | 664.6 | 652.9 | 663.1 | 656.1 | 665.1 | 664.5 |
| 37.5° | 763.5 | 758.9 | 752.7 | 742.1 | 722.3 | 700.7 | 673.7 | 686.3 | 697.3 | 708.7 | 706.7 |
| 40° | 796.0 | 792.9 | 794.4 | 792.7 | 767.3 | 724.5 | 683.9 | 697.7 | 727.5 | 747.0 | 746.0 |
| 42.5° | 824.1 | 820.9 | 829.6 | 835.9 | 805.9 | 746.6 | 688.9 | 702.1 | 746.9 | 777.3 | 775.8 |
| 45° | 836.5 | 835.6 | 850.0 | 869.9 | 841.3 | 770.0 | 701.6 | 711.1 | 761.6 | 800.5 | 794.8 |
| 47.5° | 821.7 | 824.8 | 853.1 | 886.8 | 870.7 | 797.7 | 727.7 | 730.1 | 780.7 | 825.7 | 809.7 |
| 50° | 792.1 | 799.0 | 837.2 | 887.3 | 892.1 | 829.0 | 763.8 | 757.8 | 806.5 | 852.5 | 817.5 |
| 52.5° | 749.1 | 756.3 | 818.7 | 883.8 | 904.4 | 865.3 | 811.9 | 803.4 | 839.0 | 879.3 | 818.8 |
| 55° | 650.4 | 660.1 | 776.1 | 876.1 | 916.4 | 898.2 | 866.2 | 848.8 | 881.0 | 916.2 | 832.1 |
| 57.5° | 564.2 | 569.3 | 672.4 | 841.4 | 918.8 | 922.5 | 904.8 | 884.1 | 922.7 | 956.1 | 847.1 |
| 60° | 414.0 | 415.2 | 508.0 | 696.2 | 845.2 | 908.4 | 901.7 | 871.0 | 902.9 | 924.2 | 778.5 |
| 62.5° | 233.9 | 234.1 | 308.1 | 464.7 | 631.3 | 740.4 | 744.6 | 717.5 | 690.7 | 697.0 | 541.9 |
| 65° | 87.8 | 96.1 | 140.7 | 228.4 | 364.0 | 437.1 | 454.5 | 460.8 | 416.1 | 388.4 | 290.6 |
| 67.5° | 58.7 | 60.7 | 82.1 | 117.5 | 162.0 | 187.0 | 209.2 | 209.8 | 153.5 | 136.8 | 114.5 |
| 70° | 44.8 | 46.8 | 64.6 | 84.1 | 82.1 | 75.8 | 82.0 | 79.7 | 82.4 | 84.7 | 87.1 |
| 72.5° | 33.4 | 35.4 | 50.1 | 59.3 | 49.3 | 48.6 | 55.0 | 61.1 | 66.8 | 69.2 | 73.0 |
| 75° | 22.2 | 23.7 | 33.7 | 31.8 | 27.3 | 32.2 | 40.2 | 46.3 | 49.6 | 52.4 | 55.3 |
| 77.5° | 14.1 | 15.1 | 18.0 | 14.5 | 15.1 | 18.9 | 23.4 | 28.9 | 32.1 | 34.9 | 36.4 |
| 80° | 6.4 | 6.3 | 6.1 | 6.9 | 8.5 | 11.1 | 14.1 | 17.4 | 19.8 | 21.0 | 21.9 |
| 82.5° | 2.5 | 2.8 | 3.1 | 3.7 | 4.6 | 6.0 | 7.9 | 10.2 | 12.1 | 12.4 | 13.2 |
| 85° | 1.0 | 1.2 | 1.3 | 1.6 | 2.1 | 2.7 | 3.3 | 4.6 | 5.8 | 6.3 | 6.7 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.4 | 0.7 | 1.3 | 1.5 | 1.6 |
| 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: GWS-SA1A-827-U-T3R-W-GRSWH

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 | 454.2 |
| 2.5° | 457.2 | 455.3 | 458.6 | 460.8 | 462.9 | 460.7 | 459.9 | 458.0 | 457.7 | 457.7 | 458.7 |
| 5° | 461.4 | 460.1 | 463.5 | 464.8 | 464.7 | 459.8 | 456.8 | 452.9 | 450.9 | 450.9 | 451.2 |
| 7.5° | 468.9 | 468.1 | 470.1 | 468.0 | 463.2 | 453.2 | 443.3 | 435.0 | 429.5 | 426.6 | 427.5 |
| 10° | 481.3 | 480.4 | 478.8 | 471.0 | 457.2 | 436.4 | 416.1 | 401.2 | 392.2 | 387.1 | 387.4 |
| 12.5° | 493.5 | 492.0 | 486.1 | 468.9 | 440.6 | 407.5 | 380.9 | 364.1 | 354.3 | 348.3 | 346.9 |
| 15° | 506.8 | 502.9 | 490.3 | 458.1 | 413.4 | 372.1 | 344.4 | 326.2 | 315.6 | 312.0 | 311.8 |
| 17.5° | 519.5 | 512.7 | 489.9 | 438.9 | 380.9 | 335.1 | 307.2 | 296.0 | 294.2 | 295.8 | 296.3 |
| 20° | 532.4 | 521.3 | 484.9 | 412.4 | 342.3 | 298.2 | 283.8 | 288.5 | 295.2 | 299.7 | 300.8 |
| 22.5° | 545.8 | 528.5 | 473.7 | 378.2 | 301.5 | 273.3 | 279.3 | 289.5 | 297.9 | 303.9 | 304.5 |
| 25° | 560.8 | 535.3 | 456.9 | 336.4 | 268.8 | 266.4 | 278.3 | 289.1 | 298.1 | 305.0 | 306.2 |
| 27.5° | 569.3 | 535.4 | 433.4 | 293.4 | 253.9 | 263.7 | 275.7 | 285.9 | 294.9 | 302.4 | 303.8 |
| 30° | 577.7 | 531.4 | 396.1 | 258.5 | 249.5 | 260.6 | 271.4 | 280.8 | 289.4 | 296.7 | 298.4 |
| 32.5° | 589.5 | 527.6 | 353.1 | 238.4 | 247.0 | 257.6 | 266.4 | 274.8 | 281.4 | 284.7 | 285.6 |
| 35° | 604.2 | 522.8 | 307.4 | 229.7 | 245.3 | 255.2 | 263.0 | 267.5 | 258.9 | 257.2 | 259.1 |
| 37.5° | 624.7 | 518.3 | 261.8 | 226.0 | 244.3 | 254.3 | 261.2 | 249.7 | 239.2 | 235.0 | 236.5 |
| 40° | 646.9 | 515.8 | 230.9 | 223.0 | 244.7 | 255.2 | 253.7 | 236.6 | 221.5 | 212.6 | 212.3 |
| 42.5° | 665.8 | 511.9 | 211.1 | 221.0 | 245.9 | 258.6 | 243.5 | 225.1 | 202.6 | 197.4 | 197.5 |
| 45° | 678.5 | 502.0 | 200.7 | 218.9 | 247.0 | 259.4 | 238.7 | 209.2 | 193.2 | 189.9 | 189.7 |
| 47.5° | 683.8 | 484.0 | 193.9 | 215.6 | 246.8 | 253.3 | 229.0 | 202.6 | 186.6 | 185.7 | 186.3 |
| 50° | 680.3 | 454.5 | 187.0 | 209.2 | 243.2 | 246.8 | 217.7 | 196.8 | 182.1 | 187.0 | 190.6 |
| 52.5° | 667.6 | 416.3 | 178.8 | 200.4 | 236.8 | 239.5 | 212.0 | 193.2 | 178.8 | 185.4 | 188.2 |
| 55° | 664.3 | 385.3 | 168.3 | 188.8 | 227.2 | 226.4 | 206.1 | 191.4 | 176.5 | 174.0 | 174.4 |
| 57.5° | 660.0 | 355.0 | 150.9 | 168.1 | 202.9 | 204.1 | 200.4 | 189.3 | 170.7 | 169.9 | 170.7 |
| 60° | 573.3 | 272.1 | 134.6 | 145.1 | 166.6 | 173.1 | 193.9 | 185.4 | 161.2 | 158.1 | 157.9 |
| 62.5° | 374.5 | 164.8 | 119.7 | 126.5 | 135.8 | 143.3 | 176.8 | 174.1 | 150.9 | 149.0 | 150.3 |
| 65° | 201.4 | 117.5 | 108.9 | 113.0 | 118.1 | 123.8 | 146.6 | 155.1 | 136.4 | 129.5 | 129.6 |
| 67.5° | 103.0 | 100.0 | 100.9 | 103.7 | 107.6 | 110.4 | 118.2 | 125.7 | 116.3 | 110.4 | 110.3 |
| 70° | 88.1 | 90.5 | 91.9 | 93.5 | 96.1 | 95.6 | 96.4 | 97.7 | 97.0 | 94.1 | 94.0 |
| 72.5° | 75.1 | 78.8 | 79.1 | 79.4 | 80.3 | 78.2 | 76.9 | 74.6 | 74.8 | 75.2 | 75.4 |
| 75° | 57.1 | 60.7 | 61.6 | 61.1 | 62.0 | 59.3 | 57.5 | 55.3 | 52.6 | 52.1 | 52.4 |
| 77.5° | 37.2 | 40.0 | 41.4 | 41.1 | 41.5 | 39.4 | 38.5 | 36.1 | 33.0 | 31.8 | 31.8 |
| 80° | 22.5 | 24.1 | 25.2 | 25.5 | 25.9 | 24.4 | 22.9 | 20.8 | 19.5 | 18.1 | 18.1 |
| 82.5° | 13.6 | 14.7 | 15.4 | 15.4 | 15.9 | 14.2 | 13.0 | 11.5 | 10.9 | 9.7 | 9.7 |
| 85° | 6.9 | 7.6 | 7.9 | 7.8 | 7.5 | 6.1 | 5.7 | 4.9 | 4.6 | 4.0 | 4.0 |
| 87.5° | 1.6 | 2.1 | 2.1 | 1.5 | 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 ($\mu\text{W}/\text{nm}$) | 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 | 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 (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 | 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)