

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: P437232

Luminaire Tested: **ISS-SA1B-827-U-SL3**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437232
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-16)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: ISS-SA1B-827-U-SL3
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 80 CRI, 2700K, 450mA LIGHTSQUARE WITH 16 LEDS AND TYPE III SPILL
LIGHT ELIMINATOR OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2521 lumens
Efficiency: N/A
Efficacy: 99.3 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B1 - U0 - G1

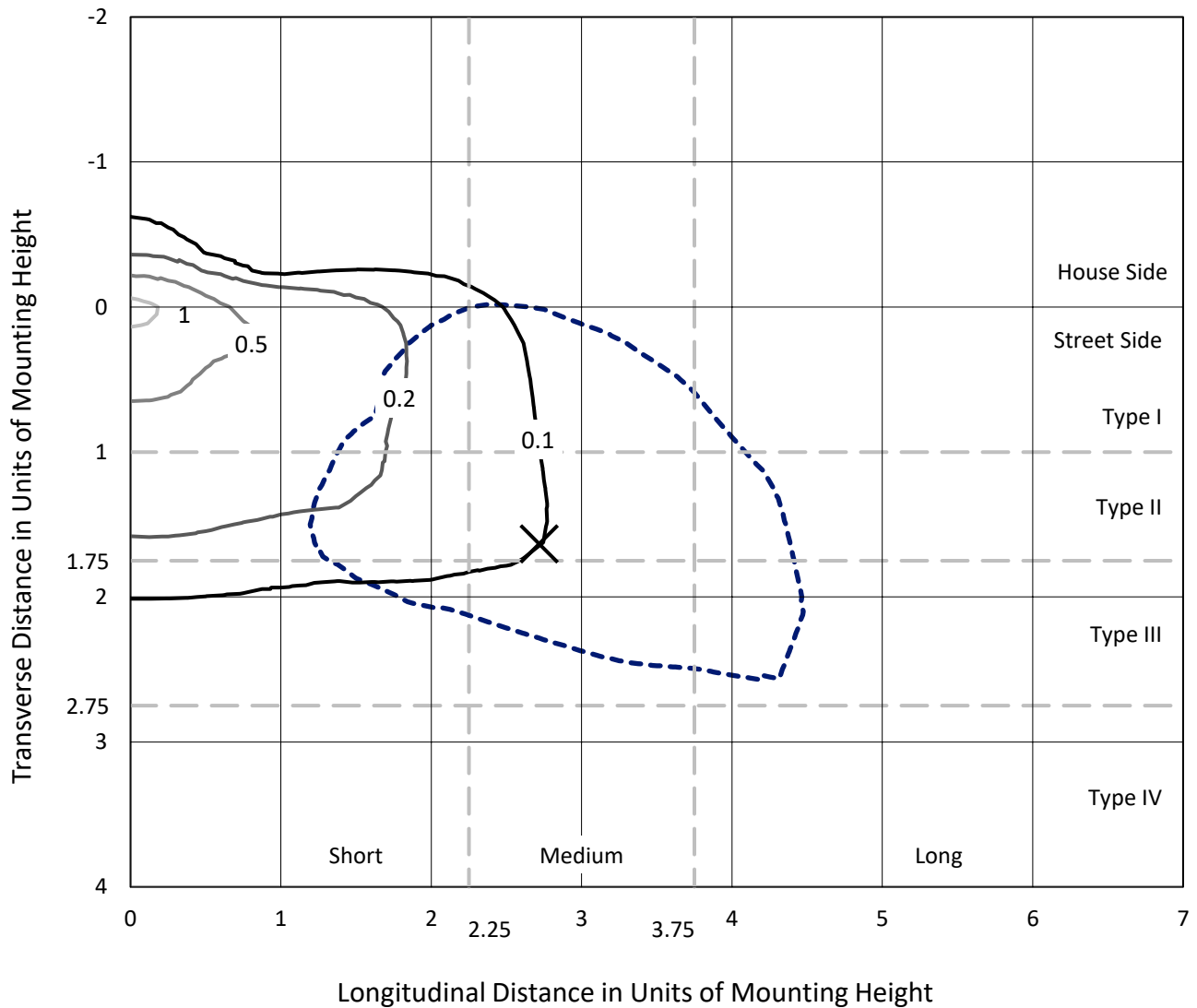
Input Watts (W): 25.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

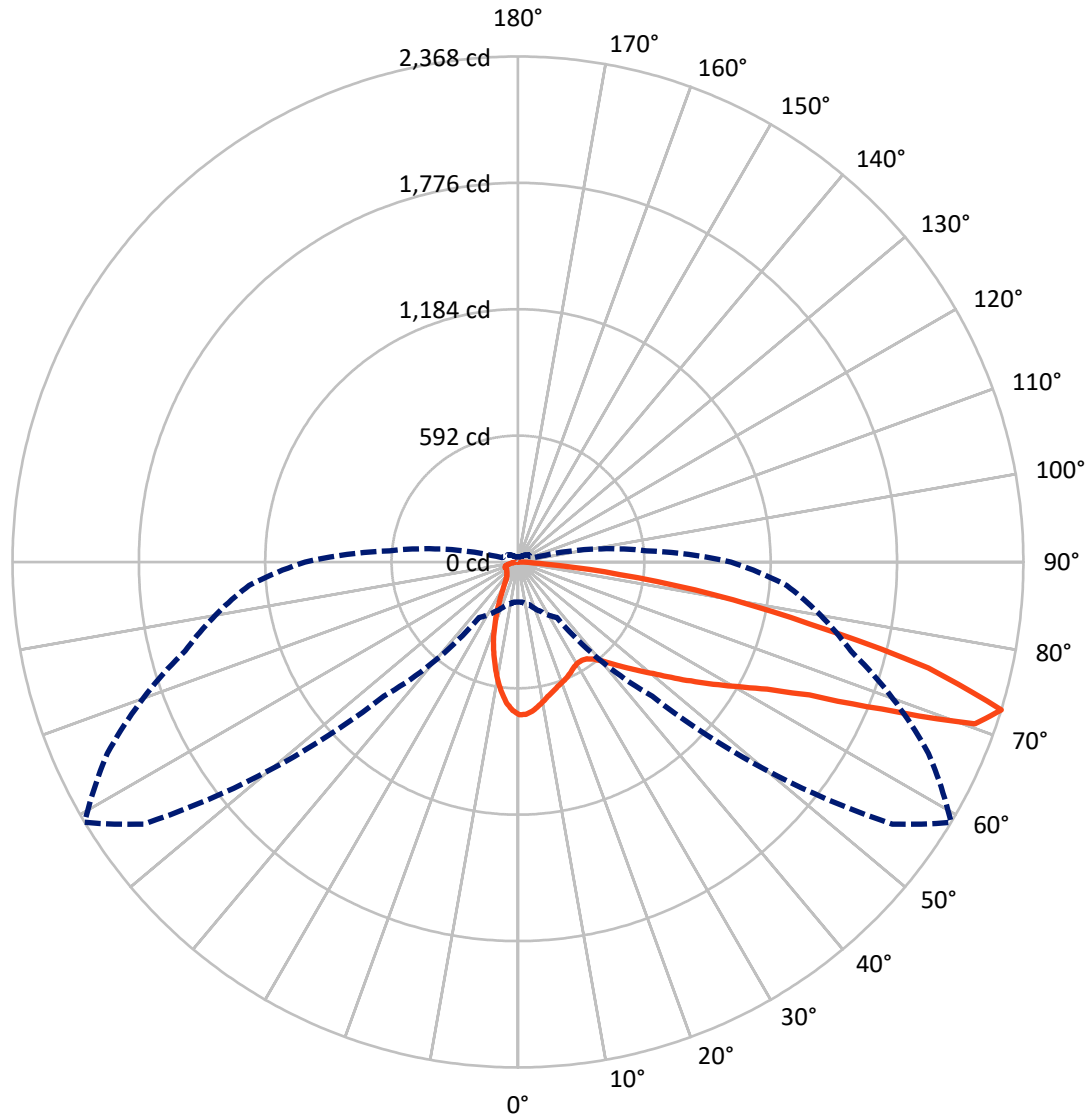
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.1 fc
 Type III - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 59-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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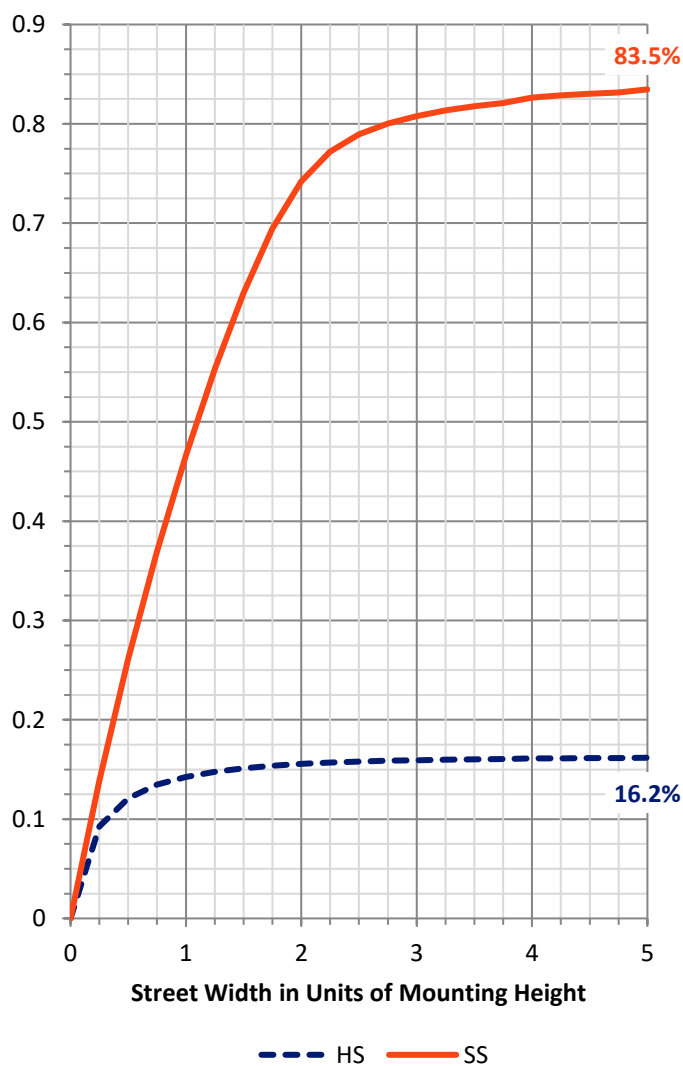
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 411.5 | 0.0 | 411.5 |
| | % Fixture | 16.3 | 0.0 | 16.3 |
| Street Side | Lumens | 2109.5 | 0.0 | 2109.5 |
| | % Fixture | 83.7 | 0.0 | 83.7 |
| Total | Lumens | 2521.0 | 0.0 | 2521.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 61.4 | 2.4 |
| 10°-20° | 138.0 | 5.5 |
| 20°-30° | 177.8 | 7.1 |
| 30°-40° | 227.4 | 9.0 |
| 40°-50° | 315.6 | 12.5 |
| 50°-60° | 465.2 | 18.5 |
| 60°-70° | 626.0 | 24.8 |
| 70°-80° | 455.4 | 18.1 |
| 80°-90° | 54.2 | 2.1 |
| 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° | 2521.0 | 100.0 |
| 0°-180° | 2521.0 | 100.0 |

Coefficient of Utilization



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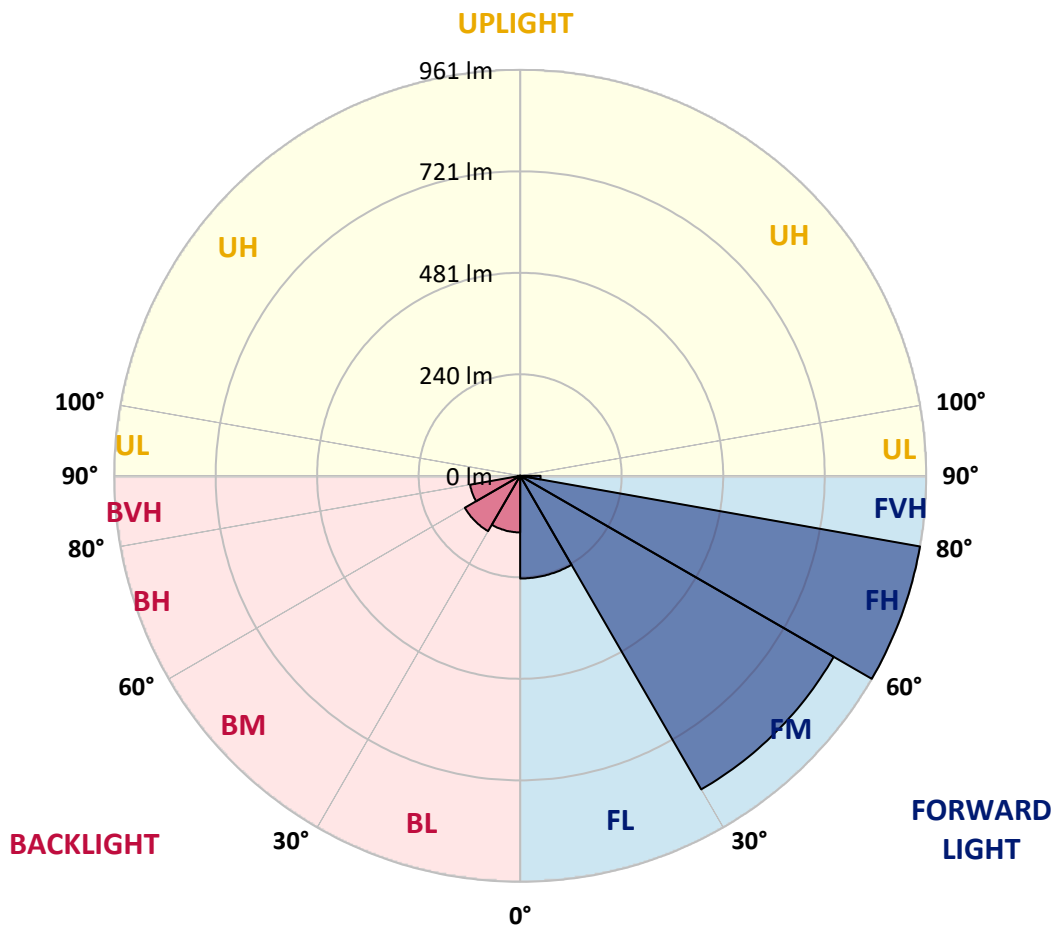
CATALOG NUMBER: ISS-SA1B-827-U-SL3

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 243.1 | 9.6 | | | |
| FM (30°-60°) | 857.0 | 34.0 | | | |
| FH (60°-80°) | 961.0 | 38.1 | | | G1/1800 |
| FVH (80°-90°) | 48.3 | 1.9 | | | G1/100 |
| BL (0°-30°) | 134.0 | 5.3 | B1/500 | | |
| BM (30°-60°) | 151.3 | 6.0 | B0/220 | | |
| BH (60°-80°) | 120.4 | 4.8 | B1/500 | | G1/500 |
| BVH (80°-90°) | 5.8 | 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-G1

Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 59° | 65° | 75° | 85° |
|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 |
| 2.5° | 711.8 | 711.8 | 714.6 | 716.4 | 713.7 | 716.4 | 715.5 | 714.6 | 715.5 | 715.5 | 713.7 |
| 5° | 682.4 | 686.1 | 686.1 | 687.0 | 693.5 | 698.1 | 699.9 | 701.7 | 702.6 | 703.6 | 701.7 |
| 7.5° | 646.6 | 648.5 | 650.3 | 658.6 | 662.2 | 672.3 | 678.8 | 682.4 | 686.1 | 687.9 | 682.4 |
| 10° | 607.1 | 609.9 | 615.4 | 621.8 | 631.0 | 644.8 | 655.8 | 662.2 | 667.7 | 670.5 | 664.1 |
| 12.5° | 574.1 | 575.0 | 580.5 | 590.6 | 601.6 | 620.9 | 634.7 | 642.0 | 649.4 | 654.9 | 647.5 |
| 15° | 543.7 | 544.7 | 549.3 | 561.2 | 574.1 | 595.2 | 615.4 | 626.4 | 636.5 | 645.7 | 635.6 |
| 17.5° | 519.9 | 522.6 | 524.5 | 534.6 | 550.2 | 573.1 | 599.8 | 610.8 | 626.4 | 640.2 | 627.3 |
| 20° | 506.1 | 505.2 | 506.1 | 512.5 | 529.0 | 552.0 | 583.2 | 598.9 | 617.2 | 636.5 | 619.1 |
| 22.5° | 497.8 | 499.7 | 498.7 | 501.5 | 511.6 | 534.6 | 565.8 | 587.8 | 609.0 | 633.8 | 611.7 |
| 25° | 497.8 | 500.6 | 499.7 | 498.7 | 502.4 | 518.0 | 551.1 | 573.1 | 599.8 | 633.8 | 603.4 |
| 27.5° | 507.0 | 507.9 | 506.1 | 503.3 | 503.3 | 508.8 | 538.2 | 558.4 | 595.2 | 632.8 | 598.9 |
| 30° | 515.3 | 517.1 | 517.1 | 515.3 | 512.5 | 509.8 | 529.0 | 550.2 | 590.6 | 638.3 | 595.2 |
| 32.5° | 526.3 | 528.1 | 531.8 | 533.6 | 530.0 | 521.7 | 531.8 | 549.3 | 591.5 | 650.3 | 596.1 |
| 35° | 540.1 | 541.9 | 547.4 | 556.6 | 553.8 | 540.1 | 541.9 | 557.5 | 598.9 | 663.1 | 599.8 |
| 37.5° | 551.1 | 553.8 | 565.8 | 581.4 | 582.3 | 567.6 | 566.7 | 577.7 | 612.6 | 683.4 | 612.6 |
| 40° | 562.1 | 565.8 | 583.2 | 609.0 | 614.5 | 606.2 | 600.7 | 609.0 | 637.4 | 712.7 | 633.8 |
| 42.5° | 576.8 | 580.5 | 603.4 | 635.6 | 649.4 | 645.7 | 642.0 | 654.0 | 675.1 | 752.2 | 666.8 |
| 45° | 592.4 | 599.8 | 629.2 | 665.0 | 689.8 | 692.5 | 696.2 | 703.6 | 720.1 | 807.4 | 713.7 |
| 47.5° | 620.9 | 627.3 | 661.3 | 698.1 | 730.2 | 744.9 | 751.3 | 760.5 | 770.6 | 857.9 | 770.6 |
| 50° | 659.5 | 672.3 | 702.6 | 738.5 | 776.1 | 804.6 | 821.1 | 821.1 | 832.2 | 918.5 | 833.1 |
| 52.5° | 717.3 | 729.3 | 747.7 | 781.6 | 826.6 | 871.6 | 894.6 | 898.3 | 894.6 | 976.4 | 896.4 |
| 55° | 766.0 | 778.0 | 795.4 | 820.2 | 877.2 | 947.0 | 986.5 | 983.7 | 970.8 | 1037.9 | 958.9 |
| 57.5° | 820.2 | 829.4 | 845.0 | 865.2 | 928.6 | 1025.0 | 1082.9 | 1080.1 | 1056.3 | 1100.3 | 1026.9 |
| 60° | 843.2 | 856.0 | 884.5 | 925.8 | 1008.5 | 1125.1 | 1193.1 | 1184.9 | 1131.6 | 1167.4 | 1087.5 |
| 62.5° | 774.3 | 798.2 | 856.0 | 939.6 | 1101.3 | 1292.3 | 1337.3 | 1310.7 | 1238.1 | 1240.9 | 1169.2 |
| 65° | 619.1 | 606.2 | 694.4 | 833.1 | 1108.6 | 1499.0 | 1557.8 | 1499.9 | 1371.3 | 1334.6 | 1262.0 |
| 67.5° | 353.6 | 359.1 | 401.4 | 551.1 | 913.0 | 1583.5 | 1939.8 | 1837.9 | 1579.8 | 1480.6 | 1374.1 |
| 70° | 239.7 | 245.2 | 263.6 | 327.0 | 524.5 | 1415.4 | 2251.2 | 2271.4 | 1902.2 | 1610.1 | 1377.7 |
| 72.5° | 187.4 | 188.3 | 207.6 | 257.2 | 317.8 | 889.1 | 2140.1 | 2367.9 | 2122.6 | 1614.7 | 1263.8 |
| 75° | 143.3 | 144.2 | 161.7 | 219.5 | 285.7 | 430.8 | 1629.4 | 1985.8 | 1991.3 | 1485.2 | 1032.4 |
| 77.5° | 90.9 | 95.5 | 115.7 | 175.4 | 268.2 | 285.7 | 1037.9 | 1398.9 | 1435.6 | 1100.3 | 540.1 |
| 80° | 44.1 | 45.9 | 57.9 | 112.1 | 236.1 | 252.6 | 618.1 | 930.4 | 806.4 | 428.9 | 164.4 |
| 82.5° | 18.4 | 19.3 | 27.6 | 48.7 | 150.6 | 214.0 | 309.5 | 478.5 | 311.4 | 116.6 | 53.3 |
| 85° | 3.7 | 4.6 | 6.4 | 11.9 | 48.7 | 104.7 | 126.8 | 124.0 | 75.3 | 35.8 | 20.2 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.9 | 0.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 | 715.5 |
| 2.5° | 712.7 | 712.7 | 705.4 | 699.9 | 693.5 | 688.9 | 684.3 | 678.8 | 677.8 | 680.6 | 683.4 |
| 5° | 698.1 | 694.4 | 682.4 | 671.4 | 658.6 | 643.9 | 634.7 | 622.7 | 616.3 | 619.1 | 617.2 |
| 7.5° | 678.8 | 673.3 | 651.2 | 632.8 | 607.1 | 584.2 | 568.5 | 551.1 | 539.2 | 534.6 | 531.8 |
| 10° | 658.6 | 647.5 | 618.1 | 585.1 | 551.1 | 517.1 | 488.6 | 461.1 | 447.3 | 446.4 | 431.7 |
| 12.5° | 639.3 | 624.6 | 583.2 | 535.5 | 488.6 | 442.7 | 400.5 | 370.2 | 332.5 | 321.5 | 325.1 |
| 15° | 623.7 | 603.4 | 545.6 | 485.0 | 424.3 | 366.5 | 311.4 | 266.4 | 233.3 | 221.4 | 216.8 |
| 17.5° | 609.0 | 580.5 | 510.7 | 438.1 | 361.9 | 289.3 | 222.3 | 188.3 | 168.1 | 160.7 | 160.7 |
| 20° | 592.4 | 559.4 | 473.0 | 385.8 | 293.0 | 214.9 | 164.4 | 147.9 | 141.4 | 140.5 | 139.6 |
| 22.5° | 579.6 | 538.2 | 434.4 | 330.7 | 228.7 | 163.5 | 135.9 | 128.6 | 128.6 | 129.5 | 129.5 |
| 25° | 564.0 | 514.4 | 393.1 | 271.9 | 176.3 | 131.3 | 120.3 | 117.6 | 120.3 | 123.1 | 123.1 |
| 27.5° | 552.9 | 493.2 | 355.5 | 216.8 | 136.9 | 113.9 | 108.4 | 109.3 | 113.0 | 116.6 | 116.6 |
| 30° | 543.7 | 473.0 | 316.0 | 170.8 | 113.9 | 101.0 | 100.1 | 102.0 | 105.6 | 109.3 | 108.4 |
| 32.5° | 534.6 | 457.4 | 272.8 | 135.0 | 98.3 | 92.8 | 91.8 | 94.6 | 97.4 | 98.3 | 100.1 |
| 35° | 530.9 | 444.5 | 229.6 | 111.1 | 89.1 | 86.3 | 86.3 | 87.3 | 88.2 | 89.1 | 89.1 |
| 37.5° | 533.6 | 434.4 | 191.0 | 94.6 | 83.6 | 82.7 | 81.7 | 80.8 | 80.8 | 80.8 | 81.7 |
| 40° | 544.7 | 430.8 | 158.0 | 85.4 | 79.0 | 79.0 | 77.2 | 74.4 | 73.5 | 74.4 | 73.5 |
| 42.5° | 566.7 | 438.1 | 130.4 | 79.9 | 75.3 | 74.4 | 71.6 | 69.8 | 68.9 | 68.9 | 68.0 |
| 45° | 601.6 | 451.0 | 112.1 | 76.2 | 72.6 | 69.8 | 67.0 | 65.2 | 64.3 | 65.2 | 65.2 |
| 47.5° | 647.5 | 474.9 | 99.2 | 72.6 | 69.8 | 65.2 | 61.5 | 60.6 | 60.6 | 62.5 | 62.5 |
| 50° | 702.6 | 507.0 | 91.8 | 70.7 | 67.0 | 61.5 | 57.9 | 56.9 | 57.9 | 59.7 | 60.6 |
| 52.5° | 761.4 | 547.4 | 90.0 | 69.8 | 64.3 | 57.9 | 55.1 | 54.2 | 55.1 | 56.9 | 57.9 |
| 55° | 820.2 | 591.5 | 94.6 | 69.8 | 61.5 | 55.1 | 53.3 | 50.5 | 51.4 | 53.3 | 54.2 |
| 57.5° | 882.7 | 639.3 | 108.4 | 68.0 | 59.7 | 53.3 | 50.5 | 47.8 | 47.8 | 49.6 | 49.6 |
| 60° | 949.7 | 693.5 | 134.1 | 68.0 | 57.9 | 51.4 | 46.8 | 44.1 | 44.1 | 44.1 | 45.0 |
| 62.5° | 1024.1 | 758.7 | 164.4 | 68.9 | 58.8 | 49.6 | 43.2 | 39.5 | 39.5 | 40.4 | 39.5 |
| 65° | 1134.3 | 856.0 | 172.7 | 69.8 | 60.6 | 47.8 | 40.4 | 36.7 | 35.8 | 35.8 | 35.8 |
| 67.5° | 1202.3 | 867.1 | 134.1 | 68.0 | 63.4 | 47.8 | 37.7 | 33.1 | 32.1 | 31.2 | 31.2 |
| 70° | 1152.7 | 761.4 | 95.5 | 65.2 | 63.4 | 47.8 | 35.8 | 30.3 | 28.5 | 26.6 | 26.6 |
| 72.5° | 997.5 | 604.4 | 78.1 | 61.5 | 58.8 | 45.0 | 33.1 | 27.6 | 24.8 | 23.0 | 23.0 |
| 75° | 799.1 | 428.9 | 66.1 | 56.9 | 49.6 | 35.8 | 27.6 | 23.0 | 21.1 | 20.2 | 20.2 |
| 77.5° | 389.4 | 211.3 | 51.4 | 49.6 | 39.5 | 26.6 | 22.0 | 19.3 | 18.4 | 16.5 | 16.5 |
| 80° | 113.9 | 78.1 | 38.6 | 39.5 | 24.8 | 18.4 | 16.5 | 15.6 | 14.7 | 12.9 | 13.8 |
| 82.5° | 52.4 | 44.1 | 27.6 | 24.8 | 15.6 | 11.0 | 11.0 | 10.1 | 9.2 | 8.3 | 8.3 |
| 85° | 21.1 | 22.0 | 14.7 | 11.9 | 7.3 | 5.5 | 4.6 | 4.6 | 3.7 | 3.7 | 3.7 |
| 87.5° | 1.8 | 2.8 | 2.8 | 1.8 | 1.8 | 0.9 | 0.0 | 0.0 | 0.0 | 0.9 | 0.9 |
| 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



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

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| 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

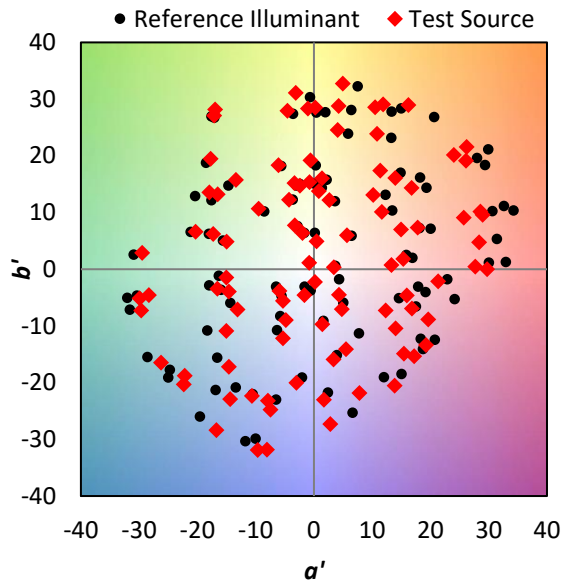
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 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)