

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: P437404

Luminaire Tested: **ISS-SA1C-827-U-SL4-HSS**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437404
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-19)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: ISS-SA1C-827-U-SL4-HSS
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 80 CRI, 2700K, 615mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV SPILL LIGHT
ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2753 lumens
Efficiency: N/A
Efficacy: 80.5 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B0 - U0 - G1

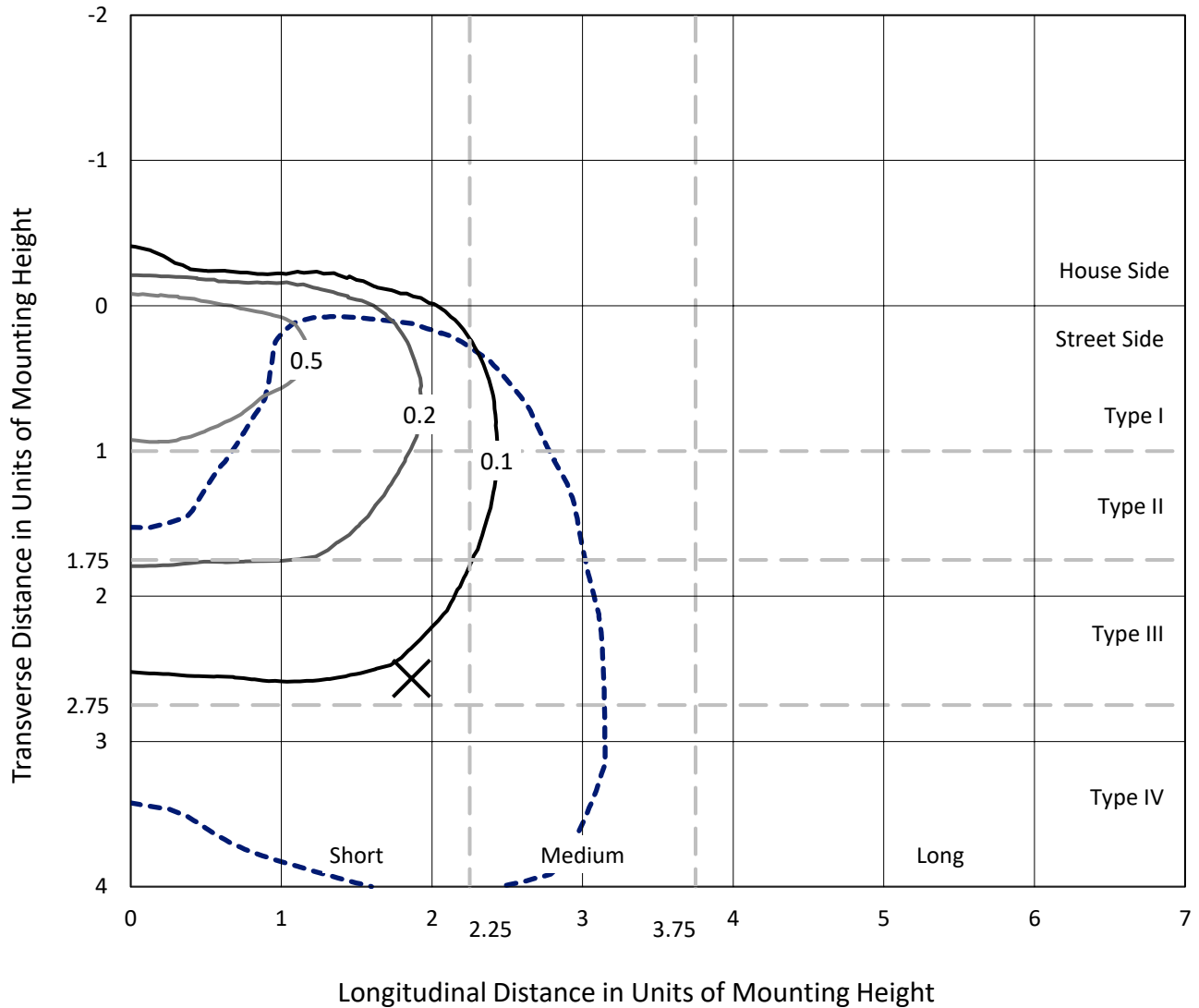
Input Watts (W): 34.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

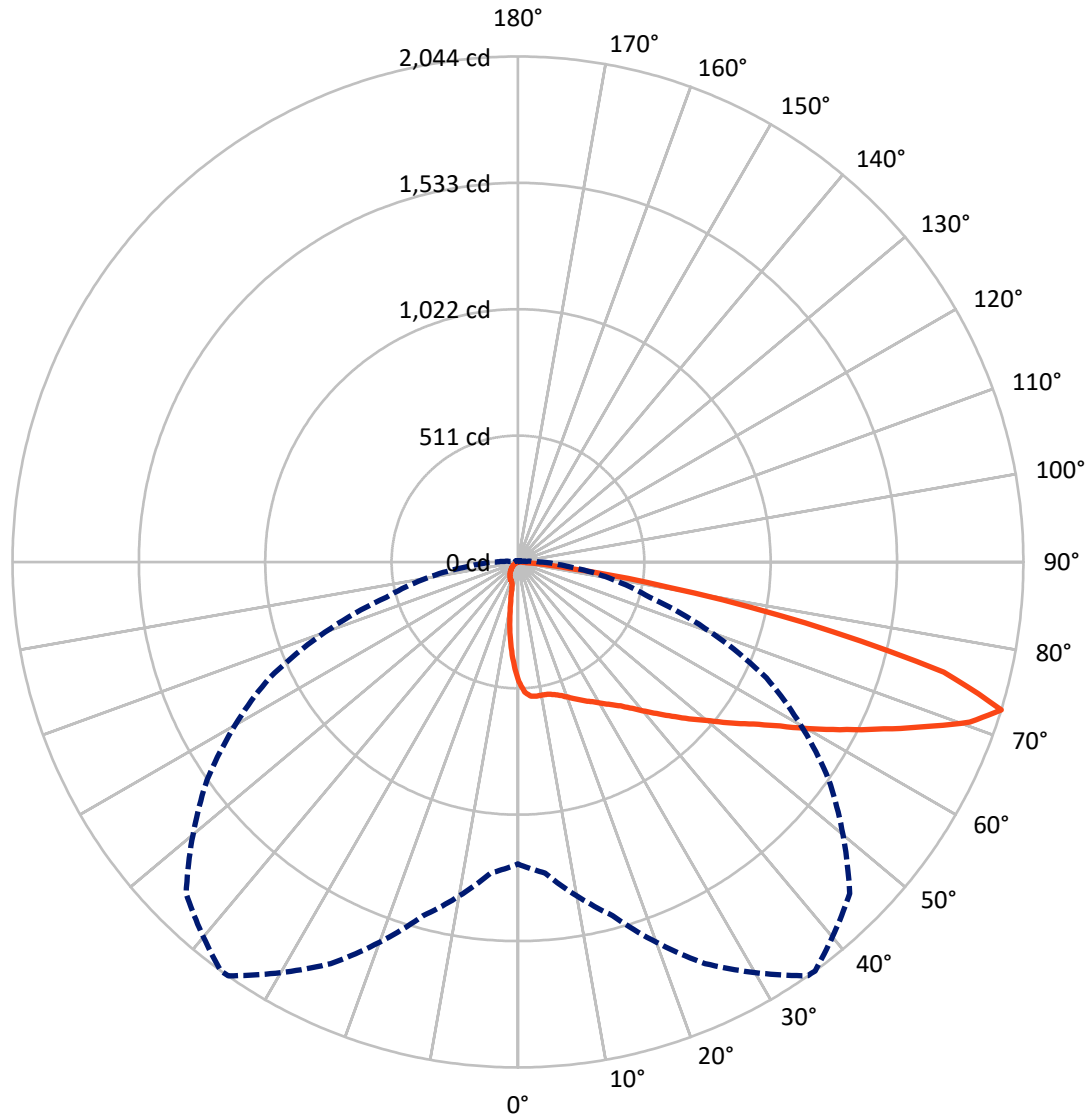
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.9 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 36-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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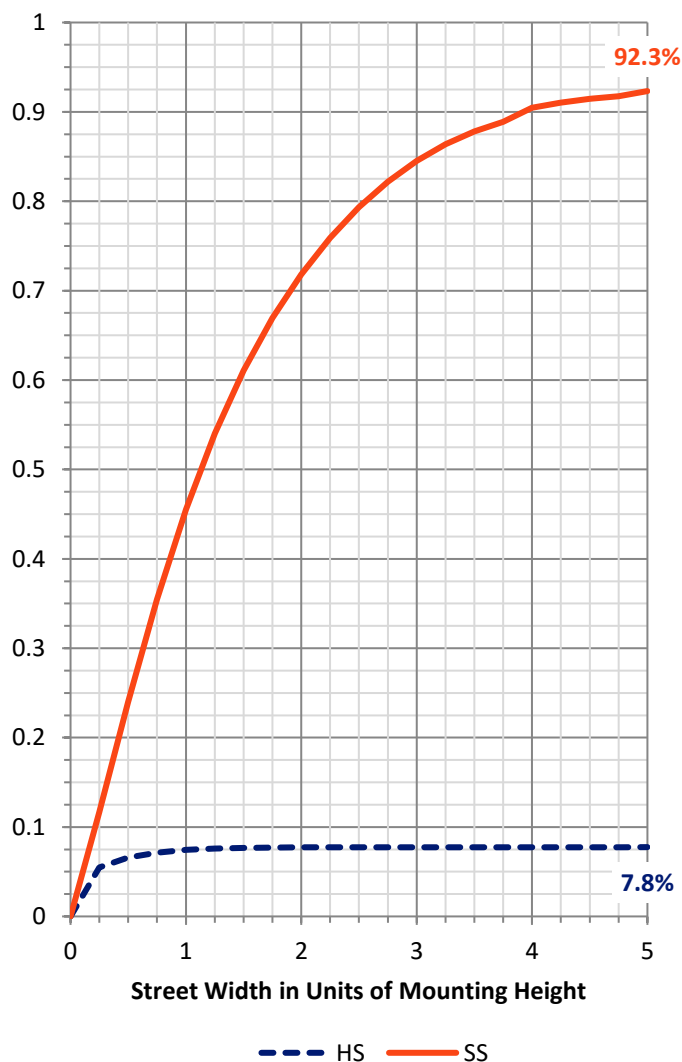
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 214.8 | 0.0 | 214.8 |
| | % Fixture | 7.8 | 0.0 | 7.8 |
| Street Side | Lumens | 2538.2 | 0.0 | 2538.2 |
| | % Fixture | 92.2 | 0.0 | 92.2 |
| Total | Lumens | 2753.0 | 0.0 | 2753.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 41.3 | 1.5 |
| 10°-20° | 103.7 | 3.8 |
| 20°-30° | 169.3 | 6.1 |
| 30°-40° | 257.4 | 9.3 |
| 40°-50° | 393.6 | 14.3 |
| 50°-60° | 559.6 | 20.3 |
| 60°-70° | 709.7 | 25.8 |
| 70°-80° | 485.9 | 17.7 |
| 80°-90° | 32.6 | 1.2 |
| 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° | 2753.0 | 100.0 |
| 0°-180° | 2753.0 | 100.0 |

Coefficient of Utilization



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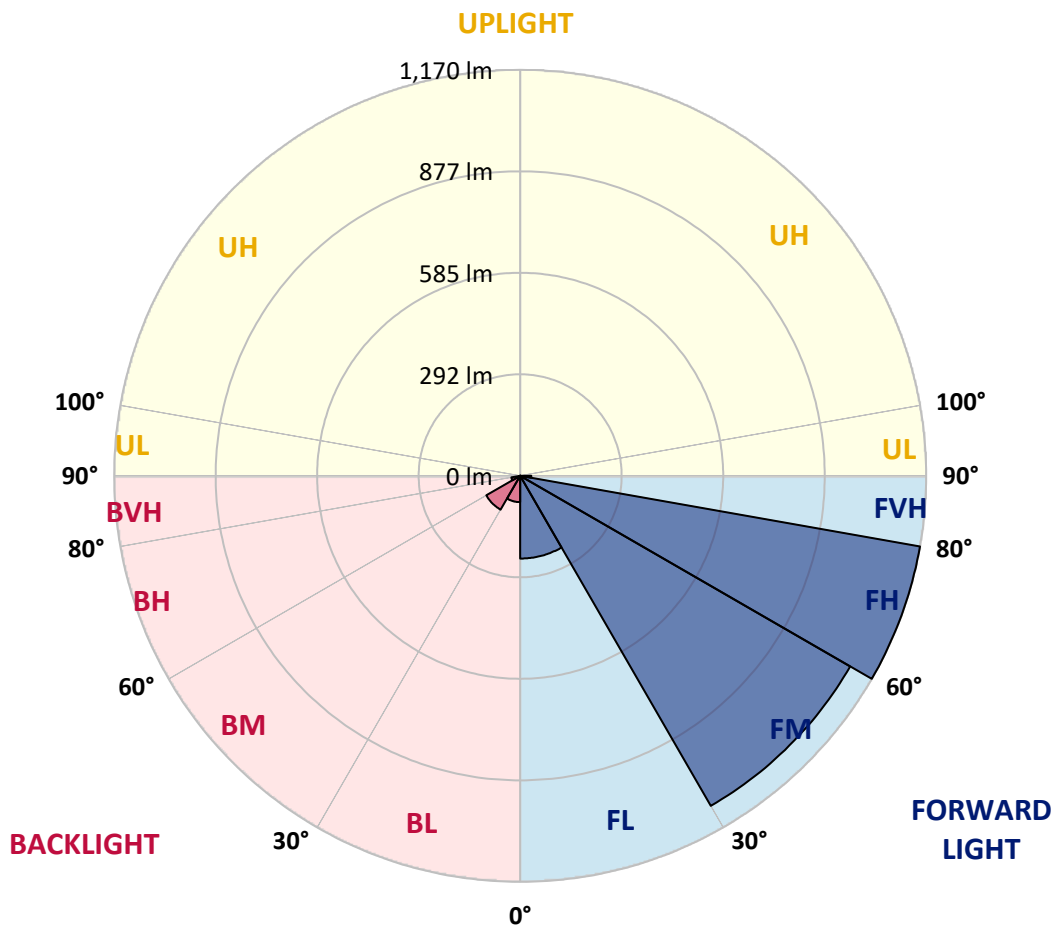
CATALOG NUMBER: ISS-SA1C-827-U-SL4-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 238.4 | 8.7 | | | |
| FM (30°-60°) | 1098.0 | 39.9 | | | |
| FH (60°-80°) | 1169.7 | 42.5 | | | G1/1800 |
| FVH (80°-90°) | 32.1 | 1.2 | | | G1/100 |
| BL (0°-30°) | 75.8 | 2.8 | B0/110 | | |
| BM (30°-60°) | 112.6 | 4.1 | B0/220 | | |
| BH (60°-80°) | 25.9 | 0.9 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.5 | 0.0 | | | 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 IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 36° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 |
| 2.5° | 541.6 | 538.0 | 535.6 | 533.1 | 525.9 | 527.1 | 519.8 | 512.5 | 501.6 | 496.8 | 489.5 |
| 5° | 555.0 | 553.7 | 552.5 | 548.9 | 542.8 | 545.3 | 538.0 | 530.7 | 515.0 | 500.4 | 484.7 |
| 7.5° | 552.5 | 555.0 | 553.7 | 551.3 | 546.5 | 547.7 | 541.6 | 534.4 | 521.0 | 501.6 | 479.8 |
| 10° | 547.7 | 548.9 | 548.9 | 547.7 | 546.5 | 546.5 | 541.6 | 535.6 | 523.5 | 506.5 | 478.6 |
| 12.5° | 538.0 | 540.4 | 544.1 | 546.5 | 547.7 | 548.9 | 545.3 | 540.4 | 529.5 | 511.3 | 482.3 |
| 15° | 534.4 | 536.8 | 544.1 | 551.3 | 555.0 | 556.2 | 552.5 | 546.5 | 536.8 | 521.0 | 488.3 |
| 17.5° | 534.4 | 536.8 | 548.9 | 559.8 | 567.1 | 568.3 | 563.4 | 557.4 | 545.3 | 529.5 | 495.6 |
| 20° | 541.6 | 544.1 | 558.6 | 578.0 | 581.6 | 584.0 | 576.8 | 568.3 | 555.0 | 539.2 | 504.1 |
| 22.5° | 553.7 | 557.4 | 575.6 | 593.7 | 601.0 | 602.2 | 593.7 | 578.0 | 565.9 | 550.1 | 511.3 |
| 25° | 574.3 | 582.8 | 599.8 | 619.2 | 620.4 | 621.6 | 608.3 | 592.5 | 578.0 | 562.2 | 519.8 |
| 27.5° | 603.4 | 610.7 | 625.2 | 647.0 | 639.8 | 639.8 | 628.9 | 608.3 | 593.7 | 579.2 | 534.4 |
| 30° | 641.0 | 645.8 | 662.8 | 671.3 | 661.6 | 662.8 | 649.5 | 630.1 | 618.0 | 603.4 | 556.2 |
| 32.5° | 676.1 | 679.8 | 697.9 | 699.2 | 688.2 | 687.0 | 677.3 | 654.3 | 644.6 | 639.8 | 586.5 |
| 35° | 708.8 | 713.7 | 728.2 | 727.0 | 716.1 | 714.9 | 710.1 | 689.5 | 689.5 | 694.3 | 631.3 |
| 37.5° | 733.1 | 745.2 | 763.4 | 758.5 | 751.3 | 751.3 | 747.6 | 731.9 | 744.0 | 762.2 | 690.7 |
| 40° | 764.6 | 771.9 | 796.1 | 792.5 | 793.7 | 793.7 | 794.9 | 785.2 | 807.0 | 837.3 | 759.7 |
| 42.5° | 781.5 | 796.1 | 825.2 | 830.0 | 840.9 | 840.9 | 850.6 | 848.2 | 889.4 | 928.2 | 839.7 |
| 45° | 808.2 | 824.0 | 855.5 | 873.6 | 887.0 | 893.0 | 910.0 | 923.3 | 981.5 | 1029.9 | 924.5 |
| 47.5° | 842.1 | 855.5 | 882.1 | 916.0 | 940.3 | 950.0 | 983.9 | 1005.7 | 1083.3 | 1132.9 | 1004.5 |
| 50° | 888.2 | 890.6 | 910.0 | 960.9 | 1003.3 | 1009.3 | 1062.7 | 1099.0 | 1186.3 | 1232.3 | 1061.4 |
| 52.5° | 937.9 | 933.0 | 943.9 | 1013.0 | 1072.4 | 1083.3 | 1143.8 | 1199.6 | 1286.8 | 1296.5 | 1084.5 |
| 55° | 976.6 | 976.6 | 985.1 | 1069.9 | 1149.9 | 1156.0 | 1240.8 | 1300.2 | 1378.9 | 1334.1 | 1099.0 |
| 57.5° | 1026.3 | 1021.5 | 1034.8 | 1128.1 | 1246.8 | 1251.7 | 1349.8 | 1395.9 | 1429.8 | 1358.3 | 1096.6 |
| 60° | 1062.7 | 1068.7 | 1089.3 | 1203.2 | 1347.4 | 1369.2 | 1451.6 | 1466.2 | 1483.1 | 1366.8 | 1089.3 |
| 62.5° | 1113.6 | 1112.3 | 1152.3 | 1286.8 | 1478.3 | 1492.8 | 1549.8 | 1525.5 | 1524.3 | 1381.3 | 1079.6 |
| 65° | 1156.0 | 1165.7 | 1226.2 | 1387.4 | 1617.6 | 1627.3 | 1646.7 | 1615.2 | 1581.3 | 1397.1 | 994.8 |
| 67.5° | 1221.4 | 1240.8 | 1317.1 | 1519.5 | 1766.7 | 1777.6 | 1794.5 | 1725.5 | 1597.0 | 1285.6 | 828.8 |
| 70° | 1295.3 | 1320.8 | 1444.3 | 1695.2 | 1926.6 | 1938.7 | 1942.4 | 1736.4 | 1446.8 | 1009.3 | 562.2 |
| 72.5° | 1221.4 | 1262.6 | 1480.7 | 1792.1 | 2042.9 | 2044.1 | 1897.5 | 1534.0 | 1108.7 | 551.3 | 198.7 |
| 75° | 786.4 | 838.5 | 1226.2 | 1589.7 | 1759.4 | 1778.8 | 1488.0 | 1072.4 | 517.4 | 123.6 | 55.7 |
| 77.5° | 266.6 | 284.7 | 602.2 | 1003.3 | 1180.2 | 1187.5 | 979.1 | 542.8 | 163.6 | 49.7 | 30.3 |
| 80° | 153.9 | 152.7 | 210.8 | 438.6 | 588.9 | 611.9 | 493.2 | 216.9 | 76.3 | 25.4 | 20.6 |
| 82.5° | 36.4 | 37.6 | 110.3 | 159.9 | 233.9 | 210.8 | 104.2 | 130.9 | 35.1 | 14.5 | 18.2 |
| 85° | 0.0 | 0.0 | 18.2 | 38.8 | 27.9 | 32.7 | 9.7 | 40.0 | 6.1 | 6.1 | 12.1 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 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° | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 | 483.5 |
| 2.5° | 482.3 | 476.2 | 464.1 | 454.4 | 441.1 | 430.2 | 419.2 | 414.4 | 405.9 | 403.5 | 404.7 |
| 5° | 475.0 | 465.3 | 442.3 | 419.2 | 393.8 | 369.6 | 344.1 | 329.6 | 323.5 | 312.6 | 310.2 |
| 7.5° | 466.5 | 452.0 | 419.2 | 381.7 | 338.1 | 302.9 | 267.8 | 243.6 | 221.7 | 213.3 | 209.6 |
| 10° | 462.9 | 444.7 | 398.6 | 341.7 | 282.3 | 225.4 | 181.8 | 150.3 | 130.9 | 123.6 | 121.2 |
| 12.5° | 462.9 | 441.1 | 379.3 | 302.9 | 224.2 | 158.7 | 118.7 | 100.6 | 94.5 | 93.3 | 92.1 |
| 15° | 467.7 | 439.8 | 361.1 | 261.7 | 169.6 | 110.3 | 90.9 | 88.5 | 87.2 | 87.2 | 88.5 |
| 17.5° | 470.1 | 437.4 | 341.7 | 221.7 | 124.8 | 88.5 | 84.8 | 84.8 | 84.8 | 84.8 | 84.8 |
| 20° | 476.2 | 436.2 | 319.9 | 179.3 | 94.5 | 82.4 | 81.2 | 81.2 | 81.2 | 81.2 | 82.4 |
| 22.5° | 477.4 | 436.2 | 293.2 | 138.1 | 83.6 | 78.8 | 77.5 | 77.5 | 77.5 | 78.8 | 78.8 |
| 25° | 484.7 | 433.8 | 267.8 | 105.4 | 78.8 | 73.9 | 73.9 | 72.7 | 73.9 | 73.9 | 73.9 |
| 27.5° | 494.4 | 435.0 | 236.3 | 87.2 | 73.9 | 70.3 | 69.1 | 69.1 | 69.1 | 69.1 | 69.1 |
| 30° | 505.3 | 437.4 | 203.6 | 77.5 | 69.1 | 66.6 | 65.4 | 64.2 | 64.2 | 64.2 | 64.2 |
| 32.5° | 525.9 | 439.8 | 168.4 | 70.3 | 64.2 | 61.8 | 60.6 | 59.4 | 59.4 | 59.4 | 59.4 |
| 35° | 557.4 | 453.2 | 138.1 | 65.4 | 59.4 | 56.9 | 55.7 | 54.5 | 54.5 | 54.5 | 53.3 |
| 37.5° | 599.8 | 473.8 | 109.1 | 60.6 | 54.5 | 52.1 | 50.9 | 49.7 | 48.5 | 48.5 | 48.5 |
| 40° | 650.7 | 495.6 | 90.9 | 54.5 | 49.7 | 47.3 | 46.0 | 44.8 | 43.6 | 42.4 | 42.4 |
| 42.5° | 711.3 | 522.2 | 72.7 | 49.7 | 44.8 | 42.4 | 41.2 | 40.0 | 37.6 | 36.4 | 37.6 |
| 45° | 779.1 | 547.7 | 61.8 | 46.0 | 41.2 | 38.8 | 37.6 | 35.1 | 32.7 | 31.5 | 31.5 |
| 47.5° | 838.5 | 553.7 | 54.5 | 41.2 | 37.6 | 35.1 | 33.9 | 30.3 | 27.9 | 25.4 | 25.4 |
| 50° | 878.5 | 542.8 | 48.5 | 37.6 | 33.9 | 32.7 | 30.3 | 25.4 | 21.8 | 20.6 | 19.4 |
| 52.5° | 883.3 | 513.8 | 42.4 | 33.9 | 31.5 | 29.1 | 25.4 | 21.8 | 18.2 | 15.8 | 15.8 |
| 55° | 878.5 | 465.3 | 37.6 | 31.5 | 27.9 | 25.4 | 21.8 | 17.0 | 13.3 | 12.1 | 10.9 |
| 57.5° | 862.7 | 414.4 | 33.9 | 27.9 | 25.4 | 21.8 | 17.0 | 13.3 | 9.7 | 8.5 | 7.3 |
| 60° | 833.6 | 352.6 | 30.3 | 25.4 | 21.8 | 18.2 | 13.3 | 9.7 | 6.1 | 4.8 | 4.8 |
| 62.5° | 779.1 | 284.7 | 26.7 | 21.8 | 18.2 | 14.5 | 10.9 | 6.1 | 3.6 | 2.4 | 2.4 |
| 65° | 671.3 | 213.3 | 23.0 | 18.2 | 14.5 | 12.1 | 7.3 | 3.6 | 1.2 | 0.0 | 0.0 |
| 67.5° | 522.2 | 144.2 | 18.2 | 14.5 | 12.1 | 9.7 | 6.1 | 1.2 | 0.0 | 0.0 | 0.0 |
| 70° | 307.8 | 76.3 | 14.5 | 10.9 | 9.7 | 7.3 | 3.6 | 1.2 | 0.0 | 0.0 | 0.0 |
| 72.5° | 88.5 | 30.3 | 10.9 | 8.5 | 7.3 | 4.8 | 2.4 | 1.2 | 0.0 | 0.0 | 0.0 |
| 75° | 36.4 | 18.2 | 7.3 | 6.1 | 6.1 | 3.6 | 1.2 | 1.2 | 0.0 | 0.0 | 0.0 |
| 77.5° | 24.2 | 13.3 | 4.8 | 3.6 | 3.6 | 2.4 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 19.4 | 7.3 | 2.4 | 2.4 | 2.4 | 1.2 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 17.0 | 4.8 | 1.2 | 1.2 | 1.2 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 8.5 | 2.4 | 1.2 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 1.2 | 1.2 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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



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 (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 $R_a = 80.9$
 $R_9 = -1.5$



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)