

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: P438951

Luminaire Tested: **ISW-SA1F-827-U-T3-HSS**

Issue Date: 12/10/2020

Test Information

Test Method: LM-79-08
Report Number: P438951
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-9)
Test Lab: INNOVATION CENTER
Issue Date: 12/10/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: ISW-SA1F-827-U-T3-HSS
Description: IMPACT ELITE LED WEDGE LUMINAIRE
(1) 80 CRI, 2700K, 1200mA LIGHTSQUARE WITH 16 LEDS AND TYPE III OPTICS
WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4051 lumens
Efficiency: N/A
Efficacy: 61.4 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G1

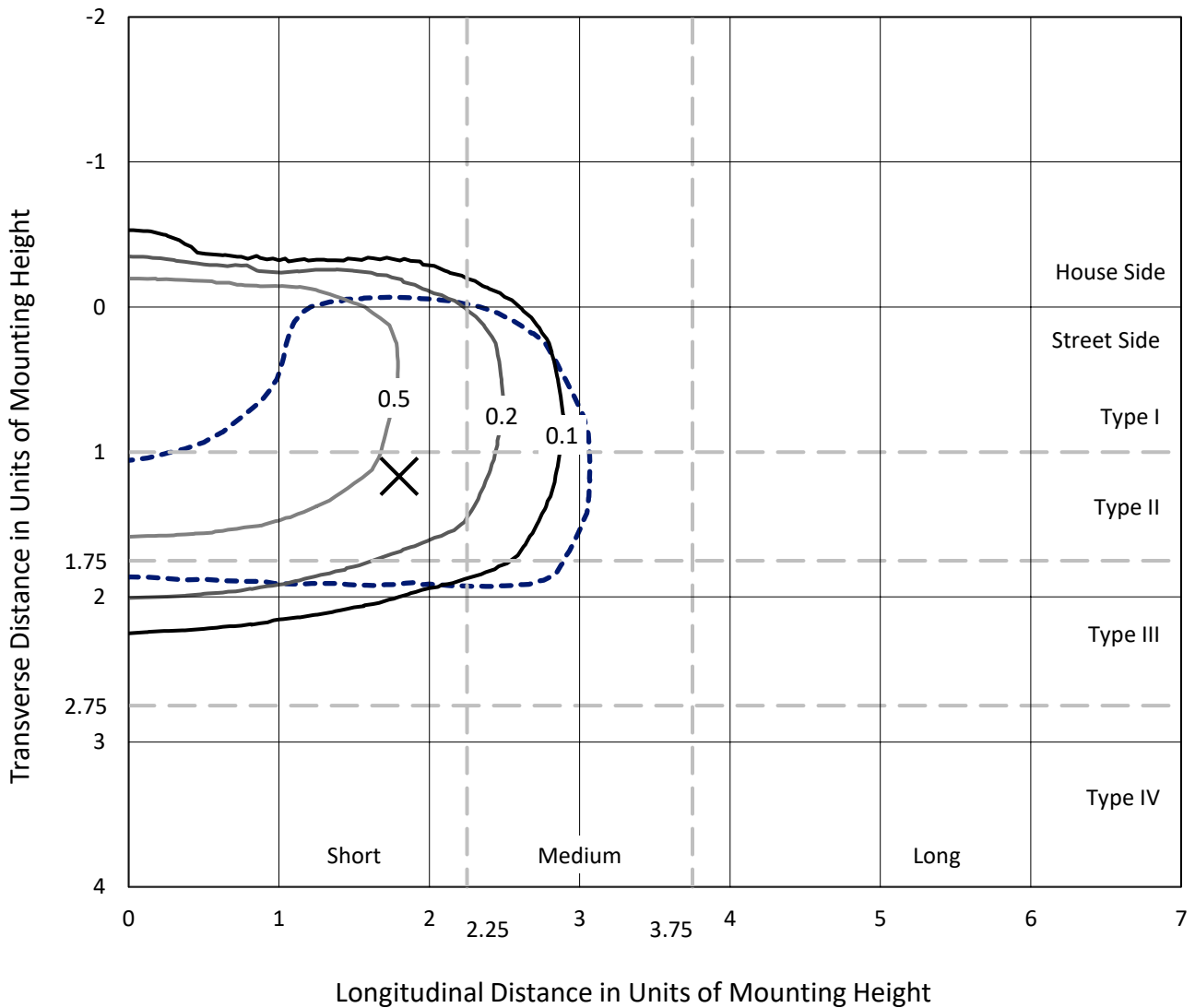
Input Watts (W): 66
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P438951
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Iso-Footcandle Lines of Horizontal Illumination

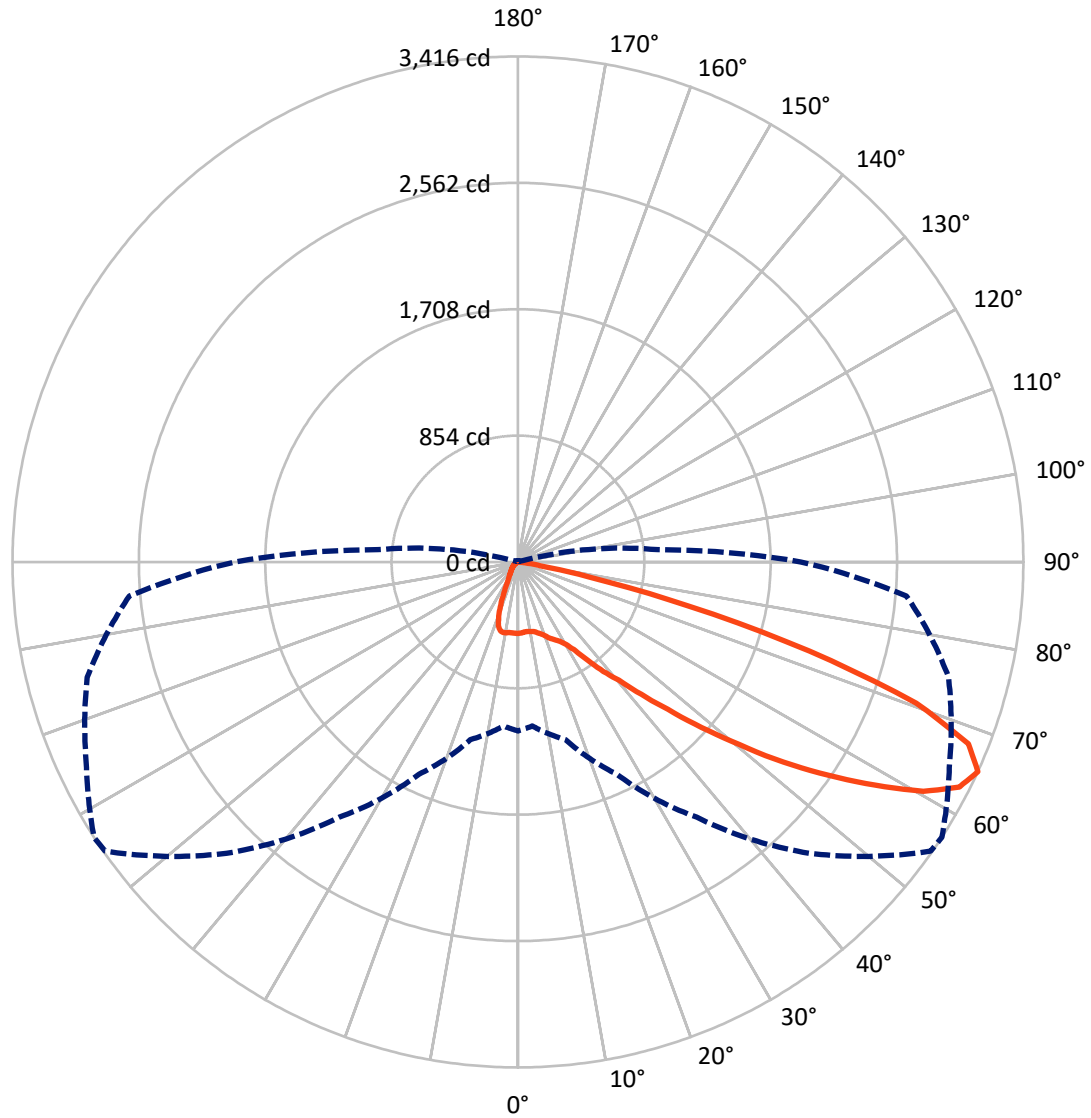
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1 fc
 Type III - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 57-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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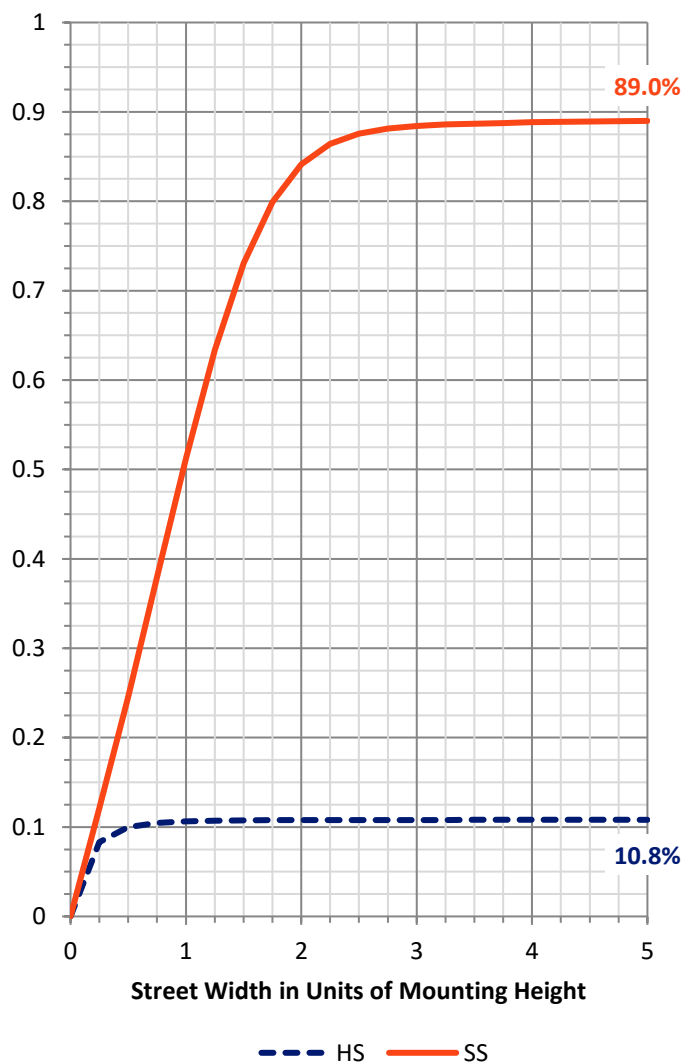
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 441.9 | 0.0 | 441.9 |
| | % Fixture | 10.9 | 0.0 | 10.9 |
| Street Side | Lumens | 3609.1 | 0.0 | 3609.1 |
| | % Fixture | 89.1 | 0.0 | 89.1 |
| Total | Lumens | 4051.0 | 0.0 | 4051.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 44.8 | 1.1 |
| 10°-20° | 121.2 | 3.0 |
| 20°-30° | 209.4 | 5.2 |
| 30°-40° | 370.8 | 9.2 |
| 40°-50° | 672.6 | 16.6 |
| 50°-60° | 1132.9 | 28.0 |
| 60°-70° | 1164.9 | 28.8 |
| 70°-80° | 322.8 | 8.0 |
| 80°-90° | 11.5 | 0.3 |
| 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° | 4051.0 | 100.0 |
| 0°-180° | 4051.0 | 100.0 |

Coefficient of Utilization



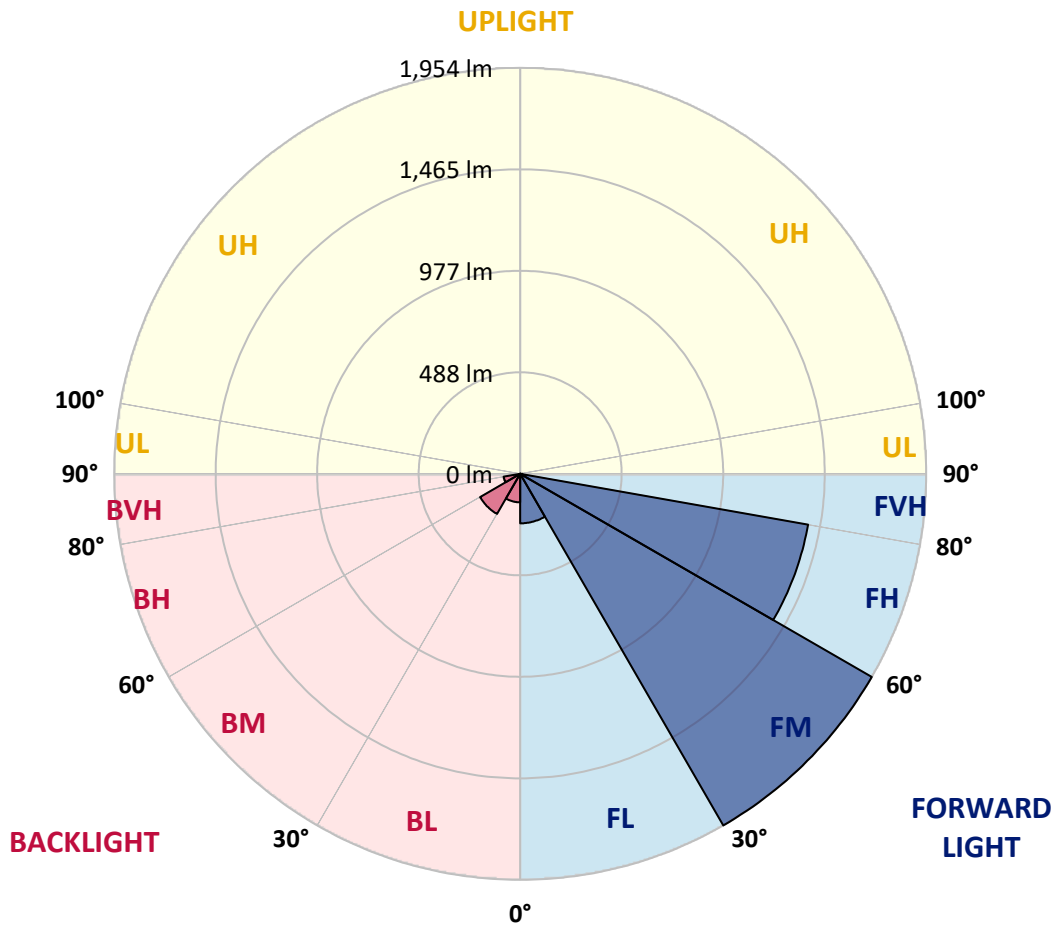
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 238.2 | 5.9 | | | |
| FM (30°-60°) | 1953.6 | 48.2 | | | |
| FH (60°-80°) | 1406.7 | 34.7 | | | G1/1800 |
| FVH (80°-90°) | 10.6 | 0.3 | | | G1/100 |
| BL (0°-30°) | 137.2 | 3.4 | B1/500 | | |
| BM (30°-60°) | 222.8 | 5.5 | B1/1000 | | |
| BH (60°-80°) | 81.0 | 2.0 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.8 | 0.0 | | | 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 Short





REPORT NUMBER: P438951
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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 57° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 |
| 2.5° | 468.2 | 468.2 | 472.1 | 474.1 | 474.1 | 476.1 | 478.1 | 480.0 | 480.0 | 480.0 | 484.0 |
| 5° | 444.5 | 442.5 | 446.5 | 450.4 | 456.3 | 464.2 | 470.2 | 474.1 | 480.0 | 486.0 | 487.9 |
| 7.5° | 422.7 | 422.7 | 426.7 | 432.6 | 444.5 | 456.3 | 468.2 | 474.1 | 484.0 | 495.8 | 499.8 |
| 10° | 416.8 | 414.8 | 420.8 | 426.7 | 438.6 | 452.4 | 470.2 | 478.1 | 491.9 | 507.7 | 513.6 |
| 12.5° | 412.9 | 412.9 | 414.8 | 424.7 | 436.6 | 454.4 | 476.1 | 482.0 | 503.7 | 521.5 | 535.3 |
| 15° | 410.9 | 410.9 | 414.8 | 422.7 | 436.6 | 456.3 | 486.0 | 495.8 | 521.5 | 547.2 | 559.1 |
| 17.5° | 426.7 | 424.7 | 422.7 | 426.7 | 440.5 | 462.3 | 501.8 | 511.6 | 543.3 | 574.9 | 588.7 |
| 20° | 474.1 | 472.1 | 466.2 | 452.4 | 452.4 | 478.1 | 521.5 | 533.4 | 574.9 | 606.5 | 614.4 |
| 22.5° | 563.0 | 568.9 | 547.2 | 511.6 | 486.0 | 497.8 | 547.2 | 561.0 | 608.4 | 642.0 | 642.0 |
| 25° | 691.4 | 683.5 | 663.8 | 604.5 | 553.1 | 529.4 | 568.9 | 582.8 | 640.0 | 679.6 | 671.7 |
| 27.5° | 825.7 | 827.7 | 800.1 | 732.9 | 649.9 | 586.7 | 592.6 | 608.4 | 673.6 | 719.1 | 701.3 |
| 30° | 932.4 | 924.5 | 910.7 | 855.4 | 764.5 | 677.6 | 638.1 | 648.0 | 711.2 | 762.5 | 746.7 |
| 32.5° | 1027.2 | 1023.3 | 1005.5 | 958.1 | 877.1 | 784.3 | 713.1 | 715.1 | 764.5 | 827.7 | 808.0 |
| 35° | 1112.2 | 1116.1 | 1108.2 | 1054.9 | 981.8 | 894.9 | 813.9 | 819.8 | 857.3 | 922.5 | 883.0 |
| 37.5° | 1218.9 | 1218.9 | 1205.0 | 1155.6 | 1100.3 | 1013.4 | 936.4 | 938.3 | 958.1 | 1011.4 | 962.0 |
| 40° | 1311.7 | 1315.7 | 1313.7 | 1276.1 | 1222.8 | 1143.8 | 1050.9 | 1050.9 | 1056.9 | 1120.1 | 1094.4 |
| 42.5° | 1438.1 | 1444.1 | 1442.1 | 1406.5 | 1365.0 | 1307.8 | 1228.7 | 1222.8 | 1218.9 | 1297.9 | 1270.2 |
| 45° | 1600.1 | 1613.9 | 1619.9 | 1576.4 | 1538.9 | 1505.3 | 1444.1 | 1420.4 | 1430.2 | 1503.3 | 1481.6 |
| 47.5° | 1754.2 | 1770.0 | 1797.7 | 1775.9 | 1758.2 | 1758.2 | 1675.2 | 1671.2 | 1655.4 | 1740.4 | 1681.1 |
| 50° | 1900.4 | 1902.4 | 1941.9 | 1975.5 | 2028.8 | 2018.9 | 1963.6 | 1939.9 | 1916.2 | 1973.5 | 1866.8 |
| 52.5° | 1983.4 | 2007.1 | 2058.4 | 2155.2 | 2271.8 | 2319.2 | 2261.9 | 2248.1 | 2200.7 | 2192.8 | 2046.6 |
| 55° | 2060.4 | 2060.4 | 2141.4 | 2309.3 | 2506.9 | 2607.6 | 2560.2 | 2544.4 | 2449.6 | 2421.9 | 2232.3 |
| 57.5° | 2086.1 | 2078.2 | 2186.8 | 2400.2 | 2696.5 | 2872.3 | 2882.2 | 2846.6 | 2714.3 | 2629.3 | 2421.9 |
| 60° | 1957.7 | 1943.9 | 2058.4 | 2340.9 | 2747.9 | 3063.9 | 3170.6 | 3146.9 | 2943.4 | 2830.8 | 2621.4 |
| 62.5° | 1588.3 | 1606.0 | 1752.2 | 2058.4 | 2566.1 | 3044.2 | 3362.2 | 3348.4 | 3113.3 | 2967.1 | 2700.5 |
| 65° | 1141.8 | 1112.2 | 1242.6 | 1582.3 | 2105.8 | 2783.4 | 3405.7 | 3415.6 | 3218.0 | 3012.6 | 2635.3 |
| 67.5° | 640.0 | 612.4 | 721.0 | 979.8 | 1497.4 | 2283.6 | 3227.9 | 3283.2 | 3143.0 | 2900.0 | 2354.7 |
| 70° | 245.0 | 260.8 | 335.8 | 484.0 | 883.0 | 1576.4 | 2777.5 | 2856.5 | 2755.8 | 2419.9 | 1754.2 |
| 72.5° | 86.9 | 98.8 | 138.3 | 215.3 | 408.9 | 849.4 | 1941.9 | 2060.4 | 2030.8 | 1681.1 | 1003.5 |
| 75° | 51.4 | 53.3 | 71.1 | 104.7 | 179.8 | 331.9 | 1096.4 | 1195.2 | 1147.7 | 831.7 | 414.8 |
| 77.5° | 35.6 | 35.6 | 45.4 | 63.2 | 102.7 | 132.4 | 428.7 | 486.0 | 499.8 | 300.3 | 122.5 |
| 80° | 21.7 | 23.7 | 31.6 | 41.5 | 59.3 | 61.2 | 132.4 | 156.1 | 146.2 | 106.7 | 43.5 |
| 82.5° | 9.9 | 9.9 | 17.8 | 27.7 | 29.6 | 25.7 | 41.5 | 45.4 | 53.3 | 47.4 | 19.8 |
| 85° | 0.0 | 0.0 | 5.9 | 9.9 | 7.9 | 5.9 | 13.8 | 13.8 | 17.8 | 21.7 | 9.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 4.0 | 2.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 | 482.0 |
| 2.5° | 484.0 | 486.0 | 484.0 | 482.0 | 482.0 | 480.0 | 480.0 | 480.0 | 480.0 | 480.0 | 480.0 |
| 5° | 487.9 | 489.9 | 487.9 | 484.0 | 480.0 | 476.1 | 472.1 | 472.1 | 472.1 | 472.1 | 476.1 |
| 7.5° | 499.8 | 499.8 | 495.8 | 487.9 | 478.1 | 474.1 | 466.2 | 464.2 | 460.3 | 458.3 | 460.3 |
| 10° | 517.6 | 517.6 | 509.7 | 497.8 | 482.0 | 466.2 | 452.4 | 432.6 | 420.8 | 412.9 | 410.9 |
| 12.5° | 535.3 | 533.4 | 523.5 | 507.7 | 482.0 | 446.5 | 401.0 | 351.6 | 322.0 | 300.3 | 296.3 |
| 15° | 559.1 | 557.1 | 541.3 | 513.6 | 470.2 | 395.1 | 306.2 | 239.0 | 203.5 | 187.7 | 185.7 |
| 17.5° | 584.7 | 580.8 | 559.1 | 517.6 | 432.6 | 298.3 | 201.5 | 156.1 | 142.2 | 138.3 | 138.3 |
| 20° | 612.4 | 606.5 | 572.9 | 511.6 | 357.6 | 203.5 | 140.3 | 130.4 | 128.4 | 126.4 | 126.4 |
| 22.5° | 634.1 | 624.2 | 582.8 | 482.0 | 266.7 | 140.3 | 124.5 | 122.5 | 120.5 | 118.5 | 118.5 |
| 25° | 657.8 | 642.0 | 590.7 | 416.8 | 175.8 | 120.5 | 116.6 | 114.6 | 110.6 | 108.7 | 108.7 |
| 27.5° | 685.5 | 661.8 | 602.5 | 327.9 | 122.5 | 108.7 | 104.7 | 102.7 | 96.8 | 92.8 | 92.8 |
| 30° | 721.0 | 691.4 | 608.4 | 239.0 | 102.7 | 94.8 | 90.9 | 86.9 | 79.0 | 75.1 | 75.1 |
| 32.5° | 778.3 | 752.6 | 596.6 | 160.0 | 92.8 | 84.9 | 79.0 | 71.1 | 63.2 | 59.3 | 57.3 |
| 35° | 851.4 | 815.9 | 555.1 | 112.6 | 83.0 | 75.1 | 65.2 | 55.3 | 49.4 | 47.4 | 47.4 |
| 37.5° | 932.4 | 885.0 | 491.9 | 90.9 | 75.1 | 65.2 | 55.3 | 45.4 | 39.5 | 37.5 | 37.5 |
| 40° | 1047.0 | 973.9 | 405.0 | 79.0 | 65.2 | 55.3 | 45.4 | 37.5 | 33.6 | 31.6 | 31.6 |
| 42.5° | 1197.1 | 1086.5 | 306.2 | 73.1 | 59.3 | 47.4 | 37.5 | 31.6 | 27.7 | 25.7 | 25.7 |
| 45° | 1365.0 | 1205.0 | 223.2 | 65.2 | 51.4 | 39.5 | 29.6 | 25.7 | 21.7 | 19.8 | 19.8 |
| 47.5° | 1533.0 | 1290.0 | 154.1 | 59.3 | 43.5 | 33.6 | 25.7 | 19.8 | 15.8 | 15.8 | 13.8 |
| 50° | 1679.1 | 1335.4 | 110.6 | 51.4 | 39.5 | 27.7 | 19.8 | 15.8 | 13.8 | 11.9 | 11.9 |
| 52.5° | 1807.5 | 1355.2 | 84.9 | 45.4 | 33.6 | 23.7 | 15.8 | 13.8 | 11.9 | 11.9 | 11.9 |
| 55° | 1916.2 | 1339.4 | 67.2 | 39.5 | 29.6 | 19.8 | 13.8 | 11.9 | 9.9 | 9.9 | 9.9 |
| 57.5° | 2022.9 | 1291.9 | 53.3 | 33.6 | 23.7 | 13.8 | 11.9 | 9.9 | 7.9 | 7.9 | 7.9 |
| 60° | 2078.2 | 1230.7 | 43.5 | 27.7 | 19.8 | 11.9 | 9.9 | 7.9 | 7.9 | 5.9 | 5.9 |
| 62.5° | 2040.6 | 1106.3 | 35.6 | 23.7 | 13.8 | 9.9 | 7.9 | 5.9 | 5.9 | 4.0 | 4.0 |
| 65° | 1914.2 | 948.2 | 27.7 | 17.8 | 9.9 | 7.9 | 5.9 | 5.9 | 4.0 | 2.0 | 2.0 |
| 67.5° | 1613.9 | 742.8 | 21.7 | 13.8 | 7.9 | 5.9 | 4.0 | 4.0 | 2.0 | 0.0 | 0.0 |
| 70° | 1153.7 | 489.9 | 17.8 | 9.9 | 5.9 | 5.9 | 4.0 | 2.0 | 0.0 | 0.0 | 0.0 |
| 72.5° | 665.7 | 237.1 | 13.8 | 5.9 | 4.0 | 4.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 |
| 75° | 248.9 | 83.0 | 11.9 | 5.9 | 4.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 |
| 77.5° | 83.0 | 33.6 | 9.9 | 7.9 | 5.9 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 25.7 | 15.8 | 4.0 | 4.0 | 4.0 | 4.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 13.8 | 7.9 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 5.9 | 4.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 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

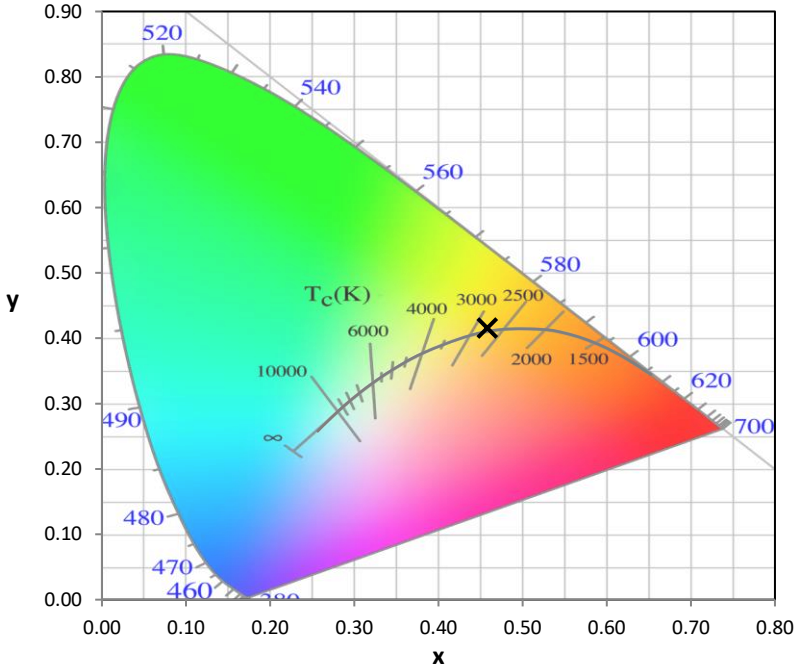
Stabilization Time: 81M
 Operation Time: 2H 21M
 Sphere Temperature (°C): 25.2

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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 ($\mu\text{W}/\text{nm}$) | 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

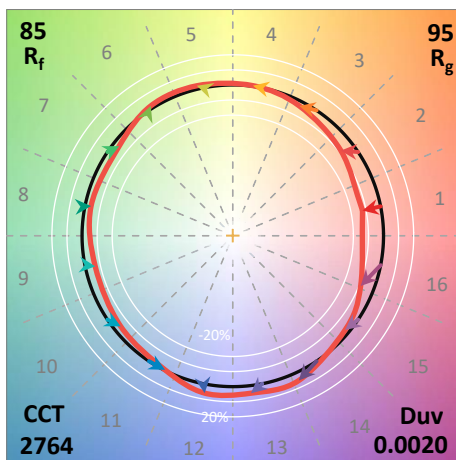
| λ (nm) | Power (μ W/nm) | Lumens (ϕ /nm) | λ (nm) | Power (μ W/nm) | Lumens (ϕ /nm) | λ (nm) | Power (μ W/nm) | Lumens (ϕ /nm) | λ (nm) | Power (μ W/nm) | Lumens (ϕ /nm) | λ (nm) | Power (μ W/nm) | Lumens (ϕ /nm) |
|-------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|
| 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

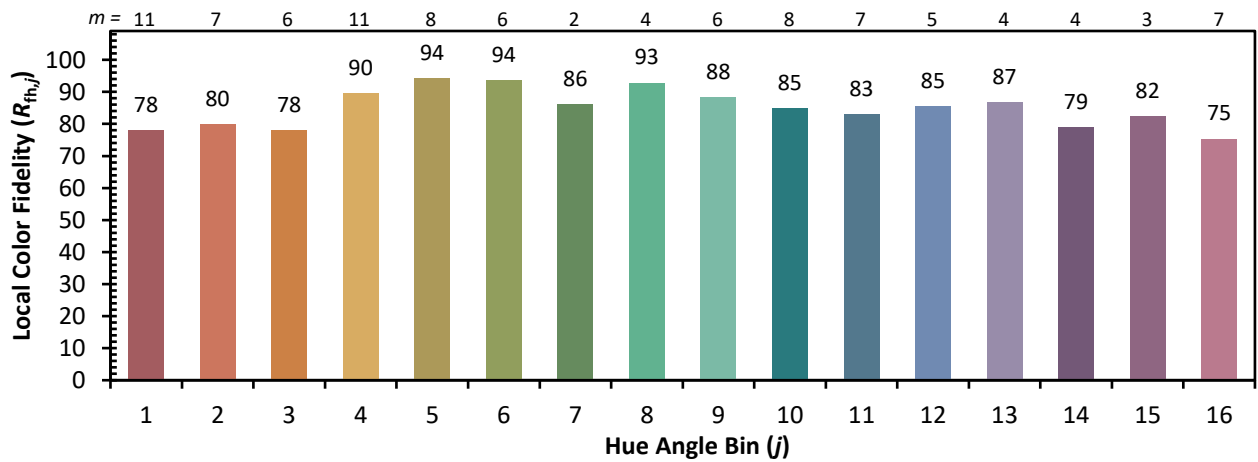


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| 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)