

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: P437587

Luminaire Tested: **ISS-SA1D-827-U-T4W-HSS**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437587
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-13)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: ISS-SA1D-827-U-T4W-HSS
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 80 CRI, 2700K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV WIDE OPTICS
WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3135 lumens
Efficiency: N/A
Efficacy: 69.4 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B0 - U0 - G1

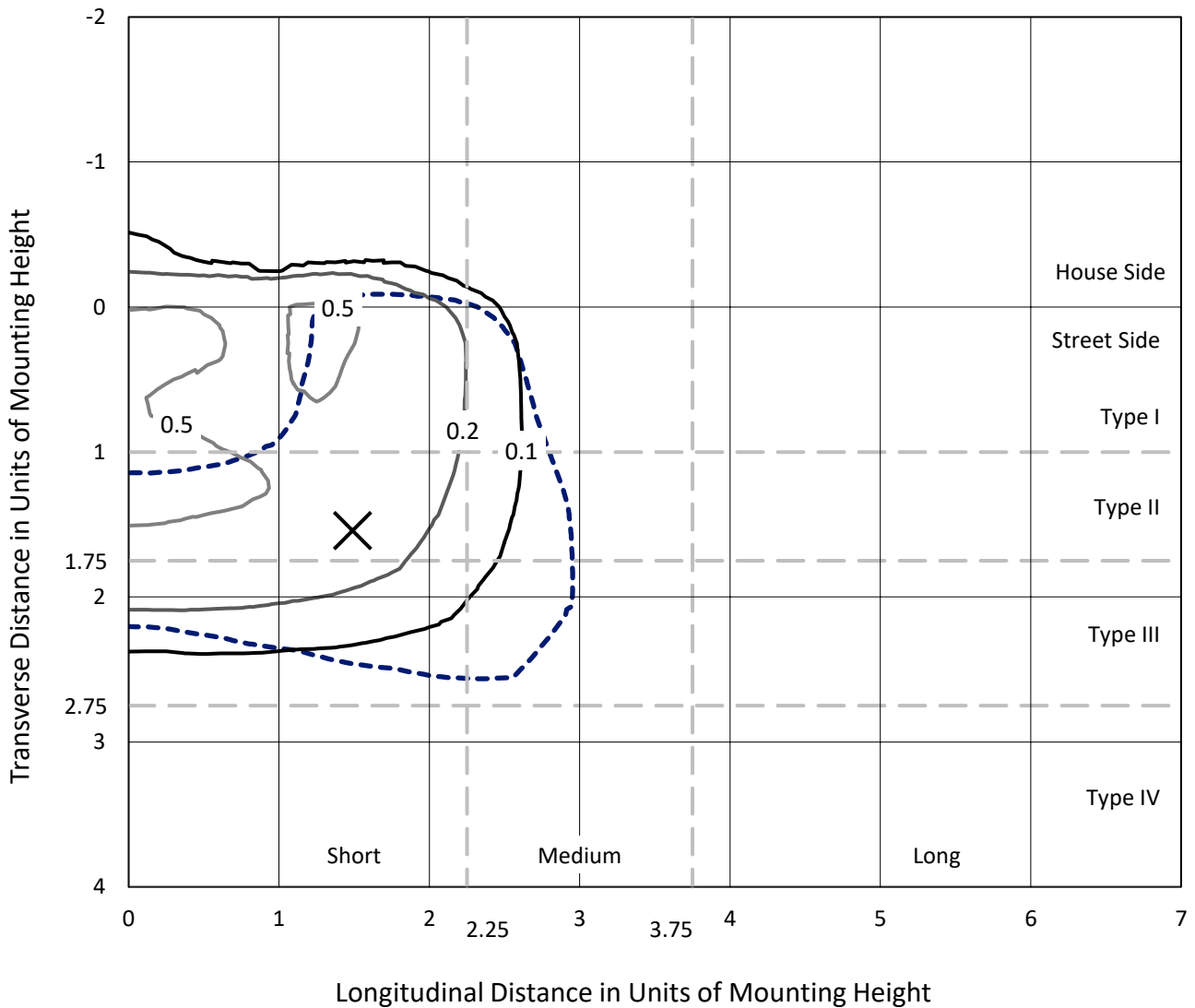
Input Watts (W): 45.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

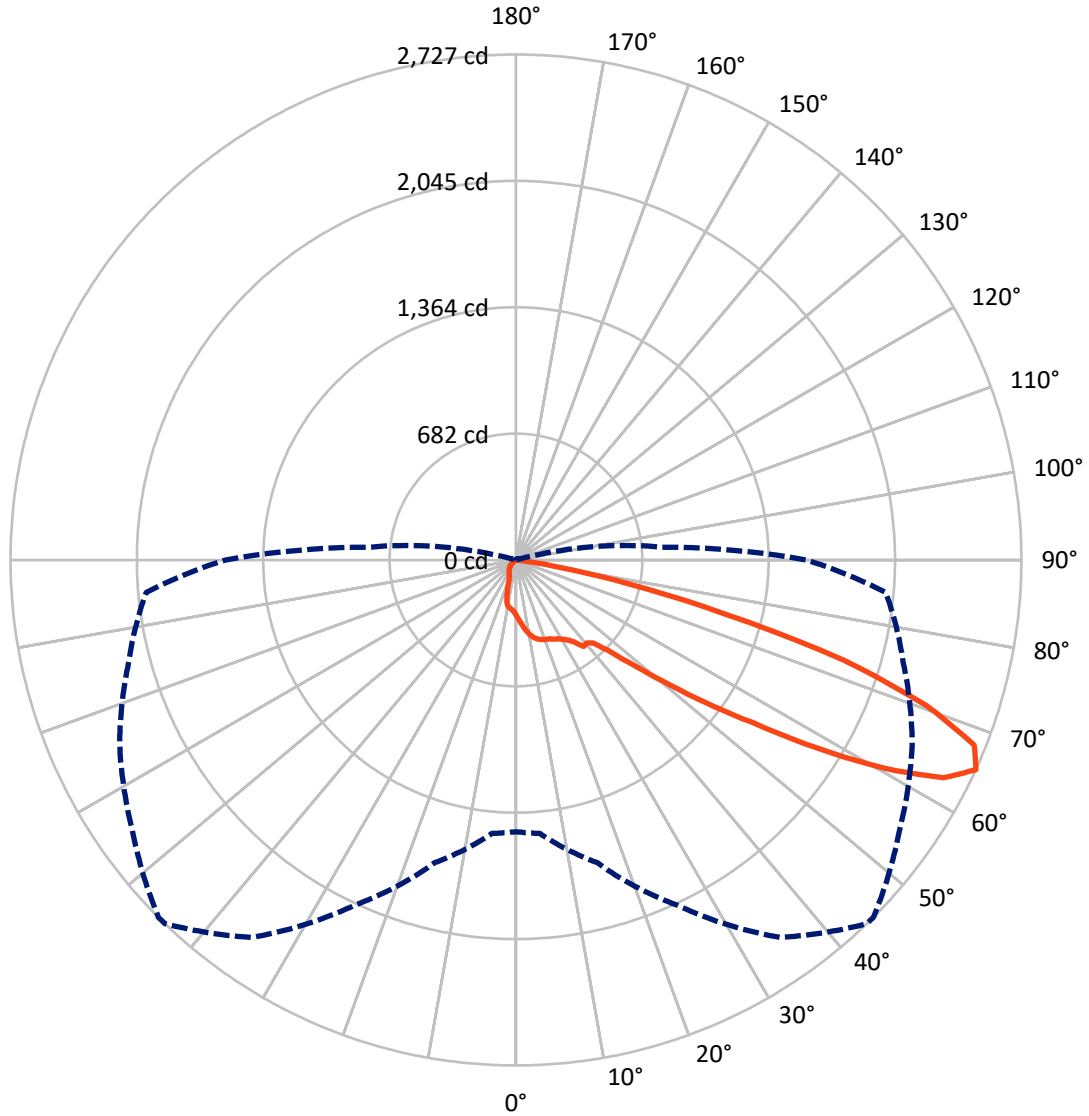
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.7 fc
 Type III - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 44-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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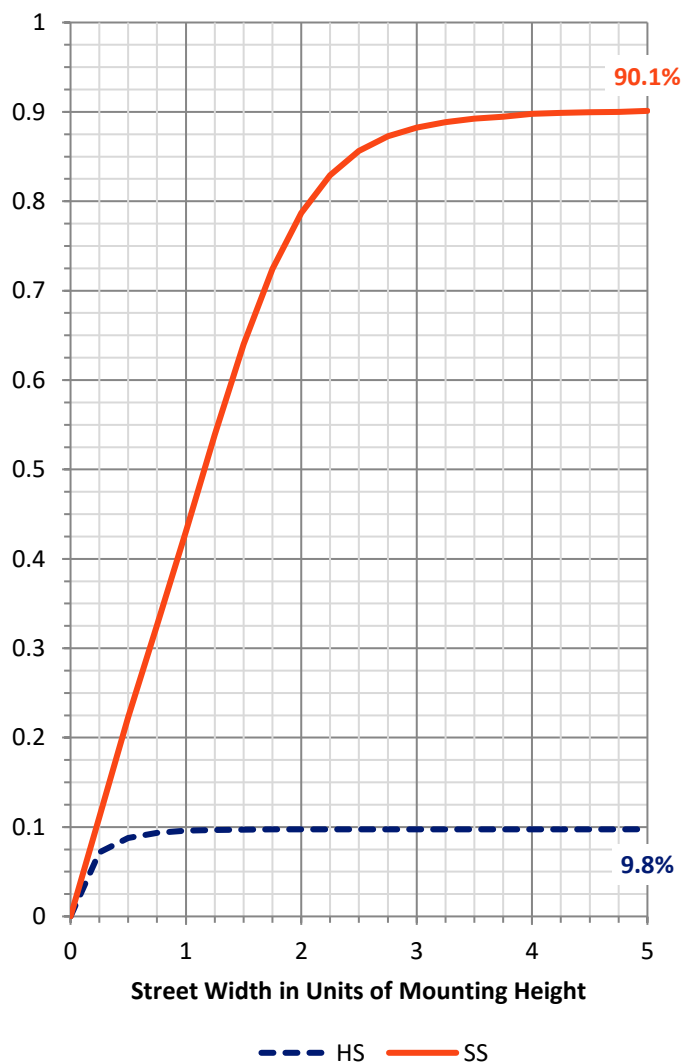
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 308.4 | 0.0 | 308.4 |
| | % Fixture | 9.8 | 0.0 | 9.8 |
| Street Side | Lumens | 2826.6 | 0.0 | 2826.6 |
| | % Fixture | 90.2 | 0.0 | 90.2 |
| Total | Lumens | 3135.0 | 0.0 | 3135.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 30.3 | 1.0 |
| 10°-20° | 91.3 | 2.9 |
| 20°-30° | 146.1 | 4.7 |
| 30°-40° | 217.0 | 6.9 |
| 40°-50° | 395.5 | 12.6 |
| 50°-60° | 829.3 | 26.5 |
| 60°-70° | 1055.5 | 33.7 |
| 70°-80° | 354.3 | 11.3 |
| 80°-90° | 15.9 | 0.5 |
| 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° | 3135.0 | 100.0 |
| 0°-180° | 3135.0 | 100.0 |

Coefficient of Utilization



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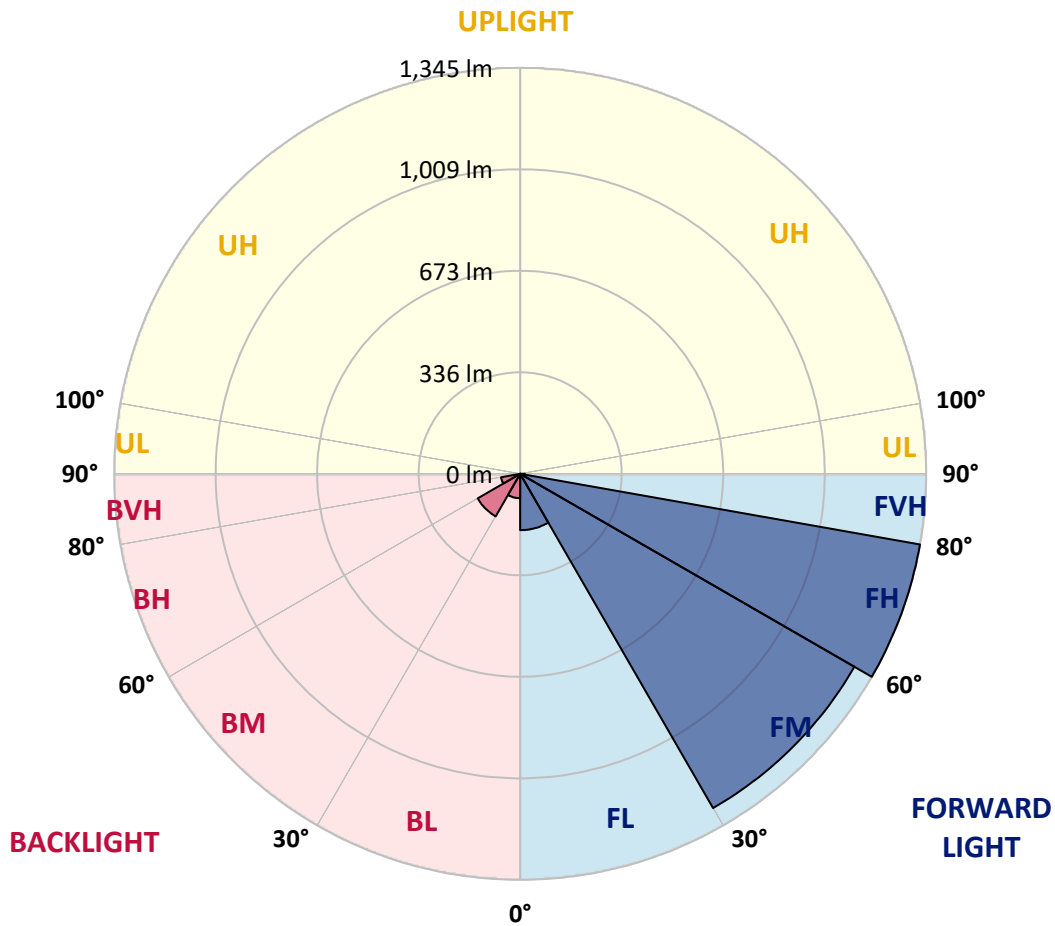
CATALOG NUMBER: ISS-SA1D-827-U-T4W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 186.7 | 6.0 | | | |
| FM (30°-60°) | 1279.0 | 40.8 | | | |
| FH (60°-80°) | 1345.4 | 42.9 | | | G1/1800 |
| FVH (80°-90°) | 15.4 | 0.5 | | | G1/100 |
| BL (0°-30°) | 81.0 | 2.6 | B0/110 | | |
| BM (30°-60°) | 162.7 | 5.2 | B0/220 | | |
| BH (60°-80°) | 64.3 | 2.1 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.4 | 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 III Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 44° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 |
| 2.5° | 336.5 | 338.0 | 332.0 | 333.5 | 330.5 | 324.4 | 322.9 | 318.3 | 312.3 | 307.7 | 303.2 |
| 5° | 380.5 | 379.0 | 375.9 | 369.9 | 362.3 | 353.2 | 350.2 | 341.1 | 330.5 | 318.3 | 309.2 |
| 7.5° | 416.9 | 416.9 | 412.3 | 406.2 | 394.1 | 382.0 | 379.0 | 366.8 | 351.7 | 335.0 | 318.3 |
| 10° | 448.7 | 447.2 | 442.6 | 435.1 | 419.9 | 409.3 | 404.7 | 389.6 | 371.4 | 353.2 | 333.5 |
| 12.5° | 472.9 | 472.9 | 466.9 | 456.3 | 439.6 | 429.0 | 426.0 | 412.3 | 394.1 | 372.9 | 345.6 |
| 15° | 486.6 | 485.1 | 480.5 | 466.9 | 454.8 | 442.6 | 441.1 | 429.0 | 413.8 | 391.1 | 362.3 |
| 17.5° | 486.6 | 488.1 | 480.5 | 472.9 | 462.3 | 451.7 | 450.2 | 441.1 | 426.0 | 406.2 | 375.9 |
| 20° | 480.5 | 480.5 | 474.5 | 468.4 | 462.3 | 457.8 | 456.3 | 450.2 | 438.1 | 421.4 | 391.1 |
| 22.5° | 472.9 | 471.4 | 469.9 | 465.4 | 463.9 | 462.3 | 463.9 | 460.8 | 453.2 | 435.1 | 406.2 |
| 25° | 471.4 | 469.9 | 466.9 | 463.9 | 465.4 | 472.9 | 472.9 | 474.5 | 466.9 | 451.7 | 424.4 |
| 27.5° | 477.5 | 477.5 | 472.9 | 468.4 | 471.4 | 482.0 | 482.0 | 486.6 | 482.0 | 471.4 | 444.1 |
| 30° | 503.3 | 497.2 | 489.6 | 480.5 | 483.6 | 495.7 | 497.2 | 506.3 | 506.3 | 498.7 | 476.0 |
| 32.5° | 538.1 | 532.1 | 512.4 | 500.2 | 500.2 | 515.4 | 515.4 | 530.5 | 544.2 | 529.0 | 494.2 |
| 35° | 565.4 | 562.4 | 539.6 | 524.5 | 529.0 | 542.7 | 547.2 | 571.5 | 583.6 | 545.7 | 503.3 |
| 37.5° | 656.4 | 651.8 | 607.9 | 551.8 | 554.8 | 592.7 | 595.7 | 606.3 | 595.7 | 553.3 | 521.5 |
| 40° | 777.6 | 780.7 | 735.2 | 642.7 | 571.5 | 588.2 | 588.2 | 606.3 | 612.4 | 586.6 | 565.4 |
| 42.5° | 961.1 | 942.9 | 897.4 | 771.6 | 645.8 | 612.4 | 613.9 | 639.7 | 671.5 | 656.4 | 659.4 |
| 45° | 1120.2 | 1106.6 | 1058.1 | 936.8 | 765.5 | 692.7 | 686.7 | 720.0 | 782.2 | 795.8 | 830.7 |
| 47.5° | 1261.2 | 1247.5 | 1226.3 | 1112.6 | 944.4 | 833.7 | 811.0 | 844.3 | 952.0 | 1023.2 | 1047.5 |
| 50° | 1431.0 | 1434.0 | 1385.5 | 1320.3 | 1139.9 | 1023.2 | 1017.1 | 1018.7 | 1188.4 | 1247.5 | 1282.4 |
| 52.5° | 1646.2 | 1641.7 | 1556.8 | 1521.9 | 1411.3 | 1271.8 | 1236.9 | 1258.2 | 1426.4 | 1468.9 | 1526.5 |
| 55° | 1799.3 | 1794.8 | 1753.8 | 1747.8 | 1711.4 | 1547.7 | 1538.6 | 1537.1 | 1688.7 | 1706.9 | 1775.1 |
| 57.5° | 1888.8 | 1896.3 | 1925.1 | 2002.4 | 2032.8 | 1914.5 | 1888.8 | 1838.7 | 1923.6 | 1919.1 | 1993.4 |
| 60° | 1903.9 | 1916.0 | 1997.9 | 2175.3 | 2345.0 | 2281.4 | 2246.5 | 2116.1 | 2138.9 | 2101.0 | 2146.5 |
| 62.5° | 1781.1 | 1816.0 | 1961.5 | 2211.6 | 2502.7 | 2587.6 | 2558.8 | 2357.2 | 2304.1 | 2225.3 | 2167.7 |
| 65° | 1465.8 | 1481.0 | 1690.2 | 2054.0 | 2486.0 | 2727.0 | 2727.0 | 2528.4 | 2358.7 | 2164.6 | 2002.4 |
| 67.5° | 1012.6 | 1020.2 | 1274.8 | 1656.8 | 2231.3 | 2666.4 | 2689.1 | 2525.4 | 2263.2 | 1926.7 | 1632.6 |
| 70° | 574.5 | 617.0 | 771.6 | 1158.1 | 1758.4 | 2348.1 | 2372.3 | 2298.0 | 1894.8 | 1427.9 | 1070.2 |
| 72.5° | 239.5 | 266.8 | 375.9 | 674.6 | 1196.0 | 1849.3 | 1891.8 | 1822.1 | 1415.8 | 871.6 | 506.3 |
| 75° | 74.3 | 77.3 | 124.3 | 294.1 | 653.3 | 1161.1 | 1232.4 | 1229.4 | 845.8 | 407.8 | 206.2 |
| 77.5° | 40.9 | 42.4 | 59.1 | 119.8 | 286.5 | 620.0 | 663.9 | 627.6 | 418.4 | 175.8 | 63.7 |
| 80° | 19.7 | 21.2 | 31.8 | 57.6 | 125.8 | 231.9 | 272.9 | 253.1 | 145.5 | 83.4 | 21.2 |
| 82.5° | 6.1 | 7.6 | 15.2 | 25.8 | 50.0 | 54.6 | 54.6 | 97.0 | 74.3 | 54.6 | 10.6 |
| 85° | 0.0 | 0.0 | 4.5 | 9.1 | 9.1 | 9.1 | 9.1 | 21.2 | 34.9 | 33.3 | 4.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 3.0 | 1.5 |
| 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° | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 | 298.6 |
| 2.5° | 300.1 | 298.6 | 292.6 | 286.5 | 283.5 | 280.4 | 277.4 | 274.4 | 274.4 | 275.9 | 274.4 |
| 5° | 303.2 | 298.6 | 289.5 | 280.4 | 274.4 | 269.8 | 263.8 | 262.2 | 260.7 | 262.2 | 262.2 |
| 7.5° | 310.8 | 304.7 | 291.0 | 277.4 | 268.3 | 260.7 | 256.2 | 254.7 | 251.6 | 251.6 | 251.6 |
| 10° | 322.9 | 312.3 | 294.1 | 278.9 | 266.8 | 256.2 | 242.5 | 227.4 | 218.3 | 212.2 | 207.7 |
| 12.5° | 335.0 | 322.9 | 298.6 | 280.4 | 266.8 | 236.5 | 203.1 | 174.3 | 159.2 | 151.6 | 150.1 |
| 15° | 348.6 | 333.5 | 307.7 | 286.5 | 250.1 | 194.0 | 148.6 | 124.3 | 118.2 | 118.2 | 116.7 |
| 17.5° | 359.3 | 345.6 | 315.3 | 288.0 | 219.8 | 145.5 | 112.2 | 104.6 | 106.1 | 109.1 | 109.1 |
| 20° | 375.9 | 359.3 | 325.9 | 274.4 | 169.8 | 109.1 | 98.5 | 100.0 | 101.6 | 103.1 | 104.6 |
| 22.5° | 391.1 | 372.9 | 338.0 | 244.1 | 124.3 | 94.0 | 94.0 | 95.5 | 97.0 | 98.5 | 100.0 |
| 25° | 409.3 | 392.6 | 350.2 | 200.1 | 95.5 | 86.4 | 87.9 | 91.0 | 92.5 | 94.0 | 94.0 |
| 27.5° | 430.5 | 412.3 | 350.2 | 157.6 | 83.4 | 80.3 | 80.3 | 83.4 | 84.9 | 87.9 | 87.9 |
| 30° | 459.3 | 439.6 | 341.1 | 116.7 | 77.3 | 74.3 | 72.8 | 75.8 | 77.3 | 80.3 | 80.3 |
| 32.5° | 477.5 | 465.4 | 321.4 | 87.9 | 71.2 | 68.2 | 66.7 | 66.7 | 68.2 | 71.2 | 71.2 |
| 35° | 495.7 | 489.6 | 291.0 | 75.8 | 66.7 | 63.7 | 60.6 | 57.6 | 57.6 | 57.6 | 57.6 |
| 37.5° | 524.5 | 533.6 | 247.1 | 69.7 | 63.7 | 59.1 | 54.6 | 50.0 | 47.0 | 45.5 | 44.0 |
| 40° | 583.6 | 591.2 | 203.1 | 65.2 | 59.1 | 54.6 | 47.0 | 40.9 | 36.4 | 33.3 | 33.3 |
| 42.5° | 676.1 | 670.0 | 154.6 | 62.2 | 54.6 | 48.5 | 39.4 | 33.3 | 27.3 | 24.3 | 24.3 |
| 45° | 836.8 | 768.5 | 113.7 | 57.6 | 51.5 | 44.0 | 33.3 | 25.8 | 19.7 | 18.2 | 18.2 |
| 47.5° | 1033.8 | 882.2 | 86.4 | 54.6 | 47.0 | 37.9 | 25.8 | 19.7 | 15.2 | 13.6 | 13.6 |
| 50° | 1246.0 | 998.9 | 71.2 | 50.0 | 42.4 | 31.8 | 21.2 | 13.6 | 10.6 | 10.6 | 10.6 |
| 52.5° | 1446.1 | 1077.8 | 59.1 | 45.5 | 36.4 | 25.8 | 15.2 | 10.6 | 9.1 | 9.1 | 9.1 |
| 55° | 1632.6 | 1126.3 | 48.5 | 39.4 | 30.3 | 19.7 | 12.1 | 9.1 | 7.6 | 6.1 | 6.1 |
| 57.5° | 1759.9 | 1118.7 | 39.4 | 31.8 | 22.7 | 13.6 | 9.1 | 7.6 | 6.1 | 4.5 | 4.5 |
| 60° | 1803.9 | 1052.0 | 30.3 | 25.8 | 16.7 | 10.6 | 7.6 | 6.1 | 4.5 | 3.0 | 3.0 |
| 62.5° | 1741.7 | 920.1 | 24.3 | 19.7 | 12.1 | 9.1 | 6.1 | 4.5 | 3.0 | 1.5 | 1.5 |
| 65° | 1567.4 | 791.3 | 18.2 | 13.6 | 9.1 | 6.1 | 4.5 | 3.0 | 1.5 | 0.0 | 0.0 |
| 67.5° | 1247.5 | 613.9 | 15.2 | 9.1 | 6.1 | 4.5 | 3.0 | 1.5 | 0.0 | 0.0 | 0.0 |
| 70° | 780.7 | 385.0 | 12.1 | 6.1 | 4.5 | 3.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72.5° | 379.0 | 189.5 | 9.1 | 4.5 | 3.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75° | 141.0 | 62.2 | 7.6 | 4.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77.5° | 45.5 | 21.2 | 6.1 | 4.5 | 3.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 16.7 | 9.1 | 3.0 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 7.6 | 4.5 | 1.5 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 3.0 | 3.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 1.5 | 1.5 | 1.5 | 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 ($\mu\text{W}/\text{nm}$) | 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 (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 | 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 $R_a = 80.9$
 $R_9 = -1.5$



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)