

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P633485

Luminaire Tested: GWS-SA2E-827-U-T2-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P633485
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-22)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA2E-827-U-T2-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS WITH HOUSE SIDE SHIELD
Light Source: (32) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 8034.5 lumens
Efficiency: N/A
Efficacy: 74.3 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G2

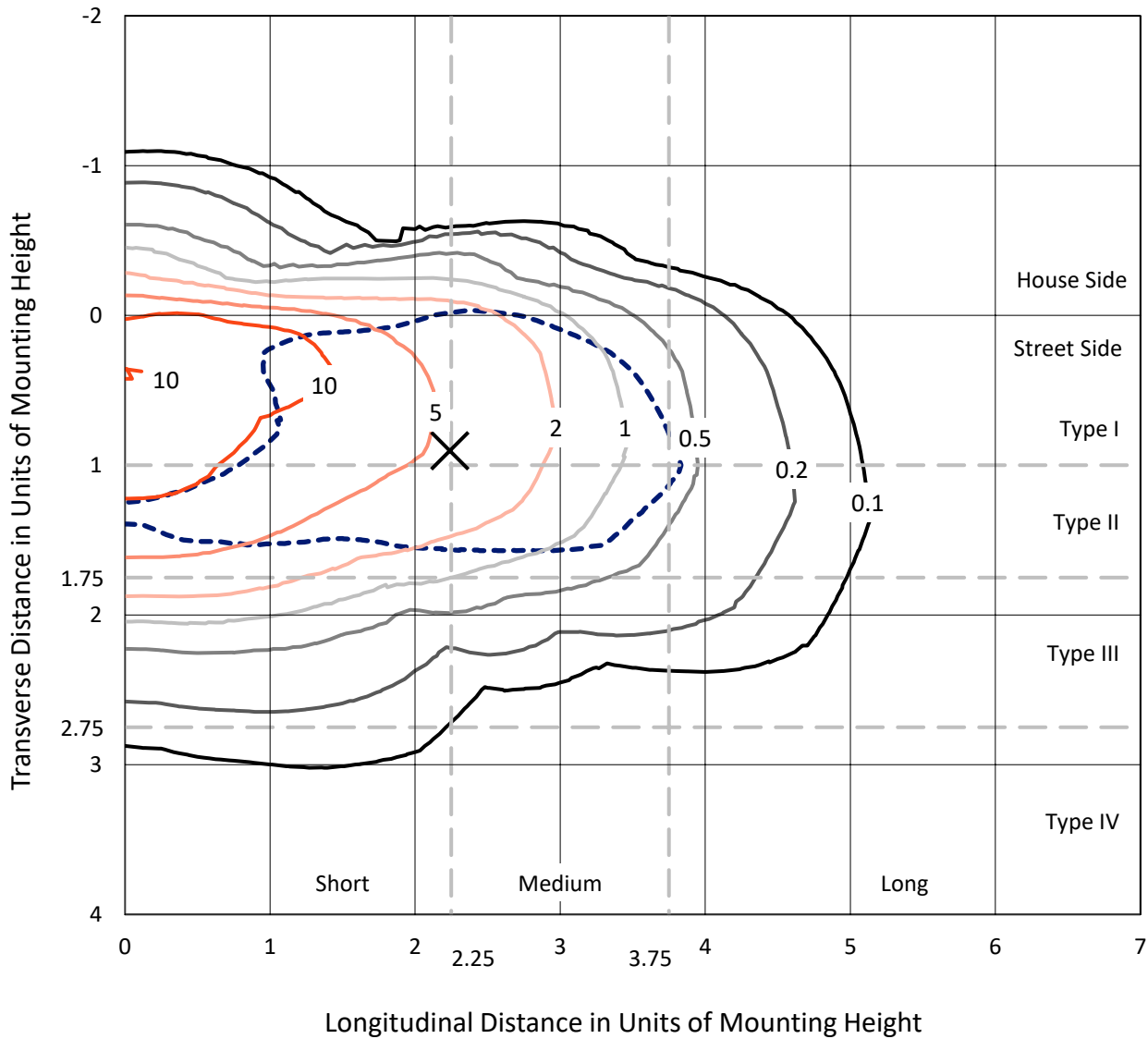
Input Watts (W): 108.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P633485
 CATALOG NUMBER: GWS-SA2E-827-U-T2-W-HSS

Iso-Footcandle Lines of Horizontal Illumination

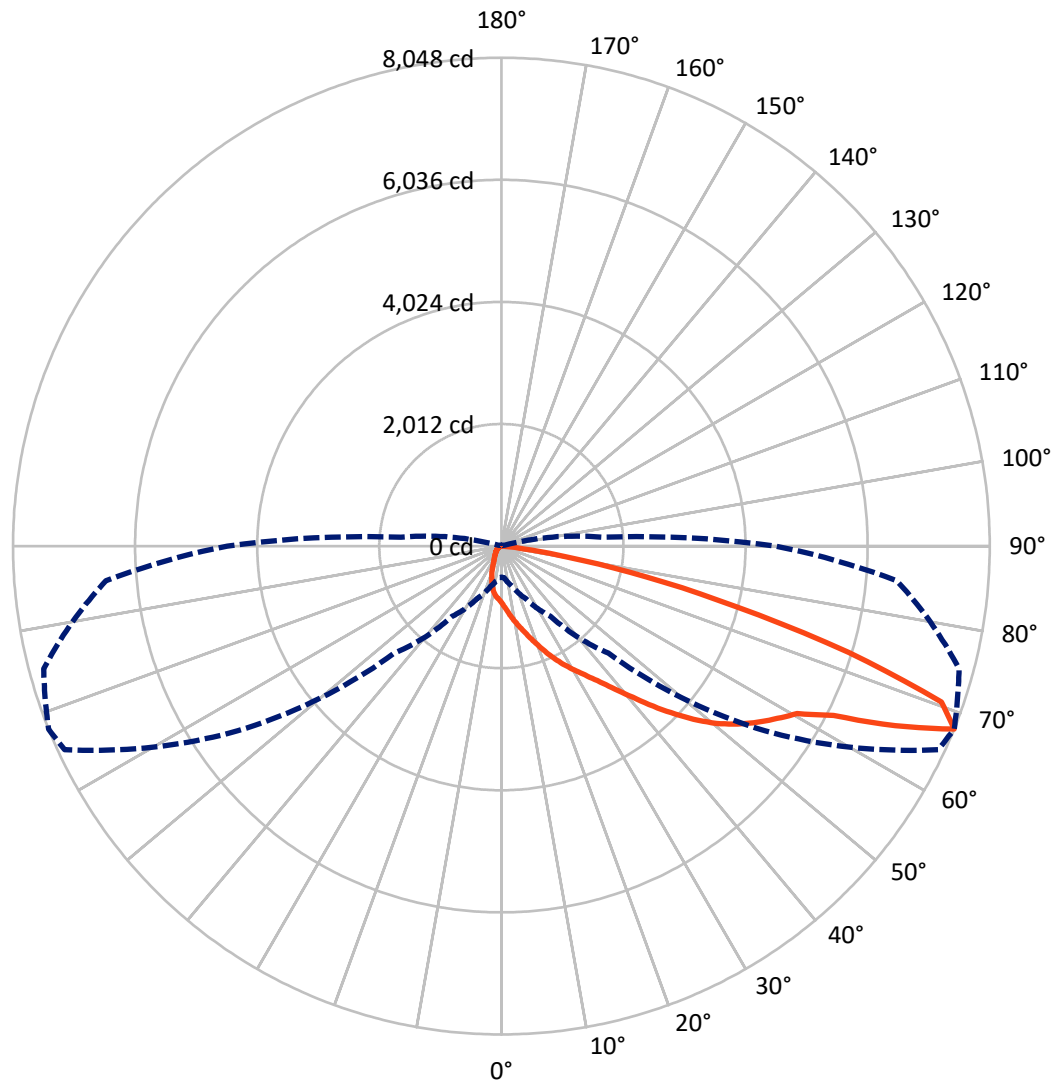
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 15.1 fc
 Type II - Short - N/A

REPORT NUMBER: P633485
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Luminous Intensity Polar Plot



— Vertical Plane Through 68-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 580.2 | 0.0 | 580.2 |
| | % Fixture | 7.2 | 0.0 | 7.2 |
| Street Side | Lumens | 7454.3 | 0.0 | 7454.3 |
| | % Fixture | 92.8 | 0.0 | 92.8 |
| Total | Lumens | 8034.5 | 0.0 | 8034.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 91.2 | 1.1 |
| 10°-20° | 261.9 | 3.3 |
| 20°-30° | 450.0 | 5.6 |
| 30°-40° | 782.4 | 9.7 |
| 40°-50° | 1365.3 | 17.0 |
| 50°-60° | 2059.2 | 25.6 |
| 60°-70° | 2064.8 | 25.7 |
| 70°-80° | 911.0 | 11.3 |
| 80°-90° | 48.7 | 0.6 |
| 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° | 8034.5 | 100.0 |
| 0°-180° | 8034.5 | 100.0 |

Coefficient of Utilization



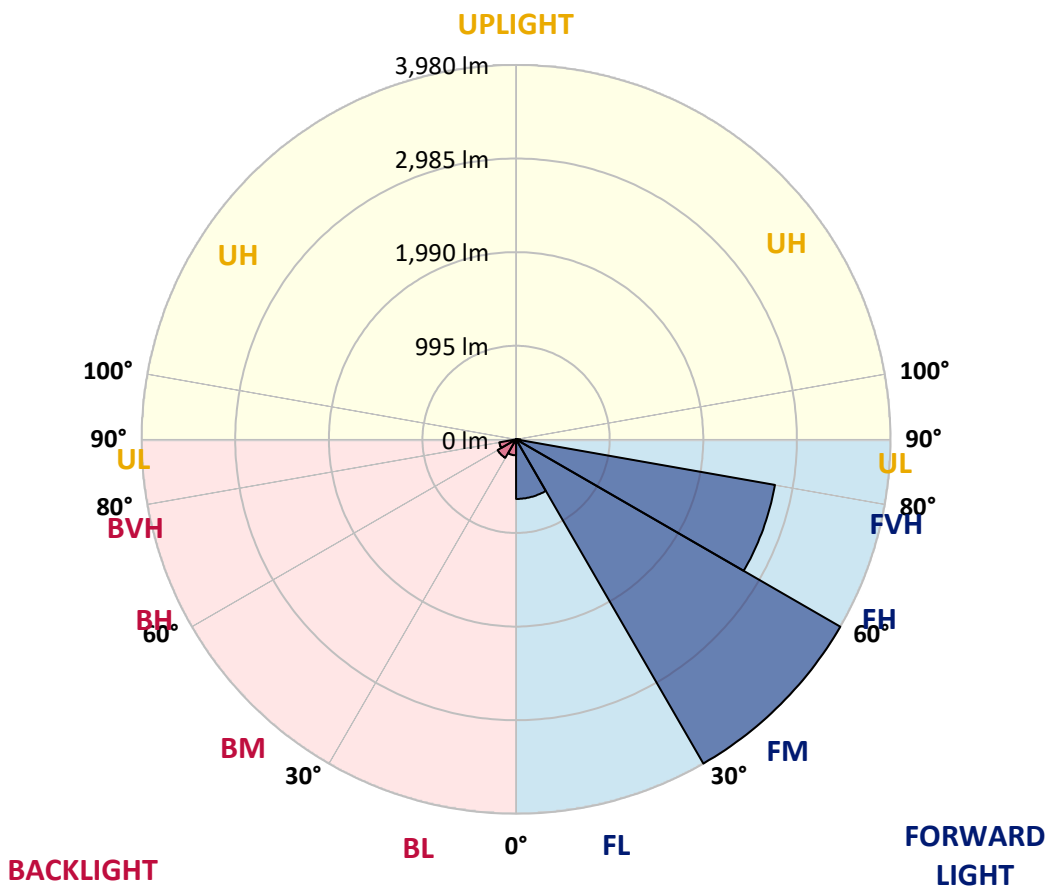
REPORT NUMBER: P633485

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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°) | 633.4 | 7.9 | | | |
| FM (30°-60°) | 3980.3 | 49.5 | | | |
| FH (60°-80°) | 2794.8 | 34.8 | | | G2/5000 |
| FVH (80°-90°) | 45.9 | 0.6 | | | G1/100 |
| BL (0°-30°) | 169.7 | 2.1 | B1/500 | | |
| BM (30°-60°) | 226.6 | 2.8 | B1/1000 | | |
| BH (60°-80°) | 181.1 | 2.3 | B1/500 | | G1/500 |
| BVH (80°-90°) | 2.7 | 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-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 68° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 |
| 2.5° | 1088.8 | 1095.7 | 1088.8 | 1090.3 | 1070.3 | 1061.1 | 1041.1 | 1013.4 | 1006.5 | 988.8 | 961.9 |
| 5° | 1221.8 | 1228.0 | 1221.1 | 1219.5 | 1196.4 | 1179.5 | 1146.5 | 1098.8 | 1085.0 | 1050.4 | 997.3 |
| 7.5° | 1294.1 | 1297.9 | 1300.3 | 1304.1 | 1295.6 | 1281.8 | 1251.8 | 1192.6 | 1178.0 | 1121.9 | 1047.3 |
| 10° | 1301.8 | 1304.9 | 1316.4 | 1339.5 | 1356.4 | 1364.8 | 1347.9 | 1293.3 | 1270.3 | 1215.7 | 1108.8 |
| 12.5° | 1280.3 | 1284.9 | 1303.3 | 1341.8 | 1388.7 | 1431.7 | 1442.5 | 1394.8 | 1374.1 | 1304.1 | 1181.1 |
| 15° | 1251.8 | 1255.7 | 1281.0 | 1333.3 | 1404.1 | 1483.3 | 1527.9 | 1507.1 | 1484.0 | 1411.0 | 1261.0 |
| 17.5° | 1208.0 | 1213.4 | 1248.7 | 1319.5 | 1411.0 | 1524.0 | 1620.1 | 1627.0 | 1610.9 | 1531.7 | 1349.5 |
| 20° | 1183.4 | 1187.2 | 1218.7 | 1291.8 | 1406.4 | 1554.0 | 1706.2 | 1771.6 | 1753.9 | 1670.9 | 1451.0 |
| 22.5° | 1204.1 | 1207.2 | 1228.0 | 1284.9 | 1391.0 | 1570.9 | 1786.2 | 1916.2 | 1906.2 | 1820.0 | 1557.8 |
| 25° | 1313.3 | 1323.3 | 1311.0 | 1321.0 | 1397.9 | 1580.1 | 1850.8 | 2060.7 | 2063.0 | 1976.1 | 1668.6 |
| 27.5° | 1534.8 | 1521.7 | 1492.5 | 1442.5 | 1451.7 | 1604.7 | 1906.2 | 2196.8 | 2216.8 | 2128.4 | 1767.0 |
| 30° | 1760.1 | 1752.4 | 1734.7 | 1657.0 | 1592.4 | 1659.3 | 1953.1 | 2336.0 | 2367.5 | 2278.3 | 1854.6 |
| 32.5° | 2013.0 | 2020.7 | 1989.2 | 1896.2 | 1786.2 | 1770.1 | 2001.5 | 2468.2 | 2527.5 | 2448.3 | 1957.7 |
| 35° | 2315.2 | 2317.5 | 2255.3 | 2152.2 | 2027.7 | 1953.1 | 2088.4 | 2614.3 | 2723.5 | 2665.1 | 2095.3 |
| 37.5° | 2609.7 | 2623.6 | 2589.7 | 2427.5 | 2316.8 | 2180.7 | 2232.2 | 2802.0 | 2955.7 | 2932.7 | 2268.3 |
| 40° | 2870.4 | 2891.9 | 2881.2 | 2724.3 | 2579.0 | 2464.4 | 2455.2 | 3021.9 | 3236.4 | 3262.5 | 2496.7 |
| 42.5° | 3078.0 | 3091.8 | 3100.3 | 2988.8 | 2860.4 | 2795.8 | 2730.4 | 3277.2 | 3567.8 | 3674.7 | 2776.6 |
| 45° | 3297.1 | 3301.8 | 3319.4 | 3244.1 | 3131.8 | 3137.2 | 3055.7 | 3587.0 | 3916.9 | 4131.4 | 3098.0 |
| 47.5° | 3576.3 | 3591.6 | 3583.2 | 3504.0 | 3402.5 | 3463.2 | 3391.7 | 3906.1 | 4261.4 | 4618.9 | 3427.1 |
| 50° | 3916.1 | 3932.3 | 3924.6 | 3832.3 | 3719.3 | 3744.7 | 3700.1 | 4216.0 | 4593.6 | 5078.7 | 3700.8 |
| 52.5° | 4091.4 | 4104.5 | 4199.9 | 4241.4 | 4182.2 | 4020.7 | 3963.0 | 4556.6 | 4874.2 | 5457.1 | 3952.3 |
| 55° | 4006.9 | 4016.1 | 4223.7 | 4399.0 | 4615.9 | 4454.4 | 4227.5 | 4819.6 | 5121.8 | 5752.3 | 4139.1 |
| 57.5° | 3656.2 | 3706.2 | 3988.4 | 4285.2 | 4741.2 | 4882.7 | 4656.6 | 5105.7 | 5360.2 | 5957.6 | 4322.9 |
| 60° | 2937.3 | 2935.0 | 3339.4 | 3872.3 | 4496.7 | 5000.3 | 5262.5 | 5492.4 | 5599.3 | 6115.3 | 4568.9 |
| 62.5° | 1623.2 | 1637.8 | 2176.1 | 2878.1 | 3816.9 | 4695.8 | 5716.9 | 6160.6 | 6144.5 | 6390.5 | 4954.2 |
| 65° | 808.1 | 837.4 | 1129.5 | 1648.6 | 2539.8 | 3880.8 | 5795.4 | 7180.2 | 7134.1 | 7038.7 | 5750.0 |
| 67.5° | 512.9 | 524.4 | 685.9 | 958.1 | 1411.7 | 2494.4 | 5307.1 | 7940.7 | 8047.6 | 7807.7 | 6539.7 |
| 70° | 332.2 | 351.4 | 476.7 | 655.1 | 852.0 | 1285.6 | 3887.7 | 7447.8 | 7693.1 | 7723.1 | 6047.6 |
| 72.5° | 180.7 | 194.5 | 304.5 | 467.5 | 615.1 | 642.8 | 2183.7 | 5589.3 | 5983.8 | 6551.2 | 4731.2 |
| 75° | 103.0 | 113.0 | 166.9 | 317.6 | 451.4 | 391.4 | 968.1 | 3741.6 | 3993.0 | 4682.0 | 3390.2 |
| 77.5° | 62.3 | 70.7 | 93.8 | 154.6 | 283.0 | 261.4 | 366.0 | 2277.6 | 2437.5 | 2793.5 | 1779.3 |
| 80° | 28.5 | 33.8 | 59.2 | 85.4 | 154.6 | 123.8 | 139.9 | 1061.9 | 1096.5 | 1146.5 | 589.0 |
| 82.5° | 13.1 | 15.4 | 26.9 | 50.7 | 87.7 | 71.5 | 53.8 | 245.3 | 345.2 | 326.8 | 149.9 |
| 85° | 1.5 | 1.5 | 10.0 | 20.8 | 24.6 | 18.5 | 22.3 | 55.4 | 70.0 | 98.4 | 43.1 |
| 87.5° | 0.0 | 0.0 | 0.8 | 0.8 | 1.5 | 2.3 | 4.6 | 6.9 | 10.0 | 16.1 | 10.8 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P633485

CATALOG NUMBER: GWS-SA2E-827-U-T2-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 | 935.0 |
| 2.5° | 949.6 | 928.1 | 908.9 | 880.4 | 861.2 | 839.7 | 825.1 | 807.4 | 800.4 | 795.1 | 787.4 |
| 5° | 971.2 | 936.5 | 889.6 | 837.4 | 794.3 | 753.5 | 715.9 | 691.3 | 669.7 | 666.7 | 655.9 |
| 7.5° | 1006.5 | 955.0 | 875.8 | 790.5 | 717.4 | 649.7 | 596.7 | 553.6 | 532.1 | 525.2 | 512.9 |
| 10° | 1053.4 | 982.7 | 855.0 | 724.3 | 619.0 | 538.2 | 478.3 | 429.8 | 396.0 | 383.7 | 374.5 |
| 12.5° | 1105.7 | 1008.1 | 822.0 | 642.8 | 522.9 | 430.6 | 354.5 | 303.0 | 281.4 | 273.7 | 266.8 |
| 15° | 1165.7 | 1031.9 | 769.7 | 561.3 | 429.1 | 316.8 | 263.0 | 240.7 | 231.4 | 229.1 | 226.8 |
| 17.5° | 1223.4 | 1047.3 | 707.4 | 476.7 | 329.9 | 246.1 | 220.7 | 212.2 | 209.9 | 207.6 | 206.1 |
| 20° | 1288.7 | 1058.0 | 634.4 | 396.8 | 256.1 | 208.4 | 196.1 | 189.9 | 185.3 | 180.7 | 179.9 |
| 22.5° | 1355.6 | 1058.0 | 555.2 | 318.3 | 214.5 | 186.8 | 173.0 | 161.5 | 153.0 | 148.4 | 146.9 |
| 25° | 1419.4 | 1043.4 | 476.7 | 254.5 | 189.2 | 166.1 | 148.4 | 135.3 | 123.8 | 118.4 | 116.9 |
| 27.5° | 1464.8 | 1005.8 | 408.3 | 215.3 | 171.5 | 147.6 | 126.1 | 111.5 | 102.3 | 96.9 | 96.1 |
| 30° | 1493.3 | 949.6 | 345.2 | 192.2 | 156.1 | 128.4 | 106.9 | 94.6 | 87.7 | 83.8 | 82.3 |
| 32.5° | 1514.8 | 880.4 | 289.1 | 176.1 | 141.5 | 111.5 | 93.0 | 83.0 | 76.9 | 73.8 | 73.0 |
| 35° | 1557.8 | 815.1 | 247.6 | 161.5 | 126.1 | 97.7 | 81.5 | 73.8 | 69.2 | 65.4 | 64.6 |
| 37.5° | 1617.8 | 760.5 | 214.5 | 148.4 | 111.5 | 86.9 | 73.8 | 66.9 | 63.1 | 59.2 | 58.4 |
| 40° | 1706.2 | 725.9 | 189.9 | 135.3 | 98.4 | 78.4 | 67.7 | 61.5 | 56.1 | 52.3 | 51.5 |
| 42.5° | 1842.3 | 709.7 | 173.8 | 122.3 | 86.9 | 70.7 | 62.3 | 54.6 | 49.2 | 45.4 | 44.6 |
| 45° | 2004.6 | 718.2 | 159.9 | 109.2 | 79.2 | 65.4 | 55.4 | 47.7 | 42.3 | 38.4 | 37.7 |
| 47.5° | 2178.4 | 748.2 | 148.4 | 96.9 | 71.5 | 60.0 | 49.2 | 40.8 | 36.1 | 32.3 | 31.5 |
| 50° | 2359.8 | 797.4 | 138.4 | 85.4 | 65.4 | 53.8 | 42.3 | 35.4 | 30.8 | 27.7 | 26.9 |
| 52.5° | 2517.5 | 864.3 | 128.4 | 76.9 | 60.0 | 47.7 | 36.9 | 30.8 | 26.1 | 23.1 | 22.3 |
| 55° | 2668.2 | 927.3 | 120.7 | 69.2 | 53.8 | 41.5 | 32.3 | 26.1 | 22.3 | 19.2 | 18.5 |
| 57.5° | 2831.9 | 994.2 | 111.5 | 62.3 | 48.4 | 36.9 | 28.5 | 22.3 | 19.2 | 16.1 | 15.4 |
| 60° | 3070.3 | 1093.4 | 97.7 | 56.9 | 42.3 | 32.3 | 24.6 | 20.0 | 16.9 | 13.1 | 12.3 |
| 62.5° | 3414.0 | 1274.1 | 82.3 | 49.2 | 36.1 | 27.7 | 20.8 | 16.9 | 13.8 | 10.8 | 9.2 |
| 65° | 4056.8 | 1581.7 | 67.7 | 40.8 | 29.2 | 23.1 | 17.7 | 13.8 | 10.8 | 7.7 | 6.9 |
| 67.5° | 4519.7 | 1661.6 | 54.6 | 33.1 | 23.8 | 17.7 | 14.6 | 10.8 | 7.7 | 5.4 | 4.6 |
| 70° | 3951.5 | 1193.4 | 42.3 | 26.9 | 20.0 | 13.8 | 11.5 | 8.5 | 5.4 | 3.8 | 3.1 |
| 72.5° | 2977.3 | 779.7 | 31.5 | 20.8 | 15.4 | 11.5 | 8.5 | 6.9 | 4.6 | 3.1 | 2.3 |
| 75° | 2098.4 | 450.6 | 23.1 | 15.4 | 10.8 | 8.5 | 6.9 | 5.4 | 3.8 | 2.3 | 2.3 |
| 77.5° | 1075.7 | 186.1 | 16.1 | 10.8 | 7.7 | 5.4 | 4.6 | 3.1 | 3.1 | 2.3 | 1.5 |
| 80° | 326.8 | 61.5 | 9.2 | 6.9 | 5.4 | 3.8 | 2.3 | 2.3 | 2.3 | 1.5 | 0.8 |
| 82.5° | 74.6 | 20.0 | 5.4 | 5.4 | 3.8 | 3.1 | 2.3 | 0.8 | 0.8 | 0.0 | 0.0 |
| 85° | 19.2 | 6.2 | 4.6 | 3.8 | 3.8 | 3.1 | 1.5 | 0.8 | 0.0 | 0.0 | 0.0 |
| 87.5° | 6.9 | 3.8 | 3.8 | 3.8 | 3.1 | 2.3 | 1.5 | 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



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Invue

Report Number: SP1-2407-157-9

Test Date: 10/03/2024

Luminaire Tested: EMM2-HTN-SA1A-827-U-5WQ

Data applicable to all product families utilizing light square engine

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Invue
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 2764
 CIE u': 0.2591
 CIE v': 0.5290
 Duv: 0.0020
 CIE x: 0.4581
 CIE y: 0.4156
 CIE z: 0.1263
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 583
 Purity: 62.2537
 Rf: 84.7
 Rg: 94.6

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.9 | | |
| R1: | 78.8 | R9: | -1.5 |
| R2: | 89.9 | R10: | 77.9 |
| R3: | 96.2 | R11: | 78.9 |
| R4: | 79.1 | R12: | 71.6 |
| R5: | 79.1 | R13: | 81.2 |
| R6: | 88.8 | R14: | 98.5 |
| R7: | 81.3 | R15: | 69.9 |
| R8: | 54.3 | | |



Test Conditions

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

REPORT NUMBER: SP1-2407-157-9

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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CIE 1931 Chromaticity Diagram



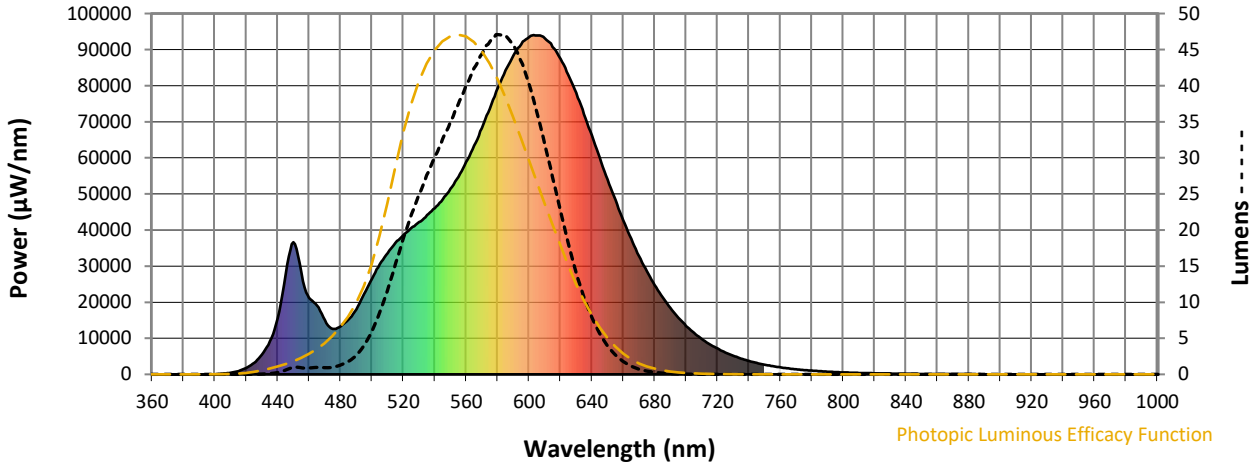
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: 4337.9

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 2.6 | 620 | 87426 | 22.8 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 3.9 | 625 | 83013 | 18.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 5.8 | 630 | 78077 | 14.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 8.5 | 635 | 72080 | 10.7 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 11.5 | 640 | 66249 | 7.9 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 15.2 | 645 | 59973 | 5.7 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 18.7 | 650 | 53972 | 3.9 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 21.9 | 655 | 48369 | 2.7 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 24.9 | 660 | 42641 | 1.8 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 27.6 | 665 | 37602 | 1.1 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 30.0 | 670 | 32798 | 0.7 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.0 | 545 | 48553 | 32.5 | 675 | 28558 | 0.5 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.0 | 550 | 51408 | 34.9 | 680 | 24782 | 0.3 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.0 | 555 | 54711 | 37.4 | 685 | 21386 | 0.2 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 0.0 | 560 | 58847 | 40.0 | 690 | 18413 | 0.1 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 0.1 | 565 | 63386 | 42.4 | 695 | 15721 | 0.1 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 0.2 | 570 | 68196 | 44.3 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 0.6 | 575 | 73613 | 46.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 0.9 | 580 | 79207 | 47.1 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 0.9 | 585 | 84248 | 47.0 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 0.9 | 590 | 88397 | 45.7 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 1.0 | 595 | 91428 | 43.4 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 0.9 | 600 | 93452 | 40.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 1.0 | 605 | 93959 | 36.4 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 1.3 | 610 | 93079 | 32.0 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 1.8 | 615 | 90707 | 27.3 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: 5286.7

S/P: 1.22

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 75.9 | 620 | 87426 | 0.4 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 93.2 | 625 | 83013 | 0.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 107.8 | 630 | 78077 | 0.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 118.7 | 635 | 72080 | 0.1 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 122.2 | 640 | 66249 | 0.1 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 120.8 | 645 | 59973 | 0.0 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 113.9 | 650 | 53972 | 0.0 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 104.1 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 92.4 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 80.5 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.1 | 540 | 46032 | 68.2 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.3 | 545 | 48553 | 57.1 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 1.1 | 550 | 51408 | 46.7 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 2.5 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 5.9 | 560 | 58847 | 29.4 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 12.5 | 565 | 63386 | 22.5 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 26.3 | 570 | 68196 | 16.9 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 55.2 | 575 | 73613 | 12.4 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 85.4 | 580 | 79207 | 9.0 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 75.1 | 585 | 84248 | 6.3 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 63.2 | 590 | 88397 | 4.4 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 63.2 | 595 | 91428 | 3.0 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 54.2 | 600 | 93452 | 2.0 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 48.8 | 605 | 93959 | 1.3 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 54.2 | 610 | 93079 | 0.9 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 63.3 | 615 | 90707 | 0.5 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Melanopic Flux vs. Wavelength



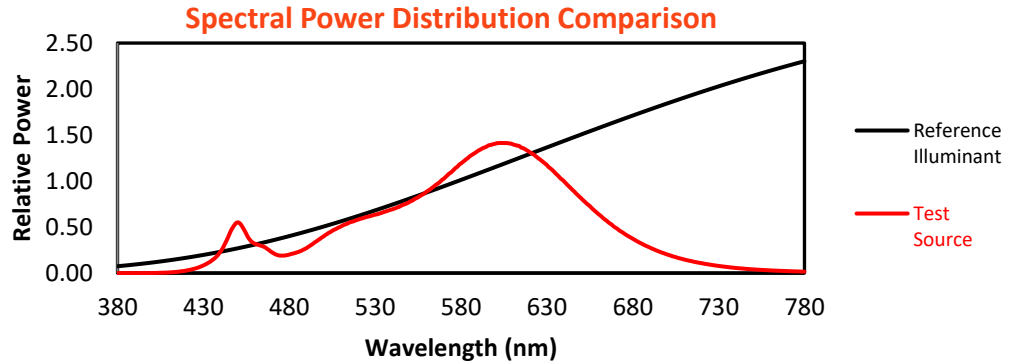
Melanopic Lumens: 9797

M/P: 2.26

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 0 | 0.0 | 490 | 18018 | 27.7 | 620 | 87426 | 1.1 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 36.0 | 625 | 83013 | 0.7 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 44.2 | 630 | 78077 | 0.4 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 51.8 | 635 | 72080 | 0.3 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 57.0 | 640 | 66249 | 0.2 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 60.5 | 645 | 59973 | 0.1 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 61.4 | 650 | 53972 | 0.1 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 60.6 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 58.2 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 55.0 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 50.9 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.1 | 545 | 48553 | 46.6 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.3 | 550 | 51408 | 42.0 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.8 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 1.9 | 560 | 58847 | 32.9 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 4.1 | 565 | 63386 | 28.4 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 8.7 | 570 | 68196 | 24.1 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 18.5 | 575 | 73613 | 20.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 28.3 | 580 | 79207 | 16.3 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 24.7 | 585 | 84248 | 12.9 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 20.4 | 590 | 88397 | 9.8 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 20.1 | 595 | 91428 | 7.3 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 17.2 | 600 | 93452 | 5.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 15.7 | 605 | 93959 | 3.7 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 18.0 | 610 | 93079 | 2.5 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 21.9 | 615 | 90707 | 1.7 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

Summary

$R_f = 84.7$
 $R_g = 94.6$
 CIE $R_a = 80.9$
 $R_9 = -1.5$



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)