

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: P634978

Luminaire Tested: GWS-SA3C-827-U-T3-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P634978
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-26)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3C-827-U-T3-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III OPTICS WITH HOUSE SIDE SHIELD
Light Source: (48) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 7528.3 lumens
Efficiency: N/A
Efficacy: 80.9 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G2

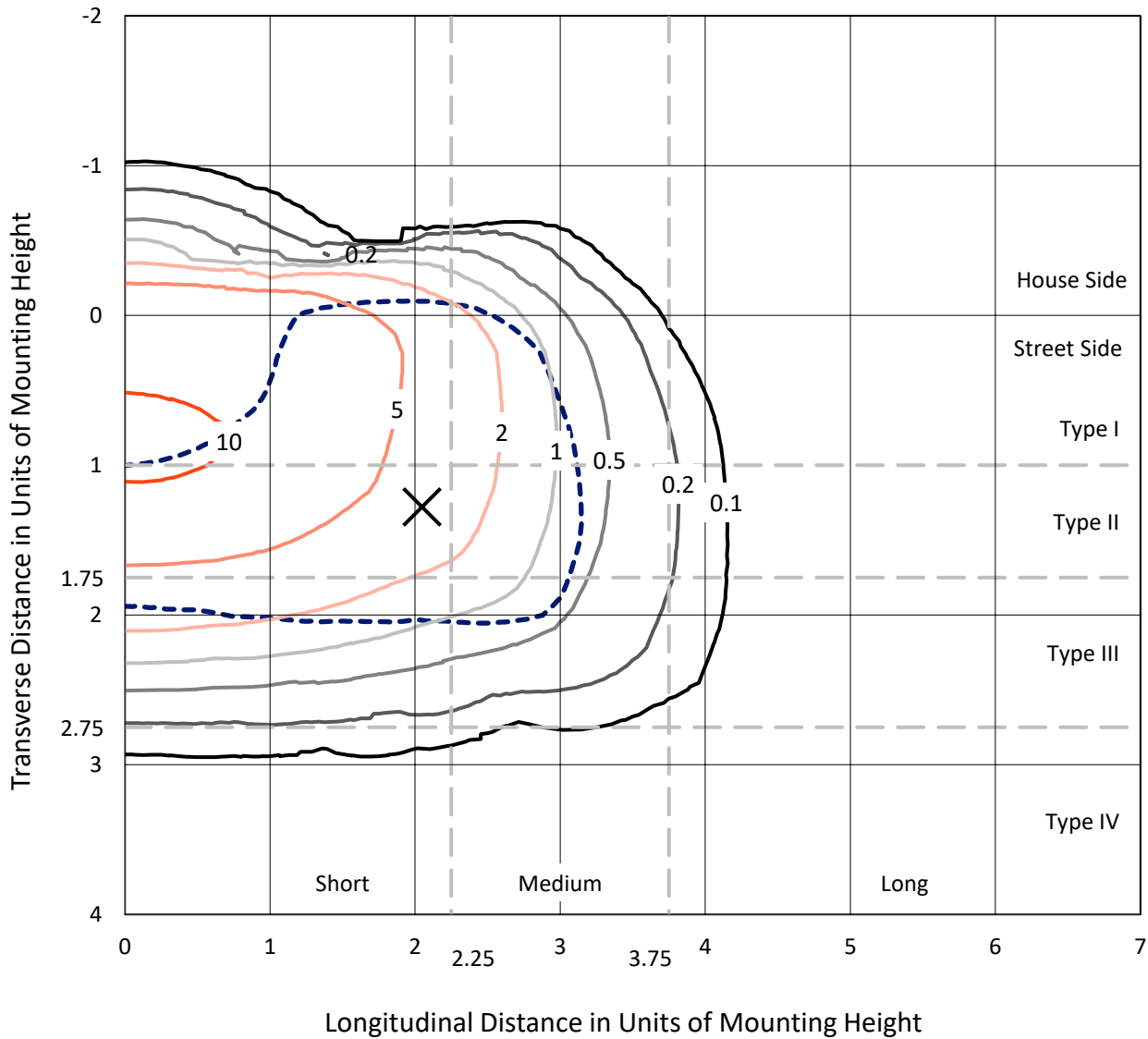
Input Watts (W): 93
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

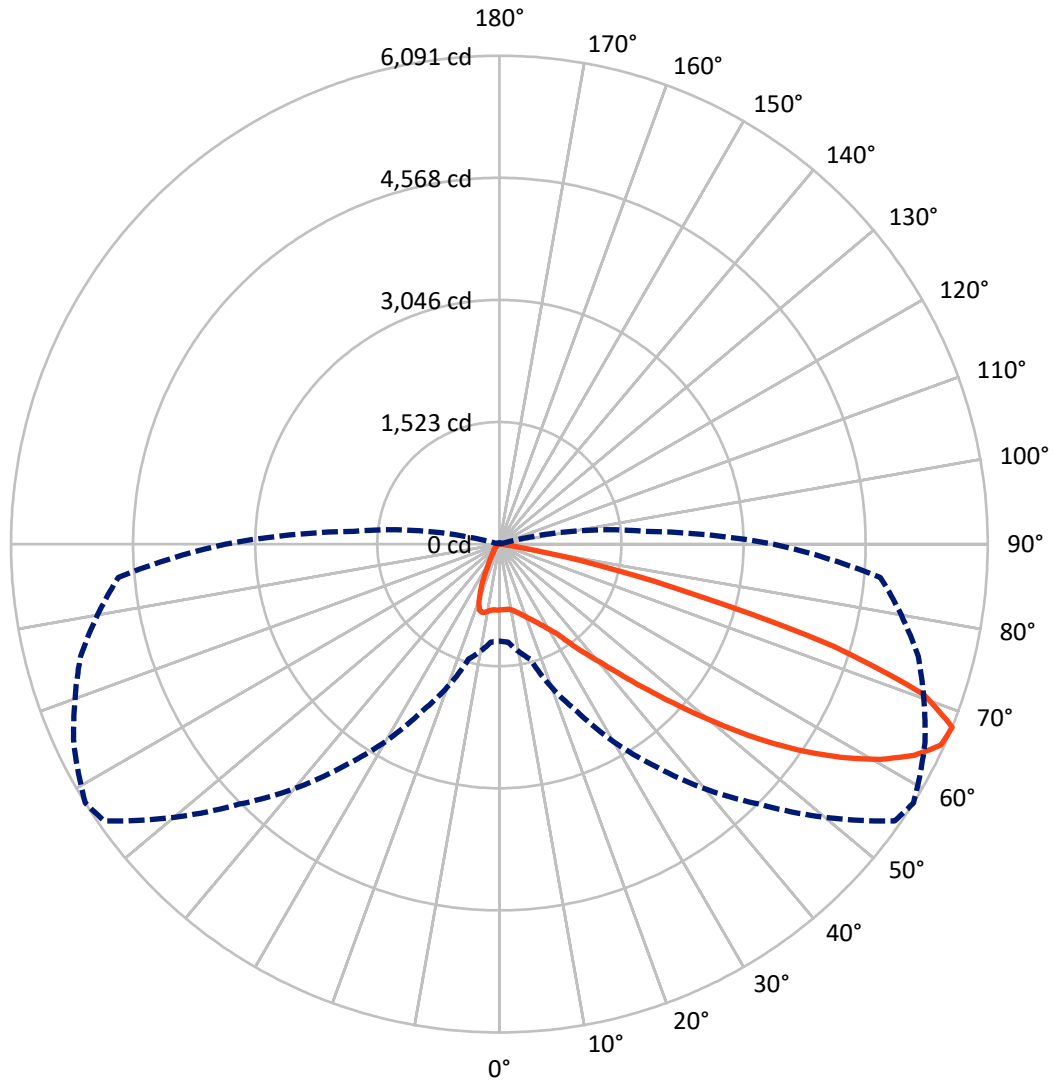
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 11.4 fc
 Type III - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 58-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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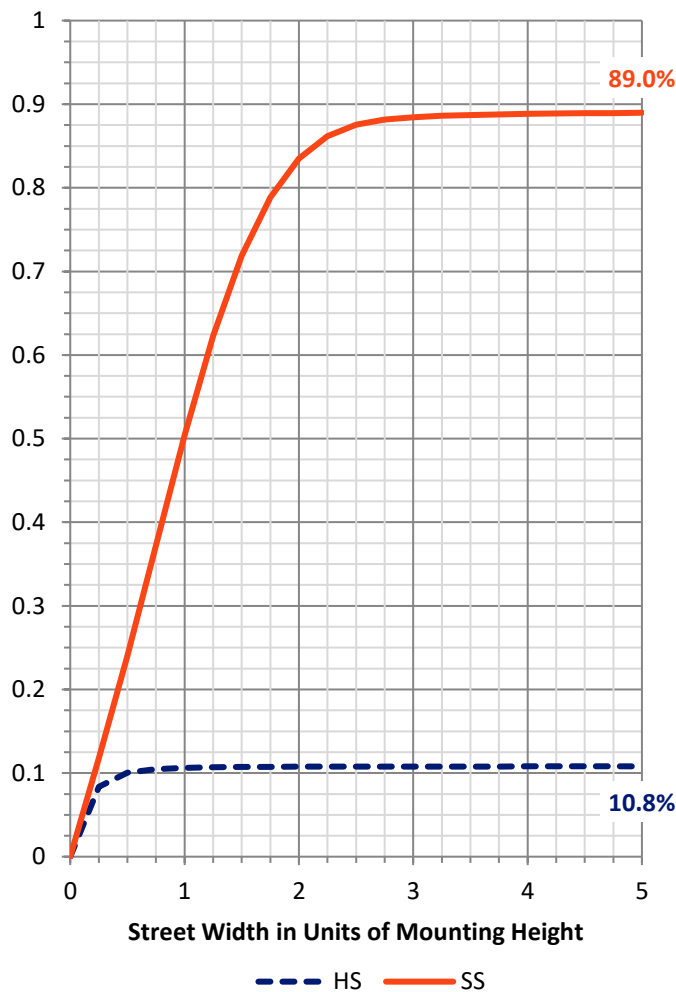
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 821.3 | 0.0 | 821.3 |
| | % Fixture | 10.9 | 0.0 | 10.9 |
| Street Side | Lumens | 6707.0 | 0.0 | 6707.0 |
| | % Fixture | 89.1 | 0.0 | 89.1 |
| Total | Lumens | 7528.3 | 0.0 | 7528.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 77.1 | 1.0 |
| 10°-20° | 216.4 | 2.9 |
| 20°-30° | 377.7 | 5.0 |
| 30°-40° | 674.5 | 9.0 |
| 40°-50° | 1232.8 | 16.4 |
| 50°-60° | 2050.3 | 27.2 |
| 60°-70° | 2227.0 | 29.6 |
| 70°-80° | 653.9 | 8.7 |
| 80°-90° | 18.6 | 0.2 |
| 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° | 7528.3 | 100.0 |
| 0°-180° | 7528.3 | 100.0 |

Coefficient of Utilization



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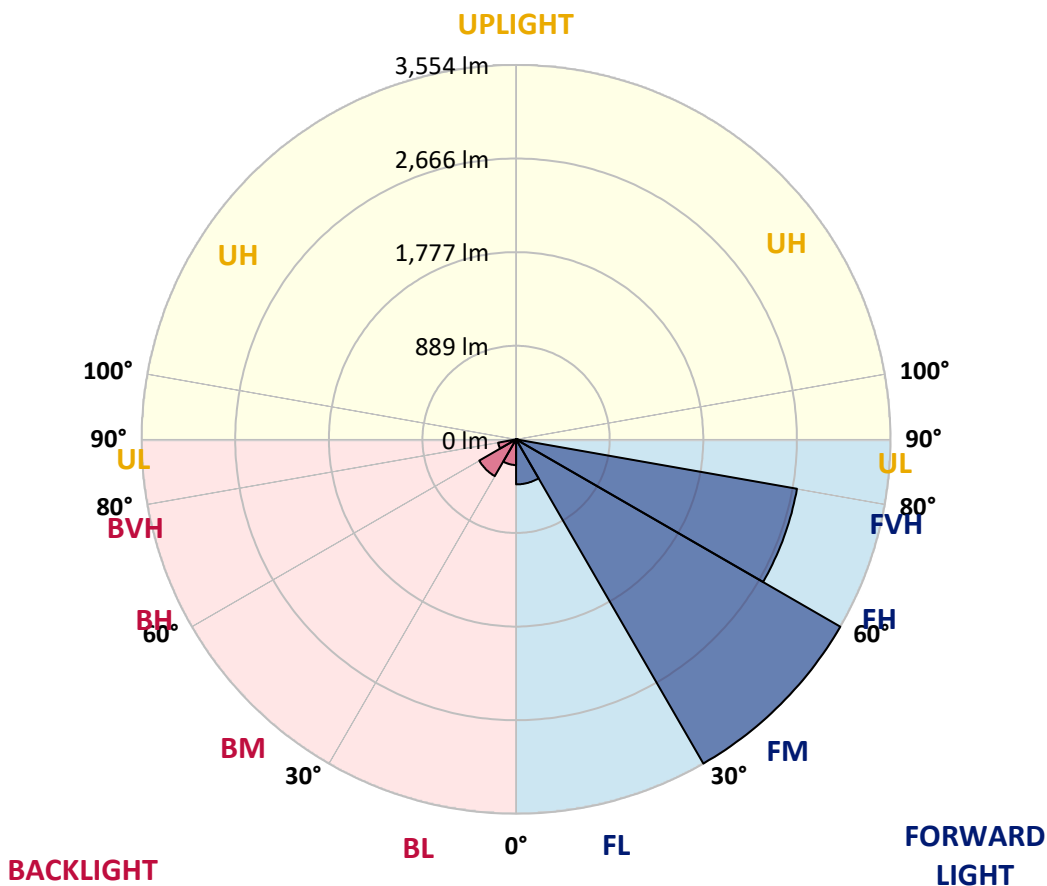
CATALOG NUMBER: GWS-SA3C-827-U-T3-W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 427.5 | 5.7 | | | |
| FM (30°-60°) | 3554.3 | 47.2 | | | |
| FH (60°-80°) | 2707.5 | 36.0 | | | G2/5000 |
| FVH (80°-90°) | 17.7 | 0.2 | | | G1/100 |
| BL (0°-30°) | 243.6 | 3.2 | B1/500 | | |
| BM (30°-60°) | 403.4 | 5.4 | B1/1000 | | |
| BH (60°-80°) | 173.4 | 2.3 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.9 | 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 III Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 58° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 |
| 2.5° | 804.9 | 803.5 | 803.5 | 809.3 | 810.1 | 813.0 | 819.6 | 820.4 | 824.0 | 822.6 | 817.4 |
| 5° | 763.0 | 763.8 | 768.2 | 778.5 | 787.3 | 798.3 | 814.5 | 818.2 | 826.2 | 830.7 | 827.7 |
| 7.5° | 724.1 | 724.8 | 731.4 | 747.6 | 764.5 | 786.5 | 813.0 | 820.4 | 836.5 | 848.3 | 849.0 |
| 10° | 709.4 | 708.6 | 715.2 | 733.6 | 755.7 | 786.5 | 824.8 | 834.3 | 858.6 | 879.2 | 882.8 |
| 12.5° | 713.8 | 713.0 | 719.7 | 736.6 | 760.8 | 799.8 | 845.4 | 858.6 | 889.5 | 921.1 | 927.7 |
| 15° | 731.4 | 730.7 | 735.1 | 749.1 | 775.5 | 815.9 | 871.8 | 891.7 | 930.6 | 968.8 | 979.1 |
| 17.5° | 784.3 | 780.7 | 776.3 | 777.7 | 793.2 | 835.1 | 905.6 | 929.9 | 978.4 | 1024.0 | 1032.8 |
| 20° | 878.4 | 868.9 | 857.1 | 841.7 | 834.3 | 863.0 | 944.6 | 972.5 | 1031.3 | 1083.5 | 1085.0 |
| 22.5° | 1020.3 | 1016.6 | 989.4 | 944.6 | 913.0 | 913.7 | 990.2 | 1022.5 | 1094.5 | 1151.9 | 1143.8 |
| 25° | 1218.0 | 1215.8 | 1173.9 | 1100.4 | 1018.1 | 990.2 | 1048.2 | 1081.3 | 1169.5 | 1230.5 | 1204.8 |
| 27.5° | 1463.6 | 1448.1 | 1398.9 | 1299.6 | 1176.9 | 1089.4 | 1121.7 | 1151.2 | 1248.9 | 1306.3 | 1257.7 |
| 30° | 1677.5 | 1678.2 | 1631.9 | 1528.3 | 1390.1 | 1238.6 | 1211.4 | 1237.2 | 1321.7 | 1382.0 | 1323.2 |
| 32.5° | 1883.3 | 1889.9 | 1839.2 | 1745.8 | 1594.4 | 1433.4 | 1340.1 | 1344.5 | 1415.0 | 1480.5 | 1409.2 |
| 35° | 2074.4 | 2079.6 | 2044.3 | 1964.9 | 1823.8 | 1637.0 | 1519.4 | 1517.2 | 1555.4 | 1622.3 | 1529.0 |
| 37.5° | 2288.3 | 2293.5 | 2258.9 | 2187.6 | 2055.3 | 1870.1 | 1723.0 | 1720.1 | 1735.5 | 1789.9 | 1683.4 |
| 40° | 2516.2 | 2525.8 | 2487.5 | 2427.3 | 2300.8 | 2144.3 | 1959.7 | 1933.3 | 1917.8 | 1981.8 | 1883.3 |
| 42.5° | 2747.0 | 2761.7 | 2748.5 | 2688.2 | 2580.2 | 2450.8 | 2267.0 | 2225.9 | 2192.8 | 2272.9 | 2168.5 |
| 45° | 3033.7 | 3051.4 | 3045.5 | 2999.2 | 2915.4 | 2810.2 | 2636.8 | 2589.0 | 2573.5 | 2647.8 | 2523.6 |
| 47.5° | 3309.4 | 3328.5 | 3349.8 | 3339.5 | 3280.0 | 3231.5 | 3038.9 | 3011.7 | 3007.3 | 3086.6 | 2894.0 |
| 50° | 3514.5 | 3532.1 | 3613.7 | 3672.5 | 3712.9 | 3702.6 | 3535.8 | 3495.4 | 3488.7 | 3539.5 | 3285.1 |
| 52.5° | 3661.5 | 3678.4 | 3790.9 | 3974.6 | 4123.1 | 4204.0 | 4035.6 | 4026.8 | 3990.8 | 3973.2 | 3651.2 |
| 55° | 3775.4 | 3798.9 | 3917.3 | 4195.2 | 4494.3 | 4673.7 | 4568.6 | 4537.0 | 4444.4 | 4342.9 | 3990.8 |
| 57.5° | 3798.2 | 3807.8 | 3974.6 | 4349.5 | 4782.5 | 5072.9 | 5072.9 | 5017.7 | 4839.1 | 4698.7 | 4383.3 |
| 60° | 3593.9 | 3623.3 | 3848.9 | 4337.0 | 4906.0 | 5333.8 | 5491.1 | 5452.9 | 5211.8 | 5039.0 | 4761.2 |
| 62.5° | 3140.3 | 3173.4 | 3448.3 | 4037.8 | 4782.5 | 5387.5 | 5807.9 | 5802.1 | 5530.1 | 5320.6 | 5074.3 |
| 65° | 2408.2 | 2432.4 | 2672.1 | 3377.7 | 4260.6 | 5180.9 | 6034.3 | 6050.5 | 5781.5 | 5506.6 | 5182.4 |
| 67.5° | 1210.0 | 1226.9 | 1485.6 | 2307.4 | 3377.0 | 4586.2 | 6018.9 | 6091.0 | 5857.9 | 5408.1 | 4770.0 |
| 70° | 422.7 | 439.6 | 561.6 | 990.2 | 2055.3 | 3502.0 | 5498.5 | 5616.1 | 5408.8 | 4616.4 | 3518.9 |
| 72.5° | 144.8 | 152.9 | 233.0 | 367.5 | 799.8 | 2075.9 | 4181.2 | 4358.3 | 3987.1 | 3099.1 | 2022.2 |
| 75° | 82.3 | 87.5 | 125.0 | 199.2 | 335.2 | 682.9 | 2372.1 | 2480.9 | 2324.4 | 1689.2 | 832.1 |
| 77.5° | 55.9 | 60.3 | 77.9 | 113.2 | 185.2 | 219.8 | 967.4 | 1218.0 | 1062.2 | 551.3 | 212.4 |
| 80° | 33.1 | 36.0 | 47.8 | 66.9 | 94.8 | 85.3 | 207.3 | 275.7 | 355.0 | 164.7 | 64.0 |
| 82.5° | 15.4 | 17.6 | 30.9 | 44.1 | 47.8 | 36.0 | 61.0 | 74.2 | 100.0 | 80.9 | 26.5 |
| 85° | 0.0 | 0.0 | 10.3 | 18.4 | 17.6 | 10.3 | 16.9 | 18.4 | 27.2 | 40.4 | 10.3 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 1.5 | 2.2 | 4.4 | 8.1 | 4.4 |
| 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: P634978
 CATALOG NUMBER: GWS-SA3C-827-U-T3-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 | 820.4 |
| 2.5° | 823.3 | 818.2 | 824.0 | 821.1 | 824.0 | 823.3 | 817.4 | 813.7 | 813.7 | 807.1 | 804.9 |
| 5° | 833.6 | 828.4 | 829.9 | 823.3 | 821.8 | 818.2 | 810.8 | 807.9 | 807.9 | 801.2 | 799.0 |
| 7.5° | 856.4 | 848.3 | 846.8 | 833.6 | 827.7 | 817.4 | 804.2 | 799.0 | 798.3 | 791.7 | 789.5 |
| 10° | 892.4 | 882.8 | 876.2 | 859.3 | 842.4 | 821.8 | 793.9 | 770.4 | 757.1 | 739.5 | 738.0 |
| 12.5° | 936.5 | 924.7 | 914.5 | 888.7 | 860.8 | 814.5 | 732.1 | 646.1 | 593.2 | 551.3 | 554.3 |
| 15° | 985.8 | 974.7 | 958.6 | 919.6 | 862.3 | 741.7 | 569.7 | 437.4 | 372.7 | 338.1 | 336.7 |
| 17.5° | 1039.4 | 1023.2 | 996.8 | 943.9 | 815.9 | 566.8 | 370.5 | 261.7 | 227.9 | 216.1 | 213.2 |
| 20° | 1089.4 | 1069.6 | 1036.5 | 949.0 | 682.2 | 383.7 | 231.6 | 202.9 | 197.0 | 193.3 | 193.3 |
| 22.5° | 1142.3 | 1117.3 | 1068.1 | 909.3 | 507.2 | 245.5 | 197.0 | 190.4 | 186.0 | 180.8 | 180.1 |
| 25° | 1196.0 | 1163.6 | 1096.8 | 805.7 | 332.3 | 193.3 | 184.5 | 177.2 | 169.1 | 161.0 | 158.8 |
| 27.5° | 1241.6 | 1199.7 | 1118.8 | 651.3 | 213.2 | 174.2 | 168.3 | 155.8 | 144.8 | 136.0 | 134.5 |
| 30° | 1296.0 | 1242.3 | 1128.4 | 476.3 | 167.6 | 153.6 | 144.8 | 131.6 | 118.3 | 109.5 | 106.6 |
| 32.5° | 1368.7 | 1309.9 | 1113.7 | 310.2 | 148.5 | 135.3 | 121.3 | 105.9 | 92.6 | 83.1 | 81.6 |
| 35° | 1481.9 | 1412.1 | 1046.0 | 197.7 | 134.5 | 116.9 | 100.0 | 83.8 | 72.8 | 65.4 | 64.0 |
| 37.5° | 1620.1 | 1555.4 | 935.0 | 148.5 | 120.6 | 101.4 | 81.6 | 66.2 | 58.1 | 52.9 | 51.5 |
| 40° | 1825.2 | 1734.8 | 797.6 | 130.1 | 106.6 | 86.0 | 66.9 | 54.4 | 48.5 | 44.1 | 42.6 |
| 42.5° | 2091.3 | 1946.5 | 639.5 | 118.3 | 93.4 | 72.0 | 54.4 | 44.8 | 39.7 | 36.8 | 36.0 |
| 45° | 2402.3 | 2153.1 | 472.7 | 106.6 | 80.9 | 59.5 | 44.8 | 36.8 | 33.1 | 30.9 | 30.1 |
| 47.5° | 2720.6 | 2333.9 | 326.4 | 94.1 | 69.1 | 49.3 | 37.5 | 31.6 | 28.7 | 25.7 | 25.0 |
| 50° | 3060.2 | 2486.8 | 222.7 | 81.6 | 58.8 | 40.4 | 32.3 | 28.7 | 25.0 | 22.8 | 22.1 |
| 52.5° | 3309.4 | 2543.4 | 155.1 | 70.6 | 50.0 | 34.5 | 28.7 | 25.7 | 22.8 | 19.8 | 19.1 |
| 55° | 3539.5 | 2541.9 | 117.6 | 59.5 | 42.6 | 30.1 | 25.7 | 22.8 | 19.8 | 17.6 | 16.9 |
| 57.5° | 3768.8 | 2522.1 | 92.6 | 50.7 | 36.8 | 27.2 | 22.8 | 19.8 | 18.4 | 15.4 | 14.7 |
| 60° | 3917.3 | 2447.1 | 72.0 | 42.6 | 31.6 | 23.5 | 19.8 | 17.6 | 15.4 | 13.2 | 12.5 |
| 62.5° | 3995.9 | 2342.7 | 55.1 | 33.8 | 25.7 | 20.6 | 17.6 | 15.4 | 13.2 | 11.0 | 10.3 |
| 65° | 3889.4 | 2157.5 | 43.4 | 26.5 | 19.8 | 17.6 | 14.7 | 12.5 | 10.3 | 8.1 | 7.4 |
| 67.5° | 3416.7 | 1819.3 | 33.8 | 21.3 | 15.4 | 13.2 | 12.5 | 10.3 | 7.4 | 5.9 | 5.1 |
| 70° | 2414.8 | 1246.0 | 26.5 | 16.2 | 11.8 | 10.3 | 9.6 | 8.1 | 5.9 | 4.4 | 3.7 |
| 72.5° | 1325.4 | 628.5 | 19.1 | 11.8 | 8.8 | 8.1 | 7.4 | 6.6 | 5.1 | 3.7 | 3.7 |
| 75° | 510.2 | 172.7 | 14.0 | 8.1 | 5.9 | 5.9 | 5.1 | 5.1 | 4.4 | 2.9 | 2.9 |
| 77.5° | 133.1 | 51.5 | 8.8 | 5.1 | 3.7 | 3.7 | 3.7 | 2.9 | 2.9 | 2.2 | 2.2 |
| 80° | 42.6 | 16.9 | 5.1 | 3.7 | 2.9 | 2.2 | 2.2 | 1.5 | 2.2 | 1.5 | 1.5 |
| 82.5° | 14.0 | 5.9 | 2.9 | 2.9 | 2.2 | 1.5 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 |
| 85° | 5.1 | 2.9 | 2.2 | 1.5 | 1.5 | 1.5 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.9 | 1.5 | 1.5 | 1.5 | 1.5 | 0.7 | 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



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 (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

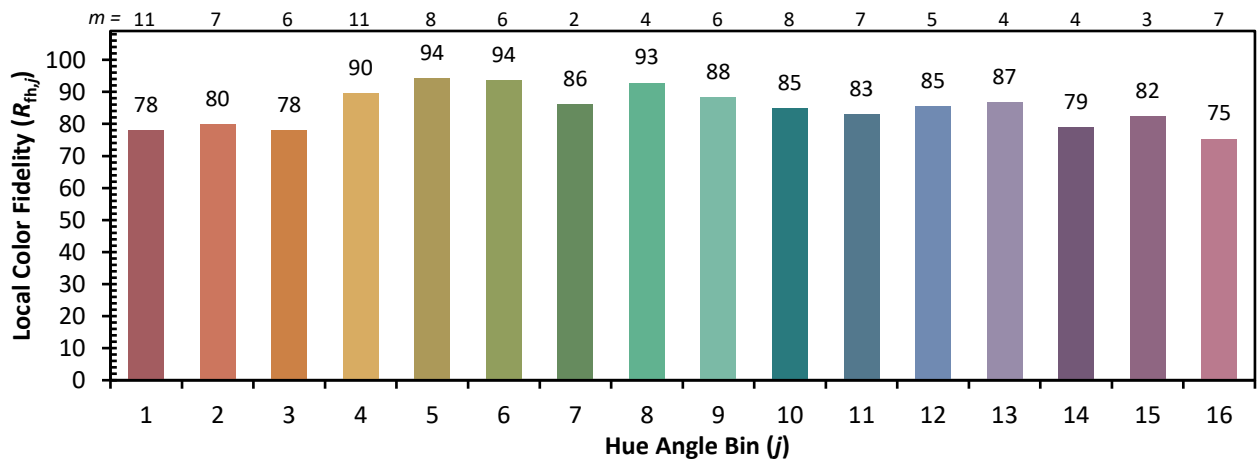


Individual Sample Fidelity Index ($R_{f,i}$)

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