

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: P643897

Luminaire Tested: GWS-SA6F-827-U-T4W-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P643897
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-52)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA6F-827-U-T4W-W
Description: GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS
Light Source: (96) 2700K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 36273.3 lumens
Efficiency: N/A
Efficacy: 97.4 lumens/watt
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')
IES Classification: Type III - Short
BUG Rating: B3 - U0 - G5

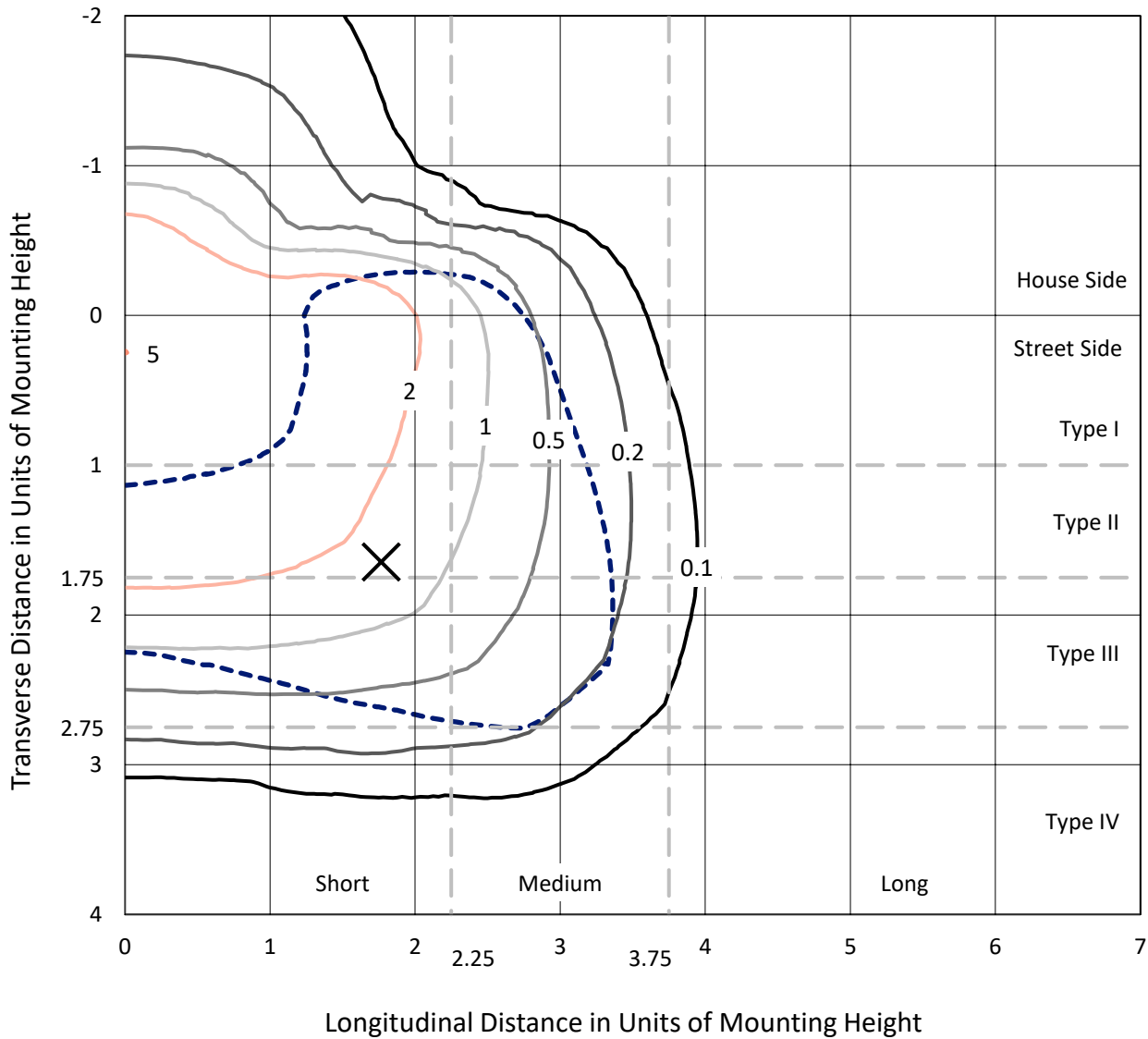
Input Watts (W): 372.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P643897
 CATALOG NUMBER: GWS-SA6F-827-U-T4W-W

Iso-Footcandle Lines of Horizontal Illumination

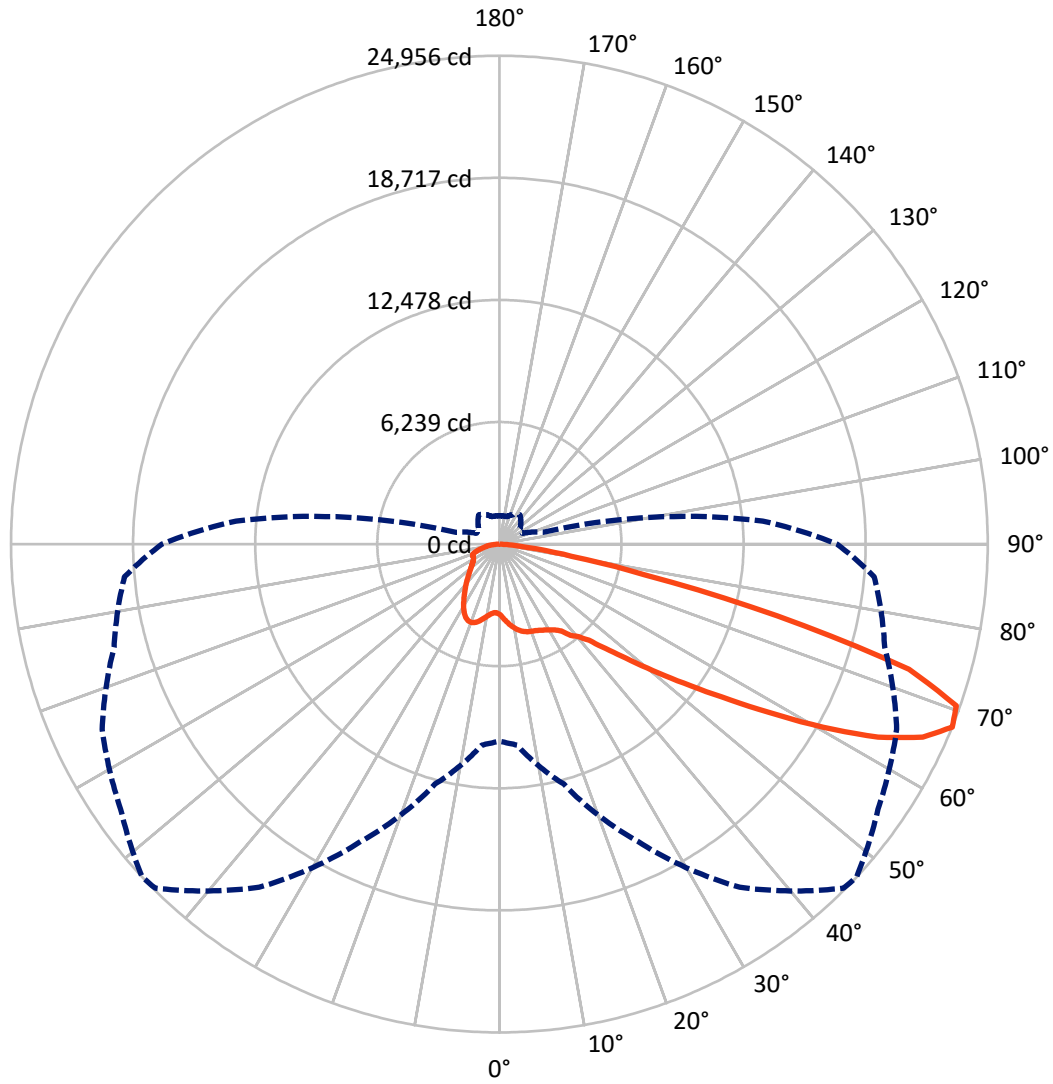
✕ Max cd
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 5 fc
 Type III - Short - N/A

REPORT NUMBER: P643897
CATALOG NUMBER: GWS-SA6F-827-U-T4W-W

Luminous Intensity Polar Plot



— Vertical Plane Through 47-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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CATALOG NUMBER: GWS-SA6F-827-U-T4W-W

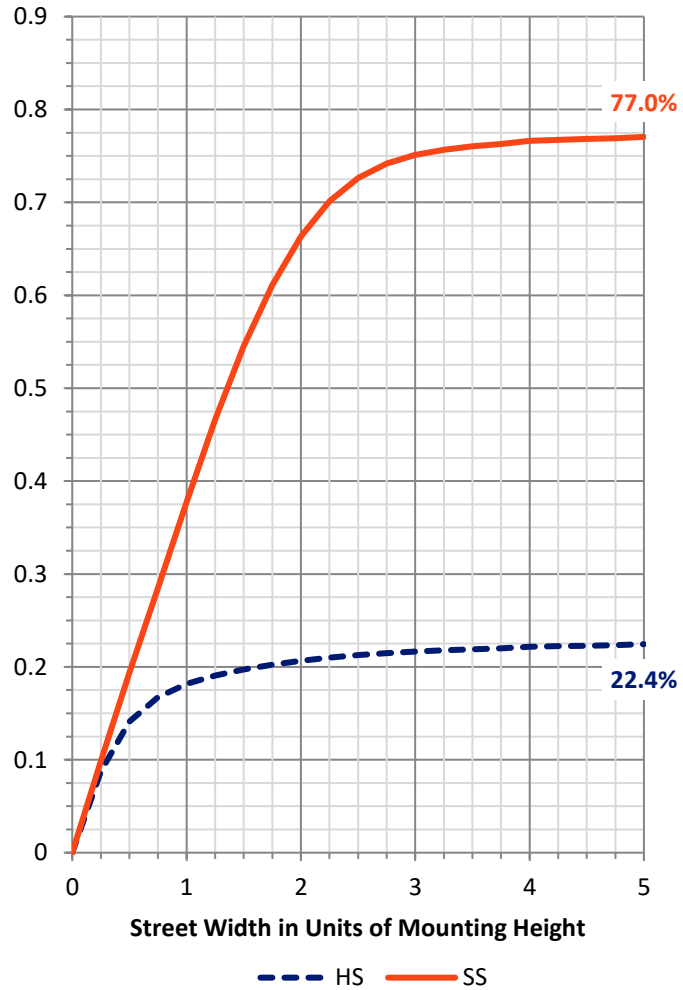
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 8267.0 | 0.0 | 8267.0 |
| | % Fixture | 22.8 | 0.0 | 22.8 |
| Street Side | Lumens | 28006.3 | 0.0 | 28006.3 |
| | % Fixture | 77.2 | 0.0 | 77.2 |
| Total | Lumens | 36273.3 | 0.0 | 36273.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 367.5 | 1.0 |
| 10°-20° | 1224.4 | 3.4 |
| 20°-30° | 2081.1 | 5.7 |
| 30°-40° | 3048.6 | 8.4 |
| 40°-50° | 4644.9 | 12.8 |
| 50°-60° | 8310.7 | 22.9 |
| 60°-70° | 11089.8 | 30.6 |
| 70°-80° | 5015.0 | 13.8 |
| 80°-90° | 491.3 | 1.4 |
| 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° | 36273.3 | 100.0 |
| 0°-180° | 36273.3 | 100.0 |

Coefficient of Utilization



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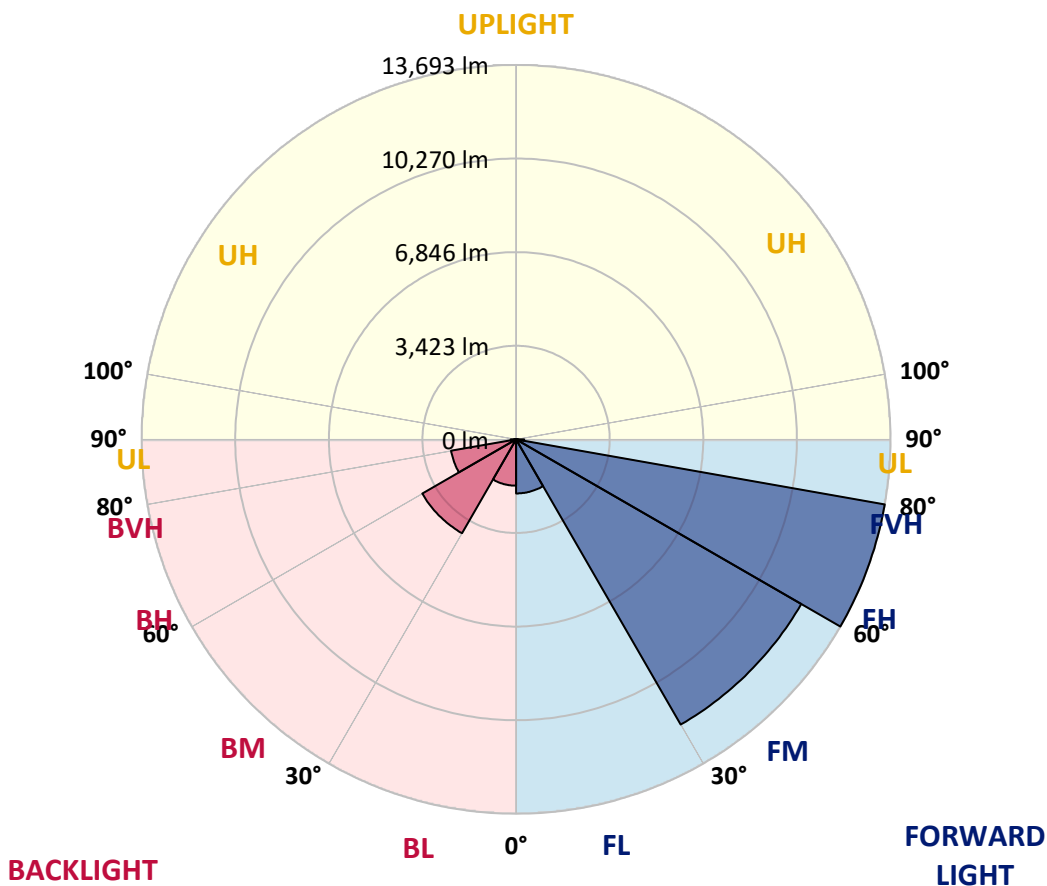
CATALOG NUMBER: GWS-SA6F-827-U-T4W-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1978.2 | 5.5 | | | |
| FM (30°-60°) | 12043.1 | 33.2 | | | |
| FH (60°-80°) | 13692.8 | 37.7 | | | G5 |
| FVH (80°-90°) | 292.3 | 0.8 | | | G3/500 |
| BL (0°-30°) | 1694.8 | 4.7 | B3/2500 | | |
| BM (30°-60°) | 3961.1 | 10.9 | B3/5000 | | |
| BH (60°-80°) | 2412.0 | 6.6 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 199.1 | 0.5 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G5

Type III Short





REPORT NUMBER: P643897
 CATALOG NUMBER: GWS-SA6F-827-U-T4W-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 47° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 |
| 2.5° | 3834.5 | 3847.6 | 3845.0 | 3824.0 | 3810.9 | 3787.3 | 3789.9 | 3753.2 | 3698.1 | 3661.4 | 3619.4 |
| 5° | 4172.8 | 4193.8 | 4167.6 | 4133.5 | 4081.0 | 4005.0 | 3997.1 | 3913.2 | 3808.3 | 3734.8 | 3658.8 |
| 7.5° | 4466.6 | 4479.7 | 4448.2 | 4390.5 | 4314.5 | 4212.2 | 4193.8 | 4094.2 | 3963.0 | 3847.6 | 3737.5 |
| 10° | 4694.8 | 4710.5 | 4668.5 | 4592.5 | 4492.8 | 4390.5 | 4377.4 | 4275.1 | 4136.1 | 3999.7 | 3860.7 |
| 12.5° | 4888.9 | 4894.1 | 4849.5 | 4747.2 | 4639.7 | 4534.8 | 4521.7 | 4427.3 | 4298.7 | 4159.7 | 4007.6 |
| 15° | 5001.6 | 5004.3 | 4949.2 | 4836.4 | 4734.1 | 4642.3 | 4634.5 | 4553.1 | 4435.1 | 4304.0 | 4141.4 |
| 17.5° | 4993.8 | 4999.0 | 4959.7 | 4860.0 | 4770.8 | 4715.8 | 4707.9 | 4655.4 | 4563.6 | 4445.6 | 4283.0 |
| 20° | 4896.7 | 4902.0 | 4875.7 | 4810.2 | 4763.0 | 4747.2 | 4749.9 | 4734.1 | 4679.0 | 4582.0 | 4416.8 |
| 22.5° | 4820.7 | 4828.5 | 4804.9 | 4757.7 | 4752.5 | 4789.2 | 4797.1 | 4804.9 | 4778.7 | 4692.2 | 4532.2 |
| 25° | 4857.4 | 4870.5 | 4833.8 | 4768.2 | 4778.7 | 4860.0 | 4875.7 | 4902.0 | 4881.0 | 4807.6 | 4668.5 |
| 27.5° | 5111.8 | 5119.7 | 5025.2 | 4891.5 | 4860.0 | 4946.6 | 4970.2 | 5012.1 | 4996.4 | 4928.2 | 4820.7 |
| 30° | 5701.9 | 5696.7 | 5494.7 | 5166.9 | 5035.7 | 5069.8 | 5088.2 | 5148.5 | 5153.8 | 5109.2 | 5006.9 |
| 32.5° | 6533.3 | 6507.1 | 6195.0 | 5673.1 | 5292.8 | 5208.8 | 5229.8 | 5311.1 | 5371.5 | 5324.2 | 5185.2 |
| 35° | 7412.0 | 7388.4 | 7044.8 | 6433.7 | 5767.5 | 5476.4 | 5452.8 | 5515.7 | 5607.5 | 5476.4 | 5277.0 |
| 37.5° | 8248.6 | 8211.9 | 7860.5 | 7105.1 | 6352.4 | 5945.8 | 5911.7 | 5848.8 | 5793.7 | 5541.9 | 5389.8 |
| 40° | 9177.1 | 9135.1 | 8828.3 | 7973.3 | 6997.6 | 6305.2 | 6218.6 | 5969.4 | 5919.6 | 5759.6 | 5683.6 |
| 42.5° | 10168.5 | 10168.5 | 9914.1 | 9072.2 | 7776.5 | 6819.2 | 6706.4 | 6331.4 | 6383.8 | 6278.9 | 6189.8 |
| 45° | 11159.9 | 11188.8 | 10986.8 | 10179.0 | 8817.8 | 7789.7 | 7608.7 | 7076.3 | 7202.2 | 7154.9 | 7110.4 |
| 47.5° | 12004.5 | 12059.5 | 12020.2 | 11309.4 | 10092.5 | 8969.9 | 8694.5 | 8141.1 | 8411.3 | 8524.0 | 8649.9 |
| 50° | 12914.6 | 12974.9 | 12935.6 | 12654.9 | 11584.8 | 10399.3 | 10152.8 | 9581.0 | 10045.2 | 10383.6 | 10795.4 |
| 52.5° | 14265.3 | 14351.9 | 14024.0 | 13916.5 | 13397.2 | 12022.8 | 11802.5 | 11152.1 | 11994.0 | 12555.2 | 13473.2 |
| 55° | 15406.2 | 15403.6 | 15288.2 | 15534.7 | 15343.3 | 14008.3 | 13764.4 | 13174.2 | 14249.6 | 14844.9 | 16187.8 |
| 57.5° | 15936.0 | 15999.0 | 16395.0 | 17092.7 | 17475.6 | 16434.3 | 16200.9 | 15597.7 | 16670.4 | 16979.9 | 18430.3 |
| 60° | 16208.8 | 16287.5 | 17053.3 | 18432.9 | 19463.7 | 19083.4 | 18991.6 | 18223.1 | 18826.3 | 18789.6 | 20321.3 |
| 62.5° | 15825.9 | 15983.2 | 17213.3 | 19046.6 | 20882.6 | 21745.5 | 21716.6 | 20554.7 | 20659.6 | 20300.3 | 21493.7 |
| 65° | 14068.6 | 14239.1 | 16169.4 | 18739.8 | 21693.0 | 23770.3 | 23778.1 | 22666.1 | 22068.1 | 21034.7 | 21297.0 |
| 67.5° | 10061.0 | 10304.9 | 12691.6 | 16767.4 | 21407.1 | 24864.0 | 24955.8 | 23623.4 | 22398.5 | 20384.2 | 19230.2 |
| 70° | 5484.2 | 5662.6 | 7532.6 | 12188.1 | 18831.6 | 24601.7 | 24772.2 | 23161.8 | 20940.3 | 17633.0 | 14803.0 |
| 72.5° | 2491.6 | 2549.3 | 3504.0 | 6688.1 | 12864.7 | 21176.3 | 21889.7 | 20670.1 | 17197.6 | 13024.7 | 9413.2 |
| 75° | 1140.9 | 1167.1 | 1526.5 | 3199.8 | 6722.2 | 14170.9 | 14671.8 | 15395.7 | 11967.7 | 8225.0 | 4907.2 |
| 77.5° | 716.0 | 723.9 | 868.1 | 1463.5 | 3351.9 | 7073.6 | 7600.8 | 9166.6 | 7008.1 | 4070.6 | 2051.0 |
| 80° | 422.3 | 430.1 | 540.3 | 792.1 | 1573.7 | 3236.5 | 3737.5 | 3624.7 | 3294.2 | 1757.3 | 933.7 |
| 82.5° | 212.4 | 220.3 | 312.1 | 451.1 | 857.6 | 1287.8 | 1516.0 | 1523.8 | 1227.5 | 952.1 | 527.2 |
| 85° | 76.1 | 78.7 | 102.3 | 178.3 | 364.6 | 424.9 | 474.7 | 579.6 | 600.6 | 553.4 | 254.4 |
| 87.5° | 0.0 | 0.0 | 2.6 | 5.2 | 10.5 | 42.0 | 44.6 | 83.9 | 175.7 | 196.7 | 102.3 |
| 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: P643897
 CATALOG NUMBER: GWS-SA6F-827-U-T4W-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 | 3595.8 |
| 2.5° | 3606.3 | 3567.0 | 3553.9 | 3540.8 | 3519.8 | 3511.9 | 3496.2 | 3480.4 | 3480.4 | 3464.7 | 3456.8 |
| 5° | 3624.7 | 3572.2 | 3538.1 | 3522.4 | 3509.3 | 3517.1 | 3517.1 | 3522.4 | 3540.8 | 3530.3 | 3535.5 |
| 7.5° | 3690.3 | 3629.9 | 3582.7 | 3569.6 | 3569.6 | 3601.1 | 3622.1 | 3648.3 | 3682.4 | 3687.6 | 3687.6 |
| 10° | 3805.7 | 3734.8 | 3685.0 | 3677.1 | 3690.3 | 3734.8 | 3766.3 | 3797.8 | 3839.8 | 3842.4 | 3847.6 |
| 12.5° | 3931.5 | 3860.7 | 3810.9 | 3821.4 | 3834.5 | 3892.2 | 3926.3 | 3952.5 | 3994.5 | 3994.5 | 3991.9 |
| 15° | 4062.7 | 3984.0 | 3942.0 | 3963.0 | 4002.4 | 4067.9 | 4073.2 | 4075.8 | 4096.8 | 4091.5 | 4088.9 |
| 17.5° | 4199.1 | 4115.1 | 4083.7 | 4115.1 | 4157.1 | 4188.6 | 4162.4 | 4125.6 | 4117.8 | 4107.3 | 4102.0 |
| 20° | 4332.8 | 4246.3 | 4233.2 | 4256.8 | 4269.9 | 4243.7 | 4162.4 | 4094.2 | 4062.7 | 4047.0 | 4041.7 |
| 22.5° | 4448.2 | 4374.8 | 4366.9 | 4366.9 | 4301.4 | 4209.6 | 4088.9 | 3997.1 | 3955.2 | 3934.2 | 3928.9 |
| 25° | 4584.6 | 4516.4 | 4503.3 | 4432.5 | 4264.6 | 4096.8 | 3934.2 | 3850.2 | 3816.1 | 3805.7 | 3808.3 |
| 27.5° | 4744.6 | 4697.4 | 4655.4 | 4453.5 | 4159.7 | 3897.5 | 3713.9 | 3677.1 | 3664.0 | 3677.1 | 3685.0 |
| 30° | 4941.3 | 4894.1 | 4799.7 | 4427.3 | 3991.9 | 3637.8 | 3462.1 | 3459.4 | 3498.8 | 3532.9 | 3538.1 |
| 32.5° | 5101.3 | 5080.3 | 4925.6 | 4343.3 | 3755.8 | 3351.9 | 3202.4 | 3212.9 | 3283.7 | 3330.9 | 3338.8 |
| 35° | 5227.2 | 5261.3 | 5030.5 | 4204.3 | 3475.2 | 3081.8 | 2963.7 | 2969.0 | 3008.3 | 3073.9 | 3076.5 |
| 37.5° | 5405.6 | 5521.0 | 5124.9 | 3991.9 | 3152.6 | 2848.3 | 2740.8 | 2701.5 | 2696.2 | 2714.6 | 2719.8 |
| 40° | 5764.9 | 5938.0 | 5193.1 | 3682.4 | 2840.5 | 2638.5 | 2517.9 | 2441.8 | 2376.2 | 2326.4 | 2310.7 |
| 42.5° | 6307.8 | 6507.1 | 5232.4 | 3307.3 | 2562.5 | 2431.3 | 2294.9 | 2197.9 | 2082.5 | 1977.6 | 1940.9 |
| 45° | 7304.4 | 7370.0 | 5232.4 | 2908.7 | 2315.9 | 2237.2 | 2100.8 | 1985.4 | 1838.6 | 1715.3 | 1689.1 |
| 47.5° | 8899.1 | 8689.3 | 5237.7 | 2523.1 | 2098.2 | 2066.8 | 1948.7 | 1817.6 | 1655.0 | 1552.7 | 1536.9 |
| 50° | 11301.6 | 10564.6 | 5345.2 | 2203.1 | 1917.3 | 1922.5 | 1835.9 | 1691.7 | 1544.8 | 1468.8 | 1455.6 |
| 52.5° | 14024.0 | 12875.2 | 5633.7 | 1967.1 | 1765.1 | 1804.5 | 1757.3 | 1618.3 | 1487.1 | 1421.5 | 1408.4 |
| 55° | 16583.8 | 14999.7 | 5880.3 | 1799.2 | 1636.6 | 1704.8 | 1702.2 | 1573.7 | 1455.6 | 1390.1 | 1382.2 |
| 57.5° | 18760.7 | 16455.3 | 5843.6 | 1662.8 | 1526.5 | 1613.0 | 1652.4 | 1544.8 | 1434.7 | 1379.6 | 1371.7 |
| 60° | 20114.1 | 17226.4 | 5321.6 | 1536.9 | 1442.5 | 1547.4 | 1623.5 | 1536.9 | 1445.2 | 1432.0 | 1434.7 |
| 62.5° | 20701.6 | 17084.8 | 4319.7 | 1442.5 | 1387.5 | 1516.0 | 1655.0 | 1592.0 | 1542.2 | 1573.7 | 1592.0 |
| 65° | 19788.9 | 15867.8 | 3178.8 | 1371.7 | 1335.0 | 1523.8 | 1728.4 | 1678.6 | 1542.2 | 1563.2 | 1571.0 |
| 67.5° | 17255.3 | 13507.3 | 2297.6 | 1300.9 | 1269.4 | 1547.4 | 1833.3 | 1665.5 | 1453.0 | 1453.0 | 1437.3 |
| 70° | 12434.6 | 9714.8 | 1668.1 | 1230.1 | 1203.9 | 1513.3 | 1838.6 | 1576.3 | 1350.7 | 1342.9 | 1303.5 |
| 72.5° | 7482.8 | 5730.8 | 1300.9 | 1151.4 | 1104.2 | 1342.9 | 1723.2 | 1471.4 | 1251.1 | 1185.5 | 1138.3 |
| 75° | 3887.0 | 2871.9 | 1091.1 | 1064.8 | 946.8 | 1138.3 | 1576.3 | 1308.8 | 1070.1 | 1012.4 | 986.2 |
| 77.5° | 1665.5 | 1342.9 | 936.3 | 949.4 | 786.8 | 957.3 | 1272.0 | 1133.0 | 949.4 | 876.0 | 852.4 |
| 80° | 820.9 | 763.2 | 739.6 | 760.6 | 629.5 | 739.6 | 1096.3 | 991.4 | 805.2 | 721.3 | 687.2 |
| 82.5° | 469.5 | 445.9 | 532.4 | 540.3 | 448.5 | 619.0 | 925.8 | 839.3 | 666.2 | 574.4 | 519.3 |
| 85° | 217.7 | 233.4 | 322.6 | 325.2 | 278.0 | 424.9 | 605.9 | 472.1 | 354.1 | 293.8 | 280.6 |
| 87.5° | 86.6 | 102.3 | 141.6 | 139.0 | 81.3 | 78.7 | 52.5 | 28.9 | 23.6 | 21.0 | 18.4 |
| 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

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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 |

REPORT NUMBER: SP1-2407-157-9

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)