

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: P636509

Luminaire Tested: GWS-SA3F-830-U-T2-W-GRSWH

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P636509
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-21)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3F-830-U-T2-W-GRSWH
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS W/ FACTORY INSALLED GLARE SHIELD, WH
Light Source: (48) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 16193.6 lumens
Efficiency: N/A
Efficacy: 88.4 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B3 - U0 - G2

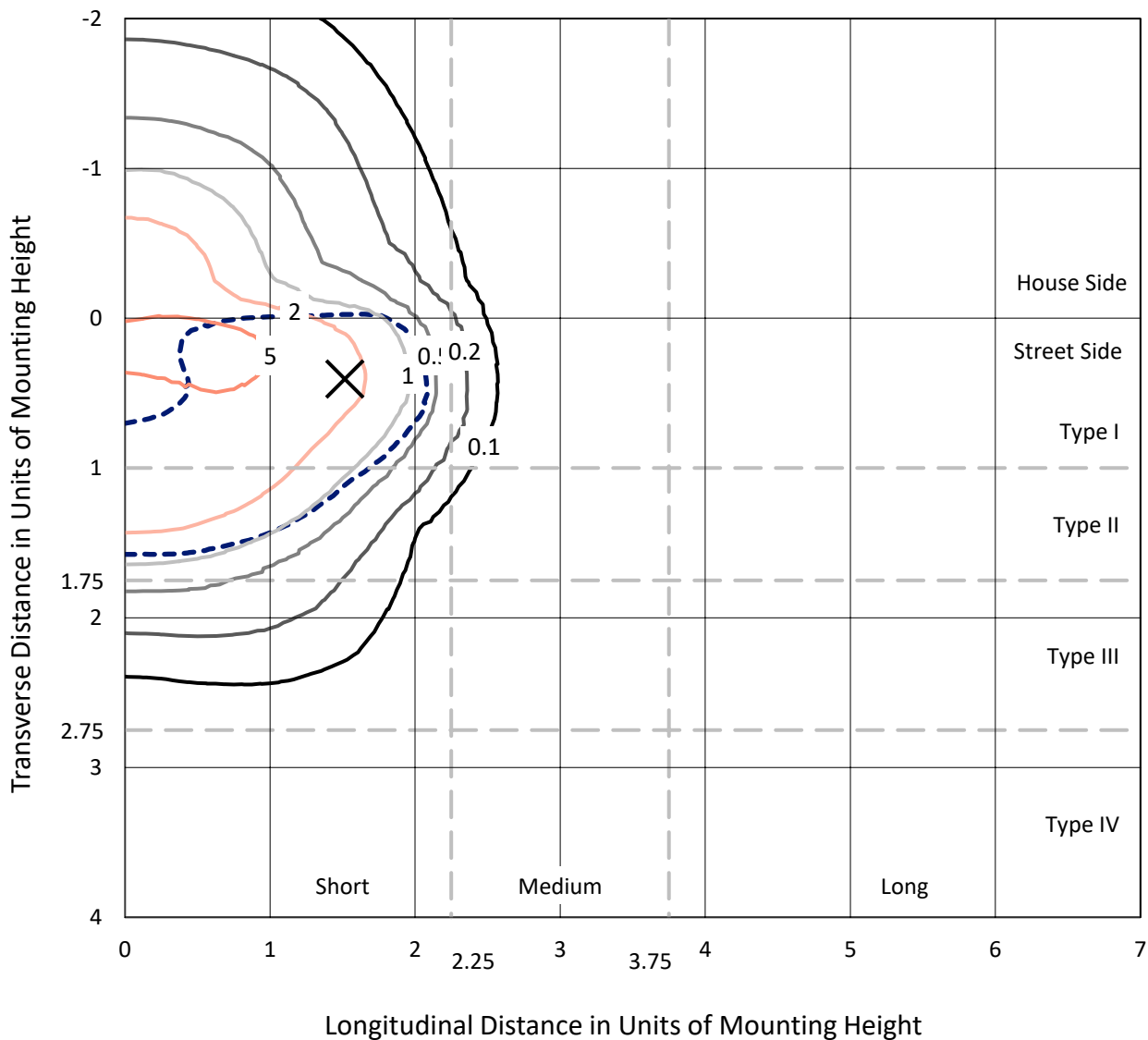
Input Watts (W): 183.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

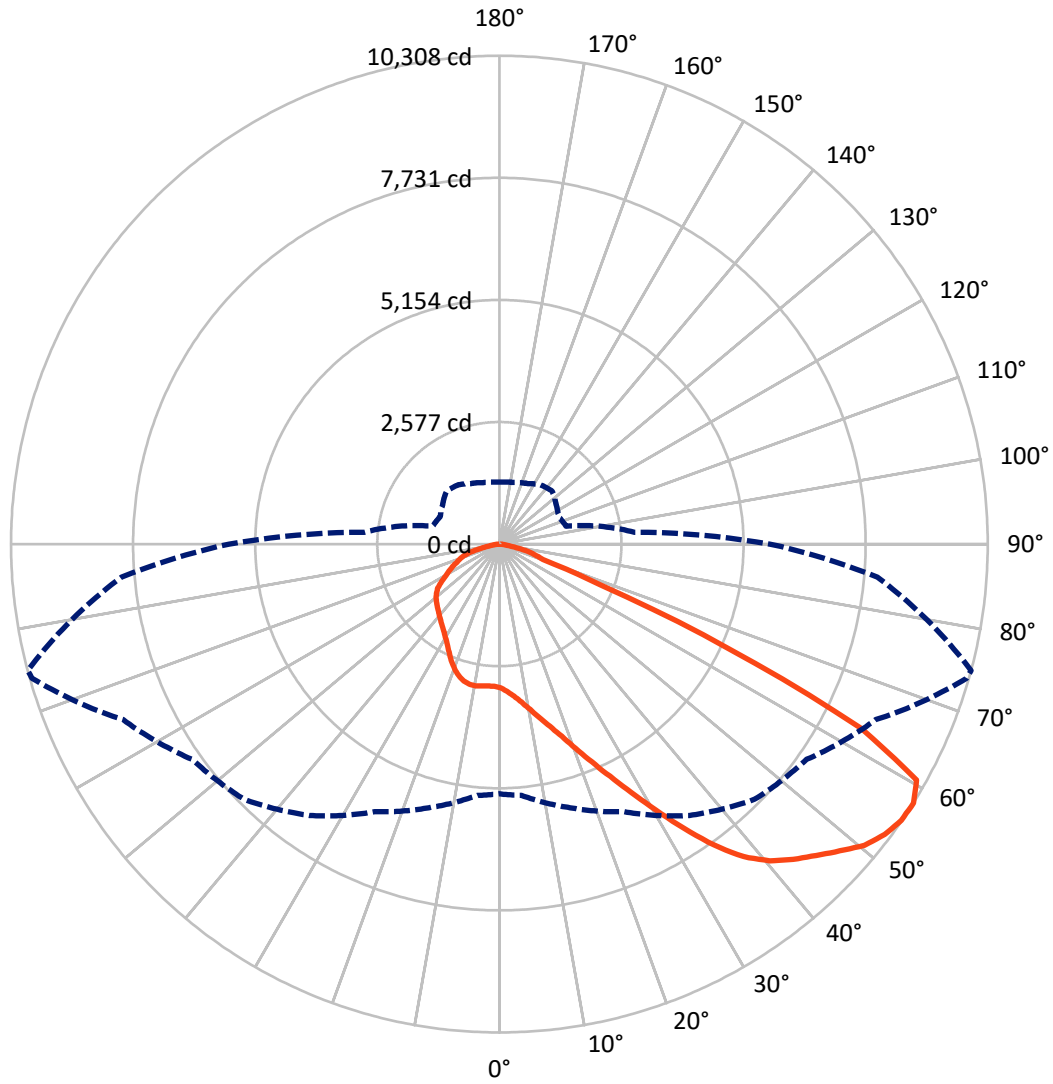
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.9 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 75-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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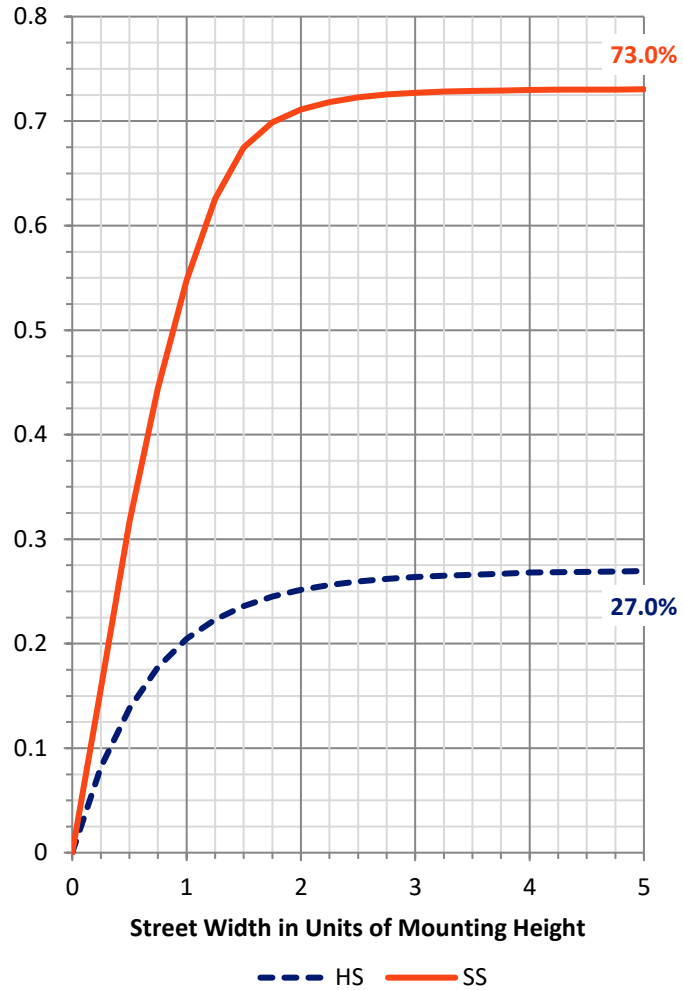
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 4380.7 | 0.0 | 4380.7 |
| | % Fixture | 27.1 | 0.0 | 27.1 |
| Street Side | Lumens | 11812.9 | 0.0 | 11812.9 |
| | % Fixture | 72.9 | 0.0 | 72.9 |
| Total | Lumens | 16193.6 | 0.0 | 16193.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 303.5 | 1.9 |
| 10°-20° | 966.2 | 6.0 |
| 20°-30° | 1713.6 | 10.6 |
| 30°-40° | 2623.1 | 16.2 |
| 40°-50° | 3652.5 | 22.6 |
| 50°-60° | 4185.1 | 25.8 |
| 60°-70° | 2150.4 | 13.3 |
| 70°-80° | 541.4 | 3.3 |
| 80°-90° | 57.9 | 0.4 |
| 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° | 16193.6 | 100.0 |
| 0°-180° | 16193.6 | 100.0 |

Coefficient of Utilization



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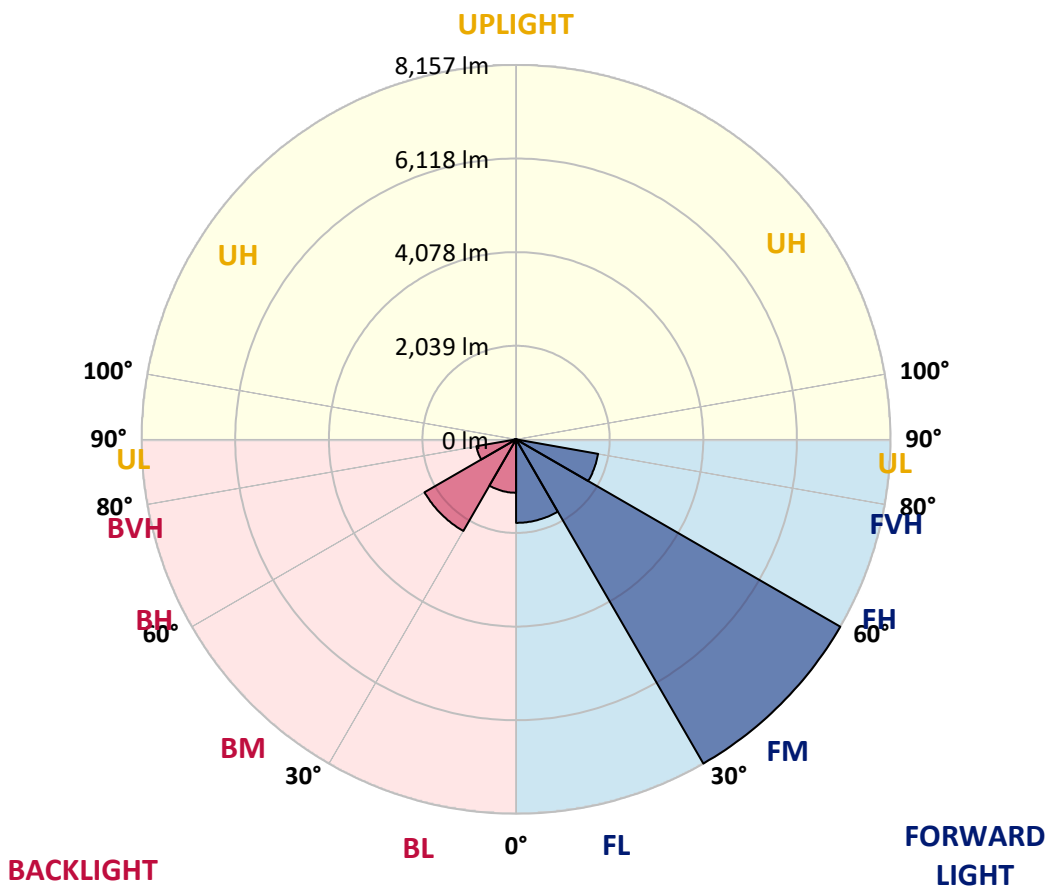
CATALOG NUMBER: GWS-SA3F-830-U-T2-W-GRSWH

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1819.5 | 11.2 | | | |
| FM (30°-60°) | 8156.9 | 50.4 | | | |
| FH (60°-80°) | 1815.1 | 11.2 | | | G2/5000 |
| FVH (80°-90°) | 21.4 | 0.1 | | | G1/100 |
| BL (0°-30°) | 1163.8 | 7.2 | B3/2500 | | |
| BM (30°-60°) | 2303.8 | 14.2 | B2/2500 | | |
| BH (60°-80°) | 876.6 | 5.4 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 36.5 | 0.2 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G2

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 74° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|
| 0° | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 |
| 2.5° | 3258.2 | 3266.6 | 3258.2 | 3272.2 | 3244.3 | 3231.8 | 3201.2 | 3155.2 | 3119.0 | 3113.4 | 3073.1 |
| 5° | 3511.7 | 3529.8 | 3518.6 | 3513.1 | 3475.5 | 3447.6 | 3401.7 | 3309.8 | 3234.6 | 3223.4 | 3144.1 |
| 7.5° | 3674.6 | 3687.1 | 3687.1 | 3691.3 | 3677.4 | 3645.3 | 3596.6 | 3488.0 | 3382.2 | 3365.5 | 3245.7 |
| 10° | 3728.9 | 3738.6 | 3756.7 | 3791.5 | 3819.4 | 3829.1 | 3797.1 | 3692.7 | 3563.2 | 3546.5 | 3379.4 |
| 12.5° | 3741.4 | 3752.5 | 3780.4 | 3844.4 | 3921.0 | 3990.7 | 3996.2 | 3919.6 | 3774.8 | 3756.7 | 3533.9 |
| 15° | 3765.1 | 3776.2 | 3813.8 | 3893.2 | 4006.0 | 4139.6 | 4221.8 | 4168.9 | 4008.8 | 3989.3 | 3709.4 |
| 17.5° | 3762.3 | 3774.8 | 3830.5 | 3936.3 | 4088.1 | 4281.7 | 4440.4 | 4462.7 | 4297.0 | 4263.6 | 3908.5 |
| 20° | 3755.3 | 3766.5 | 3826.3 | 3955.8 | 4143.8 | 4409.8 | 4696.6 | 4812.2 | 4633.9 | 4603.3 | 4141.0 |
| 22.5° | 3811.0 | 3823.6 | 3869.5 | 3976.7 | 4173.1 | 4508.6 | 4933.3 | 5211.8 | 5033.6 | 4990.4 | 4408.4 |
| 25° | 3936.3 | 3954.4 | 3982.3 | 4056.1 | 4226.0 | 4596.4 | 5175.6 | 5664.3 | 5481.9 | 5430.4 | 4699.4 |
| 27.5° | 4129.9 | 4152.2 | 4191.2 | 4226.0 | 4344.3 | 4707.7 | 5416.5 | 6171.2 | 5988.8 | 5934.5 | 5007.1 |
| 30° | 4366.6 | 4395.8 | 4446.0 | 4469.6 | 4550.4 | 4872.0 | 5678.3 | 6693.3 | 6587.5 | 6512.3 | 5353.8 |
| 32.5° | 4693.8 | 4734.2 | 4781.5 | 4788.5 | 4837.2 | 5121.3 | 5937.2 | 7211.3 | 7209.9 | 7157.0 | 5747.9 |
| 35° | 5119.9 | 5163.1 | 5172.8 | 5182.6 | 5206.2 | 5463.8 | 6250.5 | 7683.3 | 7865.7 | 7804.5 | 6176.7 |
| 37.5° | 5585.0 | 5647.6 | 5662.9 | 5619.8 | 5653.2 | 5876.0 | 6602.8 | 8062.1 | 8436.6 | 8371.2 | 6591.7 |
| 40° | 6082.1 | 6107.1 | 6148.9 | 6080.7 | 6122.4 | 6348.0 | 6948.1 | 8304.3 | 8862.7 | 8793.1 | 6918.9 |
| 42.5° | 6438.5 | 6484.5 | 6547.1 | 6522.1 | 6545.7 | 6751.8 | 7190.4 | 8421.3 | 9166.2 | 9096.6 | 7154.2 |
| 45° | 6825.6 | 6839.5 | 6879.9 | 6874.3 | 6888.3 | 7080.4 | 7364.5 | 8472.8 | 9437.8 | 9375.1 | 7354.7 |
| 47.5° | 7162.6 | 7183.5 | 7209.9 | 7179.3 | 7148.6 | 7274.0 | 7506.5 | 8517.4 | 9751.1 | 9675.9 | 7565.0 |
| 50° | 7487.0 | 7505.1 | 7537.1 | 7448.0 | 7333.8 | 7365.9 | 7576.1 | 8578.6 | 10044.9 | 9991.9 | 7730.7 |
| 52.5° | 7546.9 | 7566.4 | 7716.7 | 7734.8 | 7588.6 | 7475.9 | 7698.6 | 8713.7 | 10217.5 | 10184.1 | 7790.5 |
| 55° | 6793.6 | 6828.4 | 7127.8 | 7471.7 | 7832.3 | 7796.1 | 7895.0 | 8784.7 | 10285.7 | 10294.1 | 7897.8 |
| 57.5° | 5273.1 | 5323.2 | 5760.4 | 6232.4 | 6991.3 | 7619.3 | 7920.0 | 8766.6 | 10262.1 | 10308.0 | 8007.8 |
| 60° | 3458.8 | 3488.0 | 4006.0 | 4535.1 | 5321.8 | 6190.7 | 7088.8 | 8440.8 | 10051.8 | 10117.3 | 7979.9 |
| 62.5° | 2088.6 | 2122.0 | 2538.4 | 2939.4 | 3403.1 | 3983.7 | 4808.0 | 6783.8 | 8425.5 | 8571.7 | 6391.2 |
| 65° | 1457.9 | 1502.4 | 1867.2 | 2197.2 | 2357.4 | 2237.6 | 2435.3 | 3788.8 | 5249.4 | 5310.7 | 3905.7 |
| 67.5° | 1056.8 | 1087.5 | 1386.8 | 1779.5 | 1956.3 | 1580.4 | 1204.4 | 1677.9 | 2286.3 | 2308.6 | 1611.0 |
| 70° | 692.0 | 726.8 | 998.4 | 1354.8 | 1597.1 | 1281.0 | 900.9 | 907.9 | 962.2 | 973.3 | 935.7 |
| 72.5° | 380.1 | 401.0 | 616.8 | 899.5 | 944.1 | 765.8 | 703.2 | 754.7 | 792.3 | 792.3 | 802.0 |
| 75° | 196.3 | 214.4 | 252.0 | 296.6 | 357.8 | 419.1 | 506.8 | 583.4 | 623.8 | 626.6 | 622.4 |
| 77.5° | 100.3 | 107.2 | 135.1 | 146.2 | 160.1 | 186.6 | 242.3 | 310.5 | 346.7 | 360.6 | 357.8 |
| 80° | 47.3 | 50.1 | 57.1 | 66.8 | 82.2 | 104.4 | 130.9 | 156.0 | 178.2 | 181.0 | 196.3 |
| 82.5° | 25.1 | 27.8 | 30.6 | 36.2 | 44.6 | 55.7 | 76.6 | 91.9 | 105.8 | 108.6 | 121.1 |
| 85° | 9.7 | 11.1 | 12.5 | 13.9 | 19.5 | 23.7 | 32.0 | 43.2 | 52.9 | 52.9 | 62.7 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 2.8 | 5.6 | 7.0 | 9.7 | 9.7 | 16.7 |
| 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: P636509

CATALOG NUMBER: GWS-SA3F-830-U-T2-W-GRSWH

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 | 3032.7 |
| 2.5° | 3063.3 | 3022.9 | 3004.8 | 2975.6 | 2951.9 | 2925.5 | 2904.6 | 2889.3 | 2879.5 | 2873.9 | 2868.4 |
| 5° | 3113.4 | 3052.2 | 3003.4 | 2945.0 | 2904.6 | 2865.6 | 2833.6 | 2811.3 | 2800.1 | 2791.8 | 2786.2 |
| 7.5° | 3191.4 | 3109.3 | 3017.4 | 2926.8 | 2855.8 | 2793.2 | 2752.8 | 2729.1 | 2713.8 | 2708.2 | 2704.1 |
| 10° | 3298.6 | 3184.4 | 3032.7 | 2889.3 | 2783.4 | 2715.2 | 2687.4 | 2676.2 | 2677.6 | 2674.8 | 2673.4 |
| 12.5° | 3419.8 | 3263.8 | 3028.5 | 2822.4 | 2705.5 | 2665.1 | 2666.5 | 2684.6 | 2705.5 | 2711.0 | 2712.4 |
| 15° | 3550.6 | 3341.8 | 2988.1 | 2736.1 | 2644.2 | 2648.4 | 2684.6 | 2727.7 | 2766.7 | 2782.0 | 2784.8 |
| 17.5° | 3692.7 | 3407.2 | 2914.3 | 2641.4 | 2594.1 | 2638.6 | 2705.5 | 2776.5 | 2833.6 | 2858.6 | 2865.6 |
| 20° | 3851.4 | 3462.9 | 2809.9 | 2548.1 | 2546.7 | 2620.5 | 2718.0 | 2811.3 | 2883.7 | 2917.1 | 2922.7 |
| 22.5° | 4019.9 | 3497.7 | 2681.8 | 2461.8 | 2498.0 | 2596.8 | 2708.2 | 2805.7 | 2882.3 | 2915.7 | 2922.7 |
| 25° | 4189.8 | 3508.9 | 2541.2 | 2382.4 | 2447.9 | 2559.3 | 2660.9 | 2738.9 | 2811.3 | 2840.5 | 2846.1 |
| 27.5° | 4348.5 | 3476.9 | 2407.5 | 2314.2 | 2401.9 | 2503.6 | 2571.8 | 2613.6 | 2663.7 | 2686.0 | 2690.1 |
| 30° | 4510.0 | 3412.8 | 2294.7 | 2259.9 | 2350.4 | 2427.0 | 2457.6 | 2460.4 | 2479.9 | 2479.9 | 2482.7 |
| 32.5° | 4672.9 | 3318.1 | 2195.8 | 2207.0 | 2286.3 | 2336.5 | 2340.6 | 2308.6 | 2284.9 | 2246.0 | 2244.6 |
| 35° | 4860.9 | 3222.0 | 2115.1 | 2147.1 | 2211.1 | 2241.8 | 2229.3 | 2168.0 | 2110.9 | 2046.8 | 2044.1 |
| 37.5° | 5035.0 | 3123.2 | 2046.8 | 2085.8 | 2126.2 | 2148.5 | 2119.3 | 2045.5 | 1998.1 | 1932.7 | 1922.9 |
| 40° | 5178.4 | 3034.1 | 1981.4 | 2021.8 | 2041.3 | 2060.8 | 2013.4 | 1953.6 | 1960.5 | 1924.3 | 1922.9 |
| 42.5° | 5261.9 | 2947.7 | 1920.1 | 1950.8 | 1963.3 | 1977.2 | 1935.5 | 1890.9 | 1928.5 | 1900.6 | 1902.0 |
| 45° | 5323.2 | 2872.5 | 1864.4 | 1875.6 | 1906.2 | 1927.1 | 1888.1 | 1838.0 | 1846.3 | 1739.1 | 1714.1 |
| 47.5° | 5392.8 | 2830.8 | 1811.5 | 1800.4 | 1854.7 | 1890.9 | 1831.0 | 1758.6 | 1708.5 | 1602.7 | 1592.9 |
| 50° | 5466.6 | 2815.5 | 1755.8 | 1725.2 | 1790.6 | 1825.5 | 1755.8 | 1665.3 | 1599.9 | 1542.8 | 1537.2 |
| 52.5° | 5491.7 | 2814.1 | 1686.2 | 1634.7 | 1700.1 | 1748.9 | 1690.4 | 1598.5 | 1520.5 | 1464.8 | 1462.0 |
| 55° | 5590.5 | 2854.4 | 1597.1 | 1510.8 | 1572.0 | 1672.3 | 1629.1 | 1496.8 | 1434.2 | 1409.1 | 1406.3 |
| 57.5° | 5706.1 | 2861.4 | 1456.5 | 1375.7 | 1460.6 | 1579.0 | 1524.7 | 1410.5 | 1342.3 | 1311.7 | 1308.9 |
| 60° | 5658.8 | 2690.1 | 1306.1 | 1272.7 | 1366.0 | 1491.3 | 1441.1 | 1342.3 | 1262.9 | 1233.7 | 1230.9 |
| 62.5° | 4312.3 | 1899.2 | 1196.1 | 1183.5 | 1264.3 | 1364.6 | 1354.8 | 1251.8 | 1176.6 | 1155.7 | 1152.9 |
| 65° | 2594.1 | 1333.9 | 1090.3 | 1088.9 | 1146.0 | 1242.0 | 1254.6 | 1171.0 | 1091.7 | 1062.4 | 1062.4 |
| 67.5° | 1282.4 | 1020.6 | 970.5 | 963.5 | 999.8 | 1068.0 | 1120.9 | 1052.7 | 985.8 | 958.0 | 953.8 |
| 70° | 906.5 | 899.5 | 882.8 | 863.3 | 870.3 | 898.1 | 920.4 | 863.3 | 792.3 | 764.4 | 758.9 |
| 72.5° | 783.9 | 785.3 | 774.2 | 758.9 | 753.3 | 733.8 | 714.3 | 672.5 | 629.4 | 600.1 | 602.9 |
| 75° | 608.5 | 611.3 | 618.2 | 612.7 | 597.3 | 576.5 | 555.6 | 502.7 | 467.9 | 440.0 | 434.4 |
| 77.5° | 355.1 | 369.0 | 391.3 | 385.7 | 388.5 | 359.2 | 350.9 | 299.4 | 267.3 | 247.8 | 243.7 |
| 80° | 200.5 | 208.9 | 218.6 | 225.6 | 217.2 | 204.7 | 186.6 | 158.7 | 149.0 | 135.1 | 132.3 |
| 82.5° | 121.1 | 129.5 | 133.7 | 139.2 | 136.5 | 119.7 | 105.8 | 87.7 | 79.4 | 72.4 | 71.0 |
| 85° | 61.3 | 66.8 | 71.0 | 73.8 | 65.4 | 54.3 | 48.7 | 39.0 | 33.4 | 29.2 | 29.2 |
| 87.5° | 15.3 | 16.7 | 19.5 | 16.7 | 15.3 | 7.0 | 5.6 | 1.4 | 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

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2408-195-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/07/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **GALN-SB1A-830-U-5WQ**
 Description: GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS

Spectral Parameters

CCT (K): 3050
 CIE u': 0.2476
 CIE v': 0.5251
 Duv: 0.0034
 CIE x: 0.4383
 CIE y: 0.4131
 CIE z: 0.1487
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 581
 Purity: 55.55201
 Rf: 81.5
 Rg: 99.2

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 81.0 | | |
| R1: | 79.6 | R9: | 7.1 |
| R2: | 85.6 | R10: | 67.0 |
| R3: | 92.0 | R11: | 82.7 |
| R4: | 82.6 | R12: | 63.2 |
| R5: | 78.9 | R13: | 80.3 |
| R6: | 81.7 | R14: | 95.0 |
| R7: | 85.2 | R15: | 71.7 |
| R8: | 62.0 | | |



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

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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 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.27

| λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.32

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 81.5$
 $R_g = 99.2$
 $CIE R_a = 81.0$
 $R_9 = 7.1$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)