

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: P640982

Luminaire Tested: GWS-SA5E-830-U-T4W-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P640982
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-SA5E-830-U-T4W-W
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS
Light Source: (80) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 29566.4 lumens
Efficiency: N/A
Efficacy: 109.7 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type III - Short
BUG Rating: B3 - U0 - G4

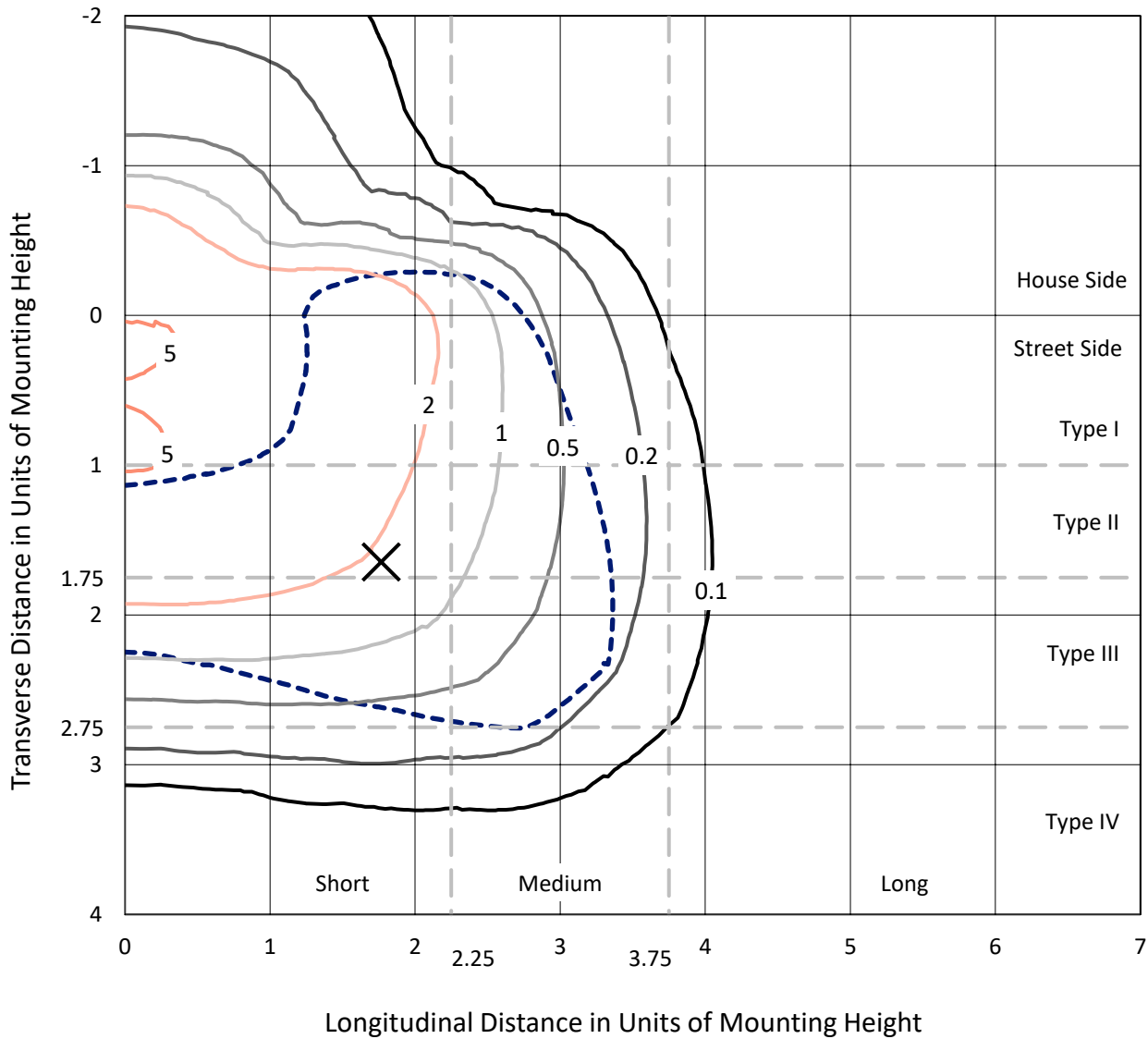
Input Watts (W): 269.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P640982
 CATALOG NUMBER: GWS-SA5E-830-U-T4W-W

Iso-Footcandle Lines of Horizontal Illumination

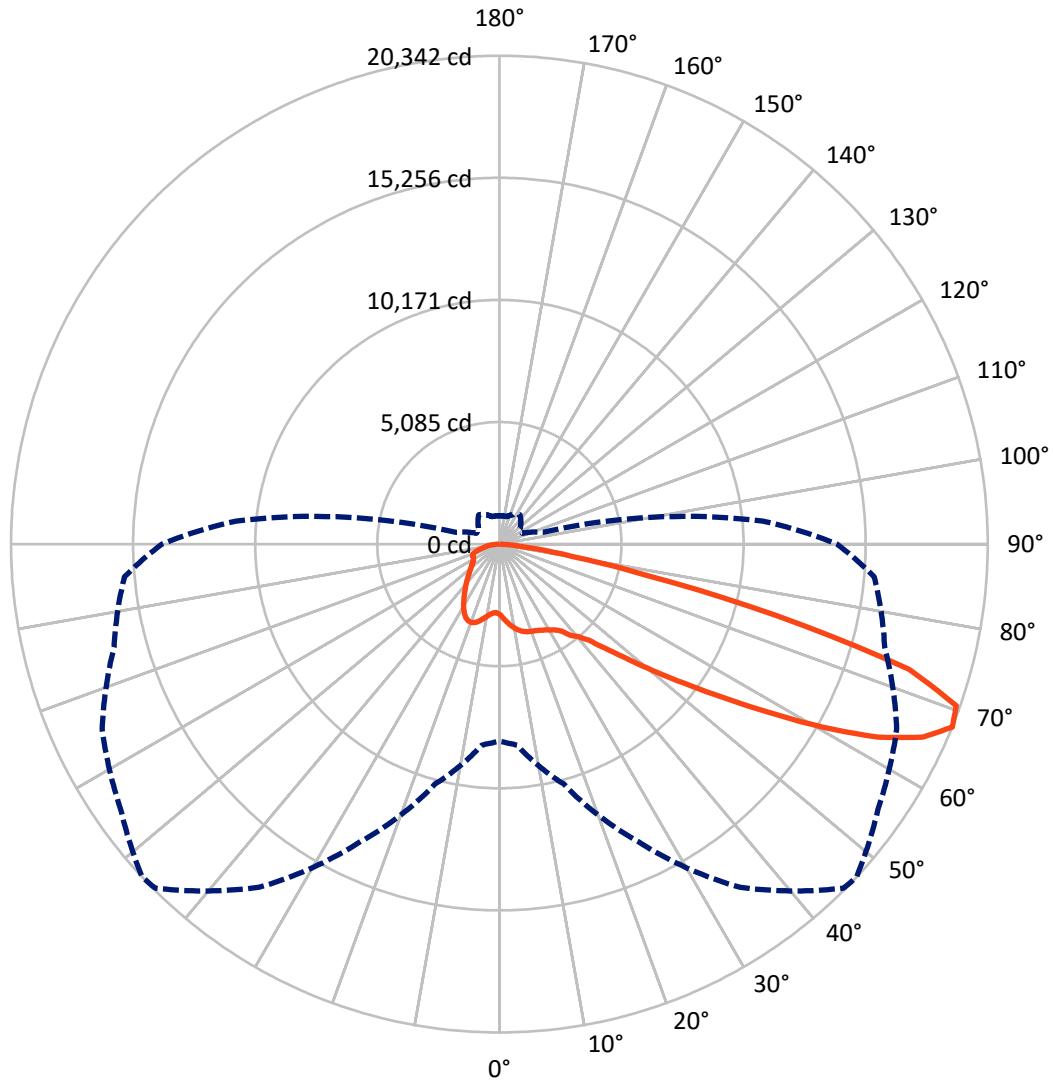
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 5.9 fc
 Type III - Short - N/A

REPORT NUMBER: P640982
CATALOG NUMBER: GWS-SA5E-830-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-SA5E-830-U-T4W-W

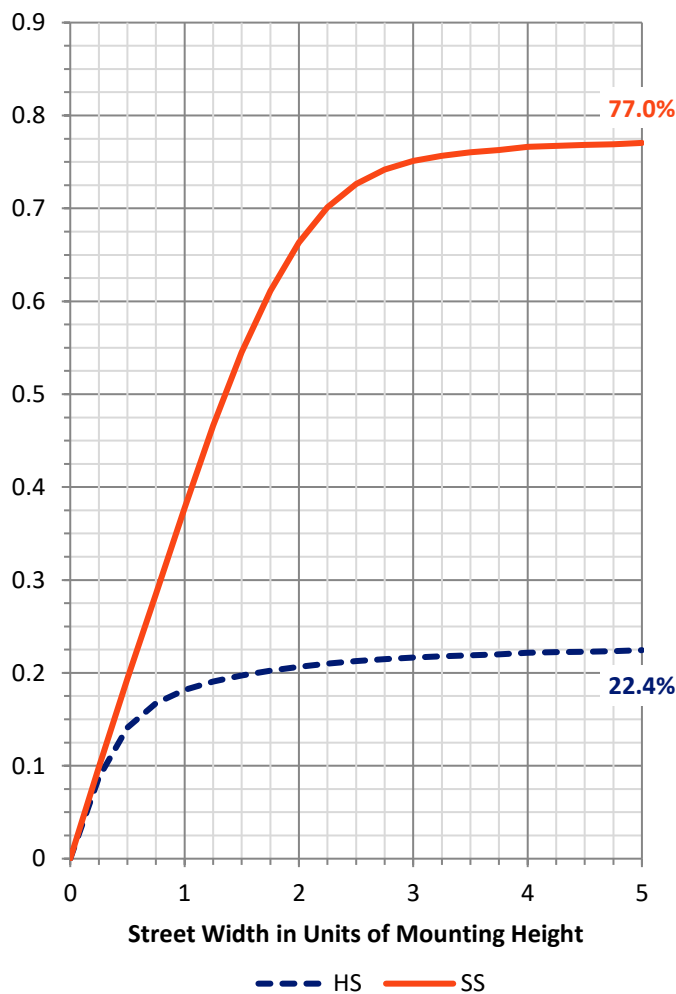
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 6738.4 | 0.0 | 6738.4 |
| | % Fixture | 22.8 | 0.0 | 22.8 |
| Street Side | Lumens | 22828.0 | 0.0 | 22828.0 |
| | % Fixture | 77.2 | 0.0 | 77.2 |
| Total | Lumens | 29566.4 | 0.0 | 29566.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 299.6 | 1.0 |
| 10°-20° | 998.0 | 3.4 |
| 20°-30° | 1696.3 | 5.7 |
| 30°-40° | 2484.9 | 8.4 |
| 40°-50° | 3786.1 | 12.8 |
| 50°-60° | 6774.1 | 22.9 |
| 60°-70° | 9039.3 | 30.6 |
| 70°-80° | 4087.8 | 13.8 |
| 80°-90° | 400.5 | 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° | 29566.4 | 100.0 |
| 0°-180° | 29566.4 | 100.0 |

Coefficient of Utilization



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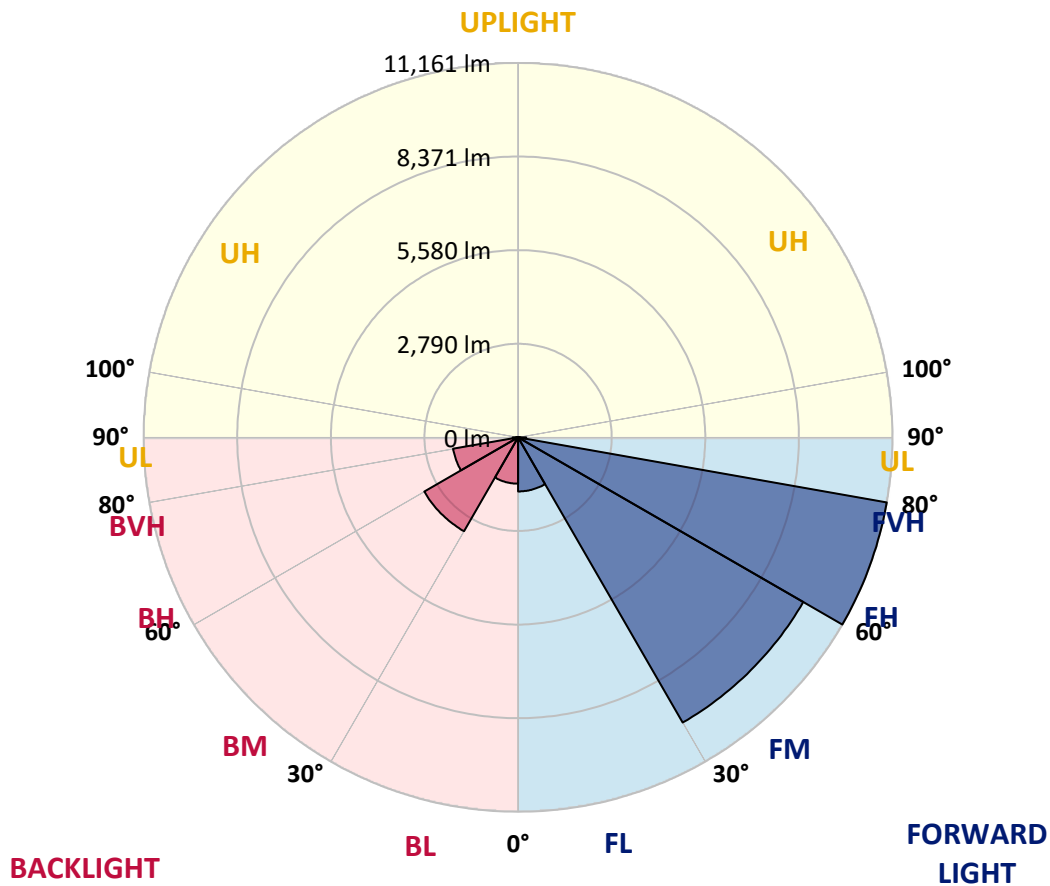
CATALOG NUMBER: GWS-SA5E-830-U-T4W-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 1612.4 | 5.5 | | | |
| FM (30°-60°) | 9816.3 | 33.2 | | | |
| FH (60°-80°) | 11161.0 | 37.7 | | | G4/12000 |
| FVH (80°-90°) | 238.2 | 0.8 | | | G3/500 |
| BL (0°-30°) | 1381.4 | 4.7 | B3/2500 | | |
| BM (30°-60°) | 3228.7 | 10.9 | B3/5000 | | |
| BH (60°-80°) | 1966.0 | 6.6 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 162.3 | 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-G4

Type III Short





REPORT NUMBER: P640982
 CATALOG NUMBER: GWS-SA5E-830-U-T4W-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 47° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 |
| 2.5° | 3125.5 | 3136.2 | 3134.1 | 3117.0 | 3106.3 | 3087.0 | 3089.2 | 3059.2 | 3014.3 | 2984.4 | 2950.2 |
| 5° | 3401.3 | 3418.4 | 3397.0 | 3369.2 | 3326.5 | 3264.5 | 3258.1 | 3189.6 | 3104.1 | 3044.3 | 2982.3 |
| 7.5° | 3640.7 | 3651.4 | 3625.8 | 3578.7 | 3516.7 | 3433.4 | 3418.4 | 3337.2 | 3230.3 | 3136.2 | 3046.4 |
| 10° | 3826.7 | 3839.5 | 3805.3 | 3743.3 | 3662.1 | 3578.7 | 3568.0 | 3484.7 | 3371.4 | 3260.2 | 3146.9 |
| 12.5° | 3984.9 | 3989.2 | 3952.8 | 3869.5 | 3781.8 | 3696.3 | 3685.6 | 3608.7 | 3503.9 | 3390.6 | 3266.6 |
| 15° | 4076.8 | 4079.0 | 4034.1 | 3942.2 | 3858.8 | 3784.0 | 3777.5 | 3711.3 | 3615.1 | 3508.2 | 3375.6 |
| 17.5° | 4070.4 | 4074.7 | 4042.6 | 3961.4 | 3888.7 | 3843.8 | 3837.4 | 3794.6 | 3719.8 | 3623.6 | 3491.1 |
| 20° | 3991.3 | 3995.6 | 3974.2 | 3920.8 | 3882.3 | 3869.5 | 3871.6 | 3858.8 | 3813.9 | 3734.8 | 3600.1 |
| 22.5° | 3929.3 | 3935.7 | 3916.5 | 3878.0 | 3873.7 | 3903.7 | 3910.1 | 3916.5 | 3895.1 | 3824.6 | 3694.2 |
| 25° | 3959.3 | 3970.0 | 3940.0 | 3886.6 | 3895.1 | 3961.4 | 3974.2 | 3995.6 | 3978.5 | 3918.6 | 3805.3 |
| 27.5° | 4166.6 | 4173.0 | 4096.1 | 3987.1 | 3961.4 | 4031.9 | 4051.2 | 4085.4 | 4072.6 | 4017.0 | 3929.3 |
| 30° | 4647.6 | 4643.4 | 4478.8 | 4211.5 | 4104.6 | 4132.4 | 4147.4 | 4196.6 | 4200.8 | 4164.5 | 4081.1 |
| 32.5° | 5325.3 | 5304.0 | 5049.6 | 4624.1 | 4314.1 | 4245.7 | 4262.8 | 4329.1 | 4378.3 | 4339.8 | 4226.5 |
| 35° | 6041.5 | 6022.3 | 5742.2 | 5244.1 | 4701.1 | 4463.8 | 4444.6 | 4495.9 | 4570.7 | 4463.8 | 4301.3 |
| 37.5° | 6723.5 | 6693.5 | 6407.1 | 5791.4 | 5177.8 | 4846.5 | 4818.7 | 4767.4 | 4722.5 | 4517.2 | 4393.2 |
| 40° | 7480.3 | 7446.1 | 7195.9 | 6499.0 | 5703.7 | 5139.3 | 5068.8 | 4865.7 | 4825.1 | 4694.7 | 4632.7 |
| 42.5° | 8288.4 | 8288.4 | 8081.0 | 7394.8 | 6338.7 | 5558.4 | 5466.4 | 5160.7 | 5203.5 | 5118.0 | 5045.3 |
| 45° | 9096.5 | 9120.0 | 8955.4 | 8296.9 | 7187.4 | 6349.4 | 6201.8 | 5767.9 | 5870.5 | 5832.0 | 5795.7 |
| 47.5° | 9784.9 | 9829.7 | 9797.7 | 9218.3 | 8226.4 | 7311.4 | 7086.9 | 6635.8 | 6856.0 | 6947.9 | 7050.6 |
| 50° | 10526.7 | 10575.8 | 10543.8 | 10315.0 | 9442.8 | 8476.5 | 8275.5 | 7809.5 | 8187.9 | 8463.7 | 8799.3 |
| 52.5° | 11627.7 | 11698.2 | 11431.0 | 11343.3 | 10920.0 | 9799.8 | 9620.2 | 9090.1 | 9776.3 | 10233.8 | 10982.0 |
| 55° | 12557.6 | 12555.5 | 12461.4 | 12662.4 | 12506.3 | 11418.2 | 11219.3 | 10738.3 | 11614.8 | 12100.1 | 13194.7 |
| 57.5° | 12989.5 | 13040.8 | 13363.6 | 13932.2 | 14244.4 | 13395.6 | 13205.4 | 12713.7 | 13588.1 | 13840.3 | 15022.5 |
| 60° | 13211.8 | 13275.9 | 13900.2 | 15024.7 | 15864.8 | 15554.9 | 15480.0 | 14853.6 | 15345.3 | 15315.4 | 16563.9 |
| 62.5° | 12899.7 | 13027.9 | 14030.6 | 15524.9 | 17021.4 | 17724.8 | 17701.2 | 16754.2 | 16839.7 | 16546.8 | 17519.5 |
| 65° | 11467.3 | 11606.3 | 13179.7 | 15274.8 | 17682.0 | 19375.2 | 19381.6 | 18475.1 | 17987.7 | 17145.4 | 17359.2 |
| 67.5° | 8200.7 | 8399.5 | 10345.0 | 13667.2 | 17449.0 | 20266.6 | 20341.5 | 19255.4 | 18257.1 | 16615.2 | 15674.6 |
| 70° | 4470.2 | 4615.6 | 6139.8 | 9934.5 | 15349.6 | 20052.9 | 20191.8 | 18879.2 | 17068.4 | 14372.6 | 12065.9 |
| 72.5° | 2030.9 | 2078.0 | 2856.1 | 5451.5 | 10486.1 | 17260.8 | 17842.3 | 16848.2 | 14017.8 | 10616.5 | 7672.7 |
| 75° | 930.0 | 951.3 | 1244.2 | 2608.2 | 5479.3 | 11550.7 | 11959.0 | 12549.1 | 9754.9 | 6704.2 | 3999.9 |
| 77.5° | 583.6 | 590.0 | 707.6 | 1192.9 | 2732.1 | 5765.7 | 6195.4 | 7471.7 | 5712.3 | 3317.9 | 1671.8 |
| 80° | 344.2 | 350.6 | 440.4 | 645.6 | 1282.7 | 2638.1 | 3046.4 | 2954.5 | 2685.1 | 1432.3 | 761.1 |
| 82.5° | 173.2 | 179.6 | 254.4 | 367.7 | 699.1 | 1049.7 | 1235.7 | 1242.1 | 1000.5 | 776.0 | 429.7 |
| 85° | 62.0 | 64.1 | 83.4 | 145.4 | 297.2 | 346.3 | 386.9 | 472.5 | 489.6 | 451.1 | 207.4 |
| 87.5° | 0.0 | 0.0 | 2.1 | 4.3 | 8.6 | 34.2 | 36.3 | 68.4 | 143.2 | 160.3 | 83.4 |
| 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: P640982
 CATALOG NUMBER: GWS-SA5E-830-U-T4W-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 | 2931.0 |
| 2.5° | 2939.5 | 2907.4 | 2896.8 | 2886.1 | 2869.0 | 2862.6 | 2849.7 | 2836.9 | 2836.9 | 2824.1 | 2817.7 |
| 5° | 2954.5 | 2911.7 | 2883.9 | 2871.1 | 2860.4 | 2866.8 | 2866.8 | 2871.1 | 2886.1 | 2877.5 | 2881.8 |
| 7.5° | 3007.9 | 2958.8 | 2920.3 | 2909.6 | 2909.6 | 2935.2 | 2952.3 | 2973.7 | 3001.5 | 3005.8 | 3005.8 |
| 10° | 3102.0 | 3044.3 | 3003.7 | 2997.2 | 3007.9 | 3044.3 | 3069.9 | 3095.6 | 3129.8 | 3131.9 | 3136.2 |
| 12.5° | 3204.6 | 3146.9 | 3106.3 | 3114.8 | 3125.5 | 3172.5 | 3200.3 | 3221.7 | 3255.9 | 3255.9 | 3253.8 |
| 15° | 3311.5 | 3247.4 | 3213.2 | 3230.3 | 3262.3 | 3315.8 | 3320.1 | 3322.2 | 3339.3 | 3335.0 | 3332.9 |
| 17.5° | 3422.7 | 3354.3 | 3328.6 | 3354.3 | 3388.5 | 3414.1 | 3392.7 | 3362.8 | 3356.4 | 3347.8 | 3343.6 |
| 20° | 3531.7 | 3461.1 | 3450.5 | 3469.7 | 3480.4 | 3459.0 | 3392.7 | 3337.2 | 3311.5 | 3298.7 | 3294.4 |
| 22.5° | 3625.8 | 3565.9 | 3559.5 | 3559.5 | 3506.0 | 3431.2 | 3332.9 | 3258.1 | 3223.8 | 3206.7 | 3202.5 |
| 25° | 3736.9 | 3681.3 | 3670.7 | 3612.9 | 3476.1 | 3339.3 | 3206.7 | 3138.3 | 3110.5 | 3102.0 | 3104.1 |
| 27.5° | 3867.3 | 3828.9 | 3794.6 | 3630.0 | 3390.6 | 3176.8 | 3027.2 | 2997.2 | 2986.5 | 2997.2 | 3003.7 |
| 30° | 4027.7 | 3989.2 | 3912.2 | 3608.7 | 3253.8 | 2965.2 | 2821.9 | 2819.8 | 2851.9 | 2879.7 | 2883.9 |
| 32.5° | 4158.1 | 4141.0 | 4014.8 | 3540.2 | 3061.4 | 2732.1 | 2610.3 | 2618.8 | 2676.6 | 2715.0 | 2721.5 |
| 35° | 4260.7 | 4288.5 | 4100.4 | 3426.9 | 2832.6 | 2512.0 | 2415.7 | 2420.0 | 2452.1 | 2505.5 | 2507.7 |
| 37.5° | 4406.1 | 4500.1 | 4177.3 | 3253.8 | 2569.7 | 2321.7 | 2234.0 | 2202.0 | 2197.7 | 2212.7 | 2216.9 |
| 40° | 4699.0 | 4840.0 | 4232.9 | 3001.5 | 2315.3 | 2150.7 | 2052.3 | 1990.3 | 1936.9 | 1896.3 | 1883.4 |
| 42.5° | 5141.5 | 5304.0 | 4265.0 | 2695.8 | 2088.7 | 1981.8 | 1870.6 | 1791.5 | 1697.4 | 1611.9 | 1582.0 |
| 45° | 5953.9 | 6007.3 | 4265.0 | 2370.9 | 1887.7 | 1823.6 | 1712.4 | 1618.3 | 1498.6 | 1398.1 | 1376.8 |
| 47.5° | 7253.7 | 7082.6 | 4269.2 | 2056.6 | 1710.3 | 1684.6 | 1588.4 | 1481.5 | 1349.0 | 1265.6 | 1252.8 |
| 50° | 9211.9 | 8611.2 | 4356.9 | 1795.8 | 1562.8 | 1567.0 | 1496.5 | 1378.9 | 1259.2 | 1197.2 | 1186.5 |
| 52.5° | 11431.0 | 10494.6 | 4592.1 | 1603.4 | 1438.8 | 1470.8 | 1432.3 | 1319.0 | 1212.2 | 1158.7 | 1148.0 |
| 55° | 13517.5 | 12226.3 | 4793.0 | 1466.6 | 1334.0 | 1389.6 | 1387.5 | 1282.7 | 1186.5 | 1133.1 | 1126.6 |
| 57.5° | 15291.9 | 13412.7 | 4763.1 | 1355.4 | 1244.2 | 1314.8 | 1346.8 | 1259.2 | 1169.4 | 1124.5 | 1118.1 |
| 60° | 16395.0 | 14041.3 | 4337.7 | 1252.8 | 1175.8 | 1261.3 | 1323.3 | 1252.8 | 1177.9 | 1167.3 | 1169.4 |
| 62.5° | 16873.9 | 13925.8 | 3521.0 | 1175.8 | 1130.9 | 1235.7 | 1349.0 | 1297.7 | 1257.0 | 1282.7 | 1297.7 |
| 65° | 16129.9 | 12933.9 | 2591.1 | 1118.1 | 1088.2 | 1242.1 | 1408.8 | 1368.2 | 1257.0 | 1274.1 | 1280.6 |
| 67.5° | 14064.8 | 11009.8 | 1872.7 | 1060.4 | 1034.7 | 1261.3 | 1494.3 | 1357.5 | 1184.4 | 1184.4 | 1171.5 |
| 70° | 10135.5 | 7918.5 | 1359.7 | 1002.6 | 981.3 | 1233.5 | 1498.6 | 1284.8 | 1101.0 | 1094.6 | 1062.5 |
| 72.5° | 6099.2 | 4671.2 | 1060.4 | 938.5 | 900.0 | 1094.6 | 1404.6 | 1199.3 | 1019.7 | 966.3 | 927.8 |
| 75° | 3168.3 | 2340.9 | 889.3 | 868.0 | 771.8 | 927.8 | 1284.8 | 1066.8 | 872.2 | 825.2 | 803.8 |
| 77.5° | 1357.5 | 1094.6 | 763.2 | 773.9 | 641.3 | 780.3 | 1036.8 | 923.5 | 773.9 | 714.0 | 694.8 |
| 80° | 669.1 | 622.1 | 602.9 | 620.0 | 513.1 | 602.9 | 893.6 | 808.1 | 656.3 | 587.9 | 560.1 |
| 82.5° | 382.7 | 363.4 | 434.0 | 440.4 | 365.6 | 504.5 | 754.7 | 684.1 | 543.0 | 468.2 | 423.3 |
| 85° | 177.4 | 190.3 | 263.0 | 265.1 | 226.6 | 346.3 | 493.8 | 384.8 | 288.6 | 239.4 | 228.7 |
| 87.5° | 70.5 | 83.4 | 115.4 | 113.3 | 66.3 | 64.1 | 42.8 | 23.5 | 19.2 | 17.1 | 15.0 |
| 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

REPORT NUMBER: SP1-2408-195-9

| 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



CCT = 3050K
 CIE x = 0.4383
 CIE y = 0.4131
 Duv = 0.0034

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)