

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: P634014

Luminaire Tested: GWS-SA2F-830-U-SL2-W-GRSBK

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P634014
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-28)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA2F-830-U-SL2-W-GRSBK
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK
Light Source: (32) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 7567.1 lumens
Efficiency: N/A
Efficacy: 60.8 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G1

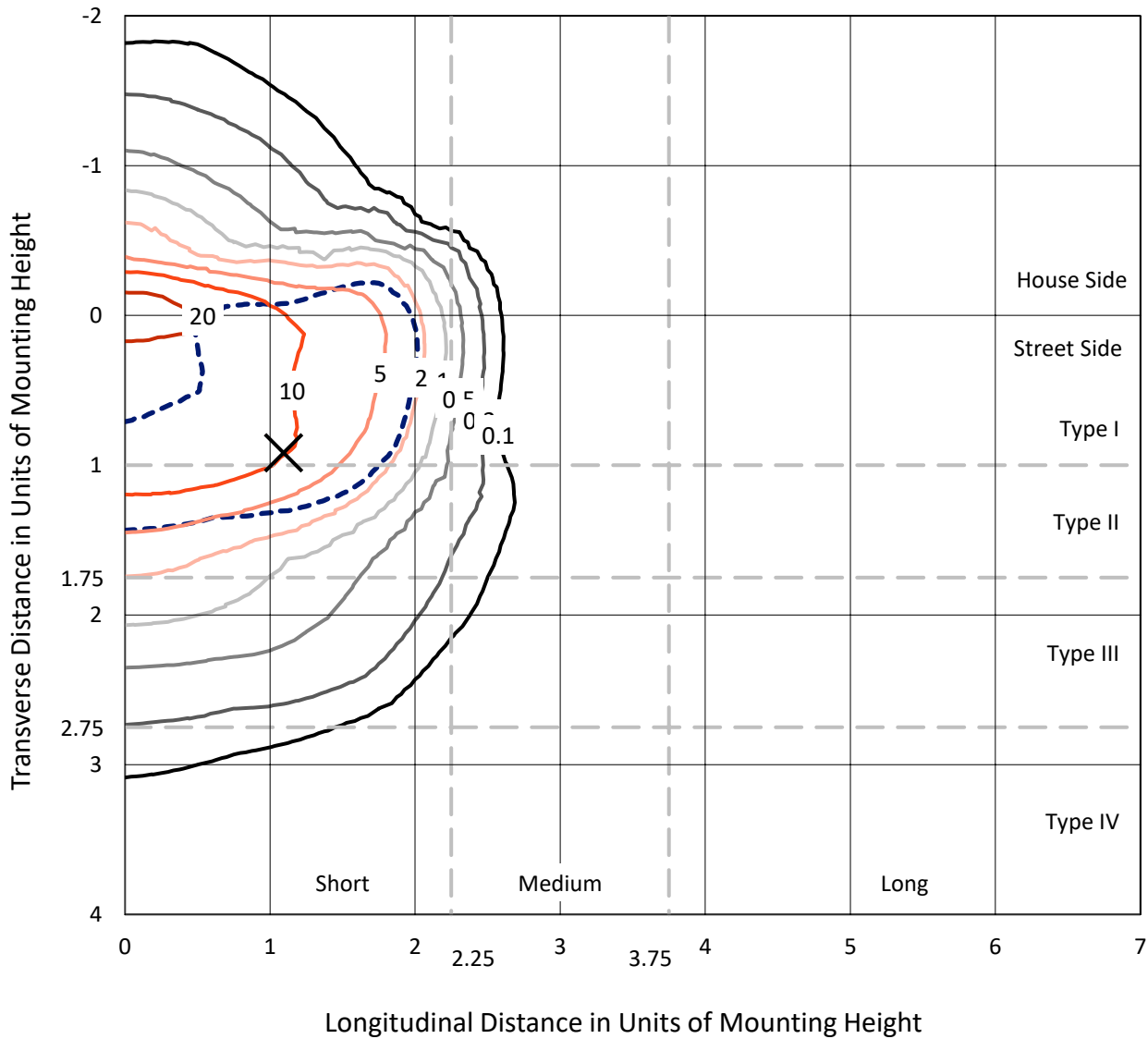
Input Watts (W): 124.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P634014
 CATALOG NUMBER: GWS-SA2F-830-U-SL2-W-GRSBK

Iso-Footcandle Lines of Horizontal Illumination

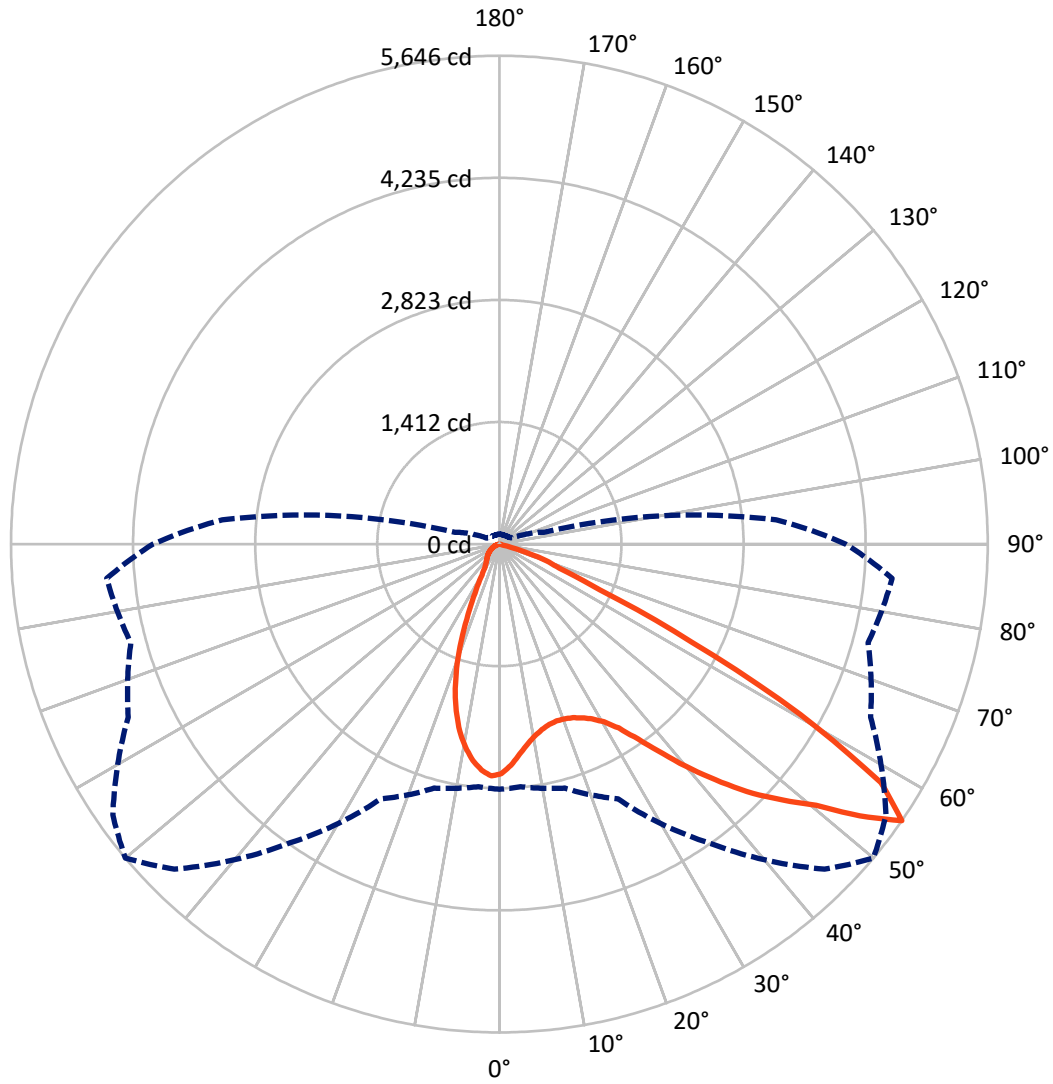
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 26.6 fc
 Type II - Short - N/A

REPORT NUMBER: P634014
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Luminous Intensity Polar Plot



— Vertical Plane Through 50-Deg Lateral - - - Horizontal Cone Through 55-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1491.1 | 0.0 | 1491.1 |
| | % Fixture | 19.7 | 0.0 | 19.7 |
| Street Side | Lumens | 6076.0 | 0.0 | 6076.0 |
| | % Fixture | 80.3 | 0.0 | 80.3 |
| Total | Lumens | 7567.1 | 0.0 | 7567.1 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 233.2 | 3.1 |
| 10°-20° | 573.8 | 7.6 |
| 20°-30° | 809.3 | 10.7 |
| 30°-40° | 1197.6 | 15.8 |
| 40°-50° | 1727.8 | 22.8 |
| 50°-60° | 2038.1 | 26.9 |
| 60°-70° | 909.1 | 12.0 |
| 70°-80° | 78.2 | 1.0 |
| 80°-90° | 0.0 | 0.0 |
| 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° | 7567.1 | 100.0 |
| 0°-180° | 7567.1 | 100.0 |

Coefficient of Utilization



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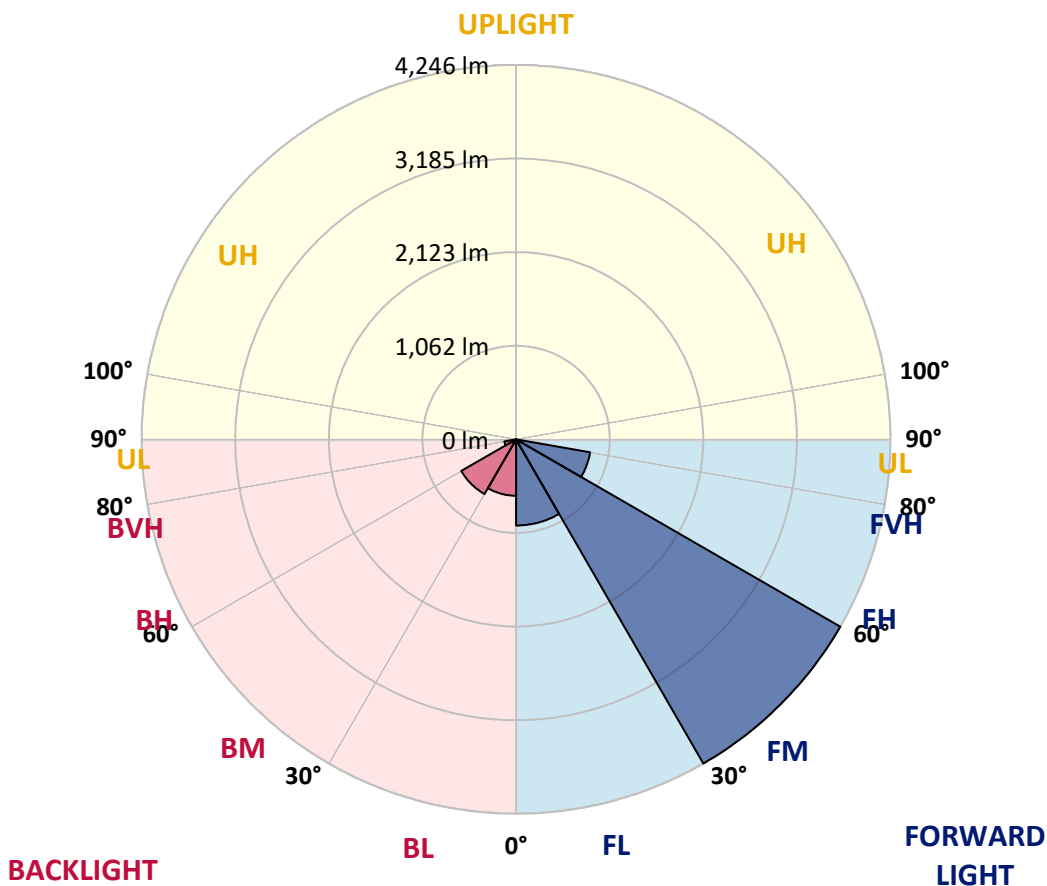
CATALOG NUMBER: GWS-SA2F-830-U-SL2-W-GRSBK

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 976.9 | 12.9 | | | |
| FM (30°-60°) | 4246.4 | 56.1 | | | |
| FH (60°-80°) | 852.7 | 11.3 | | | G1/1800 |
| FVH (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| BL (0°-30°) | 639.3 | 8.4 | B2/1000 | | |
| BM (30°-60°) | 717.1 | 9.5 | B1/1000 | | |
| BH (60°-80°) | 134.6 | 1.8 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G1

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 50° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 |
| 2.5° | 2466.5 | 2468.4 | 2469.3 | 2494.2 | 2503.5 | 2540.4 | 2559.8 | 2570.0 | 2596.8 | 2628.2 | 2654.0 |
| 5° | 2301.1 | 2298.4 | 2303.0 | 2334.4 | 2354.7 | 2409.2 | 2438.8 | 2459.1 | 2518.2 | 2592.1 | 2654.0 |
| 7.5° | 2157.0 | 2162.6 | 2168.1 | 2202.3 | 2232.8 | 2291.9 | 2334.4 | 2364.9 | 2447.1 | 2557.0 | 2661.4 |
| 10° | 2055.4 | 2055.4 | 2063.7 | 2102.5 | 2138.6 | 2211.5 | 2254.0 | 2292.8 | 2390.8 | 2525.6 | 2669.7 |
| 12.5° | 1980.6 | 1981.5 | 1991.7 | 2036.0 | 2077.6 | 2153.3 | 2197.7 | 2235.6 | 2343.6 | 2494.2 | 2671.6 |
| 15° | 1945.5 | 1942.7 | 1951.0 | 1998.1 | 2044.3 | 2115.5 | 2161.7 | 2198.6 | 2310.4 | 2476.7 | 2680.8 |
| 17.5° | 1936.3 | 1934.4 | 1940.9 | 1987.1 | 2034.2 | 2103.5 | 2148.7 | 2185.7 | 2305.8 | 2482.2 | 2708.5 |
| 20° | 1963.0 | 1959.3 | 1956.6 | 1996.3 | 2040.6 | 2109.0 | 2156.1 | 2197.7 | 2327.9 | 2512.7 | 2751.0 |
| 22.5° | 2026.8 | 2026.8 | 2020.3 | 2039.7 | 2069.3 | 2131.2 | 2180.1 | 2234.6 | 2386.1 | 2573.7 | 2813.9 |
| 25° | 2144.1 | 2134.9 | 2122.9 | 2131.2 | 2127.5 | 2166.3 | 2224.5 | 2300.2 | 2496.1 | 2674.4 | 2890.5 |
| 27.5° | 2278.1 | 2286.4 | 2266.0 | 2267.0 | 2234.6 | 2220.8 | 2288.2 | 2402.8 | 2659.6 | 2816.6 | 3004.2 |
| 30° | 2460.0 | 2453.6 | 2454.5 | 2451.7 | 2376.9 | 2311.3 | 2384.3 | 2536.7 | 2865.6 | 3033.7 | 3152.0 |
| 32.5° | 2602.3 | 2611.5 | 2642.0 | 2659.6 | 2561.7 | 2456.3 | 2533.9 | 2718.7 | 3100.2 | 3281.3 | 3333.0 |
| 35° | 2752.9 | 2769.5 | 2831.4 | 2888.7 | 2806.5 | 2685.4 | 2768.6 | 2959.8 | 3321.0 | 3526.1 | 3540.9 |
| 37.5° | 2911.8 | 2945.0 | 3018.9 | 3119.6 | 3106.7 | 2999.5 | 3075.3 | 3243.4 | 3494.7 | 3673.9 | 3712.7 |
| 40° | 3093.8 | 3126.1 | 3247.1 | 3392.1 | 3422.6 | 3398.6 | 3423.5 | 3521.5 | 3609.2 | 3680.4 | 3786.6 |
| 42.5° | 3293.3 | 3337.6 | 3491.0 | 3685.0 | 3799.5 | 3820.8 | 3762.6 | 3752.4 | 3659.1 | 3606.5 | 3770.9 |
| 45° | 3528.9 | 3580.6 | 3754.3 | 4005.5 | 4187.5 | 4216.2 | 4115.5 | 3985.2 | 3690.5 | 3552.0 | 3723.8 |
| 47.5° | 3793.1 | 3842.0 | 4014.8 | 4316.8 | 4587.5 | 4598.6 | 4423.1 | 4213.4 | 3783.8 | 3614.8 | 3759.8 |
| 50° | 3881.7 | 3912.2 | 4061.9 | 4416.6 | 4915.5 | 5000.5 | 4746.4 | 4470.2 | 3971.4 | 3799.5 | 3935.3 |
| 52.5° | 3576.9 | 3588.9 | 3719.2 | 4077.6 | 4848.9 | 5394.9 | 5218.5 | 4853.6 | 4304.8 | 4081.3 | 4206.0 |
| 55° | 2834.2 | 2814.8 | 2920.1 | 3249.0 | 4214.3 | 5314.5 | 5646.2 | 5455.9 | 4734.4 | 4412.0 | 4558.0 |
| 57.5° | 1982.4 | 1959.3 | 1935.3 | 2158.0 | 3144.6 | 4505.3 | 5202.8 | 5539.9 | 5143.6 | 4739.9 | 4937.6 |
| 60° | 1629.6 | 1607.4 | 1491.0 | 1388.4 | 1901.2 | 3235.1 | 3996.3 | 4630.9 | 5110.4 | 4723.3 | 4925.6 |
| 62.5° | 1407.8 | 1394.9 | 1347.8 | 1208.3 | 1118.7 | 1846.6 | 2502.5 | 3110.4 | 3921.5 | 3709.0 | 3720.1 |
| 65° | 1105.8 | 1102.1 | 1134.4 | 1149.2 | 989.4 | 1021.7 | 1276.7 | 1616.6 | 2120.1 | 1999.1 | 1895.6 |
| 67.5° | 755.7 | 747.3 | 808.3 | 994.0 | 951.5 | 806.5 | 747.3 | 753.8 | 917.3 | 560.7 | 445.3 |
| 70° | 480.4 | 461.0 | 461.9 | 616.2 | 774.1 | 636.5 | 576.4 | 507.2 | 456.4 | 83.1 | 94.2 |
| 72.5° | 307.6 | 295.6 | 254.0 | 278.1 | 358.4 | 310.4 | 313.2 | 269.7 | 180.1 | 44.3 | 51.7 |
| 75° | 129.3 | 119.2 | 91.5 | 73.0 | 72.1 | 45.3 | 39.7 | 37.0 | 24.9 | 24.9 | 26.8 |
| 77.5° | 0.9 | 0.0 | 0.0 | 0.9 | 1.8 | 0.9 | 0.9 | 1.8 | 3.7 | 5.5 | 6.5 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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 |



REPORT NUMBER: P634014
 CATALOG NUMBER: GWS-SA2F-830-U-SL2-W-GRSBK

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 | 2655.0 |
| 2.5° | 2669.7 | 2647.6 | 2672.5 | 2681.7 | 2680.8 | 2681.7 | 2655.0 | 2636.5 | 2635.6 | 2612.5 | 2601.4 |
| 5° | 2679.9 | 2662.3 | 2680.8 | 2668.8 | 2640.2 | 2604.2 | 2556.1 | 2514.5 | 2496.1 | 2469.3 | 2456.3 |
| 7.5° | 2699.3 | 2680.8 | 2678.1 | 2630.0 | 2558.9 | 2483.1 | 2398.1 | 2322.4 | 2281.8 | 2232.8 | 2235.6 |
| 10° | 2713.2 | 2691.9 | 2655.9 | 2558.0 | 2439.7 | 2318.7 | 2192.1 | 2079.4 | 2008.3 | 1942.7 | 1931.6 |
| 12.5° | 2718.7 | 2687.3 | 2603.2 | 2455.4 | 2289.1 | 2131.2 | 1945.5 | 1784.8 | 1673.9 | 1588.0 | 1576.0 |
| 15° | 2728.9 | 2678.1 | 2535.8 | 2331.6 | 2103.5 | 1879.9 | 1643.4 | 1423.6 | 1276.7 | 1177.8 | 1186.1 |
| 17.5° | 2744.6 | 2667.9 | 2460.0 | 2193.1 | 1903.9 | 1588.0 | 1268.4 | 1016.2 | 881.3 | 824.0 | 824.9 |
| 20° | 2766.7 | 2655.9 | 2376.9 | 2040.6 | 1664.7 | 1258.2 | 886.8 | 696.5 | 658.7 | 656.8 | 654.0 |
| 22.5° | 2796.3 | 2643.9 | 2288.2 | 1873.4 | 1381.1 | 881.3 | 590.3 | 531.2 | 546.9 | 577.4 | 582.9 |
| 25° | 2831.4 | 2629.1 | 2189.4 | 1685.0 | 1071.6 | 578.3 | 442.5 | 433.3 | 471.1 | 511.8 | 521.0 |
| 27.5° | 2885.9 | 2621.7 | 2076.7 | 1470.7 | 752.0 | 414.8 | 362.1 | 367.7 | 401.8 | 436.0 | 444.3 |
| 30° | 2978.3 | 2635.6 | 1953.8 | 1230.5 | 483.1 | 330.7 | 314.1 | 322.4 | 340.9 | 358.4 | 365.8 |
| 32.5° | 3103.9 | 2676.2 | 1834.6 | 968.1 | 344.6 | 287.3 | 283.6 | 288.2 | 295.6 | 305.8 | 308.5 |
| 35° | 3250.8 | 2746.4 | 1711.8 | 692.8 | 284.5 | 262.4 | 258.7 | 258.7 | 262.4 | 264.2 | 265.1 |
| 37.5° | 3371.8 | 2820.3 | 1596.3 | 461.0 | 255.0 | 243.0 | 237.4 | 234.6 | 233.7 | 235.6 | 236.5 |
| 40° | 3424.5 | 2850.8 | 1470.7 | 335.3 | 233.7 | 225.4 | 217.1 | 208.8 | 208.8 | 215.2 | 216.2 |
| 42.5° | 3387.5 | 2816.6 | 1325.6 | 277.1 | 218.9 | 206.9 | 194.0 | 186.6 | 190.3 | 196.8 | 198.6 |
| 45° | 3309.0 | 2732.6 | 1165.8 | 244.8 | 204.2 | 188.5 | 173.7 | 169.1 | 172.7 | 181.1 | 182.9 |
| 47.5° | 3296.1 | 2677.1 | 974.6 | 223.6 | 188.5 | 172.7 | 157.0 | 152.4 | 157.0 | 163.5 | 165.4 |
| 50° | 3424.5 | 2725.2 | 762.1 | 205.1 | 173.7 | 156.1 | 143.2 | 138.6 | 141.3 | 145.0 | 146.9 |
| 52.5° | 3659.1 | 2903.5 | 615.2 | 187.5 | 156.1 | 139.5 | 131.2 | 125.6 | 125.6 | 129.3 | 130.3 |
| 55° | 4005.5 | 3214.8 | 531.2 | 167.2 | 135.8 | 126.6 | 119.2 | 113.6 | 113.6 | 115.5 | 116.4 |
| 57.5° | 4404.6 | 3591.7 | 550.6 | 140.4 | 119.2 | 114.5 | 108.1 | 103.5 | 105.3 | 105.3 | 105.3 |
| 60° | 4349.2 | 3564.0 | 589.4 | 118.2 | 105.3 | 103.5 | 97.9 | 96.1 | 100.7 | 97.0 | 95.1 |
| 62.5° | 3203.7 | 2461.9 | 308.5 | 97.0 | 90.5 | 88.7 | 85.0 | 88.7 | 95.1 | 85.0 | 81.3 |
| 65° | 1555.7 | 1191.7 | 123.8 | 79.4 | 76.7 | 74.8 | 73.0 | 78.5 | 82.2 | 66.5 | 62.8 |
| 67.5° | 365.8 | 297.5 | 80.4 | 67.4 | 63.7 | 60.0 | 61.9 | 62.8 | 60.0 | 45.3 | 43.4 |
| 70° | 95.1 | 93.3 | 62.8 | 56.4 | 50.8 | 47.1 | 47.1 | 46.2 | 39.7 | 28.6 | 26.8 |
| 72.5° | 51.7 | 50.8 | 45.3 | 42.5 | 35.1 | 31.4 | 32.3 | 28.6 | 22.2 | 16.6 | 15.7 |
| 75° | 25.9 | 27.7 | 25.9 | 24.0 | 19.4 | 17.6 | 17.6 | 15.7 | 11.1 | 6.5 | 6.5 |
| 77.5° | 5.5 | 6.5 | 6.5 | 5.5 | 4.6 | 3.7 | 3.7 | 4.6 | 1.8 | 0.0 | 0.0 |
| 80° | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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

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



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)