

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: P637010

Luminaire Tested: GWS-SA4B-830-U-T2R-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P637010
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-11)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA4B-830-U-T2R-W
Description: GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II ROADWAY OPTICS
Light Source: (64) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 11724.5 lumens
Efficiency: N/A
Efficacy: 124.2 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G2

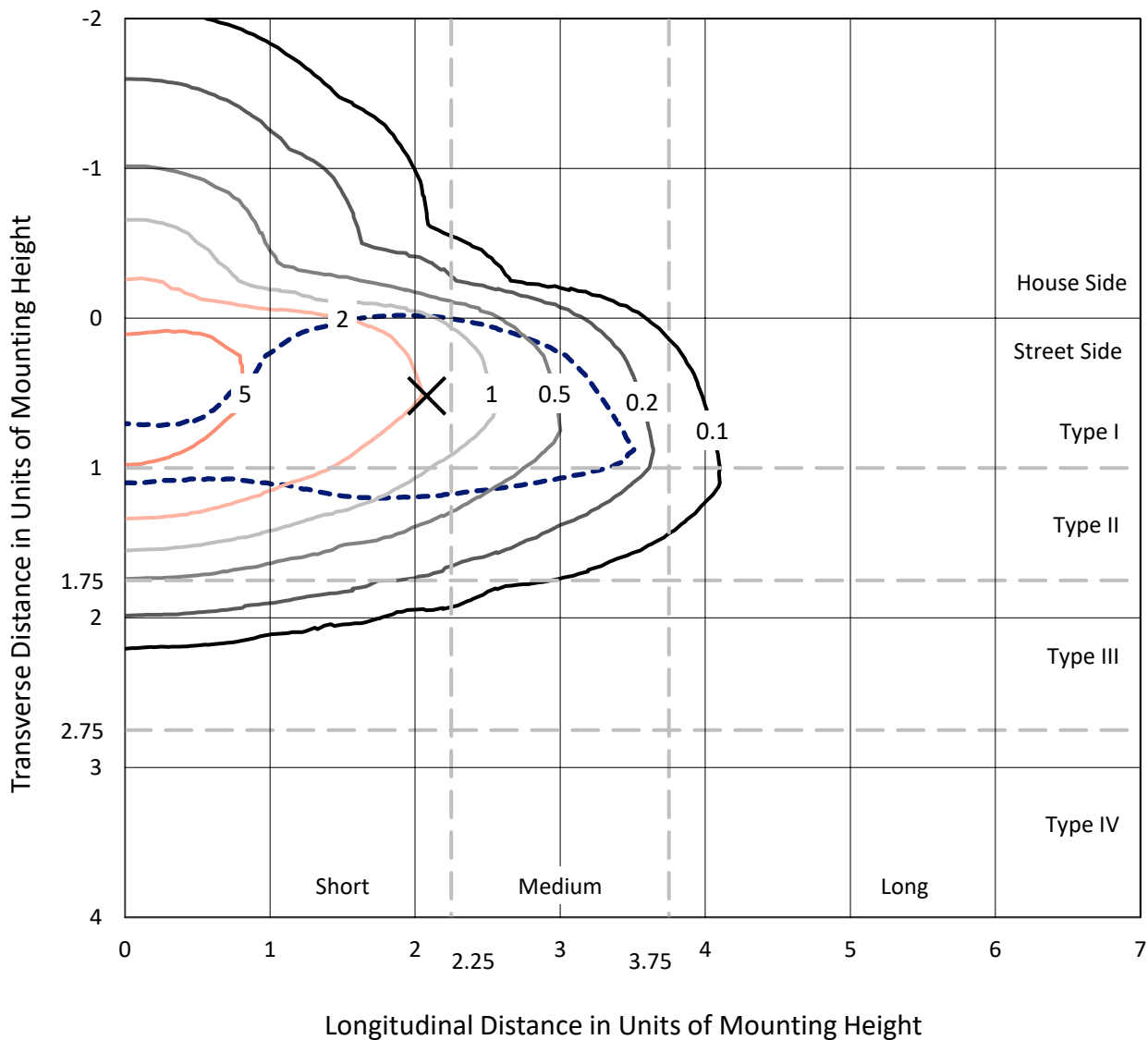
Input Watts (W): 94.4
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P637010
 CATALOG NUMBER: GWS-SA4B-830-U-T2R-W

Iso-Footcandle Lines of Horizontal Illumination

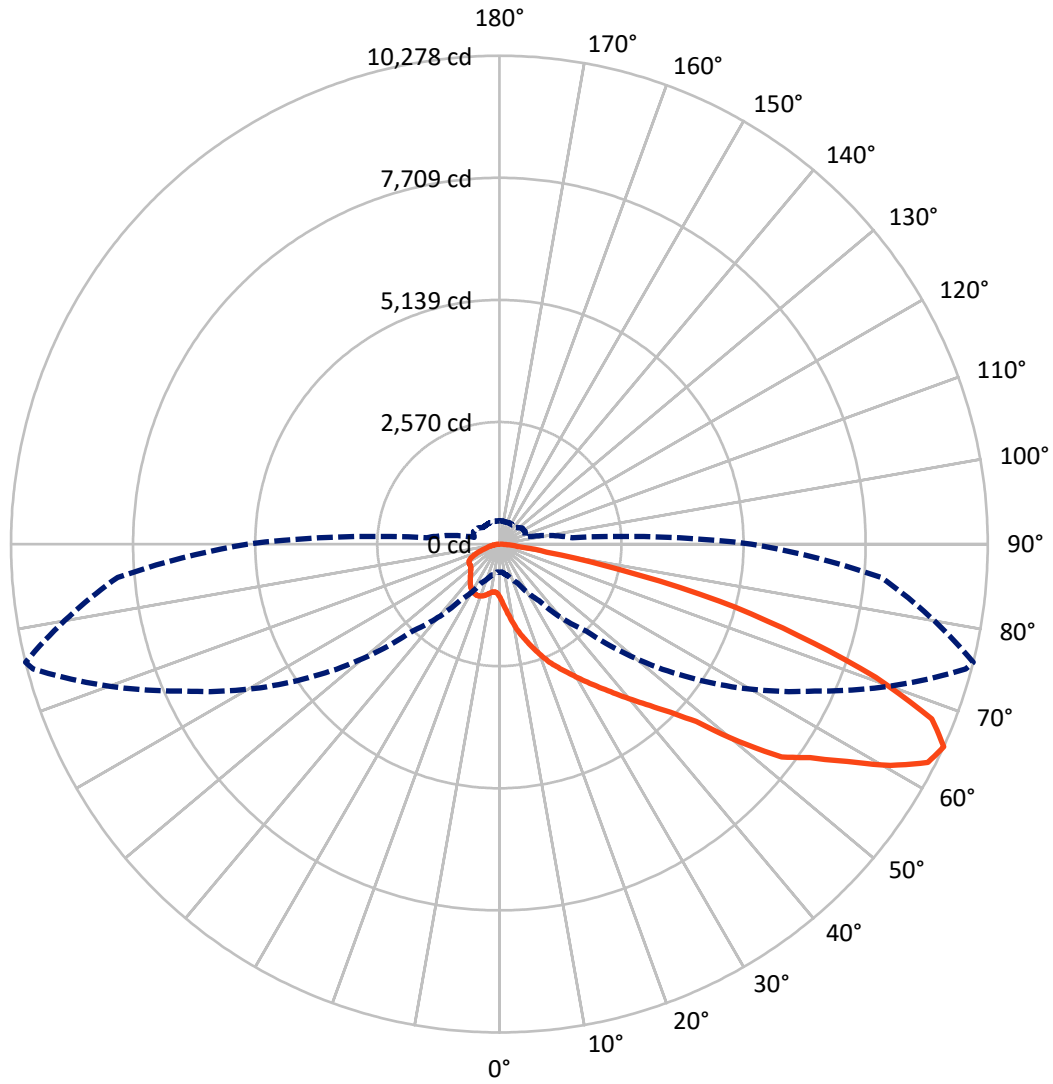
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 7.2 fc
 Type II - Short - N/A

REPORT NUMBER: P637010
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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

REPORT NUMBER: P637010

CATALOG NUMBER: GWS-SA4B-830-U-T2R-W

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1959.8 | 0.0 | 1959.8 |
| | % Fixture | 16.7 | 0.0 | 16.7 |
| Street Side | Lumens | 9764.7 | 0.0 | 9764.7 |
| | % Fixture | 83.3 | 0.0 | 83.3 |
| Total | Lumens | 11724.5 | 0.0 | 11724.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 131.9 | 1.1 |
| 10°-20° | 502.4 | 4.3 |
| 20°-30° | 979.1 | 8.4 |
| 30°-40° | 1637.5 | 14.0 |
| 40°-50° | 2344.6 | 20.0 |
| 50°-60° | 2775.7 | 23.7 |
| 60°-70° | 2308.0 | 19.7 |
| 70°-80° | 944.5 | 8.1 |
| 80°-90° | 100.6 | 0.9 |
| 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° | 11724.5 | 100.0 |
| 0°-180° | 11724.5 | 100.0 |

Coefficient of Utilization



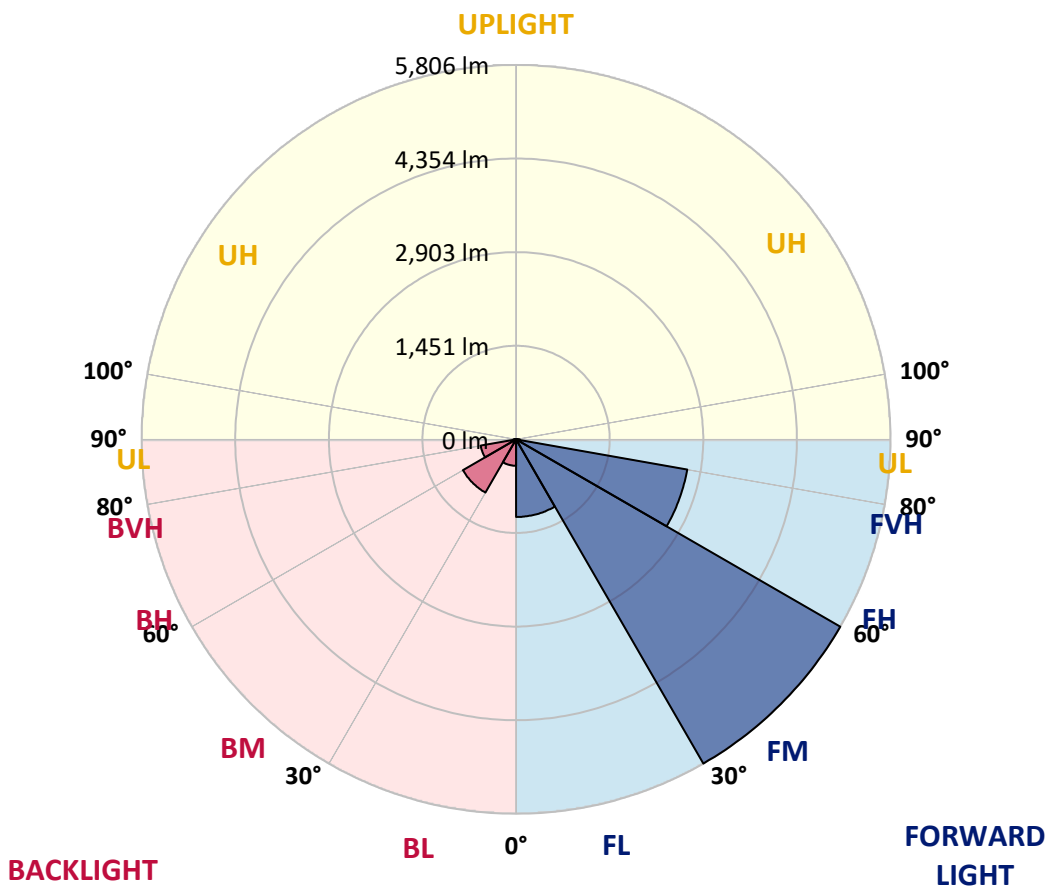
REPORT NUMBER: P637010

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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1203.5 | 10.3 | | | |
| FM (30°-60°) | 5805.5 | 49.5 | | | |
| FH (60°-80°) | 2695.8 | 23.0 | | | G2/5000 |
| FVH (80°-90°) | 60.0 | 0.5 | | | G1/100 |
| BL (0°-30°) | 410.0 | 3.5 | B1/500 | | |
| BM (30°-60°) | 952.4 | 8.1 | B1/1000 | | |
| BH (60°-80°) | 556.8 | 4.7 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 40.6 | 0.3 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|
| 0° | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 |
| 2.5° | 1556.2 | 1562.0 | 1543.0 | 1536.4 | 1491.9 | 1431.7 | 1381.4 | 1305.6 | 1235.6 | 1224.8 | 1162.2 |
| 5° | 1976.6 | 1951.8 | 1930.4 | 1916.4 | 1854.6 | 1786.2 | 1679.8 | 1537.2 | 1388.0 | 1369.9 | 1234.7 |
| 7.5° | 2226.3 | 2222.2 | 2195.8 | 2187.6 | 2139.8 | 2071.3 | 1961.7 | 1784.5 | 1567.7 | 1538.1 | 1332.8 |
| 10° | 2426.6 | 2424.1 | 2410.9 | 2418.4 | 2374.7 | 2307.9 | 2201.6 | 2018.6 | 1764.7 | 1735.0 | 1442.4 |
| 12.5° | 2601.3 | 2605.5 | 2603.0 | 2630.2 | 2607.9 | 2556.0 | 2445.6 | 2244.4 | 1961.7 | 1929.6 | 1576.0 |
| 15° | 2729.1 | 2732.4 | 2744.8 | 2804.1 | 2816.5 | 2805.8 | 2693.7 | 2466.2 | 2156.2 | 2110.1 | 1713.6 |
| 17.5° | 2765.4 | 2772.0 | 2801.6 | 2897.2 | 2964.0 | 3008.5 | 2925.3 | 2692.0 | 2347.5 | 2297.2 | 1853.7 |
| 20° | 2814.0 | 2821.4 | 2851.1 | 2950.8 | 3048.9 | 3150.3 | 3135.5 | 2921.1 | 2540.3 | 2499.1 | 1995.5 |
| 22.5° | 3039.0 | 3033.2 | 3020.1 | 3067.9 | 3137.9 | 3264.0 | 3301.1 | 3141.2 | 2739.8 | 2700.2 | 2152.1 |
| 25° | 3472.6 | 3461.9 | 3377.8 | 3334.1 | 3311.0 | 3387.7 | 3453.6 | 3341.5 | 2934.3 | 2875.0 | 2298.0 |
| 27.5° | 3950.6 | 3944.9 | 3837.7 | 3733.9 | 3592.1 | 3559.1 | 3597.9 | 3516.3 | 3123.1 | 3062.9 | 2424.9 |
| 30° | 4403.2 | 4385.8 | 4273.7 | 4143.5 | 3953.9 | 3812.2 | 3755.3 | 3687.7 | 3330.0 | 3267.3 | 2573.3 |
| 32.5° | 4807.9 | 4785.6 | 4653.7 | 4509.5 | 4310.8 | 4143.5 | 3973.7 | 3869.9 | 3564.1 | 3491.5 | 2725.0 |
| 35° | 5140.0 | 5117.8 | 4982.6 | 4829.3 | 4610.9 | 4487.2 | 4254.8 | 4067.7 | 3802.3 | 3728.9 | 2903.8 |
| 37.5° | 5397.2 | 5376.6 | 5235.6 | 5084.8 | 4894.4 | 4796.3 | 4594.4 | 4290.2 | 4076.7 | 4000.1 | 3093.4 |
| 40° | 5541.4 | 5526.6 | 5413.7 | 5294.2 | 5134.3 | 5049.4 | 4958.7 | 4571.3 | 4384.2 | 4307.5 | 3316.8 |
| 42.5° | 5585.1 | 5575.2 | 5496.1 | 5434.3 | 5326.3 | 5262.0 | 5313.9 | 4901.8 | 4712.2 | 4645.5 | 3568.2 |
| 45° | 5475.5 | 5475.5 | 5452.4 | 5483.7 | 5488.7 | 5487.9 | 5670.0 | 5275.2 | 5115.3 | 5041.9 | 3922.6 |
| 47.5° | 5195.3 | 5213.4 | 5247.2 | 5401.3 | 5563.7 | 5699.7 | 6086.3 | 5773.1 | 5633.8 | 5573.6 | 4424.6 |
| 50° | 4682.6 | 4732.0 | 4847.4 | 5148.3 | 5493.6 | 5839.8 | 6480.3 | 6509.1 | 6641.8 | 6535.5 | 5163.1 |
| 52.5° | 3931.7 | 3924.3 | 4218.5 | 4647.1 | 5173.8 | 5845.6 | 6697.0 | 7158.6 | 7515.5 | 7442.2 | 5712.1 |
| 55° | 3124.7 | 3112.4 | 3386.8 | 3977.8 | 4683.4 | 5624.7 | 6827.3 | 7456.2 | 8000.2 | 7934.2 | 6205.8 |
| 57.5° | 2392.8 | 2377.1 | 2621.1 | 3154.4 | 3991.0 | 5155.7 | 6802.5 | 7810.6 | 8667.0 | 8633.2 | 6876.7 |
| 60° | 1646.9 | 1627.9 | 1856.2 | 2322.7 | 3171.7 | 4438.6 | 6528.9 | 7992.8 | 9447.6 | 9459.1 | 7594.7 |
| 62.5° | 989.1 | 978.4 | 1144.1 | 1505.9 | 2281.5 | 3550.1 | 5888.5 | 7882.3 | 10069.1 | 10121.0 | 8056.2 |
| 65° | 596.8 | 589.3 | 686.6 | 898.4 | 1447.4 | 2590.6 | 4901.0 | 7317.7 | 10158.9 | 10278.4 | 8066.9 |
| 67.5° | 434.4 | 435.2 | 463.2 | 547.3 | 844.0 | 1673.2 | 3677.8 | 6305.5 | 9690.7 | 9814.4 | 7558.4 |
| 70° | 377.5 | 379.2 | 394.0 | 413.0 | 510.2 | 957.8 | 2391.2 | 4977.7 | 8306.8 | 8402.4 | 6339.3 |
| 72.5° | 335.5 | 335.5 | 345.4 | 355.3 | 398.9 | 583.6 | 1280.9 | 3479.2 | 6556.1 | 6581.6 | 4838.4 |
| 75° | 295.1 | 292.6 | 297.6 | 302.5 | 346.2 | 408.0 | 623.1 | 2424.1 | 4842.5 | 4783.1 | 3127.2 |
| 77.5° | 234.9 | 232.4 | 233.3 | 238.2 | 277.8 | 291.8 | 315.7 | 1514.2 | 2729.1 | 2575.8 | 1381.4 |
| 80° | 167.3 | 165.7 | 174.7 | 187.1 | 205.2 | 178.9 | 197.8 | 732.8 | 1082.2 | 1007.2 | 535.8 |
| 82.5° | 99.7 | 103.0 | 117.0 | 126.9 | 141.8 | 112.1 | 127.8 | 244.8 | 383.3 | 373.4 | 217.6 |
| 85° | 14.0 | 14.8 | 42.0 | 48.6 | 61.0 | 43.7 | 67.6 | 110.4 | 153.3 | 164.0 | 76.7 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 19.8 | 43.7 | 44.5 | 19.0 |
| 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: P637010
 CATALOG NUMBER: GWS-SA4B-830-U-T2R-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 | 1110.3 |
| 2.5° | 1130.0 | 1091.3 | 1036.1 | 989.9 | 951.2 | 919.9 | 893.5 | 873.7 | 867.9 | 859.7 | 859.7 |
| 5° | 1171.3 | 1101.2 | 1002.3 | 932.2 | 891.8 | 867.9 | 851.5 | 843.2 | 839.1 | 834.1 | 831.7 |
| 7.5° | 1228.1 | 1130.0 | 996.5 | 925.6 | 894.3 | 879.5 | 868.8 | 863.8 | 860.5 | 855.6 | 855.6 |
| 10° | 1306.4 | 1172.9 | 1014.7 | 948.7 | 924.0 | 909.1 | 896.8 | 888.5 | 881.1 | 873.7 | 872.1 |
| 12.5° | 1391.3 | 1229.0 | 1047.6 | 980.0 | 953.7 | 935.5 | 918.2 | 905.9 | 896.8 | 887.7 | 885.2 |
| 15° | 1485.3 | 1286.7 | 1083.1 | 1010.5 | 977.6 | 952.8 | 932.2 | 913.3 | 900.9 | 887.7 | 886.1 |
| 17.5° | 1577.6 | 1345.2 | 1112.7 | 1031.1 | 989.1 | 958.6 | 928.9 | 904.2 | 888.5 | 873.7 | 869.6 |
| 20° | 1688.1 | 1403.7 | 1133.3 | 1036.9 | 986.6 | 946.2 | 910.8 | 879.5 | 862.2 | 844.9 | 842.4 |
| 22.5° | 1789.5 | 1458.1 | 1143.2 | 1028.7 | 967.7 | 919.9 | 878.7 | 844.9 | 825.9 | 808.6 | 805.3 |
| 25° | 1887.5 | 1505.9 | 1139.1 | 1008.9 | 938.8 | 883.6 | 840.7 | 806.9 | 788.8 | 770.7 | 765.7 |
| 27.5° | 1982.3 | 1538.1 | 1122.6 | 978.4 | 902.6 | 843.2 | 802.0 | 771.5 | 755.8 | 740.2 | 733.6 |
| 30° | 2075.5 | 1567.7 | 1097.1 | 938.8 | 856.4 | 801.2 | 767.4 | 745.9 | 730.3 | 713.8 | 708.9 |
| 32.5° | 2169.4 | 1589.2 | 1058.3 | 892.7 | 809.4 | 764.1 | 743.5 | 727.8 | 711.3 | 694.8 | 689.9 |
| 35° | 2264.2 | 1598.2 | 1011.4 | 839.9 | 769.9 | 740.2 | 732.8 | 714.6 | 692.4 | 672.6 | 666.0 |
| 37.5° | 2377.1 | 1606.5 | 952.8 | 788.0 | 735.2 | 728.6 | 727.0 | 699.8 | 673.4 | 646.2 | 638.8 |
| 40° | 2513.1 | 1617.2 | 892.7 | 741.0 | 707.2 | 724.5 | 717.9 | 680.8 | 628.1 | 601.7 | 593.5 |
| 42.5° | 2679.6 | 1637.0 | 830.0 | 698.1 | 686.6 | 708.9 | 701.4 | 634.7 | 599.2 | 584.4 | 580.3 |
| 45° | 2924.4 | 1709.5 | 767.4 | 664.3 | 670.9 | 686.6 | 675.1 | 607.5 | 593.5 | 583.6 | 578.6 |
| 47.5° | 3360.5 | 1820.8 | 713.0 | 638.8 | 658.6 | 666.8 | 622.3 | 600.1 | 589.3 | 576.2 | 570.4 |
| 50° | 3813.8 | 1869.4 | 669.3 | 623.1 | 644.6 | 648.7 | 593.5 | 590.2 | 582.7 | 568.7 | 563.0 |
| 52.5° | 4120.4 | 1862.8 | 642.9 | 617.4 | 633.0 | 617.4 | 580.3 | 579.4 | 574.5 | 558.0 | 551.4 |
| 55° | 4466.6 | 1874.3 | 631.4 | 619.0 | 628.1 | 564.6 | 563.8 | 566.3 | 563.8 | 545.7 | 542.4 |
| 57.5° | 4934.0 | 1909.8 | 625.6 | 624.8 | 624.8 | 539.1 | 548.1 | 551.4 | 546.5 | 538.2 | 535.8 |
| 60° | 5383.2 | 1912.3 | 614.9 | 631.4 | 622.3 | 523.4 | 530.0 | 533.3 | 527.5 | 525.9 | 525.0 |
| 62.5° | 5552.2 | 1793.6 | 591.0 | 626.4 | 612.4 | 506.1 | 511.0 | 512.7 | 506.9 | 511.0 | 510.2 |
| 65° | 5300.8 | 1541.4 | 551.4 | 602.5 | 581.9 | 490.4 | 487.1 | 491.3 | 481.4 | 492.1 | 492.9 |
| 67.5° | 4706.5 | 1224.8 | 491.3 | 557.2 | 539.1 | 473.1 | 466.5 | 466.5 | 450.0 | 466.5 | 465.7 |
| 70° | 3794.9 | 865.5 | 403.1 | 484.7 | 492.1 | 452.5 | 449.2 | 430.3 | 403.9 | 428.6 | 426.1 |
| 72.5° | 2876.6 | 621.5 | 317.3 | 383.3 | 423.7 | 423.7 | 424.5 | 392.3 | 361.8 | 373.4 | 363.5 |
| 75° | 1822.4 | 437.7 | 253.9 | 293.4 | 332.2 | 371.7 | 390.7 | 331.3 | 304.1 | 299.2 | 294.3 |
| 77.5° | 821.0 | 287.7 | 197.8 | 225.0 | 235.7 | 293.4 | 356.9 | 285.2 | 248.1 | 237.4 | 234.1 |
| 80° | 343.7 | 178.9 | 140.9 | 159.1 | 145.1 | 246.5 | 314.9 | 221.7 | 182.2 | 167.3 | 156.6 |
| 82.5° | 150.8 | 106.3 | 89.8 | 85.7 | 90.7 | 183.0 | 234.9 | 147.5 | 113.7 | 154.1 | 155.8 |
| 85° | 63.5 | 56.0 | 46.2 | 42.0 | 37.1 | 70.1 | 110.4 | 57.7 | 70.9 | 40.4 | 33.0 |
| 87.5° | 14.8 | 16.5 | 12.4 | 8.2 | 4.9 | 0.8 | 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)