

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: P630549

Luminaire Tested: GWS-SA1D-830-U-SL2-W-GRSBK

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P630549
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-SA1D-830-U-SL2-W-GRSBK
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK
Light Source: (16) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2828.5 lumens
Efficiency: N/A
Efficacy: 63.8 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G0

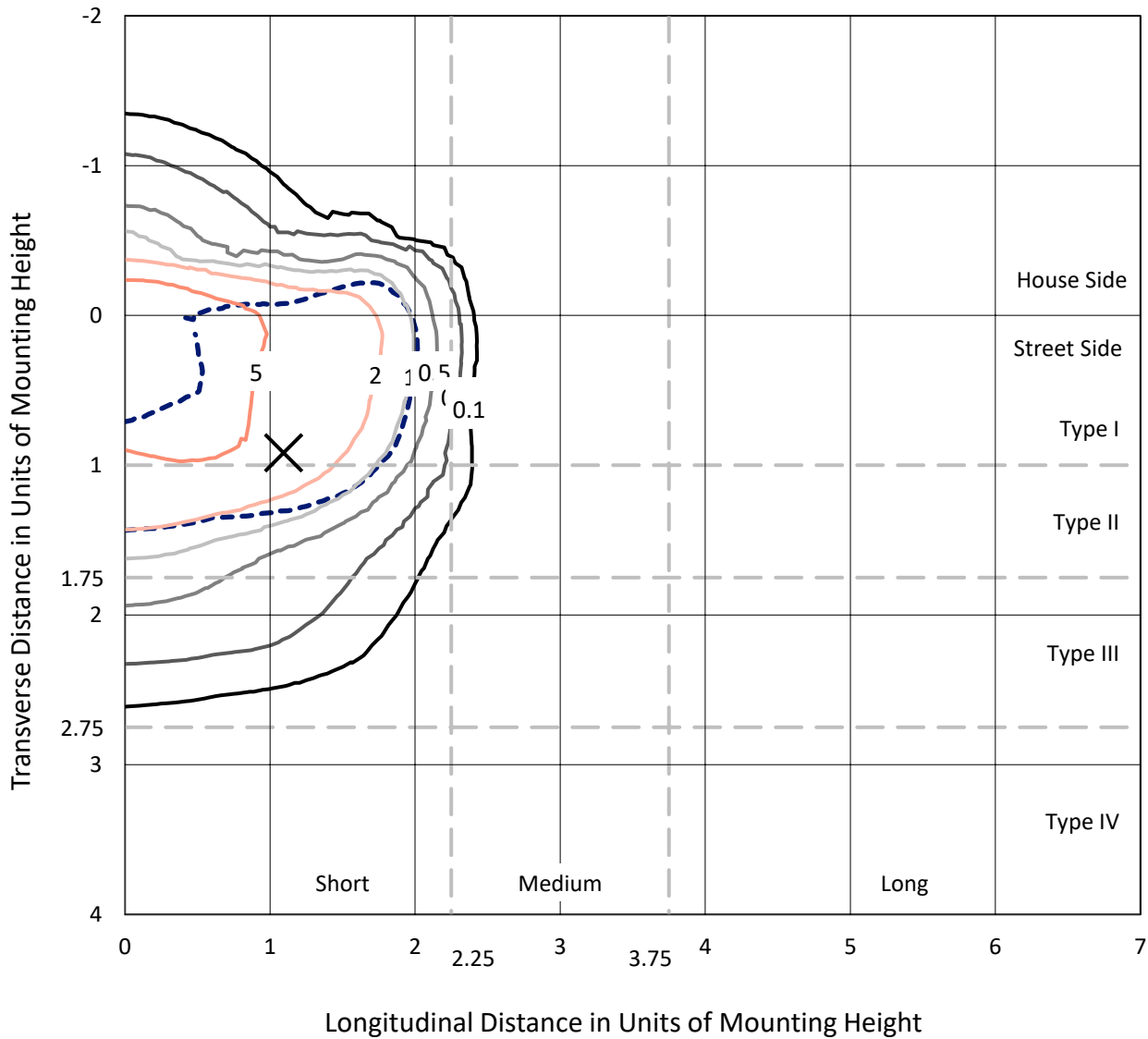
Input Watts (W): 44.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

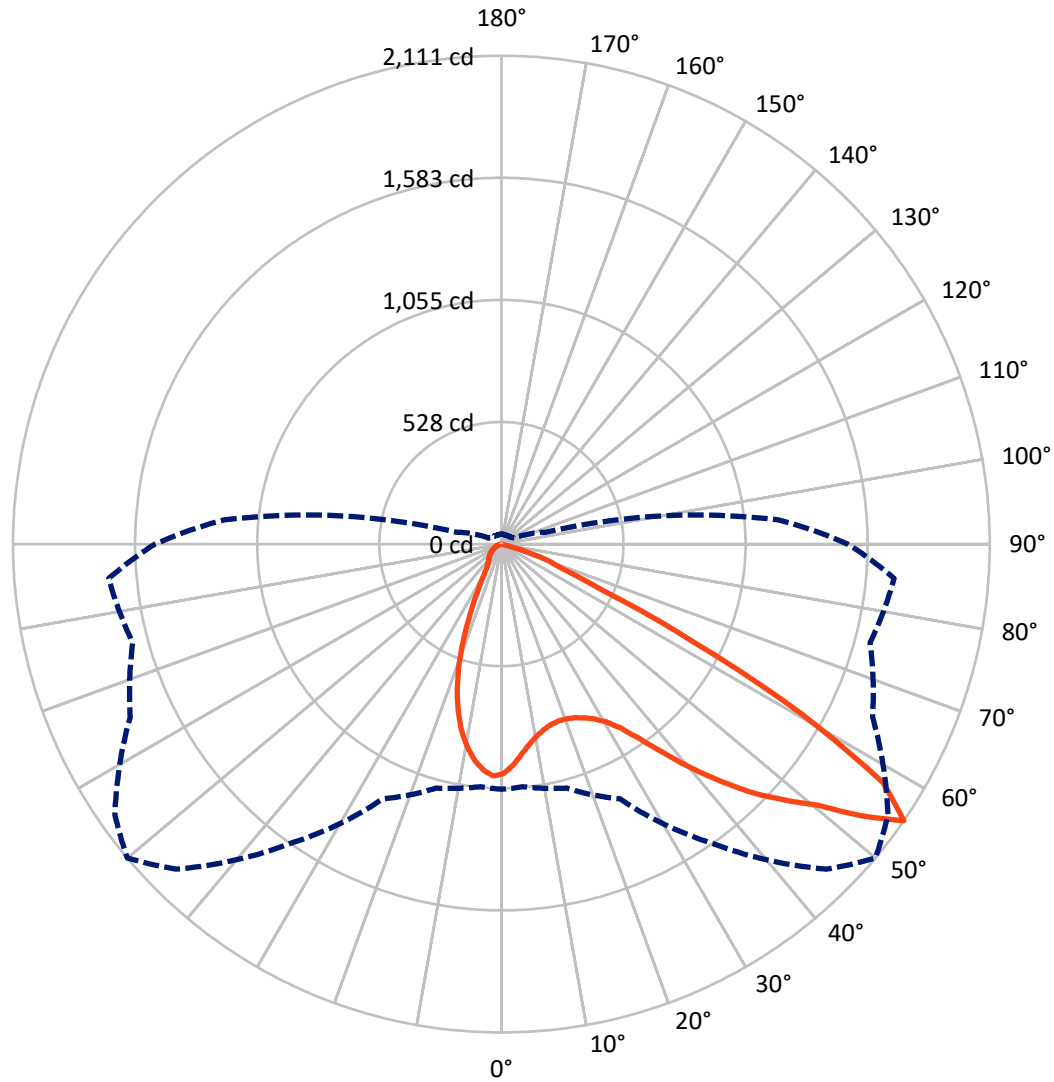
✕ Max cd
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 9.9 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



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

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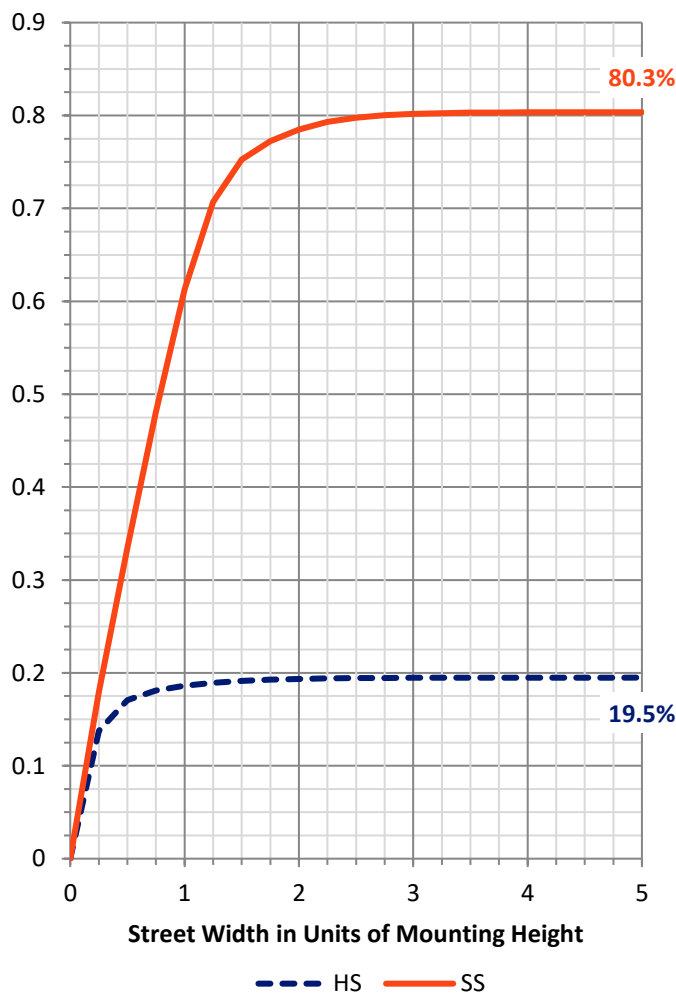
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 557.3 | 0.0 | 557.3 |
| | % Fixture | 19.7 | 0.0 | 19.7 |
| Street Side | Lumens | 2271.1 | 0.0 | 2271.1 |
| | % Fixture | 80.3 | 0.0 | 80.3 |
| Total | Lumens | 2828.5 | 0.0 | 2828.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 87.2 | 3.1 |
| 10°-20° | 214.5 | 7.6 |
| 20°-30° | 302.5 | 10.7 |
| 30°-40° | 447.7 | 15.8 |
| 40°-50° | 645.8 | 22.8 |
| 50°-60° | 761.8 | 26.9 |
| 60°-70° | 339.8 | 12.0 |
| 70°-80° | 29.2 | 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° | 2828.5 | 100.0 |
| 0°-180° | 2828.5 | 100.0 |

Coefficient of Utilization



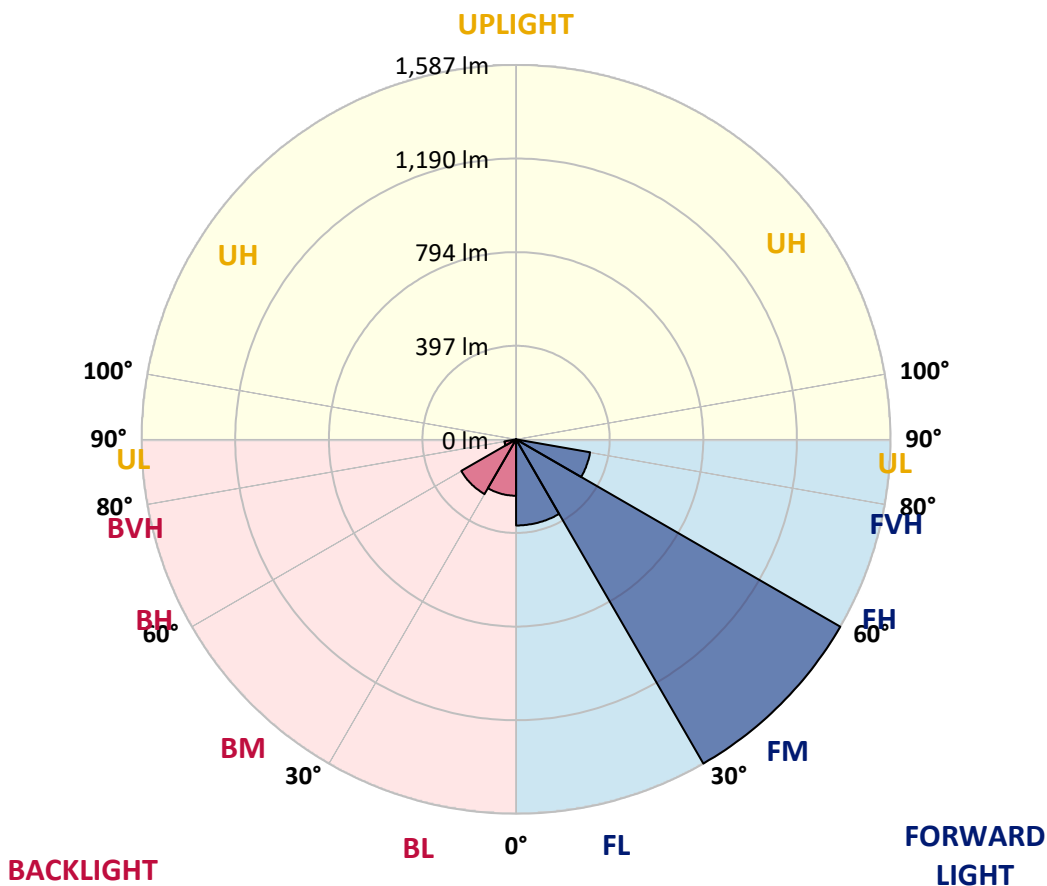
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 365.2 | 12.9 | | | |
| FM (30°-60°) | 1587.3 | 56.1 | | | |
| FH (60°-80°) | 318.7 | 11.3 | | | G0/660 |
| FVH (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| BL (0°-30°) | 239.0 | 8.4 | B1/500 | | |
| BM (30°-60°) | 268.0 | 9.5 | B1/1000 | | |
| BH (60°-80°) | 50.3 | 1.8 | B0/110 | | G0/110 |
| 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: B1-U0-G0
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 50° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 |
| 2.5° | 922.0 | 922.6 | 923.0 | 932.3 | 935.8 | 949.6 | 956.8 | 960.6 | 970.6 | 982.4 | 992.0 |
| 5° | 860.1 | 859.1 | 860.8 | 872.6 | 880.2 | 900.5 | 911.6 | 919.2 | 941.3 | 968.9 | 992.0 |
| 7.5° | 806.3 | 808.3 | 810.4 | 823.2 | 834.6 | 856.7 | 872.6 | 884.0 | 914.7 | 955.8 | 994.8 |
| 10° | 768.3 | 768.3 | 771.4 | 785.9 | 799.4 | 826.7 | 842.5 | 857.0 | 893.6 | 944.1 | 997.9 |
| 12.5° | 740.3 | 740.7 | 744.5 | 761.0 | 776.6 | 804.9 | 821.5 | 835.6 | 876.0 | 932.3 | 998.6 |
| 15° | 727.2 | 726.2 | 729.3 | 746.9 | 764.2 | 790.7 | 808.0 | 821.8 | 863.6 | 925.8 | 1002.1 |
| 17.5° | 723.8 | 723.1 | 725.5 | 742.7 | 760.4 | 786.3 | 803.2 | 817.0 | 861.9 | 927.8 | 1012.4 |
| 20° | 733.8 | 732.4 | 731.3 | 746.2 | 762.8 | 788.3 | 805.9 | 821.5 | 870.2 | 939.2 | 1028.3 |
| 22.5° | 757.6 | 757.6 | 755.2 | 762.4 | 773.5 | 796.6 | 814.9 | 835.3 | 891.9 | 962.0 | 1051.8 |
| 25° | 801.4 | 798.0 | 793.5 | 796.6 | 795.2 | 809.7 | 831.5 | 859.8 | 933.0 | 999.6 | 1080.4 |
| 27.5° | 851.5 | 854.6 | 847.0 | 847.4 | 835.3 | 830.1 | 855.3 | 898.1 | 994.1 | 1052.8 | 1122.9 |
| 30° | 919.5 | 917.1 | 917.5 | 916.4 | 888.5 | 863.9 | 891.2 | 948.2 | 1071.1 | 1134.0 | 1178.2 |
| 32.5° | 972.7 | 976.2 | 987.6 | 994.1 | 957.5 | 918.2 | 947.2 | 1016.2 | 1158.8 | 1226.5 | 1245.8 |
| 35° | 1029.0 | 1035.2 | 1058.3 | 1079.8 | 1049.0 | 1003.8 | 1034.9 | 1106.3 | 1241.4 | 1318.0 | 1323.5 |
| 37.5° | 1088.4 | 1100.8 | 1128.4 | 1166.1 | 1161.2 | 1121.2 | 1149.5 | 1212.4 | 1306.3 | 1373.3 | 1387.8 |
| 40° | 1156.4 | 1168.5 | 1213.7 | 1267.9 | 1279.3 | 1270.4 | 1279.7 | 1316.3 | 1349.1 | 1375.7 | 1415.4 |
| 42.5° | 1231.0 | 1247.6 | 1304.9 | 1377.4 | 1420.2 | 1428.2 | 1406.4 | 1402.6 | 1367.7 | 1348.1 | 1409.5 |
| 45° | 1319.0 | 1338.4 | 1403.3 | 1497.2 | 1565.2 | 1576.0 | 1538.3 | 1489.6 | 1379.5 | 1327.7 | 1391.9 |
| 47.5° | 1417.8 | 1436.1 | 1500.7 | 1613.6 | 1714.8 | 1718.9 | 1653.3 | 1574.9 | 1414.4 | 1351.2 | 1405.4 |
| 50° | 1451.0 | 1462.3 | 1518.3 | 1650.9 | 1837.3 | 1869.1 | 1774.2 | 1670.9 | 1484.4 | 1420.2 | 1471.0 |
| 52.5° | 1337.0 | 1341.5 | 1390.2 | 1524.2 | 1812.5 | 2016.6 | 1950.6 | 1814.2 | 1609.1 | 1525.5 | 1572.2 |
| 55° | 1059.4 | 1052.1 | 1091.5 | 1214.4 | 1575.3 | 1986.5 | 2110.5 | 2039.3 | 1769.7 | 1649.2 | 1703.7 |
| 57.5° | 741.0 | 732.4 | 723.4 | 806.6 | 1175.4 | 1684.0 | 1944.7 | 2070.8 | 1922.6 | 1771.7 | 1845.6 |
| 60° | 609.1 | 600.8 | 557.3 | 519.0 | 710.6 | 1209.2 | 1493.8 | 1731.0 | 1910.2 | 1765.5 | 1841.1 |
| 62.5° | 526.2 | 521.4 | 503.8 | 451.7 | 418.2 | 690.3 | 935.4 | 1162.6 | 1465.8 | 1386.4 | 1390.5 |
| 65° | 413.3 | 411.9 | 424.0 | 429.6 | 369.8 | 381.9 | 477.2 | 604.3 | 792.5 | 747.2 | 708.6 |
| 67.5° | 282.5 | 279.3 | 302.1 | 371.5 | 355.7 | 301.4 | 279.3 | 281.8 | 342.9 | 209.6 | 166.4 |
| 70° | 179.6 | 172.3 | 172.7 | 230.3 | 289.4 | 237.9 | 215.5 | 189.6 | 170.6 | 31.1 | 35.2 |
| 72.5° | 115.0 | 110.5 | 95.0 | 103.9 | 134.0 | 116.0 | 117.1 | 100.8 | 67.3 | 16.6 | 19.3 |
| 75° | 48.3 | 44.5 | 34.2 | 27.3 | 26.9 | 16.9 | 14.8 | 13.8 | 9.3 | 9.3 | 10.0 |
| 77.5° | 0.3 | 0.0 | 0.0 | 0.3 | 0.7 | 0.3 | 0.3 | 0.7 | 1.4 | 2.1 | 2.4 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 |
| 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: P630549

CATALOG NUMBER: GWS-SA1D-830-U-SL2-W-GRSBK

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|
| 0° | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 | 992.4 |
| 2.5° | 997.9 | 989.6 | 999.0 | 1002.4 | 1002.1 | 1002.4 | 992.4 | 985.5 | 985.1 | 976.5 | 972.4 |
| 5° | 1001.7 | 995.2 | 1002.1 | 997.6 | 986.9 | 973.4 | 955.4 | 939.9 | 933.0 | 923.0 | 918.2 |
| 7.5° | 1009.0 | 1002.1 | 1001.0 | 983.1 | 956.5 | 928.2 | 896.4 | 868.1 | 852.9 | 834.6 | 835.6 |
| 10° | 1014.1 | 1006.2 | 992.7 | 956.1 | 911.9 | 866.7 | 819.4 | 777.3 | 750.7 | 726.2 | 722.0 |
| 12.5° | 1016.2 | 1004.5 | 973.1 | 917.8 | 855.7 | 796.6 | 727.2 | 667.1 | 625.7 | 593.6 | 589.1 |
| 15° | 1020.0 | 1001.0 | 947.9 | 871.5 | 786.3 | 702.7 | 614.3 | 532.1 | 477.2 | 440.3 | 443.4 |
| 17.5° | 1025.9 | 997.2 | 919.5 | 819.7 | 711.7 | 593.6 | 474.1 | 379.8 | 329.4 | 308.0 | 308.4 |
| 20° | 1034.2 | 992.7 | 888.5 | 762.8 | 622.2 | 470.3 | 331.5 | 260.4 | 246.2 | 245.5 | 244.5 |
| 22.5° | 1045.2 | 988.3 | 855.3 | 700.3 | 516.2 | 329.4 | 220.6 | 198.5 | 204.4 | 215.8 | 217.9 |
| 25° | 1058.3 | 982.7 | 818.4 | 629.8 | 400.5 | 216.2 | 165.4 | 161.9 | 176.1 | 191.3 | 194.7 |
| 27.5° | 1078.7 | 980.0 | 776.2 | 549.7 | 281.1 | 155.0 | 135.4 | 137.4 | 150.2 | 163.0 | 166.1 |
| 30° | 1113.3 | 985.1 | 730.3 | 459.9 | 180.6 | 123.6 | 117.4 | 120.5 | 127.4 | 134.0 | 136.7 |
| 32.5° | 1160.2 | 1000.3 | 685.8 | 361.9 | 128.8 | 107.4 | 106.0 | 107.7 | 110.5 | 114.3 | 115.3 |
| 35° | 1215.1 | 1026.6 | 639.8 | 259.0 | 106.4 | 98.1 | 96.7 | 96.7 | 98.1 | 98.8 | 99.1 |
| 37.5° | 1260.3 | 1054.2 | 596.7 | 172.3 | 95.3 | 90.8 | 88.7 | 87.7 | 87.4 | 88.1 | 88.4 |
| 40° | 1280.0 | 1065.6 | 549.7 | 125.3 | 87.4 | 84.3 | 81.1 | 78.0 | 78.0 | 80.5 | 80.8 |
| 42.5° | 1266.2 | 1052.8 | 495.5 | 103.6 | 81.8 | 77.3 | 72.5 | 69.8 | 71.1 | 73.5 | 74.2 |
| 45° | 1236.9 | 1021.4 | 435.8 | 91.5 | 76.3 | 70.4 | 64.9 | 63.2 | 64.6 | 67.7 | 68.4 |
| 47.5° | 1232.0 | 1000.7 | 364.3 | 83.6 | 70.4 | 64.6 | 58.7 | 57.0 | 58.7 | 61.1 | 61.8 |
| 50° | 1280.0 | 1018.6 | 284.9 | 76.7 | 64.9 | 58.4 | 53.5 | 51.8 | 52.8 | 54.2 | 54.9 |
| 52.5° | 1367.7 | 1085.3 | 230.0 | 70.1 | 58.4 | 52.1 | 49.0 | 47.0 | 47.0 | 48.3 | 48.7 |
| 55° | 1497.2 | 1201.6 | 198.5 | 62.5 | 50.8 | 47.3 | 44.5 | 42.5 | 42.5 | 43.2 | 43.5 |
| 57.5° | 1646.4 | 1342.5 | 205.8 | 52.5 | 44.5 | 42.8 | 40.4 | 38.7 | 39.4 | 39.4 | 39.4 |
| 60° | 1625.7 | 1332.2 | 220.3 | 44.2 | 39.4 | 38.7 | 36.6 | 35.9 | 37.6 | 36.3 | 35.6 |
| 62.5° | 1197.5 | 920.2 | 115.3 | 36.3 | 33.8 | 33.1 | 31.8 | 33.1 | 35.6 | 31.8 | 30.4 |
| 65° | 581.5 | 445.4 | 46.3 | 29.7 | 28.7 | 28.0 | 27.3 | 29.4 | 30.7 | 24.9 | 23.5 |
| 67.5° | 136.7 | 111.2 | 30.0 | 25.2 | 23.8 | 22.4 | 23.1 | 23.5 | 22.4 | 16.9 | 16.2 |
| 70° | 35.6 | 34.9 | 23.5 | 21.1 | 19.0 | 17.6 | 17.6 | 17.3 | 14.8 | 10.7 | 10.0 |
| 72.5° | 19.3 | 19.0 | 16.9 | 15.9 | 13.1 | 11.7 | 12.1 | 10.7 | 8.3 | 6.2 | 5.9 |
| 75° | 9.7 | 10.4 | 9.7 | 9.0 | 7.3 | 6.6 | 6.6 | 5.9 | 4.1 | 2.4 | 2.4 |
| 77.5° | 2.1 | 2.4 | 2.4 | 2.1 | 1.7 | 1.4 | 1.4 | 1.7 | 0.7 | 0.0 | 0.0 |
| 80° | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 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)