

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: P640977

Luminaire Tested: GWS-SA5E-830-U-T3R-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P640977
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-18)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA5E-830-U-T3R-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS WITH HOUSE SIDE SHIELD
Light Source: (80) 3000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23345.2 lumens
Efficiency: N/A
Efficacy: 86.6 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B2 - U0 - G4

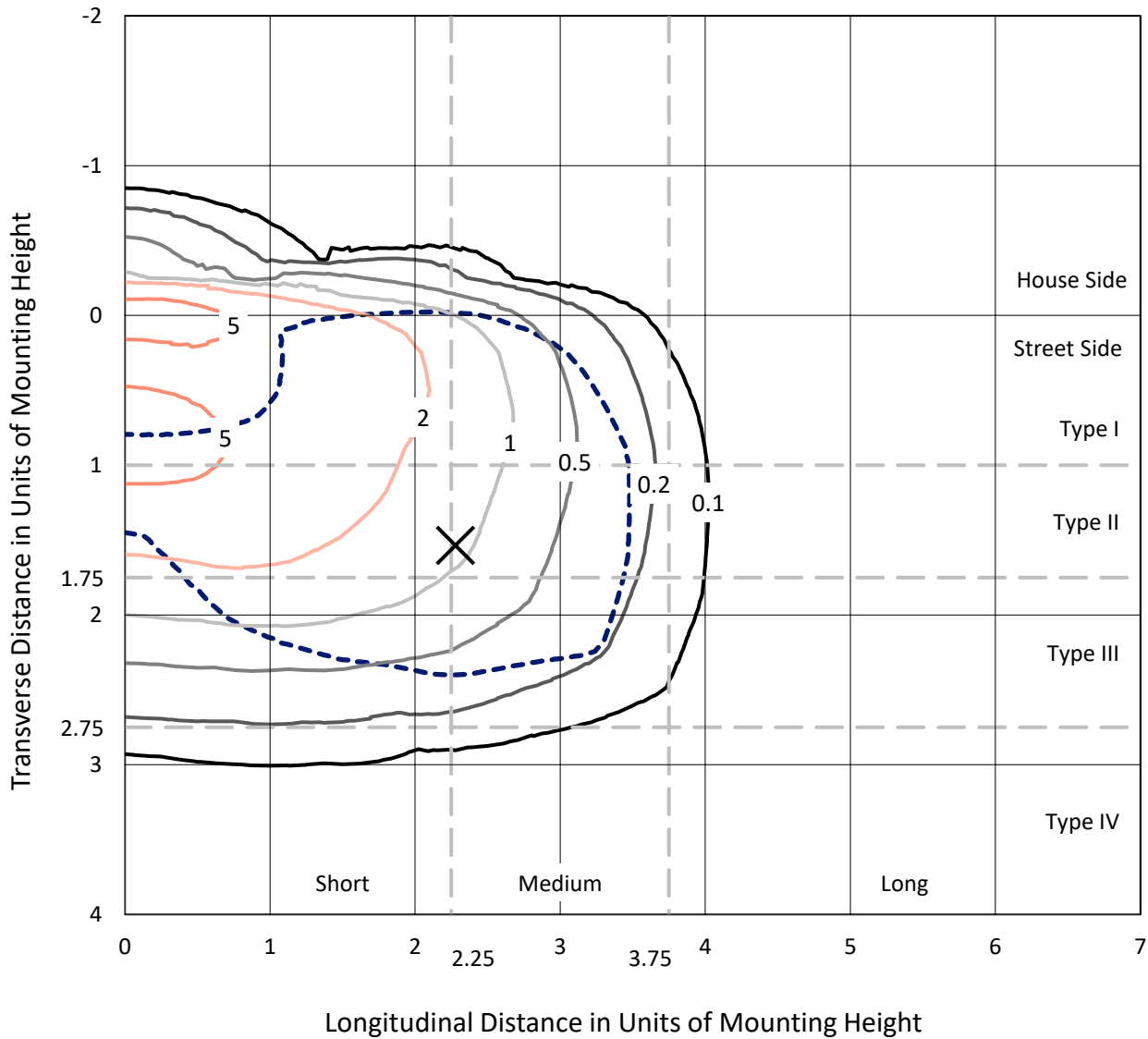
Input Watts (W): 269.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P640977
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Iso-Footcandle Lines of Horizontal Illumination

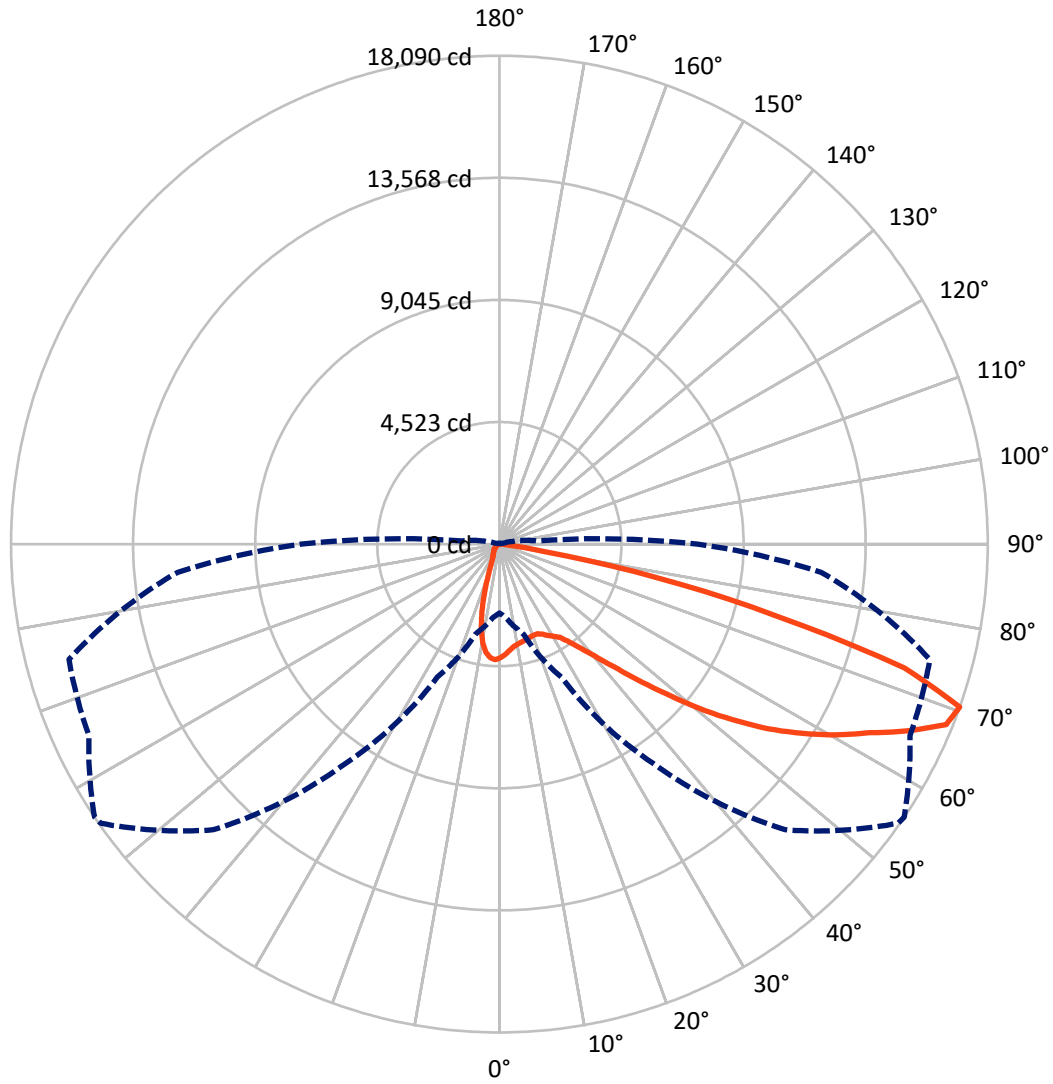
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.1 fc
 Type III - Medium - N/A

REPORT NUMBER: P640977
CATALOG NUMBER: GWS-SA5E-830-U-T3R-W-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 56-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2096.8 | 0.0 | 2096.8 |
| | % Fixture | 9.0 | 0.0 | 9.0 |
| Street Side | Lumens | 21248.4 | 0.0 | 21248.4 |
| | % Fixture | 91.0 | 0.0 | 91.0 |
| Total | Lumens | 23345.2 | 0.0 | 23345.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 361.4 | 1.5 |
| 10°-20° | 812.9 | 3.5 |
| 20°-30° | 1287.6 | 5.5 |
| 30°-40° | 2220.4 | 9.5 |
| 40°-50° | 3749.5 | 16.1 |
| 50°-60° | 5509.2 | 23.6 |
| 60°-70° | 6531.5 | 28.0 |
| 70°-80° | 2785.3 | 11.9 |
| 80°-90° | 87.5 | 0.4 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 23345.2 | 100.0 |
| 0°-180° | 23345.2 | 100.0 |

Coefficient of Utilization



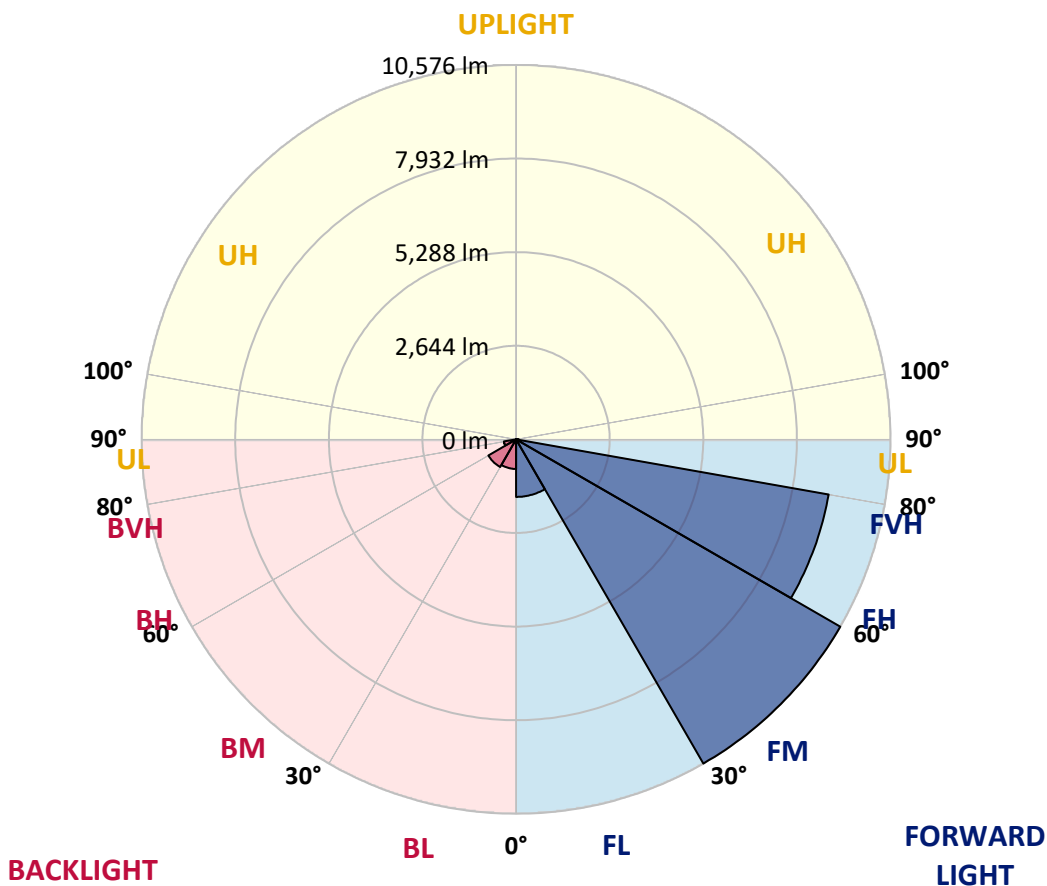
REPORT NUMBER: P640977

CATALOG NUMBER: GWS-SA5E-830-U-T3R-W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|---------|-----------|-------------------------|------|----------|
| | | | B | U | G |
| FL (0°-30°) | 1626.7 | 7.0 | | | |
| FM (30°-60°) | 10576.0 | 45.3 | | | |
| FH (60°-80°) | 8967.1 | 38.4 | | | G4/12000 |
| FVH (80°-90°) | 78.6 | 0.3 | | | G1/100 |
| BL (0°-30°) | 835.1 | 3.6 | B2/1000 | | |
| BM (30°-60°) | 903.1 | 3.9 | B1/1000 | | |
| BH (60°-80°) | 349.7 | 1.5 | B1/500 | | G1/500 |
| BVH (80°-90°) | 8.9 | 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-G4
 Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 56° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 |
| 2.5° | 3918.6 | 3912.2 | 3916.5 | 3948.6 | 4008.4 | 4036.2 | 4083.2 | 4091.8 | 4130.3 | 4179.4 | 4198.7 |
| 5° | 3664.2 | 3642.9 | 3653.5 | 3698.4 | 3766.8 | 3843.8 | 3931.5 | 3955.0 | 4051.2 | 4160.2 | 4241.4 |
| 7.5° | 3431.2 | 3407.7 | 3433.3 | 3503.9 | 3600.1 | 3683.5 | 3813.9 | 3828.8 | 3982.8 | 4175.2 | 4322.7 |
| 10° | 3065.6 | 3072.1 | 3123.4 | 3247.4 | 3394.9 | 3568.0 | 3743.3 | 3764.7 | 3955.0 | 4224.3 | 4453.1 |
| 12.5° | 2785.6 | 2770.6 | 2826.2 | 2967.3 | 3174.7 | 3426.9 | 3689.9 | 3717.7 | 3957.1 | 4299.2 | 4619.8 |
| 15° | 2655.2 | 2650.9 | 2674.4 | 2777.0 | 2978.0 | 3275.1 | 3640.7 | 3677.1 | 3984.9 | 4367.6 | 4778.0 |
| 17.5° | 2659.5 | 2653.0 | 2650.9 | 2710.8 | 2860.4 | 3161.8 | 3587.3 | 3634.3 | 4008.4 | 4442.4 | 4944.8 |
| 20° | 2845.4 | 2815.5 | 2762.1 | 2734.3 | 2824.1 | 3089.2 | 3550.9 | 3604.4 | 4042.6 | 4521.5 | 5122.2 |
| 22.5° | 3234.5 | 3245.2 | 3102.0 | 2952.3 | 2909.6 | 3097.7 | 3546.6 | 3608.6 | 4117.4 | 4645.5 | 5340.3 |
| 25° | 4012.7 | 3995.6 | 3730.5 | 3394.9 | 3161.8 | 3196.0 | 3621.5 | 3696.3 | 4265.0 | 4822.9 | 5545.5 |
| 27.5° | 4987.5 | 5002.5 | 4639.1 | 4104.6 | 3617.2 | 3399.1 | 3758.3 | 3833.1 | 4436.0 | 4934.1 | 5682.3 |
| 30° | 6050.0 | 6035.1 | 5646.0 | 5053.8 | 4262.8 | 3736.9 | 3895.1 | 3961.4 | 4521.5 | 4994.0 | 5823.4 |
| 32.5° | 7054.8 | 7020.6 | 6635.8 | 6015.8 | 5085.9 | 4269.2 | 4083.2 | 4121.7 | 4634.8 | 5124.4 | 6013.7 |
| 35° | 7912.1 | 7909.9 | 7574.3 | 6913.7 | 5932.5 | 4936.2 | 4406.1 | 4438.1 | 4846.4 | 5331.7 | 6293.8 |
| 37.5° | 8797.1 | 8767.2 | 8391.0 | 7788.1 | 6802.6 | 5667.4 | 4899.9 | 4887.1 | 5179.9 | 5637.4 | 6637.9 |
| 40° | 9524.0 | 9504.8 | 9216.2 | 8636.8 | 7706.9 | 6475.5 | 5498.5 | 5460.0 | 5575.4 | 6060.7 | 7116.8 |
| 42.5° | 10062.7 | 10064.9 | 9975.1 | 9622.3 | 8664.6 | 7409.7 | 6251.0 | 6191.1 | 6189.0 | 6699.9 | 7749.6 |
| 45° | 10471.1 | 10498.9 | 10633.5 | 10580.1 | 9795.5 | 8497.8 | 7215.2 | 7153.2 | 7048.4 | 7529.4 | 8474.3 |
| 47.5° | 10661.3 | 10697.7 | 11103.9 | 11317.6 | 10785.3 | 9577.4 | 8363.2 | 8232.8 | 8027.5 | 8632.5 | 9284.6 |
| 50° | 10642.1 | 10706.2 | 11272.7 | 11922.6 | 11683.2 | 10672.0 | 9613.8 | 9551.8 | 9216.2 | 9799.8 | 10086.3 |
| 52.5° | 10206.0 | 10342.8 | 11283.4 | 12290.3 | 12373.7 | 11681.1 | 10907.2 | 10791.7 | 10629.3 | 11018.3 | 10838.8 |
| 55° | 9021.6 | 9188.4 | 10832.4 | 12407.9 | 12912.5 | 12561.9 | 12172.8 | 12078.7 | 11809.3 | 12168.5 | 11495.1 |
| 57.5° | 8378.1 | 8521.4 | 9883.2 | 12350.2 | 13369.9 | 13376.4 | 13299.4 | 13222.4 | 13000.1 | 13305.8 | 12264.7 |
| 60° | 7991.2 | 8134.4 | 9376.5 | 12138.6 | 13784.7 | 14235.8 | 14357.6 | 14349.1 | 14028.4 | 14599.2 | 13166.9 |
| 62.5° | 7424.7 | 7621.3 | 8848.5 | 11589.1 | 14079.7 | 15082.3 | 15450.1 | 15392.3 | 15035.3 | 15946.0 | 14060.5 |
| 65° | 6280.9 | 6452.0 | 7766.7 | 10682.7 | 13906.5 | 15783.6 | 16634.4 | 16664.3 | 16251.7 | 17213.8 | 14765.9 |
| 67.5° | 4403.9 | 4530.0 | 5836.3 | 8780.0 | 12730.7 | 16014.4 | 17846.6 | 17844.4 | 17141.1 | 17863.7 | 14453.8 |
| 70° | 2552.6 | 2725.7 | 3448.3 | 5427.9 | 9904.5 | 14964.8 | 18028.3 | 18090.3 | 16779.8 | 16506.1 | 11961.1 |
| 72.5° | 987.7 | 1130.9 | 1954.0 | 2883.9 | 5165.0 | 11463.0 | 15507.8 | 15689.5 | 14043.4 | 12732.9 | 8324.7 |
| 75° | 295.0 | 329.2 | 919.3 | 1535.0 | 2073.7 | 5537.0 | 10498.9 | 10550.2 | 9633.0 | 7942.0 | 4267.1 |
| 77.5° | 220.2 | 243.7 | 401.9 | 776.0 | 726.9 | 1678.2 | 5432.2 | 5932.5 | 5113.7 | 2836.9 | 1175.8 |
| 80° | 149.6 | 177.4 | 286.5 | 378.4 | 269.4 | 446.8 | 1526.4 | 1676.1 | 1560.6 | 637.1 | 295.0 |
| 82.5° | 66.3 | 85.5 | 203.1 | 190.3 | 98.3 | 128.3 | 470.3 | 500.3 | 322.8 | 192.4 | 102.6 |
| 85° | 6.4 | 8.6 | 77.0 | 83.4 | 36.3 | 29.9 | 98.3 | 98.3 | 70.5 | 66.3 | 42.8 |
| 87.5° | 0.0 | 0.0 | 2.1 | 4.3 | 4.3 | 6.4 | 8.6 | 10.7 | 12.8 | 17.1 | 21.4 |
| 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: P640977

CATALOG NUMBER: GWS-SA5E-830-U-T3R-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 | 4209.4 |
| 2.5° | 4247.9 | 4222.2 | 4254.3 | 4279.9 | 4286.3 | 4239.3 | 4211.5 | 4170.9 | 4162.3 | 4164.5 | 4153.8 |
| 5° | 4305.6 | 4292.7 | 4316.3 | 4288.5 | 4215.8 | 4079.0 | 3961.4 | 3831.0 | 3760.4 | 3719.8 | 3715.5 |
| 7.5° | 4412.5 | 4406.1 | 4380.4 | 4254.3 | 4027.7 | 3724.1 | 3431.2 | 3144.7 | 2967.3 | 2903.2 | 2892.5 |
| 10° | 4570.7 | 4557.8 | 4453.1 | 4153.8 | 3670.6 | 3087.0 | 2595.3 | 2184.9 | 1934.7 | 1862.0 | 1772.3 |
| 12.5° | 4752.4 | 4726.7 | 4498.0 | 3937.9 | 3131.9 | 2323.8 | 1710.3 | 1250.6 | 1034.7 | 970.6 | 970.6 |
| 15° | 4927.7 | 4872.1 | 4472.3 | 3580.9 | 2469.2 | 1511.4 | 955.6 | 722.6 | 656.3 | 639.2 | 639.2 |
| 17.5° | 5107.3 | 5000.4 | 4371.8 | 3093.4 | 1706.0 | 893.6 | 637.1 | 592.2 | 583.6 | 585.8 | 587.9 |
| 20° | 5276.1 | 5109.4 | 4194.4 | 2507.7 | 1088.2 | 624.2 | 570.8 | 560.1 | 555.8 | 560.1 | 558.0 |
| 22.5° | 5460.0 | 5209.9 | 3925.0 | 1868.5 | 707.6 | 562.2 | 543.0 | 534.5 | 530.2 | 536.6 | 536.6 |
| 25° | 5641.7 | 5282.6 | 3568.0 | 1257.0 | 562.2 | 523.8 | 513.1 | 504.5 | 500.3 | 502.4 | 502.4 |
| 27.5° | 5735.8 | 5254.8 | 3099.8 | 801.7 | 504.5 | 485.3 | 474.6 | 463.9 | 457.5 | 455.4 | 457.5 |
| 30° | 5799.9 | 5169.3 | 2526.9 | 570.8 | 457.5 | 434.0 | 423.3 | 414.7 | 397.6 | 386.9 | 391.2 |
| 32.5° | 5900.4 | 5083.7 | 1904.8 | 478.9 | 419.0 | 382.7 | 365.6 | 344.2 | 320.7 | 310.0 | 310.0 |
| 35° | 6020.1 | 4966.2 | 1336.1 | 431.8 | 378.4 | 339.9 | 307.8 | 271.5 | 243.7 | 235.2 | 235.2 |
| 37.5° | 6178.3 | 4855.0 | 889.3 | 399.8 | 344.2 | 303.6 | 258.7 | 215.9 | 186.0 | 181.7 | 179.6 |
| 40° | 6415.6 | 4760.9 | 626.4 | 376.3 | 314.3 | 265.1 | 211.6 | 166.8 | 145.4 | 139.0 | 139.0 |
| 42.5° | 6723.5 | 4664.7 | 496.0 | 352.7 | 288.6 | 228.7 | 168.9 | 132.5 | 115.4 | 111.2 | 109.0 |
| 45° | 7104.0 | 4551.4 | 431.8 | 331.4 | 263.0 | 190.3 | 134.7 | 111.2 | 98.3 | 94.1 | 94.1 |
| 47.5° | 7516.6 | 4397.5 | 401.9 | 303.6 | 233.0 | 153.9 | 113.3 | 96.2 | 89.8 | 87.7 | 85.5 |
| 50° | 7922.8 | 4190.1 | 376.3 | 277.9 | 198.8 | 126.1 | 98.3 | 87.7 | 83.4 | 81.2 | 81.2 |
| 52.5° | 8277.7 | 3948.6 | 344.2 | 248.0 | 162.5 | 109.0 | 87.7 | 81.2 | 77.0 | 72.7 | 70.5 |
| 55° | 8581.2 | 3685.6 | 303.6 | 213.8 | 132.5 | 96.2 | 81.2 | 74.8 | 70.5 | 66.3 | 64.1 |
| 57.5° | 8972.4 | 3536.0 | 243.7 | 173.2 | 109.0 | 85.5 | 74.8 | 68.4 | 64.1 | 57.7 | 57.7 |
| 60° | 9406.4 | 3426.9 | 181.7 | 136.8 | 94.1 | 79.1 | 68.4 | 62.0 | 57.7 | 51.3 | 51.3 |
| 62.5° | 9754.9 | 3264.5 | 143.2 | 111.2 | 81.2 | 70.5 | 62.0 | 55.6 | 51.3 | 44.9 | 44.9 |
| 65° | 9887.4 | 2928.8 | 117.6 | 87.7 | 66.3 | 62.0 | 55.6 | 51.3 | 44.9 | 38.5 | 38.5 |
| 67.5° | 9288.8 | 2257.5 | 98.3 | 70.5 | 55.6 | 53.4 | 49.2 | 47.0 | 38.5 | 34.2 | 32.1 |
| 70° | 7356.3 | 1376.8 | 81.2 | 57.7 | 47.0 | 44.9 | 44.9 | 40.6 | 34.2 | 32.1 | 29.9 |
| 72.5° | 5041.0 | 709.8 | 66.3 | 47.0 | 40.6 | 40.6 | 38.5 | 36.3 | 32.1 | 29.9 | 29.9 |
| 75° | 2618.8 | 237.3 | 51.3 | 36.3 | 32.1 | 34.2 | 34.2 | 32.1 | 29.9 | 29.9 | 27.8 |
| 77.5° | 750.4 | 106.9 | 38.5 | 27.8 | 25.7 | 25.7 | 27.8 | 27.8 | 27.8 | 25.7 | 25.7 |
| 80° | 194.5 | 62.0 | 27.8 | 21.4 | 21.4 | 21.4 | 21.4 | 23.5 | 25.7 | 23.5 | 23.5 |
| 82.5° | 79.1 | 34.2 | 19.2 | 17.1 | 17.1 | 17.1 | 17.1 | 19.2 | 21.4 | 21.4 | 21.4 |
| 85° | 49.2 | 17.1 | 15.0 | 15.0 | 15.0 | 12.8 | 12.8 | 15.0 | 15.0 | 17.1 | 17.1 |
| 87.5° | 29.9 | 12.8 | 12.8 | 12.8 | 12.8 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 | 10.7 |
| 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)