

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: P638854

Luminaire Tested: GWS-SA4F-760-U-SL2-W-GRSBK

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P638854
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-SA4F-760-U-SL2-W-GRSBK
Description: GALLEON WALL SLIM LUMINAIRE. (4) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK
Light Source: (64) 5700K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 20156.6 lumens
Efficiency: N/A
Efficacy: 89.5 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B3 - U0 - G2

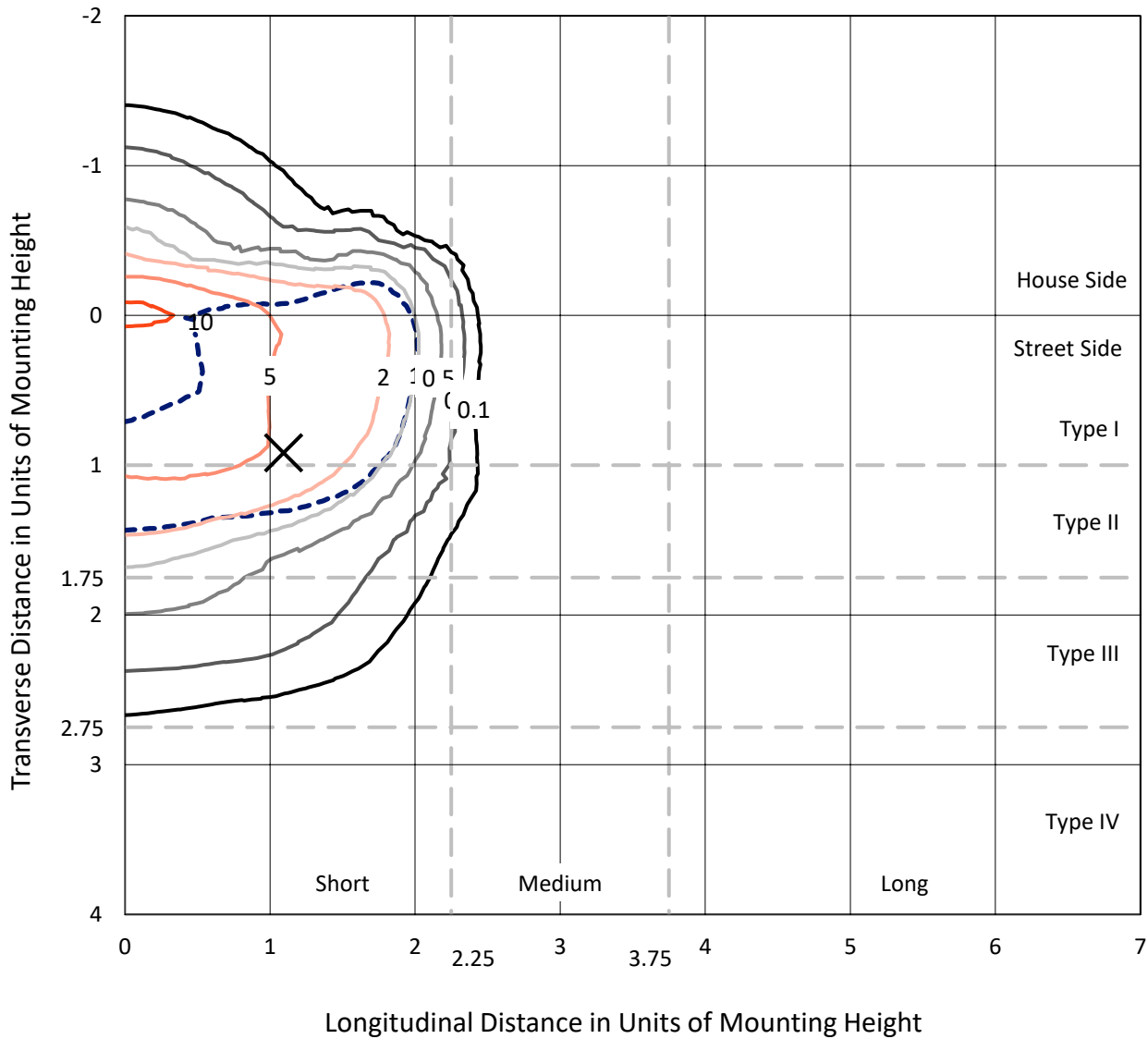
Input Watts (W): 225.3
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P638854
 CATALOG NUMBER: GWS-SA4F-760-U-SL2-W-GRSBK

Iso-Footcandle Lines of Horizontal Illumination

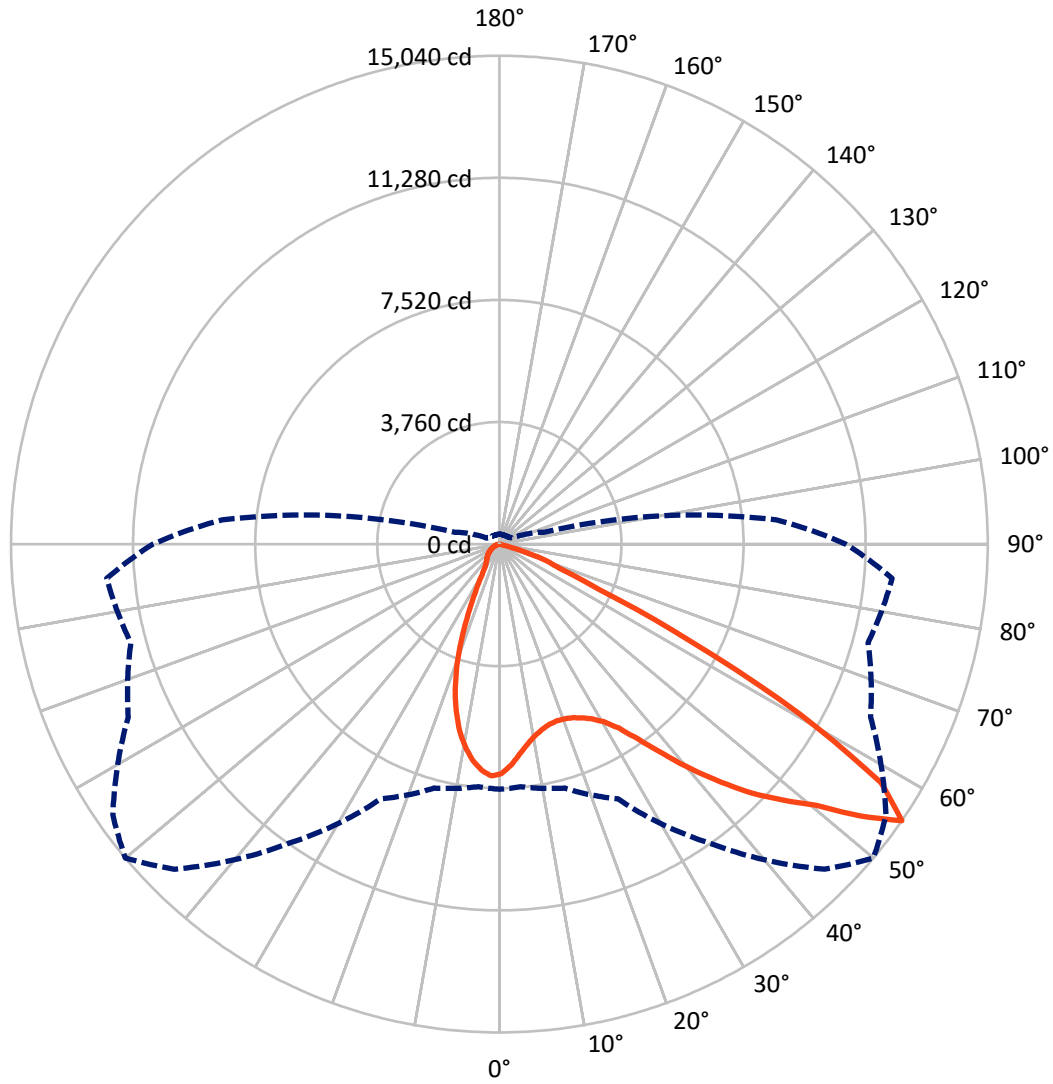
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.3 fc
 Type II - Short - N/A

REPORT NUMBER: P638854
CATALOG NUMBER: GWS-SA4F-760-U-SL2-W-GRSBK

Luminous Intensity Polar Plot



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

REPORT NUMBER: P638854
 CATALOG NUMBER: GWS-SA4F-760-U-SL2-W-GRSBK

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 3971.8 | 0.0 | 3971.8 |
| | % Fixture | 19.7 | 0.0 | 19.7 |
| Street Side | Lumens | 16184.8 | 0.0 | 16184.8 |
| | % Fixture | 80.3 | 0.0 | 80.3 |
| Total | Lumens | 20156.6 | 0.0 | 20156.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 621.1 | 3.1 |
| 10°-20° | 1528.4 | 7.6 |
| 20°-30° | 2155.8 | 10.7 |
| 30°-40° | 3190.2 | 15.8 |
| 40°-50° | 4602.4 | 22.8 |
| 50°-60° | 5428.8 | 26.9 |
| 60°-70° | 2421.7 | 12.0 |
| 70°-80° | 208.2 | 1.0 |
| 80°-90° | 0.1 | 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° | 20156.6 | 100.0 |
| 0°-180° | 20156.6 | 100.0 |

Coefficient of Utilization



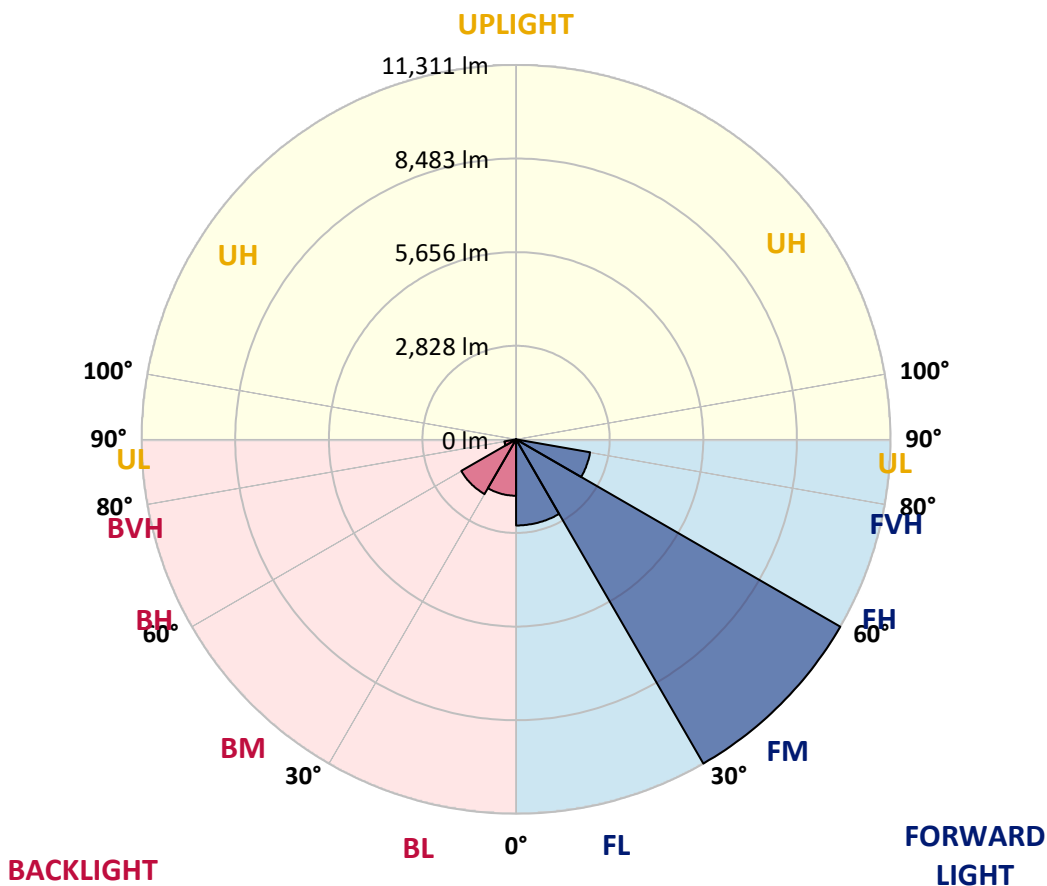
REPORT NUMBER: P638854

CATALOG NUMBER: GWS-SA4F-760-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°) | 2602.3 | 12.9 | | | |
| FM (30°-60°) | 11311.2 | 56.1 | | | |
| FH (60°-80°) | 2271.3 | 11.3 | | | G2/5000 |
| FVH (80°-90°) | 0.0 | 0.0 | | | G0/10 |
| BL (0°-30°) | 1703.0 | 8.4 | B3/2500 | | |
| BM (30°-60°) | 1910.1 | 9.5 | B2/2500 | | |
| BH (60°-80°) | 358.6 | 1.8 | B1/500 | | G1/500 |
| BVH (80°-90°) | 0.1 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G2
 Type II Short





REPORT NUMBER: P638854

CATALOG NUMBER: GWS-SA4F-760-U-SL2-W-GRSBK

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 50° | 55° | 65° | 75° | 85° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0° | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 |
| 2.5° | 6570.1 | 6575.0 | 6577.5 | 6643.9 | 6668.5 | 6766.9 | 6818.6 | 6845.7 | 6917.0 | 7000.7 | 7069.6 |
| 5° | 6129.6 | 6122.2 | 6134.5 | 6218.2 | 6272.3 | 6417.5 | 6496.3 | 6550.4 | 6707.9 | 6904.7 | 7069.6 |
| 7.5° | 5745.7 | 5760.5 | 5775.3 | 5866.3 | 5947.5 | 6105.0 | 6218.2 | 6299.4 | 6518.4 | 6811.2 | 7089.3 |
| 10° | 5475.1 | 5475.1 | 5497.2 | 5600.6 | 5696.5 | 5890.9 | 6004.1 | 6107.5 | 6368.3 | 6727.6 | 7111.4 |
| 12.5° | 5275.7 | 5278.2 | 5305.3 | 5423.4 | 5534.1 | 5735.9 | 5854.0 | 5954.9 | 6242.8 | 6643.9 | 7116.3 |
| 15° | 5182.2 | 5174.9 | 5197.0 | 5322.5 | 5445.5 | 5635.0 | 5758.0 | 5856.5 | 6154.2 | 6597.1 | 7141.0 |
| 17.5° | 5157.6 | 5152.7 | 5169.9 | 5293.0 | 5418.5 | 5603.0 | 5723.6 | 5822.0 | 6141.9 | 6611.9 | 7214.8 |
| 20° | 5229.0 | 5219.1 | 5211.8 | 5317.6 | 5435.7 | 5617.8 | 5743.3 | 5854.0 | 6201.0 | 6693.1 | 7328.0 |
| 22.5° | 5398.8 | 5398.8 | 5381.6 | 5433.2 | 5512.0 | 5676.8 | 5807.3 | 5952.4 | 6356.0 | 6855.5 | 7495.3 |
| 25° | 5711.3 | 5686.7 | 5654.7 | 5676.8 | 5667.0 | 5770.3 | 5925.4 | 6127.1 | 6648.8 | 7123.7 | 7699.5 |
| 27.5° | 6068.1 | 6090.2 | 6036.1 | 6038.6 | 5952.4 | 5915.5 | 6095.2 | 6400.3 | 7084.4 | 7502.7 | 8002.2 |
| 30° | 6552.8 | 6535.6 | 6538.1 | 6530.7 | 6331.4 | 6156.7 | 6351.1 | 6757.1 | 7633.1 | 8080.9 | 8395.9 |
| 32.5° | 6931.8 | 6956.4 | 7037.6 | 7084.4 | 6823.5 | 6543.0 | 6749.7 | 7241.8 | 8258.1 | 8740.4 | 8878.2 |
| 35° | 7332.9 | 7377.2 | 7542.1 | 7694.6 | 7475.6 | 7153.3 | 7374.7 | 7884.1 | 8846.2 | 9392.5 | 9431.9 |
| 37.5° | 7756.1 | 7844.7 | 8041.6 | 8309.8 | 8275.3 | 7989.9 | 8191.7 | 8639.5 | 9308.8 | 9786.2 | 9889.6 |
| 40° | 8240.9 | 8327.0 | 8649.4 | 9035.7 | 9116.9 | 9052.9 | 9119.4 | 9380.2 | 9614.0 | 9803.4 | 10086.4 |
| 42.5° | 8772.4 | 8890.5 | 9299.0 | 9815.7 | 10120.9 | 10177.5 | 10022.4 | 9995.4 | 9746.8 | 9606.6 | 10044.6 |
| 45° | 9399.9 | 9537.7 | 10000.3 | 10669.6 | 11154.4 | 11230.6 | 10962.4 | 10615.5 | 9830.5 | 9461.4 | 9919.1 |
| 47.5° | 10103.6 | 10234.1 | 10694.2 | 11498.9 | 12219.8 | 12249.4 | 11781.8 | 11223.3 | 10079.0 | 9628.7 | 10015.1 |
| 50° | 10339.9 | 10421.1 | 10819.7 | 11764.6 | 13093.4 | 13319.8 | 12643.1 | 11907.3 | 10578.6 | 10120.9 | 10482.6 |
| 52.5° | 9527.8 | 9559.8 | 9906.8 | 10861.5 | 12916.2 | 14370.5 | 13900.5 | 12928.5 | 11466.9 | 10871.4 | 11203.6 |
| 55° | 7549.4 | 7497.8 | 7778.3 | 8654.3 | 11225.7 | 14156.4 | 15039.8 | 14532.9 | 12611.1 | 11752.3 | 12141.1 |
| 57.5° | 5280.7 | 5219.1 | 5155.2 | 5748.2 | 8376.2 | 12000.8 | 13858.7 | 14756.8 | 13701.2 | 12625.9 | 13152.4 |
| 60° | 4340.7 | 4281.6 | 3971.6 | 3698.4 | 5064.1 | 8617.4 | 10645.0 | 12335.5 | 13612.6 | 12581.6 | 13120.5 |
| 62.5° | 3750.1 | 3715.7 | 3590.2 | 3218.6 | 2979.9 | 4918.9 | 6666.0 | 8285.2 | 10445.7 | 9879.7 | 9909.2 |
| 65° | 2945.5 | 2935.6 | 3021.7 | 3061.1 | 2635.4 | 2721.5 | 3400.7 | 4306.2 | 5647.3 | 5325.0 | 5049.4 |
| 67.5° | 2012.9 | 1990.7 | 2153.1 | 2647.7 | 2534.5 | 2148.2 | 1990.7 | 2007.9 | 2443.5 | 1493.6 | 1186.1 |
| 70° | 1279.6 | 1227.9 | 1230.4 | 1641.3 | 2062.1 | 1695.4 | 1535.5 | 1350.9 | 1215.6 | 221.5 | 251.0 |
| 72.5° | 819.4 | 787.4 | 676.7 | 740.7 | 954.8 | 826.8 | 834.2 | 718.5 | 479.8 | 118.1 | 137.8 |
| 75° | 344.5 | 317.4 | 243.6 | 194.4 | 191.9 | 120.6 | 105.8 | 98.4 | 66.4 | 66.4 | 71.4 |
| 77.5° | 2.5 | 0.0 | 0.0 | 2.5 | 4.9 | 2.5 | 2.5 | 4.9 | 9.8 | 14.8 | 17.2 |
| 80° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.5 |
| 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: P638854
 CATALOG NUMBER: GWS-SA4F-760-U-SL2-W-GRSBK

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 | 7072.1 |
| 2.5° | 7111.4 | 7052.4 | 7118.8 | 7143.4 | 7141.0 | 7143.4 | 7072.1 | 7022.8 | 7020.4 | 6958.9 | 6929.3 |
| 5° | 7138.5 | 7091.7 | 7141.0 | 7109.0 | 7032.7 | 6936.7 | 6808.8 | 6698.0 | 6648.8 | 6577.5 | 6543.0 |
| 7.5° | 7190.2 | 7141.0 | 7133.6 | 7005.6 | 6816.1 | 6614.4 | 6388.0 | 6186.2 | 6077.9 | 5947.5 | 5954.9 |
| 10° | 7227.1 | 7170.5 | 7074.5 | 6813.7 | 6498.7 | 6176.4 | 5839.2 | 5539.0 | 5349.6 | 5174.9 | 5145.3 |
| 12.5° | 7241.8 | 7158.2 | 6934.3 | 6540.5 | 6097.6 | 5676.8 | 5182.2 | 4754.1 | 4458.8 | 4229.9 | 4198.0 |
| 15° | 7268.9 | 7133.6 | 6754.6 | 6210.8 | 5603.0 | 5007.5 | 4377.6 | 3791.9 | 3400.7 | 3137.4 | 3159.5 |
| 17.5° | 7310.7 | 7106.5 | 6552.8 | 5841.7 | 5071.5 | 4229.9 | 3378.5 | 2706.8 | 2347.5 | 2194.9 | 2197.4 |
| 20° | 7369.8 | 7074.5 | 6331.4 | 5435.7 | 4434.2 | 3351.5 | 2362.3 | 1855.4 | 1754.5 | 1749.6 | 1742.2 |
| 22.5° | 7448.5 | 7042.5 | 6095.2 | 4990.3 | 3678.7 | 2347.5 | 1572.4 | 1414.9 | 1456.7 | 1537.9 | 1552.7 |
| 25° | 7542.1 | 7003.2 | 5831.9 | 4488.3 | 2854.4 | 1540.4 | 1178.7 | 1154.1 | 1255.0 | 1363.2 | 1387.8 |
| 27.5° | 7687.2 | 6983.5 | 5531.7 | 3917.4 | 2003.0 | 1104.9 | 964.6 | 979.4 | 1070.4 | 1161.5 | 1183.6 |
| 30° | 7933.3 | 7020.4 | 5204.4 | 3277.7 | 1286.9 | 880.9 | 836.6 | 858.8 | 908.0 | 954.8 | 974.4 |
| 32.5° | 8268.0 | 7128.7 | 4887.0 | 2578.8 | 917.8 | 765.3 | 755.4 | 767.7 | 787.4 | 814.5 | 821.9 |
| 35° | 8659.2 | 7315.7 | 4559.7 | 1845.5 | 757.9 | 698.8 | 689.0 | 689.0 | 698.8 | 703.8 | 706.2 |
| 37.5° | 8981.6 | 7512.5 | 4252.1 | 1227.9 | 679.2 | 647.2 | 632.4 | 625.0 | 622.6 | 627.5 | 629.9 |
| 40° | 9121.8 | 7593.7 | 3917.4 | 893.2 | 622.6 | 600.4 | 578.3 | 556.1 | 556.1 | 573.3 | 575.8 |
| 42.5° | 9023.4 | 7502.7 | 3531.1 | 738.2 | 583.2 | 551.2 | 516.7 | 497.1 | 506.9 | 524.1 | 529.1 |
| 45° | 8814.2 | 7278.8 | 3105.4 | 652.1 | 543.8 | 502.0 | 462.6 | 450.3 | 460.2 | 482.3 | 487.2 |
| 47.5° | 8779.8 | 7131.1 | 2596.0 | 595.5 | 502.0 | 460.2 | 418.3 | 406.0 | 418.3 | 435.5 | 440.5 |
| 50° | 9121.8 | 7259.1 | 2030.1 | 546.3 | 462.6 | 415.9 | 381.4 | 369.1 | 376.5 | 386.3 | 391.3 |
| 52.5° | 9746.8 | 7734.0 | 1638.8 | 499.5 | 415.9 | 371.6 | 349.4 | 334.7 | 334.7 | 344.5 | 347.0 |
| 55° | 10669.6 | 8563.2 | 1414.9 | 445.4 | 361.7 | 337.1 | 317.4 | 302.7 | 302.7 | 307.6 | 310.0 |
| 57.5° | 11732.6 | 9567.2 | 1466.6 | 374.0 | 317.4 | 305.1 | 287.9 | 275.6 | 280.5 | 280.5 | 280.5 |
| 60° | 11585.0 | 9493.4 | 1569.9 | 315.0 | 280.5 | 275.6 | 260.8 | 255.9 | 268.2 | 258.4 | 253.5 |
| 62.5° | 8533.7 | 6557.8 | 821.9 | 258.4 | 241.1 | 236.2 | 226.4 | 236.2 | 253.5 | 226.4 | 216.5 |
| 65° | 4143.8 | 3174.3 | 329.7 | 211.6 | 204.2 | 199.3 | 194.4 | 209.2 | 219.0 | 177.2 | 167.3 |
| 67.5° | 974.4 | 792.3 | 214.1 | 179.6 | 169.8 | 159.9 | 164.9 | 167.3 | 159.9 | 120.6 | 115.7 |
| 70° | 253.5 | 248.5 | 167.3 | 150.1 | 135.3 | 125.5 | 125.5 | 123.0 | 105.8 | 76.3 | 71.4 |
| 72.5° | 137.8 | 135.3 | 120.6 | 113.2 | 93.5 | 83.7 | 86.1 | 76.3 | 59.1 | 44.3 | 41.8 |
| 75° | 68.9 | 73.8 | 68.9 | 64.0 | 51.7 | 46.8 | 46.8 | 41.8 | 29.5 | 17.2 | 17.2 |
| 77.5° | 14.8 | 17.2 | 17.2 | 14.8 | 12.3 | 9.8 | 9.8 | 12.3 | 4.9 | 0.0 | 0.0 |
| 80° | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 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 |

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-9-R4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/28/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: McGRAW-EDISON
 Catalog Number: **SA1C-760-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 5474
 CIE u': 0.2052
 CIE v': 0.4804
 Duv: 0.0025
 CIE x: 0.3330
 CIE y: 0.3466
 CIE z: 0.3204
 Peak Wavelength (nm): 442
 Dominant Wavelength (nm): 554
 Purity: 4.1

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 | | |
| R1: | 70.6 | R9: | -27.1 |
| R2: | 74.6 | R10: | 40.8 |
| R3: | 78.3 | R11: | 74.6 |
| R4: | 73.8 | R12: | 50.4 |
| R5: | 72.4 | R13: | 70.0 |
| R6: | 67.5 | R14: | 87.8 |
| R7: | 77.5 | | |
| R8: | 58.9 | | |

Rf: 72.1
 Rg: 97.2



Test Conditions

Stabilization Time: 240M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.6/31%
 Sphere Temperature (°C): 25.9

REPORT NUMBER: SP1-1908-441-9-R4

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

REPORT NUMBER: SP1-1908-441-9-R4

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-R4

Photopic Flux vs. Wavelength



#####

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3 S/P: 1.85

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5527.6 M/P: 0.74

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 3540 | NR | 490 | 33363 | NR | 620 | 80193 | NR | 750 | 4663 | NR | 880 | 4678 | NR |
| 365 | 2862 | NR | 495 | 44177 | NR | 625 | 73091 | NR | 755 | 4147 | NR | 885 | 4128 | NR |
| 370 | 2865 | NR | 500 | 57019 | NR | 630 | 66269 | NR | 760 | 4040 | NR | 890 | 4504 | NR |
| 375 | 3254 | NR | 505 | 70030 | NR | 635 | 60012 | NR | 765 | 3474 | NR | 895 | 4371 | NR |
| 380 | 3076 | NR | 510 | 81972 | NR | 640 | 53914 | NR | 770 | 3469 | NR | 900 | 4082 | NR |
| 385 | 2904 | NR | 515 | 92590 | NR | 645 | 48385 | NR | 775 | 3181 | NR | 905 | 2982 | NR |
| 390 | 2689 | NR | 520 | 100305 | NR | 650 | 43219 | NR | 780 | 2969 | NR | 910 | 4351 | NR |
| 395 | 2619 | NR | 525 | 107452 | NR | 655 | 38562 | NR | 785 | 3132 | NR | 915 | 3365 | NR |
| 400 | 2679 | NR | 530 | 111373 | NR | 660 | 34110 | NR | 790 | 2507 | NR | 920 | 3430 | NR |
| 405 | 3515 | NR | 535 | 114505 | NR | 665 | 30085 | NR | 795 | 2968 | NR | 925 | 4264 | NR |
| 410 | 6934 | NR | 540 | 116408 | NR | 670 | 26205 | NR | 800 | 2758 | NR | 930 | 4095 | NR |
| 415 | 14943 | NR | 545 | 118700 | NR | 675 | 22906 | NR | 805 | 2872 | NR | 935 | 5048 | NR |
| 420 | 31939 | NR | 550 | 119209 | NR | 680 | 20058 | NR | 810 | 3094 | NR | 940 | 4074 | NR |
| 425 | 64701 | NR | 555 | 120742 | NR | 685 | 17413 | NR | 815 | 3222 | NR | 945 | 4949 | NR |
| 430 | 110939 | NR | 560 | 121594 | NR | 690 | 15447 | NR | 820 | 3238 | NR | 950 | 4387 | NR |
| 435 | 164597 | NR | 565 | 121913 | NR | 695 | 13398 | NR | 825 | 3524 | NR | 955 | 4978 | NR |
| 440 | 207696 | NR | 570 | 122147 | NR | 700 | 11777 | NR | 830 | 2921 | NR | 960 | 4706 | NR |
| 445 | 201830 | NR | 575 | 121605 | NR | 705 | 10412 | NR | 835 | 3595 | NR | 965 | 5083 | NR |
| 450 | 145410 | NR | 580 | 120248 | NR | 710 | 9544 | NR | 840 | 3016 | NR | 970 | 4522 | NR |
| 455 | 89594 | NR | 585 | 117717 | NR | 715 | 8940 | NR | 845 | 4032 | NR | 975 | 4740 | NR |
| 460 | 58321 | NR | 590 | 114359 | NR | 720 | 7897 | NR | 850 | 3579 | NR | 980 | 6122 | NR |
| 465 | 39318 | NR | 595 | 109974 | NR | 725 | 7045 | NR | 855 | 4571 | NR | 985 | 6450 | NR |
| 470 | 27693 | NR | 600 | 105269 | NR | 730 | 6483 | NR | 860 | 4485 | NR | 990 | 4875 | NR |
| 475 | 23081 | NR | 605 | 99453 | NR | 735 | 5838 | NR | 865 | 3978 | NR | 995 | 4764 | NR |
| 480 | 23002 | NR | 610 | 92921 | NR | 740 | 5261 | NR | 870 | 4298 | NR | 1000 | 3640 | NR |
| 485 | 26201 | NR | 615 | 86989 | NR | 745 | 4760 | NR | 875 | 4356 | NR | | | |

REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 | |



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

TM-30-18

Measure Comparisons



(END OF REPORT)