

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: P635828

Luminaire Tested: GWS-SA3E-750-U-RW-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P635828
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-49)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA3E-750-U-RW-W
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND RECTANGULAR WIDE OPTICS
Light Source: (48) 5000K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 23157.5 lumens
Efficiency: N/A
Efficacy: 145.5 lumens/watt
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B4 - U0 - G4

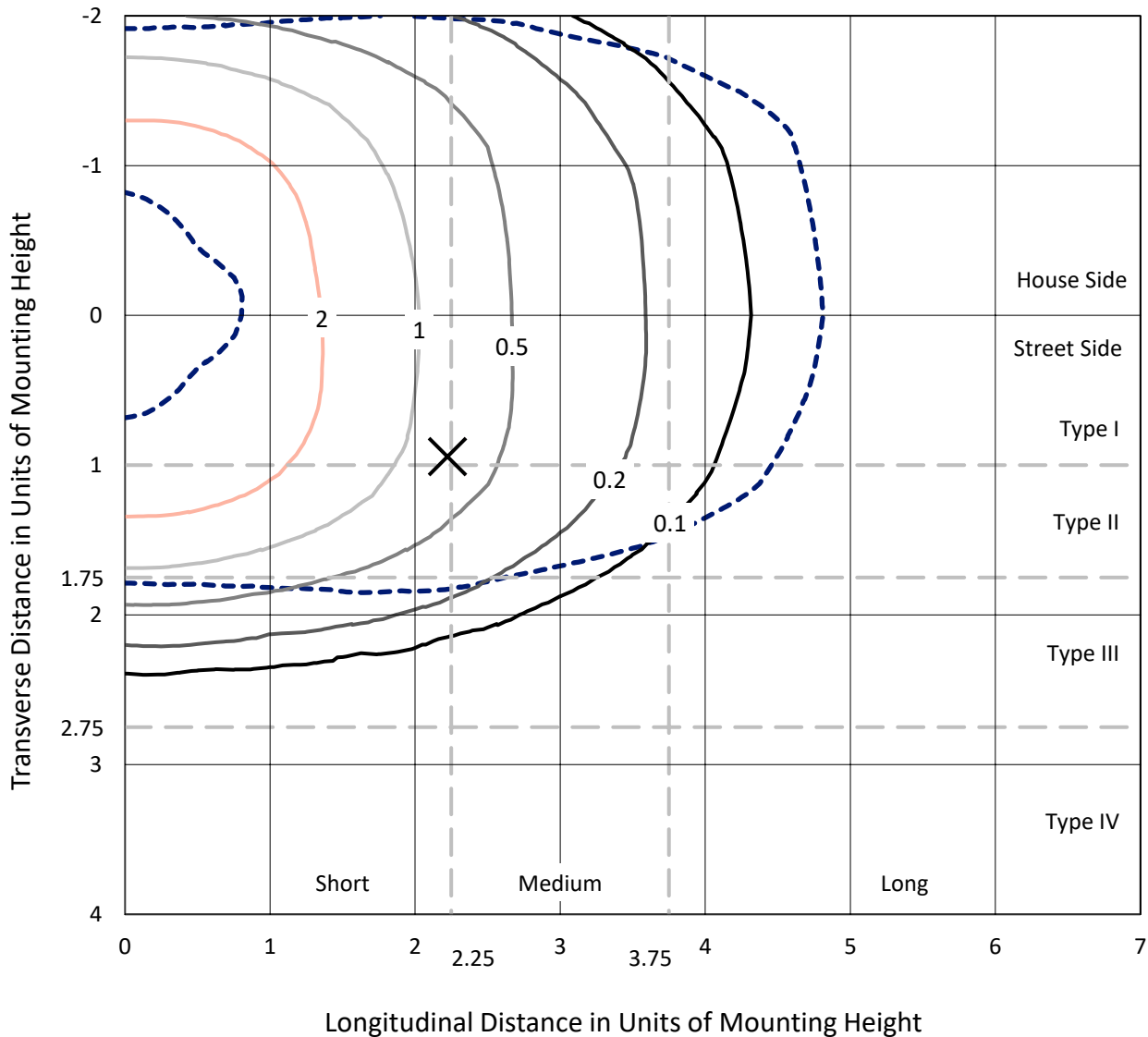
Input Watts (W): 159.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P635828
 CATALOG NUMBER: GWS-SA3E-750-U-RW-W

Iso-Footcandle Lines of Horizontal Illumination

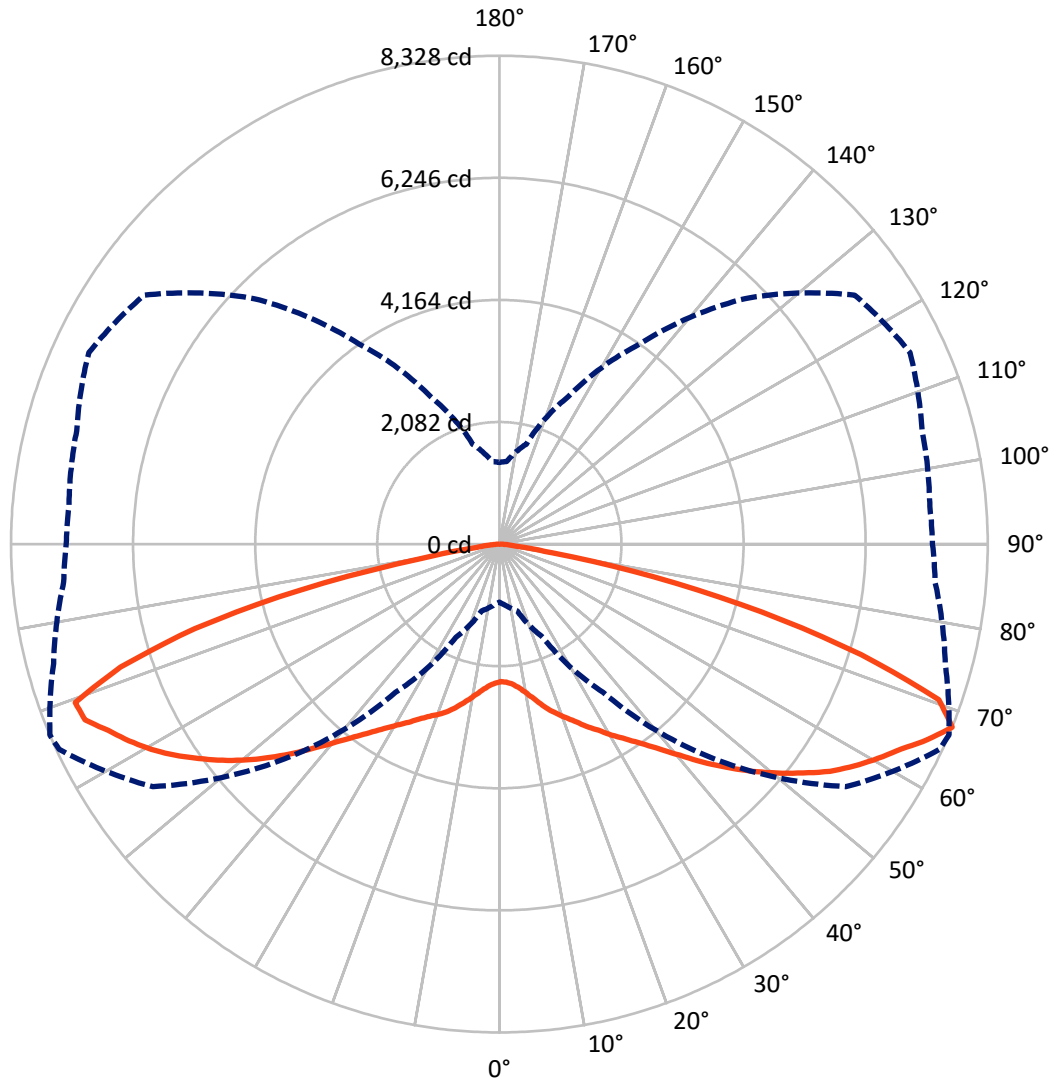
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.3 fc
 Type III - Short - N/A

REPORT NUMBER: P635828
CATALOG NUMBER: GWS-SA3E-750-U-RW-W

Luminous Intensity Polar Plot



— Vertical Plane Through 67-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P635828

CATALOG NUMBER: GWS-SA3E-750-U-RW-W

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 11451.0 | 0.0 | 11451.0 |
| | % Fixture | 49.4 | 0.0 | 49.4 |
| Street Side | Lumens | 11706.5 | 0.0 | 11706.5 |
| | % Fixture | 50.6 | 0.0 | 50.6 |
| Total | Lumens | 23157.5 | 0.0 | 23157.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 230.1 | 1.0 |
| 10°-20° | 777.2 | 3.4 |
| 20°-30° | 1524.9 | 6.6 |
| 30°-40° | 2597.9 | 11.2 |
| 40°-50° | 4171.7 | 18.0 |
| 50°-60° | 5668.5 | 24.5 |
| 60°-70° | 5422.3 | 23.4 |
| 70°-80° | 2578.0 | 11.1 |
| 80°-90° | 186.8 | 0.8 |
| 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° | 23157.5 | 100.0 |
| 0°-180° | 23157.5 | 100.0 |

Coefficient of Utilization



REPORT NUMBER: P635828

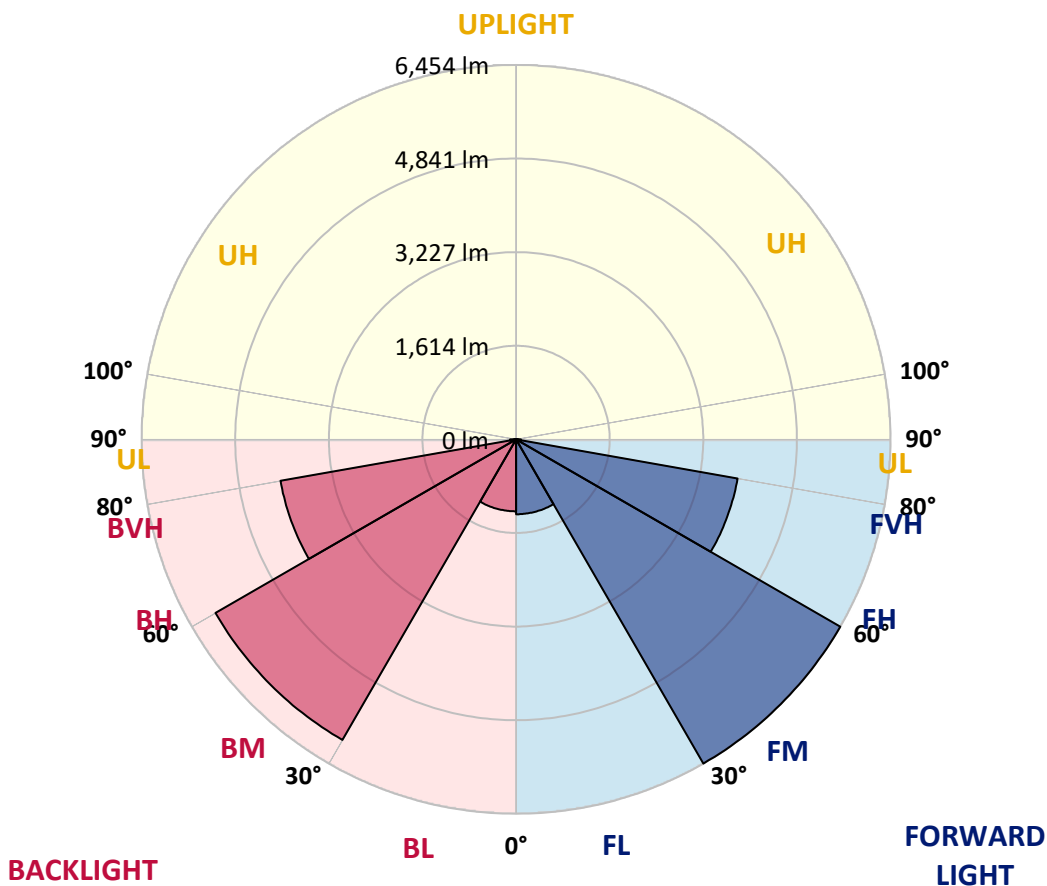
CATALOG NUMBER: GWS-SA3E-750-U-RW-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1291.2 | 5.6 | | | |
| FM (30°-60°) | 6454.2 | 27.9 | | | |
| FH (60°-80°) | 3877.2 | 16.7 | | | G2/5000 |
| FVH (80°-90°) | 84.0 | 0.4 | | | G1/100 |
| BL (0°-30°) | 1241.0 | 5.4 | B3/2500 | | |
| BM (30°-60°) | 5984.0 | 25.8 | B4/8500 | | |
| BH (60°-80°) | 4123.1 | 17.8 | B4/5000 | | G4/5000 |
| BVH (80°-90°) | 102.9 | 0.4 | | | G2/225 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B4-U0-G4

Type III Short





REPORT NUMBER: P635828
 CATALOG NUMBER: GWS-SA3E-750-U-RW-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 67° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 |
| 2.5° | 2296.4 | 2299.7 | 2304.5 | 2314.2 | 2323.9 | 2338.4 | 2352.9 | 2351.3 | 2357.7 | 2362.6 | 2367.4 |
| 5° | 2283.5 | 2286.8 | 2294.8 | 2307.7 | 2322.2 | 2346.4 | 2377.1 | 2390.0 | 2399.7 | 2417.4 | 2433.5 |
| 7.5° | 2311.0 | 2317.4 | 2328.7 | 2346.4 | 2369.0 | 2399.7 | 2441.6 | 2464.2 | 2478.7 | 2510.9 | 2538.3 |
| 10° | 2348.1 | 2356.1 | 2378.7 | 2412.6 | 2446.4 | 2493.2 | 2546.4 | 2580.3 | 2590.0 | 2631.9 | 2683.5 |
| 12.5° | 2383.5 | 2393.2 | 2430.3 | 2491.6 | 2552.9 | 2615.8 | 2678.6 | 2720.6 | 2723.8 | 2780.2 | 2838.3 |
| 15° | 2440.0 | 2448.0 | 2498.0 | 2577.1 | 2670.6 | 2757.7 | 2835.1 | 2864.1 | 2877.0 | 2917.3 | 2989.9 |
| 17.5° | 2564.1 | 2573.8 | 2638.3 | 2723.8 | 2822.2 | 2914.1 | 2991.5 | 3015.7 | 3015.7 | 3049.6 | 3109.2 |
| 20° | 2698.0 | 2707.7 | 2793.1 | 2902.8 | 3022.1 | 3115.7 | 3175.4 | 3152.8 | 3144.7 | 3154.4 | 3196.3 |
| 22.5° | 2848.0 | 2865.7 | 2948.0 | 3075.4 | 3222.1 | 3336.6 | 3367.3 | 3299.5 | 3277.0 | 3254.4 | 3264.0 |
| 25° | 3039.9 | 3060.9 | 3141.5 | 3277.0 | 3420.5 | 3541.4 | 3559.2 | 3454.3 | 3441.4 | 3362.4 | 3333.4 |
| 27.5° | 3260.8 | 3277.0 | 3376.9 | 3510.8 | 3644.6 | 3746.2 | 3765.6 | 3636.6 | 3593.0 | 3483.4 | 3415.6 |
| 30° | 3546.3 | 3560.8 | 3647.9 | 3780.1 | 3896.2 | 3967.2 | 3991.4 | 3814.0 | 3780.1 | 3612.4 | 3507.6 |
| 32.5° | 3857.5 | 3864.0 | 3952.7 | 4080.1 | 4183.3 | 4251.0 | 4217.1 | 4010.7 | 3960.7 | 3772.0 | 3628.5 |
| 35° | 4213.9 | 4213.9 | 4328.4 | 4431.6 | 4513.9 | 4533.2 | 4468.7 | 4233.3 | 4175.2 | 3970.4 | 3791.4 |
| 37.5° | 4563.9 | 4573.5 | 4680.0 | 4802.5 | 4875.1 | 4871.9 | 4754.2 | 4496.1 | 4430.0 | 4207.5 | 4009.1 |
| 40° | 4942.8 | 4963.8 | 5070.2 | 5207.3 | 5276.7 | 5267.0 | 5086.4 | 4799.3 | 4731.6 | 4468.7 | 4275.2 |
| 42.5° | 5291.2 | 5325.0 | 5449.2 | 5589.5 | 5665.3 | 5658.9 | 5470.2 | 5147.7 | 5081.5 | 4784.8 | 4591.3 |
| 45° | 5568.6 | 5604.0 | 5758.9 | 5954.0 | 6074.9 | 6063.6 | 5873.4 | 5508.9 | 5428.3 | 5117.0 | 4904.1 |
| 47.5° | 5812.1 | 5849.2 | 6021.7 | 6228.1 | 6420.0 | 6439.4 | 6265.2 | 5873.4 | 5787.9 | 5473.4 | 5233.1 |
| 50° | 5999.1 | 6016.9 | 6210.4 | 6436.2 | 6658.7 | 6766.8 | 6615.2 | 6239.4 | 6136.2 | 5825.0 | 5554.0 |
| 52.5° | 5984.6 | 6008.8 | 6247.5 | 6553.9 | 6852.2 | 7029.6 | 6924.8 | 6584.5 | 6484.6 | 6145.9 | 5881.4 |
| 55° | 5689.5 | 5713.7 | 5997.5 | 6444.2 | 6960.3 | 7221.5 | 7210.3 | 6913.5 | 6841.0 | 6473.3 | 6221.7 |
| 57.5° | 5258.9 | 5312.1 | 5594.4 | 6076.6 | 6818.4 | 7374.8 | 7419.9 | 7213.5 | 7137.7 | 6794.2 | 6558.7 |
| 60° | 4488.1 | 4559.0 | 4884.8 | 5510.5 | 6363.6 | 7323.1 | 7644.1 | 7466.7 | 7419.9 | 7092.5 | 6863.5 |
| 62.5° | 3260.8 | 3312.4 | 3746.2 | 4567.1 | 5689.5 | 6955.5 | 7832.8 | 7727.9 | 7692.4 | 7360.2 | 7139.3 |
| 65° | 1952.9 | 2070.7 | 2419.0 | 3230.2 | 4589.7 | 6262.0 | 7729.5 | 8069.8 | 8032.7 | 7636.0 | 7374.8 |
| 67.5° | 988.6 | 1041.8 | 1178.9 | 1751.4 | 3086.7 | 5181.5 | 7211.9 | 8282.7 | 8327.8 | 7871.5 | 7458.6 |
| 70° | 612.8 | 627.3 | 666.0 | 864.4 | 1541.7 | 3404.4 | 5897.5 | 7727.9 | 7948.9 | 7834.4 | 7240.9 |
| 72.5° | 491.9 | 495.1 | 501.5 | 538.6 | 740.2 | 1591.7 | 3728.5 | 6052.4 | 6450.7 | 7316.7 | 6929.7 |
| 75° | 408.0 | 409.6 | 411.2 | 422.5 | 461.2 | 649.9 | 1814.3 | 4159.1 | 4625.1 | 6218.5 | 6424.9 |
| 77.5° | 327.4 | 319.3 | 325.8 | 330.6 | 340.3 | 362.9 | 625.7 | 2219.0 | 2691.6 | 4081.7 | 4968.6 |
| 80° | 212.9 | 209.6 | 222.5 | 227.4 | 237.1 | 251.6 | 333.8 | 753.1 | 914.4 | 1485.3 | 1580.4 |
| 82.5° | 114.5 | 108.0 | 135.5 | 130.6 | 135.5 | 146.8 | 196.7 | 275.8 | 309.6 | 448.3 | 379.0 |
| 85° | 35.5 | 35.5 | 37.1 | 43.5 | 53.2 | 51.6 | 85.5 | 135.5 | 150.0 | 191.9 | 141.9 |
| 87.5° | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 8.1 | 17.7 | 27.4 | 37.1 | 66.1 | 50.0 |
| 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: P635828
 CATALOG NUMBER: GWS-SA3E-750-U-RW-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 | 2344.8 |
| 2.5° | 2377.1 | 2362.6 | 2370.6 | 2375.5 | 2373.9 | 2370.6 | 2354.5 | 2351.3 | 2343.2 | 2330.3 | 2327.1 |
| 5° | 2448.0 | 2431.9 | 2433.5 | 2428.7 | 2412.6 | 2391.6 | 2356.1 | 2338.4 | 2323.9 | 2307.7 | 2306.1 |
| 7.5° | 2559.3 | 2541.6 | 2536.7 | 2514.2 | 2469.0 | 2420.6 | 2364.2 | 2331.9 | 2307.7 | 2286.8 | 2283.5 |
| 10° | 2701.2 | 2683.5 | 2667.4 | 2614.1 | 2540.0 | 2475.5 | 2401.3 | 2354.5 | 2319.0 | 2293.2 | 2288.4 |
| 12.5° | 2859.3 | 2844.8 | 2804.4 | 2727.0 | 2638.3 | 2562.5 | 2486.7 | 2428.7 | 2377.1 | 2338.4 | 2333.5 |
| 15° | 3035.0 | 3002.8 | 2941.5 | 2841.5 | 2757.7 | 2696.4 | 2604.5 | 2525.4 | 2443.2 | 2391.6 | 2380.3 |
| 17.5° | 3157.6 | 3130.2 | 3057.6 | 2960.9 | 2894.7 | 2841.5 | 2733.5 | 2620.6 | 2509.3 | 2433.5 | 2417.4 |
| 20° | 3244.7 | 3215.7 | 3133.4 | 3062.5 | 3041.5 | 2996.3 | 2870.6 | 2739.9 | 2610.9 | 2517.4 | 2496.4 |
| 22.5° | 3307.6 | 3277.0 | 3193.1 | 3157.6 | 3186.6 | 3178.6 | 3056.0 | 2907.6 | 2754.4 | 2643.2 | 2617.4 |
| 25° | 3367.3 | 3338.2 | 3264.0 | 3277.0 | 3354.4 | 3378.5 | 3246.3 | 3073.8 | 2899.6 | 2769.0 | 2738.3 |
| 27.5° | 3423.7 | 3386.6 | 3352.7 | 3423.7 | 3533.4 | 3578.5 | 3438.2 | 3243.1 | 3054.4 | 2920.6 | 2896.4 |
| 30° | 3510.8 | 3467.2 | 3462.4 | 3565.6 | 3739.8 | 3778.5 | 3623.7 | 3428.5 | 3241.5 | 3106.0 | 3075.4 |
| 32.5° | 3620.4 | 3580.1 | 3583.4 | 3738.2 | 3939.8 | 3972.0 | 3839.8 | 3657.5 | 3470.5 | 3335.0 | 3293.1 |
| 35° | 3768.8 | 3718.8 | 3746.2 | 3936.5 | 4139.7 | 4199.4 | 4093.0 | 3941.4 | 3759.1 | 3620.4 | 3573.7 |
| 37.5° | 3973.6 | 3901.1 | 3957.5 | 4157.5 | 4362.3 | 4451.0 | 4368.7 | 4255.8 | 4075.2 | 3934.9 | 3891.4 |
| 40° | 4234.9 | 4175.2 | 4197.8 | 4418.7 | 4630.0 | 4736.4 | 4684.8 | 4573.5 | 4394.5 | 4247.8 | 4197.8 |
| 42.5° | 4544.5 | 4484.8 | 4476.8 | 4712.2 | 4923.5 | 5084.8 | 5034.8 | 4933.2 | 4747.7 | 4580.0 | 4531.6 |
| 45° | 4847.7 | 4792.9 | 4804.2 | 5044.4 | 5281.5 | 5457.3 | 5407.3 | 5288.0 | 5086.4 | 4892.8 | 4854.1 |
| 47.5° | 5163.8 | 5118.6 | 5128.3 | 5383.1 | 5644.4 | 5820.1 | 5757.2 | 5612.1 | 5376.7 | 5170.2 | 5123.5 |
| 50° | 5487.9 | 5436.3 | 5450.8 | 5718.5 | 6000.8 | 6166.9 | 6070.1 | 5855.6 | 5596.0 | 5394.4 | 5354.1 |
| 52.5° | 5810.5 | 5749.2 | 5786.3 | 6039.5 | 6331.4 | 6463.6 | 6284.6 | 6024.9 | 5773.4 | 5573.4 | 5528.2 |
| 55° | 6181.4 | 6116.9 | 6076.6 | 6347.5 | 6636.1 | 6691.0 | 6445.9 | 6142.7 | 5844.3 | 5616.9 | 5589.5 |
| 57.5° | 6520.0 | 6465.2 | 6389.4 | 6660.3 | 6873.2 | 6832.9 | 6570.0 | 6110.4 | 5671.8 | 5379.9 | 5341.2 |
| 60° | 6823.2 | 6776.5 | 6710.3 | 6940.9 | 7037.7 | 6947.4 | 6470.0 | 5728.2 | 5246.0 | 4941.2 | 4923.5 |
| 62.5° | 7102.2 | 7052.2 | 6990.9 | 7187.7 | 7174.8 | 6965.1 | 6015.3 | 5141.2 | 4496.1 | 4168.8 | 4139.7 |
| 65° | 7323.1 | 7278.0 | 7260.3 | 7415.1 | 7394.1 | 6618.4 | 5307.3 | 4180.0 | 3285.0 | 2915.7 | 2904.4 |
| 67.5° | 7386.0 | 7368.3 | 7463.4 | 7726.3 | 7398.9 | 5921.7 | 4162.3 | 2772.2 | 1764.3 | 1414.3 | 1393.3 |
| 70° | 7150.6 | 7149.0 | 7421.5 | 7797.3 | 6728.1 | 4523.5 | 2456.1 | 1249.8 | 887.0 | 787.0 | 774.1 |
| 72.5° | 6844.2 | 6839.3 | 7055.4 | 6726.5 | 4989.6 | 2475.5 | 1033.7 | 669.3 | 554.8 | 527.3 | 527.3 |
| 75° | 6341.0 | 6328.1 | 6491.0 | 5117.0 | 2806.1 | 932.1 | 548.3 | 459.6 | 435.4 | 430.6 | 430.6 |
| 77.5° | 5168.6 | 5060.6 | 4804.2 | 3162.5 | 978.9 | 458.0 | 362.9 | 361.2 | 346.7 | 345.1 | 345.1 |
| 80° | 1699.8 | 1699.8 | 1975.5 | 1206.3 | 432.2 | 282.2 | 256.4 | 269.3 | 254.8 | 245.1 | 243.5 |
| 82.5° | 277.4 | 382.2 | 543.5 | 345.1 | 233.8 | 175.8 | 158.0 | 167.7 | 175.8 | 140.3 | 140.3 |
| 85° | 109.7 | 143.5 | 209.6 | 161.3 | 108.0 | 71.0 | 75.8 | 83.9 | 74.2 | 64.5 | 62.9 |
| 87.5° | 41.9 | 51.6 | 74.2 | 38.7 | 22.6 | 12.9 | 8.1 | 8.1 | 6.5 | 6.5 | 6.5 |
| 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: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-4-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-750-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): 4884
 CIE u': 0.2101
 CIE v': 0.4904
 Duv: 0.0037
 CIE x: 0.3493
 CIE y: 0.3624
 CIE z: 0.2884
 Peak Wavelength (nm): 444
 Dominant Wavelength (nm): 571
 Purity: 13.7
 Rf: 74.9
 Rg: 96.3

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 73.5 | | |
| R1: | 70.5 | R9: | -28.4 |
| R2: | 77.7 | R10: | 48.6 |
| R3: | 84.6 | R11: | 73.2 |
| R4: | 74.7 | R12: | 50.7 |
| R5: | 71.9 | R13: | 71.2 |
| R6: | 70.7 | R14: | 91.4 |
| R7: | 81.2 | | |
| R8: | 56.9 | | |



Test Conditions

Stabilization Time: 240M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.0./44%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-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: SP1-1908-441-4-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-4-R4

Photopic Flux vs. Wavelength



#####

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

REPORT NUMBER: SP1-1908-441-4-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5 S/P: 1.77

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

REPORT NUMBER: SP1-1908-441-4-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 5378.9

M/P: 0.71

| 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 | 2945 | NR | 490 | 37941 | NR | 620 | 88803 | NR | 750 | 3908 | NR | 880 | 2997 | NR |
| 365 | 2596 | NR | 495 | 48525 | NR | 625 | 80578 | NR | 755 | 3988 | NR | 885 | 2927 | NR |
| 370 | 2732 | NR | 500 | 60609 | NR | 630 | 73127 | NR | 760 | 3335 | NR | 890 | 2649 | NR |
| 375 | 2894 | NR | 505 | 72036 | NR | 635 | 66244 | NR | 765 | 3438 | NR | 895 | 2828 | NR |
| 380 | 2822 | NR | 510 | 82168 | NR | 640 | 59440 | NR | 770 | 3427 | NR | 900 | 1407 | NR |
| 385 | 2394 | NR | 515 | 90898 | NR | 645 | 52864 | NR | 775 | 2759 | NR | 905 | 2224 | NR |
| 390 | 2370 | NR | 520 | 97142 | NR | 650 | 47085 | NR | 780 | 2340 | NR | 910 | 2905 | NR |
| 395 | 2267 | NR | 525 | 103255 | NR | 655 | 41789 | NR | 785 | 2412 | NR | 915 | 3350 | NR |
| 400 | 2262 | NR | 530 | 106697 | NR | 660 | 37064 | NR | 790 | 1999 | NR | 920 | 3114 | NR |
| 405 | 3000 | NR | 535 | 110081 | NR | 665 | 32299 | NR | 795 | 2054 | NR | 925 | 2834 | NR |
| 410 | 5324 | NR | 540 | 112494 | NR | 670 | 28142 | NR | 800 | 2331 | NR | 930 | 2271 | NR |
| 415 | 10725 | NR | 545 | 115513 | NR | 675 | 24505 | NR | 805 | 2648 | NR | 935 | 2228 | NR |
| 420 | 22128 | NR | 550 | 117203 | NR | 680 | 21162 | NR | 810 | 2485 | NR | 940 | 2833 | NR |
| 425 | 44095 | NR | 555 | 119753 | NR | 685 | 18400 | NR | 815 | 2409 | NR | 945 | 2941 | NR |
| 430 | 77002 | NR | 560 | 122602 | NR | 690 | 16065 | NR | 820 | 2221 | NR | 950 | 2323 | NR |
| 435 | 119881 | NR | 565 | 124314 | NR | 695 | 13860 | NR | 825 | 1562 | NR | 955 | 1667 | NR |
| 440 | 164454 | NR | 570 | 126775 | NR | 700 | 12177 | NR | 830 | 2249 | NR | 960 | 749 | NR |
| 445 | 179997 | NR | 575 | 127511 | NR | 705 | 10757 | NR | 835 | 2573 | NR | 965 | 2669 | NR |
| 450 | 142822 | NR | 580 | 127577 | NR | 710 | 9601 | NR | 840 | 2764 | NR | 970 | 3968 | NR |
| 455 | 90008 | NR | 585 | 126153 | NR | 715 | 8944 | NR | 845 | 3109 | NR | 975 | 3886 | NR |
| 460 | 60557 | NR | 590 | 123678 | NR | 720 | 7947 | NR | 850 | 2963 | NR | 980 | 2788 | NR |
| 465 | 43305 | NR | 595 | 119774 | NR | 725 | 7062 | NR | 855 | 2336 | NR | 985 | 3496 | NR |
| 470 | 31089 | NR | 600 | 115733 | NR | 730 | 6004 | NR | 860 | 2118 | NR | 990 | 2913 | NR |
| 475 | 26278 | NR | 605 | 109231 | NR | 735 | 5594 | NR | 865 | 3144 | NR | 995 | 4659 | NR |
| 480 | 27060 | NR | 610 | 102408 | NR | 740 | 5165 | NR | 870 | 3069 | NR | 1000 | 1308 | NR |
| 485 | 30698 | NR | 615 | 96015 | NR | 745 | 4687 | NR | 875 | 3311 | NR | | | |

REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

Summary

$R_f = 74.9$
 $R_g = 96.3$
 CIE $R_a = 73.5$
 $R_9 = -28.4$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)