

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: P635663

Luminaire Tested: GWS-SA3E-730-U-RW-W

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P635663
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-730-U-RW-W
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND RECTANGULAR WIDE OPTICS
Light Source: (48) 3000K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 20615.1 lumens
Efficiency: N/A
Efficacy: 129.5 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

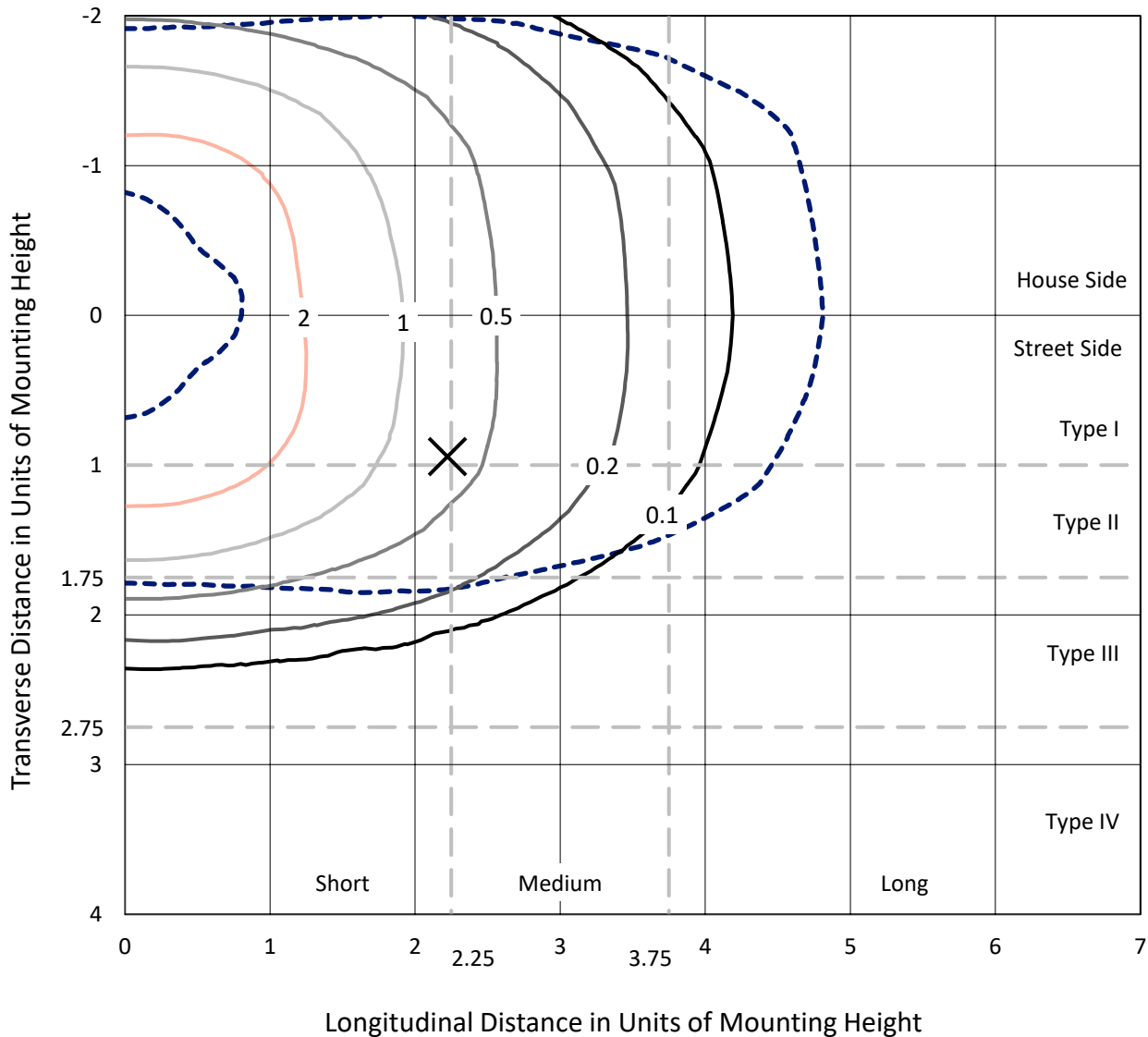
Input Watts (W): 159.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P635663
 CATALOG NUMBER: GWS-SA3E-730-U-RW-W

Iso-Footcandle Lines of Horizontal Illumination

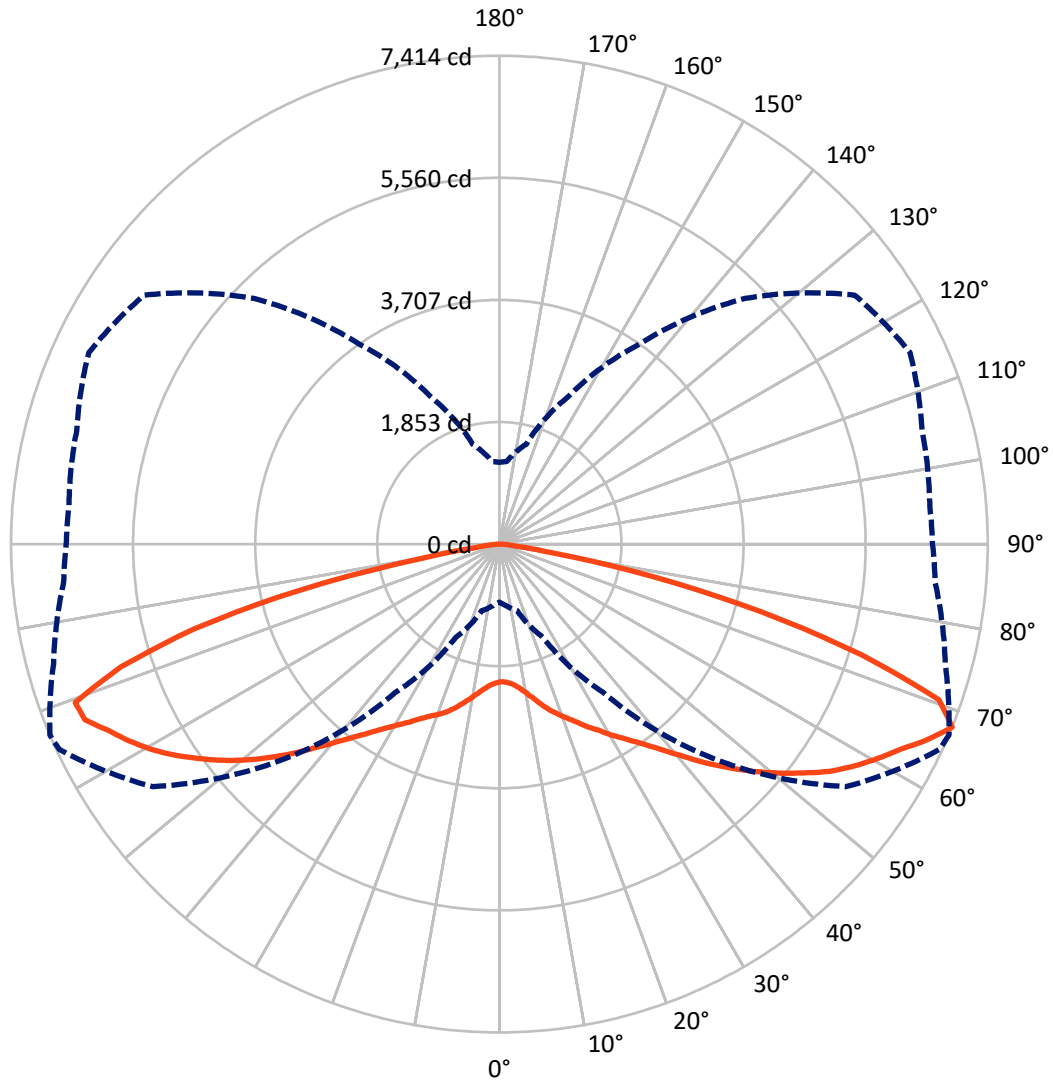
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 3.9 fc
 Type III - Short - N/A

REPORT NUMBER: P635663
CATALOG NUMBER: GWS-SA3E-730-U-RW-W

Luminous Intensity Polar Plot



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

REPORT NUMBER: P635663

CATALOG NUMBER: GWS-SA3E-730-U-RW-W

FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 10193.8 | 0.0 | 10193.8 |
| | % Fixture | 49.4 | 0.0 | 49.4 |
| Street Side | Lumens | 10421.3 | 0.0 | 10421.3 |
| | % Fixture | 50.6 | 0.0 | 50.6 |
| Total | Lumens | 20615.1 | 0.0 | 20615.1 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 204.8 | 1.0 |
| 10°-20° | 691.9 | 3.4 |
| 20°-30° | 1357.5 | 6.6 |
| 30°-40° | 2312.7 | 11.2 |
| 40°-50° | 3713.7 | 18.0 |
| 50°-60° | 5046.2 | 24.5 |
| 60°-70° | 4827.0 | 23.4 |
| 70°-80° | 2294.9 | 11.1 |
| 80°-90° | 166.3 | 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° | 20615.1 | 100.0 |
| 0°-180° | 20615.1 | 100.0 |

Coefficient of Utilization



REPORT NUMBER: P635663

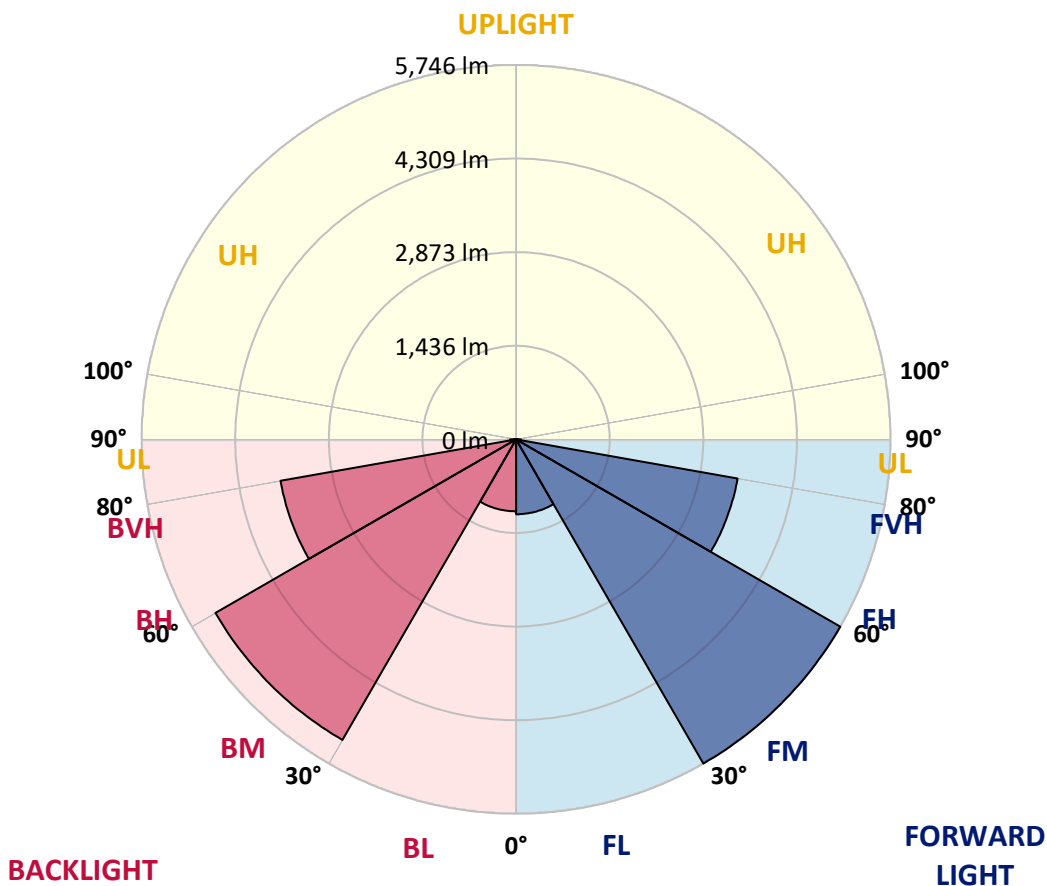
CATALOG NUMBER: GWS-SA3E-730-U-RW-W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1149.4 | 5.6 | | | |
| FM (30°-60°) | 5745.6 | 27.9 | | | |
| FH (60°-80°) | 3451.5 | 16.7 | | | G2/5000 |
| FVH (80°-90°) | 74.7 | 0.4 | | | G1/100 |
| BL (0°-30°) | 1104.7 | 5.4 | B3/2500 | | |
| BM (30°-60°) | 5327.0 | 25.8 | B4/8500 | | |
| BH (60°-80°) | 3670.5 | 17.8 | B4/5000 | | G4/5000 |
| BVH (80°-90°) | 91.6 | 0.4 | | | G1/100 |
| 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: P635663
 CATALOG NUMBER: GWS-SA3E-730-U-RW-W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 67° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 |
| 2.5° | 2044.3 | 2047.2 | 2051.5 | 2060.1 | 2068.7 | 2081.7 | 2094.6 | 2093.1 | 2098.9 | 2103.2 | 2107.5 |
| 5° | 2032.8 | 2035.7 | 2042.9 | 2054.4 | 2067.3 | 2088.8 | 2116.1 | 2127.6 | 2136.2 | 2152.0 | 2166.4 |
| 7.5° | 2057.2 | 2063.0 | 2073.0 | 2088.8 | 2108.9 | 2136.2 | 2173.5 | 2193.6 | 2206.6 | 2235.3 | 2259.7 |
| 10° | 2090.3 | 2097.4 | 2117.5 | 2147.7 | 2177.8 | 2219.5 | 2266.8 | 2297.0 | 2305.6 | 2342.9 | 2388.9 |
| 12.5° | 2121.8 | 2130.5 | 2163.5 | 2218.0 | 2272.6 | 2328.6 | 2384.6 | 2421.9 | 2424.8 | 2475.0 | 2526.7 |
| 15° | 2172.1 | 2179.3 | 2223.8 | 2294.1 | 2377.4 | 2454.9 | 2523.8 | 2549.7 | 2561.1 | 2597.0 | 2661.6 |
| 17.5° | 2282.6 | 2291.3 | 2348.7 | 2424.8 | 2512.3 | 2594.2 | 2663.1 | 2684.6 | 2684.6 | 2714.8 | 2767.9 |
| 20° | 2401.8 | 2410.4 | 2486.5 | 2584.1 | 2690.4 | 2773.6 | 2826.7 | 2806.6 | 2799.5 | 2808.1 | 2845.4 |
| 22.5° | 2535.3 | 2551.1 | 2624.3 | 2737.7 | 2868.4 | 2970.3 | 2997.6 | 2937.3 | 2917.2 | 2897.1 | 2905.7 |
| 25° | 2706.1 | 2724.8 | 2796.6 | 2917.2 | 3045.0 | 3152.6 | 3168.4 | 3075.1 | 3063.6 | 2993.3 | 2967.4 |
| 27.5° | 2902.8 | 2917.2 | 3006.2 | 3125.3 | 3244.5 | 3334.9 | 3352.2 | 3237.3 | 3198.6 | 3100.9 | 3040.6 |
| 30° | 3156.9 | 3169.9 | 3247.4 | 3365.1 | 3468.5 | 3531.6 | 3553.2 | 3395.2 | 3365.1 | 3215.8 | 3122.5 |
| 32.5° | 3434.0 | 3439.7 | 3518.7 | 3632.1 | 3724.0 | 3784.3 | 3754.2 | 3570.4 | 3525.9 | 3357.9 | 3230.1 |
| 35° | 3751.3 | 3751.3 | 3853.2 | 3945.1 | 4018.3 | 4035.5 | 3978.1 | 3768.5 | 3716.8 | 3534.5 | 3375.1 |
| 37.5° | 4062.8 | 4071.4 | 4166.2 | 4275.3 | 4339.9 | 4337.0 | 4232.2 | 4002.5 | 3943.7 | 3745.5 | 3569.0 |
| 40° | 4400.2 | 4418.8 | 4513.6 | 4635.6 | 4697.4 | 4688.7 | 4528.0 | 4272.4 | 4212.1 | 3978.1 | 3805.8 |
| 42.5° | 4710.3 | 4740.4 | 4851.0 | 4975.9 | 5043.3 | 5037.6 | 4869.6 | 4582.5 | 4523.6 | 4259.5 | 4087.2 |
| 45° | 4957.2 | 4988.8 | 5126.6 | 5300.3 | 5408.0 | 5397.9 | 5228.5 | 4904.1 | 4832.3 | 4555.2 | 4365.7 |
| 47.5° | 5174.0 | 5207.0 | 5360.6 | 5544.4 | 5715.2 | 5732.4 | 5577.4 | 5228.5 | 5152.4 | 4872.5 | 4658.6 |
| 50° | 5340.5 | 5356.3 | 5528.6 | 5729.6 | 5927.7 | 6023.9 | 5888.9 | 5554.4 | 5462.5 | 5185.5 | 4944.3 |
| 52.5° | 5327.6 | 5349.1 | 5561.6 | 5834.4 | 6100.0 | 6257.9 | 6164.6 | 5861.6 | 5772.6 | 5471.2 | 5235.7 |
| 55° | 5064.9 | 5086.4 | 5339.1 | 5736.7 | 6196.1 | 6428.7 | 6418.7 | 6154.5 | 6089.9 | 5762.6 | 5538.6 |
| 57.5° | 4681.6 | 4728.9 | 4980.2 | 5409.4 | 6069.8 | 6565.1 | 6605.3 | 6421.5 | 6354.1 | 6048.3 | 5838.7 |
| 60° | 3995.3 | 4058.5 | 4348.5 | 4905.5 | 5665.0 | 6519.2 | 6804.8 | 6646.9 | 6605.3 | 6313.9 | 6110.0 |
| 62.5° | 2902.8 | 2948.8 | 3334.9 | 4065.7 | 5064.9 | 6191.8 | 6972.8 | 6879.5 | 6847.9 | 6552.2 | 6355.5 |
| 65° | 1738.5 | 1843.3 | 2153.4 | 2875.6 | 4085.8 | 5574.5 | 6880.9 | 7183.9 | 7150.8 | 6797.7 | 6565.1 |
| 67.5° | 880.0 | 927.4 | 1049.4 | 1559.1 | 2747.8 | 4612.7 | 6420.1 | 7373.4 | 7413.5 | 7007.3 | 6639.7 |
| 70° | 545.5 | 558.5 | 592.9 | 769.5 | 1372.5 | 3030.6 | 5250.1 | 6879.5 | 7076.2 | 6974.2 | 6445.9 |
| 72.5° | 437.9 | 440.7 | 446.5 | 479.5 | 659.0 | 1417.0 | 3319.2 | 5387.9 | 5742.5 | 6513.4 | 6168.9 |
| 75° | 363.2 | 364.6 | 366.1 | 376.1 | 410.6 | 578.6 | 1615.1 | 3702.5 | 4117.4 | 5535.8 | 5719.5 |
| 77.5° | 291.4 | 284.3 | 290.0 | 294.3 | 302.9 | 323.0 | 557.0 | 1975.4 | 2396.1 | 3633.6 | 4423.2 |
| 80° | 189.5 | 186.6 | 198.1 | 202.4 | 211.0 | 224.0 | 297.2 | 670.4 | 814.0 | 1322.2 | 1406.9 |
| 82.5° | 101.9 | 96.2 | 120.6 | 116.3 | 120.6 | 130.6 | 175.1 | 245.5 | 275.6 | 399.1 | 337.4 |
| 85° | 31.6 | 31.6 | 33.0 | 38.8 | 47.4 | 45.9 | 76.1 | 120.6 | 133.5 | 170.8 | 126.3 |
| 87.5° | 5.7 | 5.7 | 5.7 | 5.7 | 5.7 | 7.2 | 15.8 | 24.4 | 33.0 | 58.9 | 44.5 |
| 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: P635663
 CATALOG NUMBER: GWS-SA3E-730-U-RW-W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 | 2087.4 |
| 2.5° | 2116.1 | 2103.2 | 2110.4 | 2114.7 | 2113.2 | 2110.4 | 2096.0 | 2093.1 | 2086.0 | 2074.5 | 2071.6 |
| 5° | 2179.3 | 2164.9 | 2166.4 | 2162.0 | 2147.7 | 2129.0 | 2097.4 | 2081.7 | 2068.7 | 2054.4 | 2052.9 |
| 7.5° | 2278.3 | 2262.5 | 2258.2 | 2238.1 | 2197.9 | 2154.9 | 2104.6 | 2075.9 | 2054.4 | 2035.7 | 2032.8 |
| 10° | 2404.7 | 2388.9 | 2374.5 | 2327.1 | 2261.1 | 2203.7 | 2137.6 | 2096.0 | 2064.4 | 2041.5 | 2037.1 |
| 12.5° | 2545.4 | 2532.4 | 2496.5 | 2427.6 | 2348.7 | 2281.2 | 2213.7 | 2162.0 | 2116.1 | 2081.7 | 2077.3 |
| 15° | 2701.8 | 2673.1 | 2618.6 | 2529.6 | 2454.9 | 2400.4 | 2318.5 | 2248.2 | 2175.0 | 2129.0 | 2119.0 |
| 17.5° | 2810.9 | 2786.5 | 2721.9 | 2635.8 | 2576.9 | 2529.6 | 2433.4 | 2332.9 | 2233.8 | 2166.4 | 2152.0 |
| 20° | 2888.5 | 2862.6 | 2789.4 | 2726.2 | 2707.6 | 2667.4 | 2555.4 | 2439.1 | 2324.3 | 2241.0 | 2222.3 |
| 22.5° | 2944.5 | 2917.2 | 2842.5 | 2810.9 | 2836.8 | 2829.6 | 2720.5 | 2588.4 | 2452.0 | 2353.0 | 2330.0 |
| 25° | 2997.6 | 2971.7 | 2905.7 | 2917.2 | 2986.1 | 3007.6 | 2889.9 | 2736.3 | 2581.2 | 2465.0 | 2437.7 |
| 27.5° | 3047.8 | 3014.8 | 2984.7 | 3047.8 | 3145.4 | 3185.6 | 3060.7 | 2887.0 | 2719.1 | 2599.9 | 2578.4 |
| 30° | 3125.3 | 3086.6 | 3082.3 | 3174.2 | 3329.2 | 3363.7 | 3225.8 | 3052.1 | 2885.6 | 2765.0 | 2737.7 |
| 32.5° | 3223.0 | 3187.1 | 3190.0 | 3327.8 | 3507.2 | 3535.9 | 3418.2 | 3256.0 | 3089.5 | 2968.9 | 2931.5 |
| 35° | 3355.0 | 3310.5 | 3334.9 | 3504.4 | 3685.2 | 3738.4 | 3643.6 | 3508.7 | 3346.4 | 3223.0 | 3181.3 |
| 37.5° | 3537.4 | 3472.8 | 3523.0 | 3701.0 | 3883.4 | 3962.3 | 3889.1 | 3788.6 | 3627.8 | 3502.9 | 3464.2 |
| 40° | 3769.9 | 3716.8 | 3736.9 | 3933.6 | 4121.7 | 4216.4 | 4170.5 | 4071.4 | 3912.1 | 3781.4 | 3736.9 |
| 42.5° | 4045.6 | 3992.5 | 3985.3 | 4194.9 | 4383.0 | 4526.5 | 4482.0 | 4391.6 | 4226.5 | 4077.2 | 4034.1 |
| 45° | 4315.5 | 4266.7 | 4276.7 | 4490.6 | 4701.7 | 4858.1 | 4813.6 | 4707.4 | 4528.0 | 4355.7 | 4321.2 |
| 47.5° | 4596.9 | 4556.7 | 4565.3 | 4792.1 | 5024.7 | 5181.2 | 5125.2 | 4996.0 | 4786.4 | 4602.6 | 4561.0 |
| 50° | 4885.4 | 4839.5 | 4852.4 | 5090.7 | 5341.9 | 5489.8 | 5403.7 | 5212.7 | 4981.6 | 4802.2 | 4766.3 |
| 52.5° | 5172.5 | 5118.0 | 5151.0 | 5376.4 | 5636.3 | 5754.0 | 5594.6 | 5363.5 | 5139.5 | 4961.5 | 4921.3 |
| 55° | 5502.7 | 5445.3 | 5409.4 | 5650.6 | 5907.6 | 5956.4 | 5738.2 | 5468.3 | 5202.7 | 5000.3 | 4975.9 |
| 57.5° | 5804.2 | 5755.4 | 5687.9 | 5929.1 | 6118.6 | 6082.7 | 5848.7 | 5439.6 | 5049.1 | 4789.2 | 4754.8 |
| 60° | 6074.1 | 6032.5 | 5973.6 | 6178.9 | 6265.1 | 6184.7 | 5759.7 | 5099.3 | 4670.1 | 4398.7 | 4383.0 |
| 62.5° | 6322.5 | 6278.0 | 6223.4 | 6398.6 | 6387.1 | 6200.4 | 5354.9 | 4576.8 | 4002.5 | 3711.1 | 3685.2 |
| 65° | 6519.2 | 6479.0 | 6463.2 | 6601.0 | 6582.3 | 5891.8 | 4724.6 | 3721.1 | 2924.4 | 2595.6 | 2585.6 |
| 67.5° | 6575.1 | 6559.4 | 6644.1 | 6878.1 | 6586.6 | 5271.6 | 3705.3 | 2467.8 | 1570.6 | 1259.0 | 1240.4 |
| 70° | 6365.5 | 6364.1 | 6606.7 | 6941.2 | 5989.4 | 4026.9 | 2186.5 | 1112.6 | 789.6 | 700.6 | 689.1 |
| 72.5° | 6092.8 | 6088.5 | 6280.8 | 5988.0 | 4441.8 | 2203.7 | 920.2 | 595.8 | 493.9 | 469.4 | 469.4 |
| 75° | 5644.9 | 5633.4 | 5778.4 | 4555.2 | 2498.0 | 829.8 | 488.1 | 409.2 | 387.6 | 383.3 | 383.3 |
| 77.5° | 4601.2 | 4505.0 | 4276.7 | 2815.3 | 871.4 | 407.7 | 323.0 | 321.6 | 308.7 | 307.2 | 307.2 |
| 80° | 1513.1 | 1513.1 | 1758.6 | 1073.8 | 384.7 | 251.2 | 228.3 | 239.7 | 226.8 | 218.2 | 216.8 |
| 82.5° | 246.9 | 340.2 | 483.8 | 307.2 | 208.2 | 156.5 | 140.7 | 149.3 | 156.5 | 124.9 | 124.9 |
| 85° | 97.6 | 127.8 | 186.6 | 143.6 | 96.2 | 63.2 | 67.5 | 74.7 | 66.0 | 57.4 | 56.0 |
| 87.5° | 37.3 | 45.9 | 66.0 | 34.5 | 20.1 | 11.5 | 7.2 | 7.2 | 5.7 | 5.7 | 5.7 |
| 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: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-2-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-730-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

| | | | | | |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K): | 2993 | CRI (Ra): | 71.8 | R9: | -38.3 |
| CIE u': | 0.2508 | R1: | 67.5 | R10: | 62.5 |
| CIE v': | 0.5215 | R2: | 82.9 | R11: | 63.7 |
| Duv: | 0.0000 | R3: | 94.7 | R12: | 57.8 |
| CIE x: | 0.4374 | R4: | 67.7 | R13: | 70.4 |
| CIE y: | 0.4043 | R5: | 67.9 | R14: | 97.3 |
| CIE z: | 0.1583 | R6: | 77.6 | | |
| Peak Wavelength (nm): | 593 | R7: | 76.0 | | |
| Dominant Wavelength (nm): | 582 | R8: | 40.5 | | |
| Purity: | 53 | | | | |
| Rf: | 75.7 | | | | |
| Rg: | 93.9 | | | | |



Test Conditions

Stabilization Time: 53M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.0./44%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-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: SP1-1908-441-2-R4

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

REPORT NUMBER: SP1-1908-441-2-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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 3101.5 M/P: 0.45

| 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 | 2397 | NR | 490 | 24908 | NR | 620 | 118784 | NR | 750 | 5037 | NR | 880 | 2677 | NR |
| 365 | 2084 | NR | 495 | 30998 | NR | 625 | 108951 | NR | 755 | 4413 | NR | 885 | 2940 | NR |
| 370 | 2143 | NR | 500 | 37103 | NR | 630 | 99573 | NR | 760 | 4189 | NR | 890 | 3116 | NR |
| 375 | 2413 | NR | 505 | 42987 | NR | 635 | 90444 | NR | 765 | 3677 | NR | 895 | 3345 | NR |
| 380 | 2172 | NR | 510 | 48702 | NR | 640 | 80749 | NR | 770 | 3366 | NR | 900 | 2312 | NR |
| 385 | 1997 | NR | 515 | 53741 | NR | 645 | 71664 | NR | 775 | 3211 | NR | 905 | 2829 | NR |
| 390 | 1830 | NR | 520 | 57283 | NR | 650 | 63936 | NR | 780 | 2682 | NR | 910 | 2783 | NR |
| 395 | 1861 | NR | 525 | 61876 | NR | 655 | 56611 | NR | 785 | 2804 | NR | 915 | 2662 | NR |
| 400 | 1717 | NR | 530 | 65398 | NR | 660 | 49763 | NR | 790 | 2581 | NR | 920 | 3047 | NR |
| 405 | 1761 | NR | 535 | 69597 | NR | 665 | 42891 | NR | 795 | 2711 | NR | 925 | 2256 | NR |
| 410 | 2680 | NR | 540 | 74214 | NR | 670 | 36939 | NR | 800 | 2609 | NR | 930 | 2976 | NR |
| 415 | 4374 | NR | 545 | 79911 | NR | 675 | 31946 | NR | 805 | 2581 | NR | 935 | 3503 | NR |
| 420 | 8071 | NR | 550 | 86153 | NR | 680 | 27385 | NR | 810 | 2404 | NR | 940 | 4226 | NR |
| 425 | 15169 | NR | 555 | 93952 | NR | 685 | 23504 | NR | 815 | 2556 | NR | 945 | 2930 | NR |
| 430 | 26038 | NR | 560 | 102904 | NR | 690 | 20210 | NR | 820 | 2742 | NR | 950 | 2115 | NR |
| 435 | 41316 | NR | 565 | 112009 | NR | 695 | 17459 | NR | 825 | 2014 | NR | 955 | 2634 | NR |
| 440 | 59674 | NR | 570 | 121662 | NR | 700 | 15207 | NR | 830 | 2488 | NR | 960 | 4200 | NR |
| 445 | 72751 | NR | 575 | 130476 | NR | 705 | 13322 | NR | 835 | 2625 | NR | 965 | 1982 | NR |
| 450 | 65091 | NR | 580 | 137926 | NR | 710 | 11676 | NR | 840 | 2754 | NR | 970 | 3613 | NR |
| 455 | 44894 | NR | 585 | 143406 | NR | 715 | 10626 | NR | 845 | 2708 | NR | 975 | 4034 | NR |
| 460 | 32712 | NR | 590 | 147039 | NR | 720 | 9416 | NR | 850 | 2608 | NR | 980 | 3922 | NR |
| 465 | 25296 | NR | 595 | 147365 | NR | 725 | 8333 | NR | 855 | 2605 | NR | 985 | 1909 | NR |
| 470 | 19318 | NR | 600 | 145800 | NR | 730 | 7134 | NR | 860 | 1765 | NR | 990 | 3617 | NR |
| 475 | 17265 | NR | 605 | 141363 | NR | 735 | 6437 | NR | 865 | 2581 | NR | 995 | 4767 | NR |
| 480 | 18260 | NR | 610 | 134199 | NR | 740 | 5834 | NR | 870 | 3016 | NR | 1000 | 2528 | NR |
| 485 | 20845 | NR | 615 | 127683 | NR | 745 | 5500 | NR | 875 | 3952 | NR | | | |

REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Summary

$R_f = 75.7$
 $R_g = 93.9$
 CIE $R_a = 71.8$
 $R_9 = -38.3$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 | |



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Measure Comparisons



(END OF REPORT)