

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: P633362

Luminaire Tested: GWS-SA2E-750-U-SL4-W-HSS

Issue Date: 1/10/2023

Test Information

Test Method: LM-79-2019
Report Number: P633362
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-36)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 1/10/2023
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: McGRAW-EDISON
Catalog Number: GWS-SA2E-750-U-SL4-W-HSS
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: (32) 5000K CCT, 70 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 11759.9 lumens
Efficiency: N/A
Efficacy: 108.7 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G2

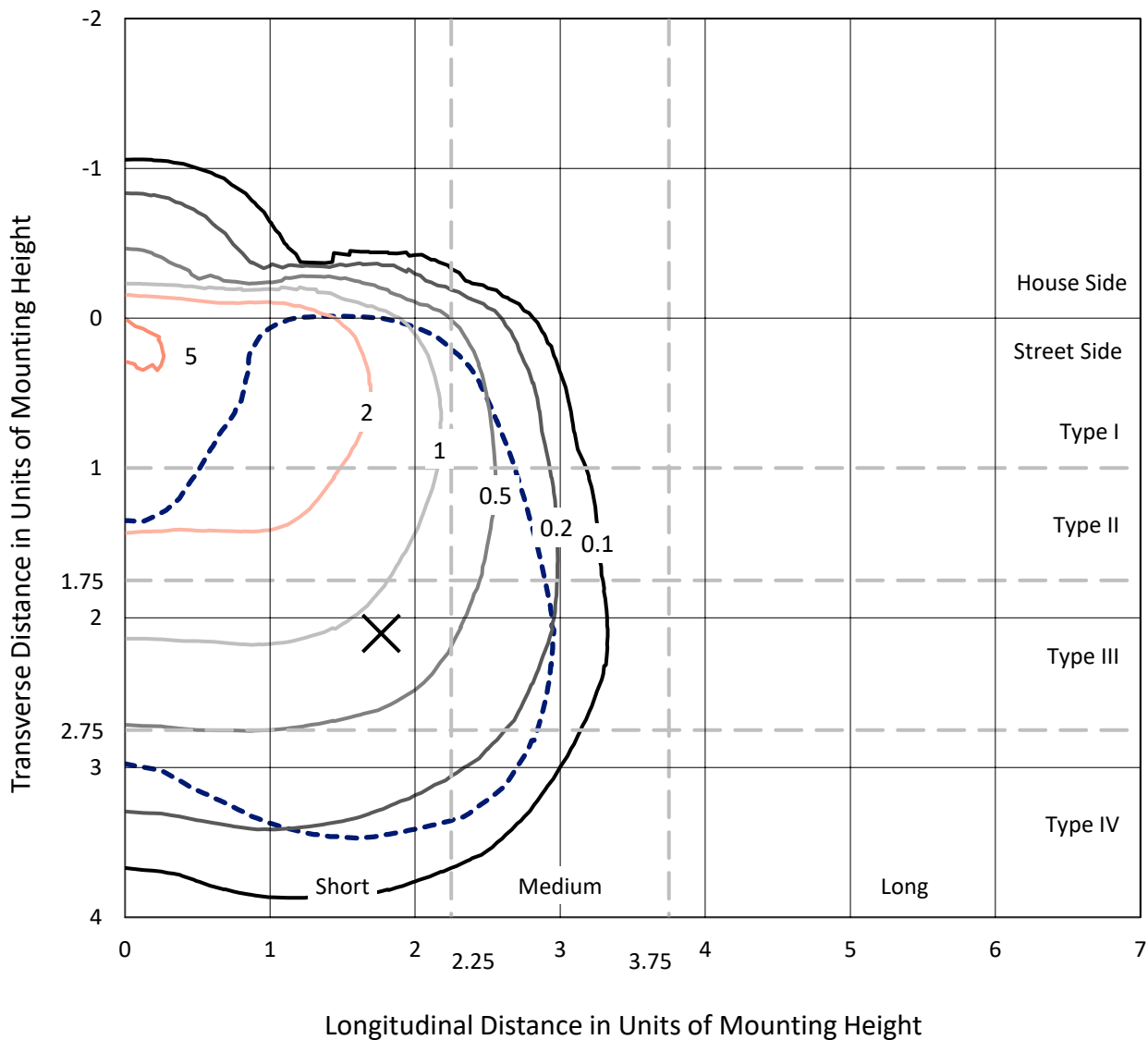
Input Watts (W): 108.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 0
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



REPORT NUMBER: P633362
 CATALOG NUMBER: GWS-SA2E-750-U-SL4-W-HSS

Iso-Footcandle Lines of Horizontal Illumination

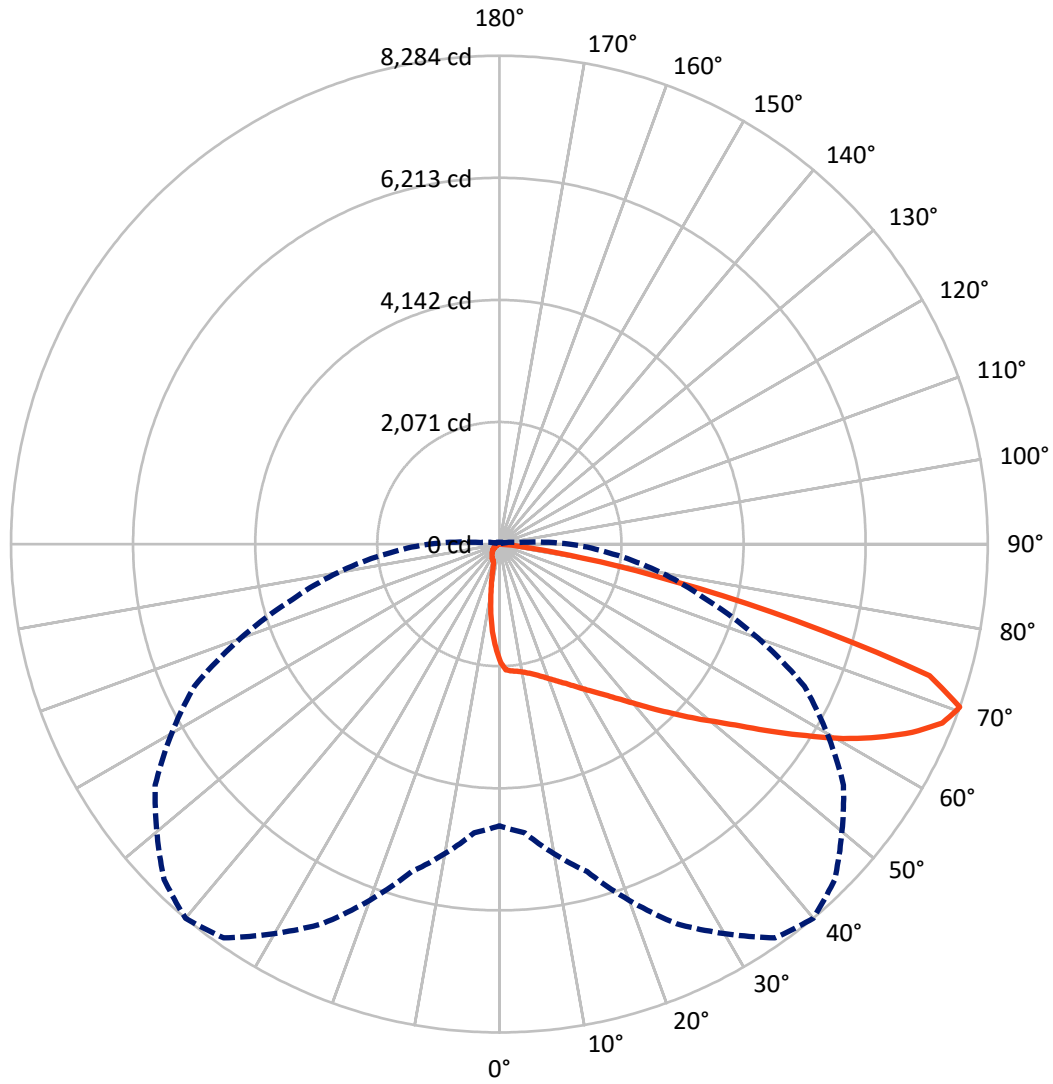
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.4 fc
 Type IV - Short - N/A

REPORT NUMBER: P633362
CATALOG NUMBER: GWS-SA2E-750-U-SL4-W-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 40-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 961.7 | 0.0 | 961.7 |
| | % Fixture | 8.2 | 0.0 | 8.2 |
| Street Side | Lumens | 10798.2 | 0.0 | 10798.2 |
| | % Fixture | 91.8 | 0.0 | 91.8 |
| Total | Lumens | 11759.9 | 0.0 | 11759.9 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 168.7 | 1.4 |
| 10°-20° | 427.8 | 3.6 |
| 20°-30° | 715.9 | 6.1 |
| 30°-40° | 1124.5 | 9.6 |
| 40°-50° | 1778.6 | 15.1 |
| 50°-60° | 2594.6 | 22.1 |
| 60°-70° | 3216.3 | 27.4 |
| 70°-80° | 1627.3 | 13.8 |
| 80°-90° | 106.2 | 0.9 |
| 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° | 11759.9 | 100.0 |
| 0°-180° | 11759.9 | 100.0 |

Coefficient of Utilization



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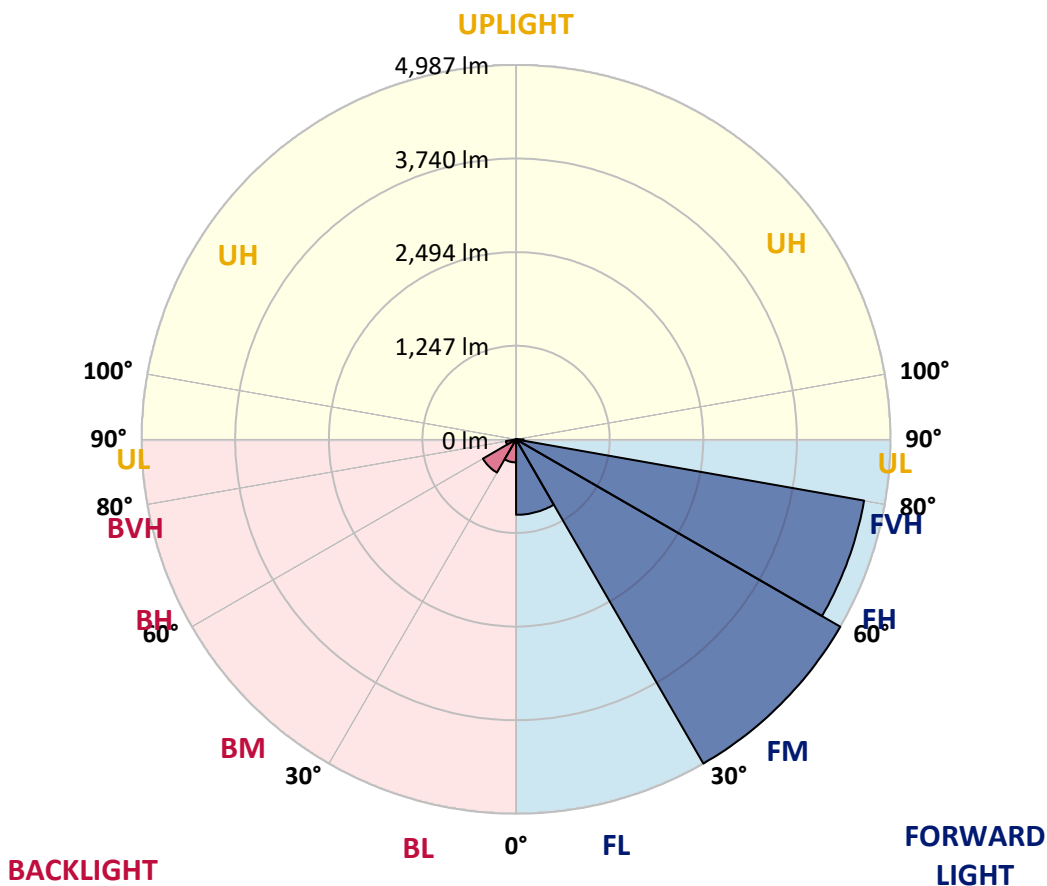
CATALOG NUMBER: GWS-SA2E-750-U-SL4-W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1005.3 | 8.5 | | | |
| FM (30°-60°) | 4987.2 | 42.4 | | | |
| FH (60°-80°) | 4706.5 | 40.0 | | | G2/5000 |
| FVH (80°-90°) | 99.2 | 0.8 | | | G1/100 |
| BL (0°-30°) | 307.1 | 2.6 | B1/500 | | |
| BM (30°-60°) | 510.4 | 4.3 | B1/1000 | | |
| BH (60°-80°) | 137.1 | 1.2 | B1/500 | | G1/500 |
| BVH (80°-90°) | 7.0 | 0.1 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 40° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 |
| 2.5° | 2145.3 | 2152.8 | 2151.7 | 2154.9 | 2147.5 | 2135.7 | 2133.5 | 2117.5 | 2088.6 | 2052.2 | 2011.6 |
| 5° | 2189.2 | 2197.7 | 2191.3 | 2188.1 | 2174.2 | 2161.4 | 2158.2 | 2141.0 | 2107.9 | 2058.6 | 1988.0 |
| 7.5° | 2226.6 | 2228.8 | 2224.5 | 2217.0 | 2196.7 | 2179.6 | 2167.8 | 2144.2 | 2104.7 | 2055.4 | 1974.1 |
| 10° | 2233.0 | 2232.0 | 2234.1 | 2235.2 | 2222.3 | 2207.4 | 2197.7 | 2165.6 | 2115.4 | 2062.9 | 1975.2 |
| 12.5° | 2225.6 | 2225.6 | 2239.5 | 2255.5 | 2255.5 | 2248.0 | 2238.4 | 2209.5 | 2150.7 | 2088.6 | 1996.6 |
| 15° | 2235.2 | 2238.4 | 2265.1 | 2295.1 | 2304.7 | 2297.2 | 2293.0 | 2263.0 | 2202.0 | 2133.5 | 2035.1 |
| 17.5° | 2269.4 | 2272.6 | 2315.4 | 2360.4 | 2372.1 | 2363.6 | 2355.0 | 2325.1 | 2259.8 | 2184.9 | 2079.0 |
| 20° | 2319.7 | 2328.3 | 2382.8 | 2440.6 | 2451.3 | 2440.6 | 2423.5 | 2381.8 | 2316.5 | 2240.5 | 2120.7 |
| 22.5° | 2411.7 | 2417.1 | 2475.9 | 2536.9 | 2542.3 | 2525.2 | 2499.5 | 2441.7 | 2373.2 | 2299.4 | 2167.8 |
| 25° | 2533.7 | 2541.2 | 2600.1 | 2658.9 | 2645.0 | 2619.3 | 2584.0 | 2518.7 | 2440.6 | 2368.9 | 2227.7 |
| 27.5° | 2679.2 | 2687.8 | 2745.6 | 2796.9 | 2760.6 | 2730.6 | 2691.0 | 2609.7 | 2530.5 | 2465.2 | 2304.7 |
| 30° | 2836.5 | 2844.0 | 2895.4 | 2941.4 | 2893.2 | 2857.9 | 2810.8 | 2727.4 | 2647.1 | 2597.9 | 2413.9 |
| 32.5° | 2988.5 | 2987.4 | 3036.6 | 3074.1 | 3024.8 | 2997.0 | 2954.2 | 2869.7 | 2805.5 | 2784.1 | 2576.5 |
| 35° | 3129.7 | 3129.7 | 3170.4 | 3207.8 | 3172.5 | 3157.5 | 3117.9 | 3050.5 | 3014.1 | 3039.8 | 2793.7 |
| 37.5° | 3272.0 | 3264.5 | 3303.0 | 3344.8 | 3341.5 | 3342.6 | 3320.2 | 3288.1 | 3290.2 | 3381.1 | 3092.2 |
| 40° | 3389.7 | 3386.5 | 3431.4 | 3486.0 | 3528.8 | 3563.0 | 3549.1 | 3560.9 | 3628.3 | 3798.4 | 3474.2 |
| 42.5° | 3483.9 | 3491.3 | 3549.1 | 3635.8 | 3743.9 | 3813.4 | 3823.0 | 3871.2 | 4044.5 | 4307.7 | 3905.4 |
| 45° | 3591.9 | 3593.0 | 3673.2 | 3805.9 | 3978.2 | 4088.4 | 4126.9 | 4251.0 | 4497.1 | 4836.3 | 4378.4 |
| 47.5° | 3724.6 | 3711.8 | 3801.6 | 3987.8 | 4237.1 | 4399.8 | 4468.2 | 4623.4 | 5004.3 | 5352.0 | 4763.6 |
| 50° | 3871.2 | 3847.7 | 3949.3 | 4202.9 | 4527.1 | 4730.4 | 4869.5 | 5096.3 | 5507.2 | 5775.8 | 5050.3 |
| 52.5° | 4041.3 | 4018.8 | 4134.4 | 4450.0 | 4874.8 | 5122.0 | 5300.7 | 5529.7 | 5938.4 | 6098.9 | 5221.5 |
| 55° | 4257.5 | 4235.0 | 4357.0 | 4746.4 | 5285.7 | 5606.7 | 5793.9 | 5986.5 | 6339.6 | 6337.5 | 5345.6 |
| 57.5° | 4497.1 | 4466.1 | 4635.2 | 5120.9 | 5798.2 | 6132.1 | 6322.5 | 6416.7 | 6644.6 | 6522.6 | 5429.1 |
| 60° | 4772.1 | 4744.3 | 4978.6 | 5567.1 | 6389.9 | 6699.1 | 6819.0 | 6780.5 | 6895.0 | 6631.7 | 5400.2 |
| 62.5° | 5020.3 | 5007.5 | 5298.5 | 6040.0 | 6953.8 | 7214.9 | 7248.0 | 7080.1 | 7079.0 | 6633.9 | 5205.5 |
| 65° | 5278.2 | 5302.8 | 5735.1 | 6584.7 | 7520.9 | 7696.4 | 7639.7 | 7377.5 | 7152.8 | 6371.7 | 4629.8 |
| 67.5° | 5374.5 | 5446.2 | 6022.9 | 7076.9 | 7968.1 | 8105.1 | 8005.6 | 7526.2 | 6845.7 | 5490.1 | 3525.6 |
| 70° | 4779.6 | 4914.4 | 5751.1 | 7104.7 | 8153.3 | 8283.8 | 8045.2 | 7126.1 | 5707.3 | 3636.9 | 1931.3 |
| 72.5° | 3634.7 | 3792.0 | 4792.4 | 5817.5 | 7332.6 | 7630.0 | 7222.4 | 5805.7 | 3678.6 | 1593.2 | 648.4 |
| 75° | 2034.0 | 2204.2 | 3569.5 | 4380.5 | 4923.0 | 5194.8 | 5045.0 | 3724.6 | 1629.6 | 416.2 | 193.7 |
| 77.5° | 688.0 | 744.7 | 1660.6 | 2710.3 | 3249.5 | 3005.6 | 2544.4 | 1850.0 | 599.2 | 158.4 | 102.7 |
| 80° | 407.7 | 429.1 | 618.4 | 1349.2 | 1709.8 | 1417.7 | 1119.2 | 683.7 | 304.9 | 84.5 | 71.7 |
| 82.5° | 122.0 | 144.4 | 341.3 | 500.8 | 669.8 | 417.3 | 353.1 | 390.5 | 158.4 | 46.0 | 59.9 |
| 85° | 0.0 | 0.0 | 72.8 | 155.1 | 175.5 | 68.5 | 68.5 | 221.5 | 28.9 | 19.3 | 43.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 5.3 | 3.2 | 4.3 | 9.6 |
| 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: P633362
 CATALOG NUMBER: GWS-SA2E-750-U-SL4-W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 | 1995.5 |
| 2.5° | 1982.7 | 1945.2 | 1901.4 | 1859.6 | 1820.0 | 1768.7 | 1744.1 | 1714.1 | 1688.4 | 1674.5 | 1682.0 |
| 5° | 1943.1 | 1884.2 | 1794.4 | 1703.4 | 1611.4 | 1524.7 | 1446.6 | 1394.2 | 1347.1 | 1322.5 | 1327.8 |
| 7.5° | 1908.8 | 1829.7 | 1689.5 | 1540.8 | 1393.1 | 1244.4 | 1123.5 | 1029.3 | 956.6 | 926.6 | 921.3 |
| 10° | 1893.9 | 1794.4 | 1596.4 | 1382.4 | 1155.6 | 955.5 | 784.3 | 680.5 | 606.7 | 570.3 | 576.7 |
| 12.5° | 1901.4 | 1776.2 | 1517.2 | 1227.3 | 933.0 | 699.8 | 536.1 | 438.7 | 386.3 | 364.9 | 359.5 |
| 15° | 1922.8 | 1771.9 | 1446.6 | 1068.9 | 720.1 | 489.0 | 370.2 | 330.6 | 319.9 | 317.8 | 317.8 |
| 17.5° | 1947.4 | 1773.0 | 1373.9 | 908.4 | 546.8 | 362.7 | 316.7 | 309.2 | 306.0 | 303.9 | 304.9 |
| 20° | 1972.0 | 1773.0 | 1290.4 | 745.8 | 410.9 | 313.5 | 301.7 | 296.4 | 293.2 | 292.1 | 292.1 |
| 22.5° | 2001.9 | 1773.0 | 1197.3 | 594.9 | 329.6 | 297.5 | 287.8 | 284.6 | 281.4 | 280.3 | 279.3 |
| 25° | 2038.3 | 1774.0 | 1094.6 | 465.4 | 299.6 | 283.5 | 276.1 | 272.8 | 269.6 | 267.5 | 267.5 |
| 27.5° | 2090.7 | 1782.6 | 981.2 | 362.7 | 282.5 | 270.7 | 264.3 | 261.1 | 257.9 | 254.7 | 254.7 |
| 30° | 2166.7 | 1804.0 | 853.8 | 299.6 | 266.4 | 256.8 | 250.4 | 248.2 | 245.0 | 241.8 | 240.7 |
| 32.5° | 2280.1 | 1841.4 | 722.2 | 268.6 | 251.4 | 241.8 | 234.3 | 232.2 | 229.0 | 225.8 | 224.7 |
| 35° | 2438.5 | 1909.9 | 593.8 | 249.3 | 232.2 | 222.6 | 218.3 | 217.2 | 212.9 | 209.7 | 209.7 |
| 37.5° | 2670.7 | 2021.2 | 470.8 | 230.0 | 216.1 | 208.6 | 203.3 | 201.2 | 196.9 | 193.7 | 192.6 |
| 40° | 2954.2 | 2165.6 | 365.9 | 215.1 | 201.2 | 193.7 | 188.3 | 185.1 | 179.8 | 175.5 | 173.3 |
| 42.5° | 3315.9 | 2342.2 | 288.9 | 199.0 | 187.2 | 179.8 | 175.5 | 169.1 | 161.6 | 155.1 | 154.1 |
| 45° | 3692.5 | 2524.1 | 238.6 | 184.0 | 174.4 | 168.0 | 162.6 | 154.1 | 143.4 | 135.9 | 133.7 |
| 47.5° | 3981.4 | 2637.5 | 208.6 | 168.0 | 160.5 | 155.1 | 148.7 | 138.0 | 125.2 | 116.6 | 114.5 |
| 50° | 4187.9 | 2654.6 | 186.2 | 153.0 | 148.7 | 143.4 | 133.7 | 120.9 | 107.0 | 98.4 | 96.3 |
| 52.5° | 4289.6 | 2577.6 | 168.0 | 139.1 | 135.9 | 130.5 | 118.8 | 104.9 | 89.9 | 81.3 | 79.2 |
| 55° | 4335.6 | 2432.1 | 150.9 | 127.3 | 123.0 | 116.6 | 103.8 | 88.8 | 73.8 | 66.3 | 64.2 |
| 57.5° | 4317.4 | 2217.0 | 135.9 | 115.6 | 110.2 | 102.7 | 88.8 | 72.8 | 61.0 | 53.5 | 52.4 |
| 60° | 4182.6 | 1915.3 | 120.9 | 103.8 | 97.4 | 88.8 | 74.9 | 59.9 | 49.2 | 43.9 | 42.8 |
| 62.5° | 3891.5 | 1540.8 | 105.9 | 89.9 | 85.6 | 77.0 | 64.2 | 49.2 | 40.7 | 37.4 | 36.4 |
| 65° | 3295.5 | 1089.2 | 90.9 | 76.0 | 73.8 | 65.3 | 53.5 | 40.7 | 35.3 | 33.2 | 32.1 |
| 67.5° | 2368.9 | 662.3 | 77.0 | 65.3 | 63.1 | 55.6 | 44.9 | 35.3 | 32.1 | 31.0 | 31.0 |
| 70° | 1190.9 | 313.5 | 61.0 | 53.5 | 53.5 | 46.0 | 38.5 | 32.1 | 31.0 | 30.0 | 30.0 |
| 72.5° | 404.5 | 133.7 | 46.0 | 41.7 | 43.9 | 39.6 | 33.2 | 30.0 | 30.0 | 30.0 | 30.0 |
| 75° | 138.0 | 70.6 | 32.1 | 30.0 | 32.1 | 32.1 | 28.9 | 28.9 | 30.0 | 30.0 | 30.0 |
| 77.5° | 89.9 | 47.1 | 22.5 | 20.3 | 24.6 | 24.6 | 24.6 | 26.7 | 28.9 | 28.9 | 28.9 |
| 80° | 73.8 | 25.7 | 15.0 | 13.9 | 18.2 | 18.2 | 20.3 | 24.6 | 26.7 | 26.7 | 26.7 |
| 82.5° | 63.1 | 16.0 | 8.6 | 9.6 | 12.8 | 13.9 | 17.1 | 20.3 | 23.5 | 24.6 | 24.6 |
| 85° | 42.8 | 8.6 | 6.4 | 7.5 | 8.6 | 10.7 | 13.9 | 17.1 | 19.3 | 21.4 | 21.4 |
| 87.5° | 11.8 | 3.2 | 4.3 | 5.3 | 5.3 | 7.5 | 10.7 | 12.8 | 15.0 | 16.0 | 16.0 |
| 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: SP1-1908-441-4-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 | CRI (Ra): | 73.5 | R9: | -28.4 |
| CIE u': | 0.2101 | R1: | 70.5 | R10: | 48.6 |
| CIE v': | 0.4904 | R2: | 77.7 | R11: | 73.2 |
| Duv: | 0.0037 | R3: | 84.6 | R12: | 50.7 |
| CIE x: | 0.3493 | R4: | 74.7 | R13: | 71.2 |
| CIE y: | 0.3624 | R5: | 71.9 | R14: | 91.4 |
| CIE z: | 0.2884 | R6: | 70.7 | | |
| Peak Wavelength (nm): | 444 | R7: | 81.2 | | |
| Dominant Wavelength (nm): | 571 | R8: | 56.9 | | |
| Purity: | 13.7 | | | | |
| Rf: | 74.9 | | | | |
| Rg: | 96.3 | | | | |



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 |

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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 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 | | | |

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TM-30-18

Summary

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



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)