Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled data based on original data using

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P323040

Luminaire Tested: **GLEON-SA6B-830-U-T4W-HSS**

Issue Date: 3/3/2020

Report Generated By E0585644

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P323040 |
| | TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-19) |
| Test Lab: | INNOVATION CENTER |
| Issue Date: | 3/3/2020 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GLEON-SA6B-830-U-T4W-HSS |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE |
| | (6) 80 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS WITH HOUSE SIDE SHIELD |
| Light Source: | - |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 19684 lumens |
| Efficiency: | N/A |
| Efficacy: | 79.1 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1' x H: 0') |
| IES Classification: | Type IV - Short |
| BUG Rating: | B2 - U0 - G4 |

| | |
|---|---|
| Input Watts (W): | 249 |
| Input Voltage (V): | NR |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | NR |
| Total Harmonic Distortion (THDi): | NR |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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Scaled Data Report

REPORT NUMBER: P323040
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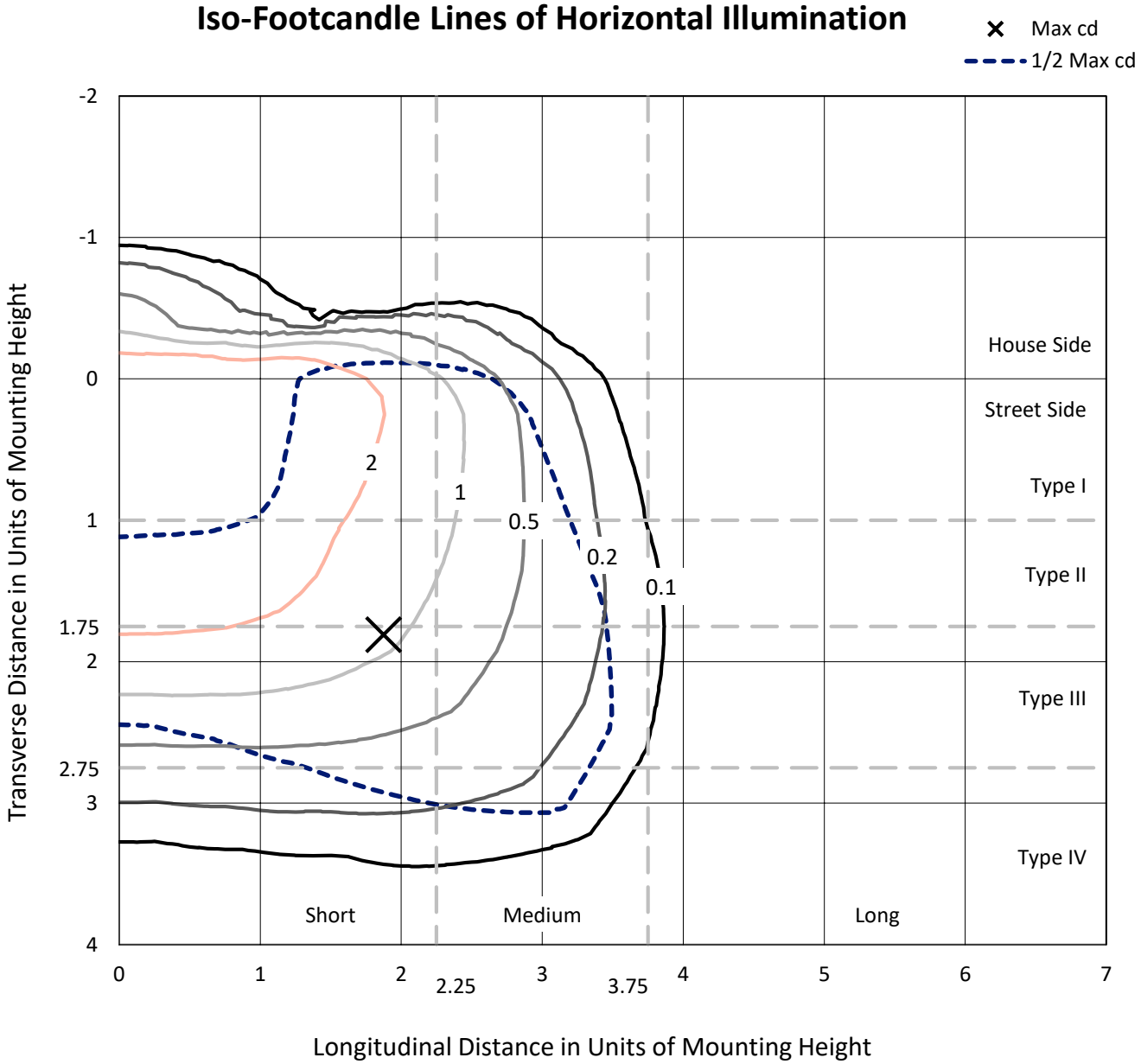
## Iso-Footcandle Lines of Horizontal Illumination




Based on 25 foot mounting height. Maximum calculated value = 4.6 fc
Type IV - Short - N/A

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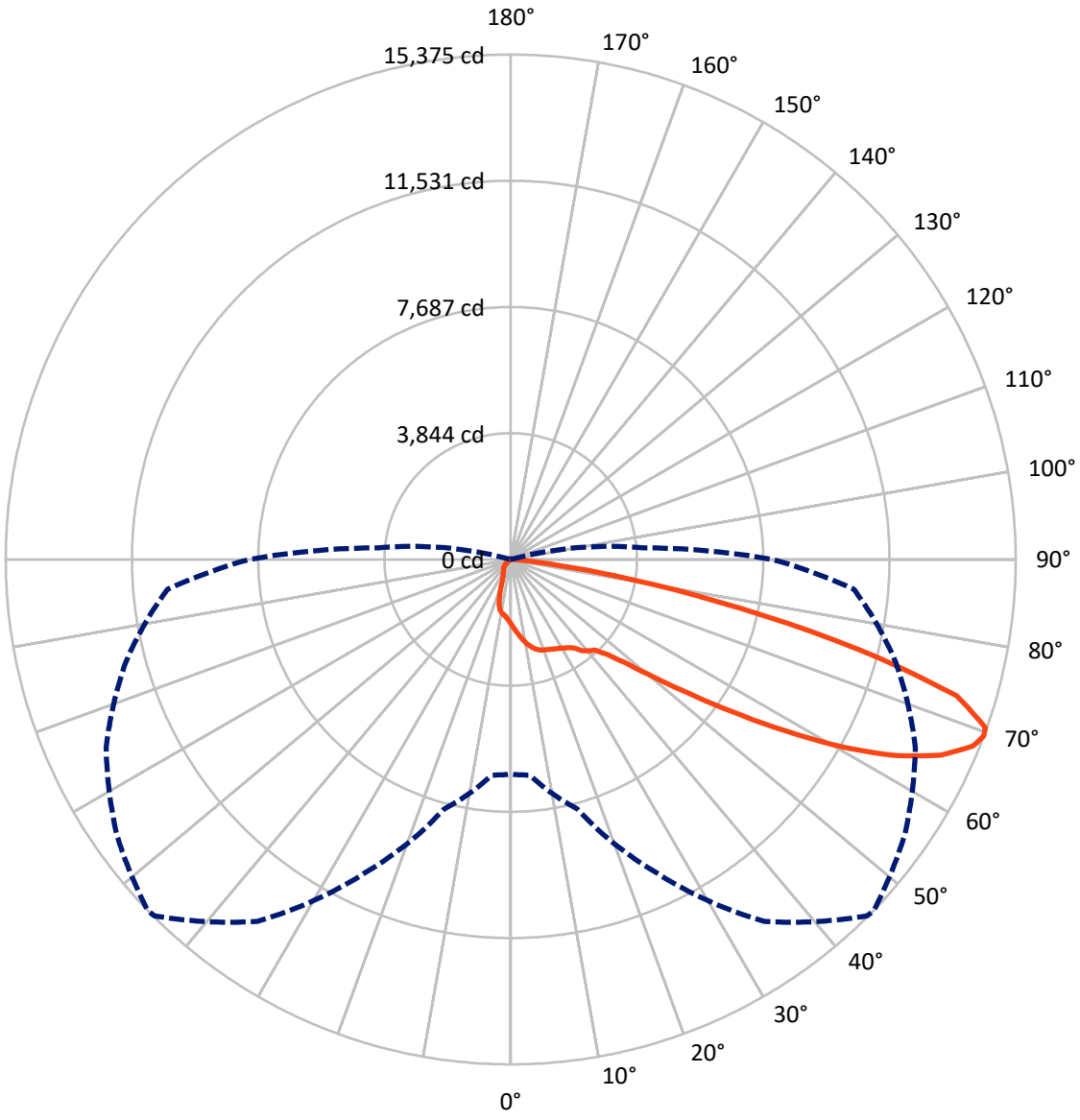
## Luminous Intensity Polar Plot



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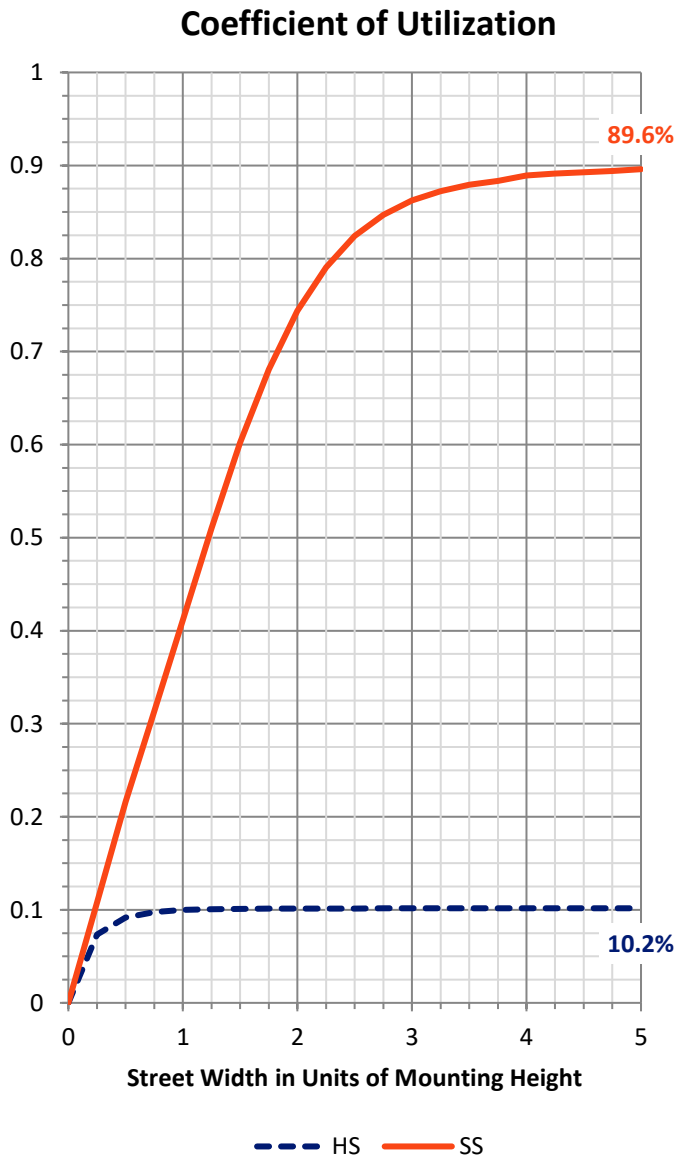
REPORT NUMBER: P323040
CATALOG NUMBER: GLEON-SA6B-830-U-T4W-HSS

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 2020.1 | 0.0 | 2020.1 |
| | % Fixture | 10.3 | 0.0 | 10.3 |
| **Street Side** | Lumens | 17663.9 | 0.0 | 17663.9 |
| | % Fixture | 89.7 | 0.0 | 89.7 |
| **Total** | Lumens | 19684.0 | 0.0 | 19684.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 196.3 | 1.0 |
| 10°-20° | 595.5 | 3.0 |
| 20°-30° | 936.6 | 4.8 |
| 30°-40° | 1343.1 | 6.8 |
| 40°-50° | 2321.4 | 11.8 |
| 50°-60° | 4586.1 | 23.3 |
| 60°-70° | 6409.5 | 32.6 |
| 70°-80° | 3096.5 | 15.7 |
| 80°-90° | 199.0 | 1.0 |
| 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° | 19684.0 | 100.0 |
| 0°-180° | 19684.0 | 100.0 |



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REPORT NUMBER: P323040
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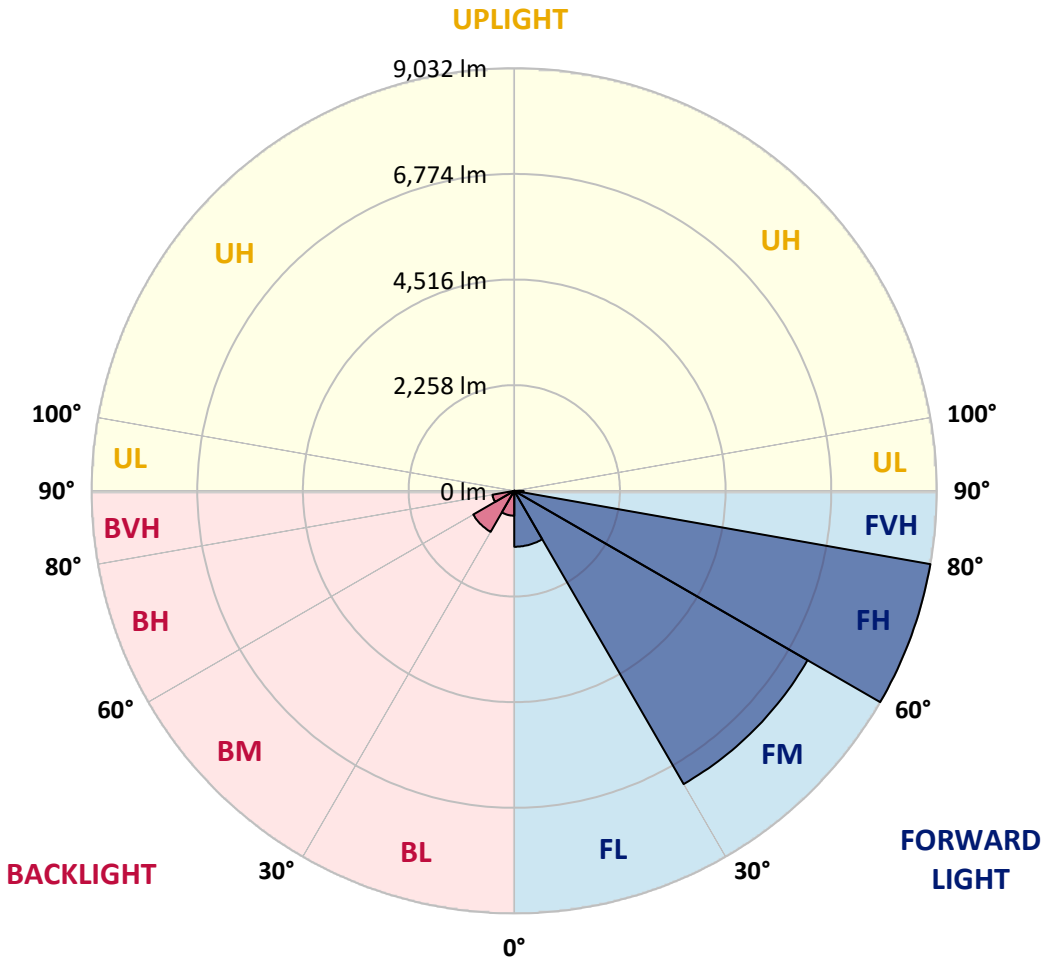
## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 1196.0 | 6.1 | | | |
| FM | (30°-60°) | 7238.2 | 36.8 | | | |
| FH | (60°-80°) | 9032.3 | 45.9 | | | G4/12000 |
| FVH | (80°-90°) | 197.4 | 1.0 | | | G2/225 |
| BL | (0°-30°) | 532.4 | 2.7 | B2/1000 | | |
| BM | (30°-60°) | 1012.3 | 5.1 | B2/2500 | | |
| BH | (60°-80°) | 473.7 | 2.4 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 1.7 | 0.0 | | | G0/10 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B2-U0-G4**
Type IV Short



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REPORT NUMBER: P323040
CATALOG NUMBER: GLEON-SA6B-830-U-T4W-HSS

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 46° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | *1972.3* | 1972.3 | 1972.3 | 1972.3 | 1972.3 |
| 2.5° | 2191.0 | 2188.2 | 2175.3 | 2169.8 | 2138.4 | 2119.9 | *2112.5* | 2089.5 | 2056.2 | 2023.0 | 1986.1 |
| 5° | 2440.2 | 2439.3 | 2415.3 | 2392.2 | 2333.1 | 2277.7 | *2267.6* | 2214.1 | 2139.3 | 2069.2 | 1999.0 |
| 7.5° | 2694.9 | 2682.9 | 2658.9 | 2614.6 | 2528.8 | 2440.2 | *2431.9* | 2356.2 | 2250.1 | 2148.5 | 2047.9 |
| 10° | 2910.9 | 2903.5 | 2872.1 | 2804.7 | 2704.1 | 2603.5 | *2593.4* | 2500.2 | 2380.2 | 2255.6 | 2127.3 |
| 12.5° | 3078.8 | 3073.3 | 3031.8 | 2947.8 | 2840.7 | 2736.4 | *2722.6* | 2639.5 | 2511.2 | 2371.9 | 2220.5 |
| 15° | 3181.3 | 3178.5 | 3127.7 | 3038.2 | 2933.0 | 2842.6 | *2830.6* | 2757.7 | 2638.6 | 2492.8 | 2322.0 |
| 17.5° | 3205.3 | 3206.2 | 3153.6 | 3063.1 | 2976.4 | 2911.8 | *2902.6* | 2847.2 | 2747.5 | 2602.6 | 2423.6 |
| 20° | 3151.7 | 3162.8 | 3115.8 | 3037.3 | 2983.8 | 2949.6 | *2942.2* | 2909.0 | 2825.0 | 2688.4 | 2504.8 |
| 22.5° | 3076.1 | 3081.6 | 3049.3 | 2996.7 | 2974.5 | 2981.0 | *2977.3* | 2958.9 | 2887.8 | 2762.3 | 2585.1 |
| 25° | 3029.9 | 3029.9 | 3010.5 | 2966.2 | 2981.0 | 3020.7 | *3021.6* | 3017.9 | 2961.6 | 2852.7 | 2682.9 |
| 27.5° | 3028.1 | 3022.5 | 3000.4 | 2967.2 | 3007.8 | 3068.7 | *3072.4* | 3097.3 | 3062.2 | 2962.5 | 2804.7 |
| 30° | 3101.9 | 3095.4 | 3048.4 | 3005.0 | 3056.7 | 3122.2 | *3131.4* | 3185.9 | 3168.4 | 3081.6 | 2940.4 |
| 32.5° | 3274.5 | 3251.4 | 3147.1 | 3076.1 | 3114.8 | 3193.3 | *3205.3* | 3292.0 | 3319.7 | 3228.3 | 3071.5 |
| 35° | 3510.8 | 3437.8 | 3287.4 | 3210.8 | 3214.5 | 3296.6 | *3307.7* | 3435.1 | 3517.2 | 3363.1 | 3173.0 |
| 37.5° | 3836.5 | 3800.6 | 3556.0 | 3351.1 | 3367.7 | 3492.3 | *3524.6* | 3663.0 | 3640.0 | 3436.9 | 3288.3 |
| 40° | 4550.9 | 4494.6 | 4234.3 | 3744.3 | 3514.4 | 3651.0 | *3661.2* | 3735.0 | 3736.9 | 3604.0 | 3528.3 |
| 42.5° | 5523.6 | 5500.6 | 5226.5 | 4457.7 | 3803.3 | 3757.2 | *3775.6* | 3900.2 | 4039.6 | 3956.5 | 3952.8 |
| 45° | 6600.7 | 6588.7 | 6298.0 | 5404.6 | 4387.5 | 4105.1 | *4128.2* | 4295.2 | 4562.0 | 4580.4 | 4697.6 |
| 47.5° | 7467.3 | 7461.7 | 7294.7 | 6461.3 | 5281.8 | 4694.9 | *4702.2* | 4879.4 | 5348.3 | 5579.9 | 5767.3 |
| 50° | 8257.3 | 8284.1 | 8152.1 | 7604.8 | 6500.1 | 5618.7 | *5601.2* | 5719.3 | 6472.4 | 6851.7 | 7084.3 |
| 52.5° | 9355.6 | 9393.4 | 9023.3 | 8671.7 | 7778.3 | 6764.9 | *6751.1* | 6874.8 | 7823.5 | 8107.8 | 8149.3 |
| 55° | 10325.5 | 10260.9 | 9968.4 | 9866.9 | 9337.1 | 8180.7 | *8177.0* | 8285.9 | 9130.4 | 9251.3 | 9327.9 |
| 57.5° | 10753.8 | 10728.9 | 10870.1 | 11102.6 | 10969.7 | 9853.9 | *9845.6* | 9762.6 | 10299.7 | 10312.6 | 10548.0 |
| 60° | 11024.2 | 11054.6 | 11487.5 | 12204.6 | 12535.9 | 11654.5 | *11601.0* | 11094.3 | 11416.4 | 11387.8 | 11639.8 |
| 62.5° | 10821.1 | 10881.1 | 11660.1 | 12855.2 | 13708.0 | 13226.3 | *13150.6* | 12314.4 | 12370.7 | 12272.0 | 12506.4 |
| 65° | 9743.2 | 9836.4 | 11112.8 | 12732.5 | 14289.4 | 14454.6 | *14378.0* | 13391.5 | 13128.4 | 12966.0 | 12835.9 |
| 67.5° | 7911.2 | 7966.6 | 9299.3 | 11664.7 | 14027.3 | 15187.4 | *15171.8* | 14335.6 | 13700.6 | 12848.8 | 11839.1 |
| 69° | *6537.9* | *6592.4* | *7875.2* | *10540.6* | *13450.5* | *15344.3* | *15374.8* | *14638.3* | *13591.7* | *12136.3* | *10489.8* |
| 70° | 5537.5 | 5595.6 | 6790.8 | 9577.1 | 12781.4 | 15271.4 | *15325.9* | 14609.7 | 13279.8 | 11311.2 | 9305.7 |
| 72.5° | 2904.4 | 2954.2 | 4180.8 | 6597.9 | 10419.7 | 14022.7 | *14187.9* | 13374.8 | 11256.8 | 8214.8 | 5502.4 |
| 75° | 912.8 | 941.4 | 1632.6 | 3448.9 | 7134.1 | 10903.3 | *10941.1* | 10491.7 | 7993.3 | 4518.6 | 2291.6 |
| 77.5° | 347.9 | 339.6 | 543.6 | 1270.9 | 3606.7 | 6865.5 | *7097.2* | 6556.4 | 4194.6 | 1597.6 | 528.8 |
| 80° | 187.4 | 188.3 | 282.4 | 526.1 | 1543.1 | 3528.3 | *3724.0* | 3177.6 | 1490.5 | 498.4 | 121.8 |
| 82.5° | 81.2 | 84.9 | 158.7 | 278.7 | 708.8 | 1301.3 | *1399.1* | 1164.7 | 569.4 | 335.0 | 45.2 |
| 85° | 17.5 | 19.4 | 76.6 | 151.4 | 288.9 | 365.5 | *383.0* | 377.5 | 362.7 | 260.3 | 17.5 |
| 87.5° | 0.0 | 0.0 | 34.1 | 54.5 | 72.9 | 83.1 | *72.9* | 95.1 | 200.3 | 175.4 | 9.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* | 0.0 | 0.0 | 0.0 | 0.0 |

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Scaled Data Report

REPORT NUMBER: P323040
CATALOG NUMBER: GLEON-SA6B-830-U-T4W-HSS

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 | 1972.3 |
| 2.5° | 1974.1 | 1957.5 | 1928.9 | 1897.5 | 1875.4 | 1852.3 | 1833.8 | 1825.5 | 1816.3 | 1809.8 | 1818.1 |
| 5° | 1970.4 | 1938.1 | 1882.7 | 1829.2 | 1790.4 | 1759.1 | 1733.2 | 1723.1 | 1712.9 | 1705.5 | 1704.6 |
| 7.5° | 2002.7 | 1957.5 | 1872.6 | 1794.1 | 1734.2 | 1691.7 | 1656.6 | 1641.9 | 1629.9 | 1624.3 | 1619.7 |
| 10° | 2064.6 | 2006.4 | 1892.9 | 1790.4 | 1712.9 | 1640.9 | 1565.3 | 1507.1 | 1469.3 | 1451.7 | 1445.3 |
| 12.5° | 2144.8 | 2071.9 | 1931.7 | 1809.8 | 1697.2 | 1558.8 | 1398.2 | 1259.8 | 1170.3 | 1140.7 | 1123.2 |
| 15° | 2239.0 | 2148.5 | 1982.4 | 1834.7 | 1640.0 | 1387.1 | 1114.9 | 934.0 | 850.9 | 834.3 | 815.9 |
| 17.5° | 2329.4 | 2229.8 | 2043.3 | 1839.4 | 1514.5 | 1108.4 | 816.8 | 694.0 | 661.7 | 672.8 | 675.6 |
| 20° | 2408.8 | 2310.0 | 2103.3 | 1798.8 | 1286.5 | 831.5 | 632.2 | 601.7 | 613.7 | 635.0 | 638.7 |
| 22.5° | 2489.1 | 2387.6 | 2158.7 | 1691.7 | 994.9 | 631.3 | 569.4 | 576.8 | 588.8 | 610.0 | 613.7 |
| 25° | 2586.9 | 2481.7 | 2210.4 | 1495.1 | 746.6 | 537.1 | 540.8 | 551.9 | 563.9 | 583.3 | 585.1 |
| 27.5° | 2699.5 | 2600.8 | 2244.5 | 1239.5 | 553.7 | 493.8 | 505.8 | 522.4 | 534.4 | 552.8 | 556.5 |
| 30° | 2849.0 | 2757.7 | 2255.6 | 974.6 | 464.2 | 455.0 | 460.5 | 480.8 | 498.4 | 515.0 | 517.8 |
| 32.5° | 2989.3 | 2912.7 | 2218.7 | 735.6 | 430.1 | 419.0 | 419.0 | 431.0 | 451.3 | 467.0 | 470.7 |
| 35° | 3118.5 | 3068.7 | 2100.5 | 538.1 | 404.2 | 385.8 | 376.5 | 376.5 | 389.5 | 402.4 | 406.1 |
| 37.5° | 3289.3 | 3287.4 | 1909.5 | 429.2 | 379.3 | 358.1 | 338.7 | 323.9 | 319.3 | 322.1 | 323.9 |
| 40° | 3581.8 | 3584.6 | 1660.3 | 384.9 | 358.1 | 329.5 | 299.9 | 273.2 | 248.3 | 240.0 | 239.0 |
| 42.5° | 4038.7 | 3997.1 | 1399.1 | 363.6 | 339.6 | 299.9 | 255.6 | 219.7 | 180.9 | 168.9 | 168.0 |
| 45° | 4764.1 | 4517.7 | 1122.3 | 344.2 | 320.3 | 266.7 | 211.3 | 162.4 | 131.1 | 121.8 | 121.8 |
| 47.5° | 5820.8 | 5201.5 | 869.4 | 323.0 | 294.4 | 228.9 | 159.7 | 117.2 | 96.0 | 91.4 | 92.3 |
| 50° | 6913.5 | 5871.6 | 666.3 | 296.3 | 263.0 | 189.2 | 118.1 | 84.9 | 72.9 | 72.9 | 73.8 |
| 52.5° | 7882.6 | 6362.6 | 519.6 | 267.6 | 224.3 | 148.6 | 89.5 | 66.4 | 60.9 | 60.0 | 60.9 |
| 55° | 8789.8 | 6679.1 | 397.8 | 234.4 | 178.1 | 110.7 | 68.3 | 54.5 | 50.8 | 48.9 | 48.0 |
| 57.5° | 9664.7 | 6836.0 | 298.1 | 189.2 | 129.2 | 80.3 | 54.5 | 46.1 | 42.5 | 39.7 | 38.8 |
| 60° | 10247.1 | 6708.6 | 204.9 | 139.4 | 89.5 | 58.1 | 45.2 | 39.7 | 35.1 | 32.3 | 31.4 |
| 62.5° | 10575.7 | 6360.7 | 132.0 | 100.6 | 63.7 | 43.4 | 36.0 | 33.2 | 26.8 | 24.0 | 24.0 |
| 65° | 10442.8 | 5786.7 | 92.3 | 72.0 | 46.1 | 32.3 | 26.8 | 26.8 | 19.4 | 15.7 | 14.8 |
| 67.5° | 9254.0 | 4888.7 | 70.1 | 53.5 | 33.2 | 24.0 | 20.3 | 23.1 | 12.0 | 7.4 | 7.4 |
| 69° | *7962.0* | *4051.6* | *60.0* | *44.3* | *27.7* | *19.4* | *17.5* | *21.2* | *8.3* | *5.5* | *4.6* |
| 70° | 6920.0 | 3495.1 | 54.5 | 38.8 | 23.1 | 16.6 | 15.7 | 20.3 | 8.3 | 4.6 | 3.7 |
| 72.5° | 4140.2 | 1949.2 | 41.5 | 27.7 | 14.8 | 12.9 | 12.9 | 23.1 | 8.3 | 4.6 | 3.7 |
| 75° | 1673.2 | 686.6 | 30.5 | 19.4 | 11.1 | 11.1 | 15.7 | 29.5 | 7.4 | 3.7 | 2.8 |
| 77.5° | 379.3 | 150.4 | 17.5 | 12.0 | 7.4 | 11.1 | 18.5 | 23.1 | 4.6 | 1.8 | 0.0 |
| 80° | 92.3 | 36.9 | 11.1 | 7.4 | 4.6 | 8.3 | 13.8 | 12.9 | 0.9 | 0.0 | 0.0 |
| 82.5° | 30.5 | 12.9 | 4.6 | 3.7 | 0.9 | 2.8 | 6.5 | 3.7 | 0.0 | 0.0 | 0.0 |
| 85° | 12.9 | 7.4 | 1.8 | 0.9 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 8.3 | 2.8 | 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 |

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# LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

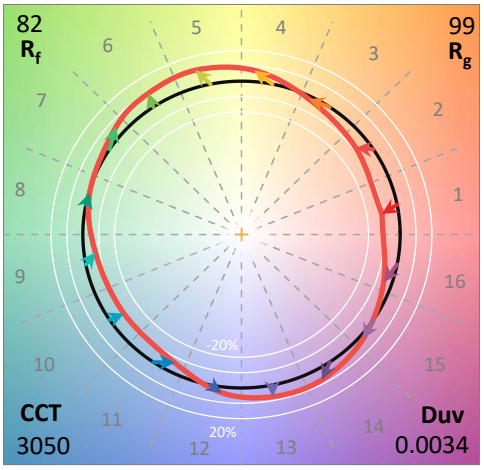
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2408-195-9 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 08/07/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | MCGRAW EDISON |
| Catalog Number: | **GALN-SB1A-830-U-5WQ** |
| Description: | GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS |

## Spectral Parameters

| | | | | | |
|---|---|---|---|---|---|
| CCT (K): | 3050 | CRI (Ra): | 81.0 | | |
| CIE u': | 0.2476 | R1: | 79.6 | R9: | 7.1 |
| CIE v': | 0.5251 | R2: | 85.6 | R10: | 67.0 |
| Duv: | 0.0034 | R3: | 92.0 | R11: | 82.7 |
| CIE x: | 0.4383 | R4: | 82.6 | R12: | 63.2 |
| CIE y: | 0.4131 | R5: | 78.9 | R13: | 80.3 |
| CIE z: | 0.1487 | R6: | 81.7 | R14: | 95.0 |
| Peak Wavelength (nm): | 603 | R7: | 85.2 | R15: | 71.7 |
| Dominant Wavelength (nm): | 581 | R8: | 62.0 | | |
| Purity: | 55.55201 | | | | |

| | |
|---|---|
| Rf: | 81.5 |
| Rg: | 99.2 |




## Test Conditions

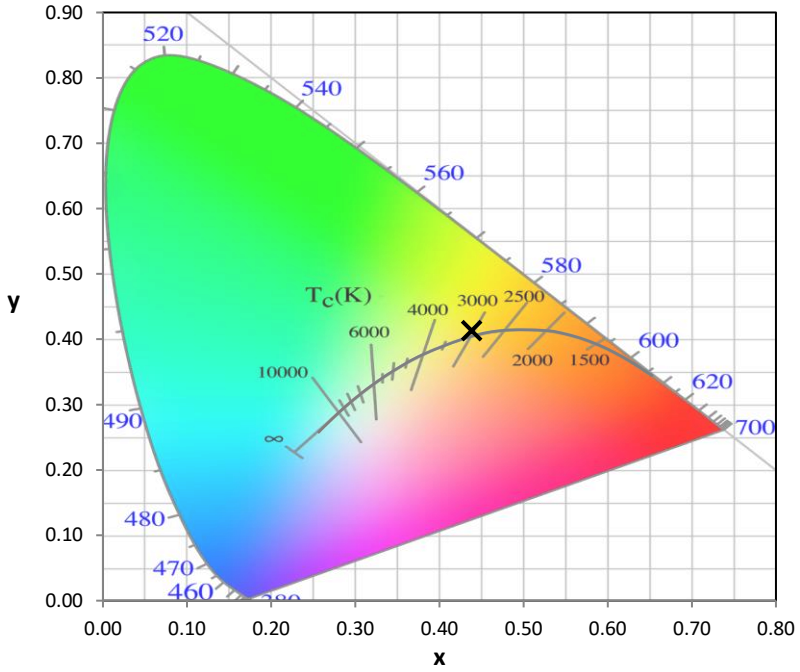
| | |
|---|---|
| Stabilization Time: | 20M |
| Operation Time: | 1H 20M |
| Sphere Temperature (°C): | 24.2 |

REPORT NUMBER: SP1-2408-195-9

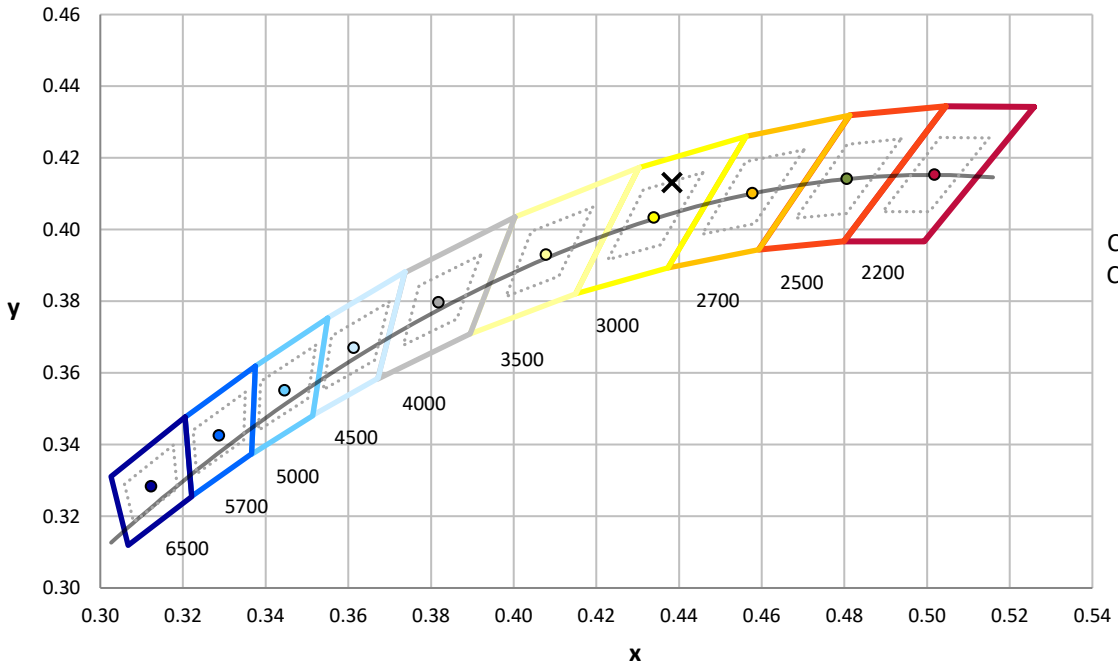
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

REPORT NUMBER: SP1-2408-195-9

## CIE 1931 Chromaticity Diagram




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

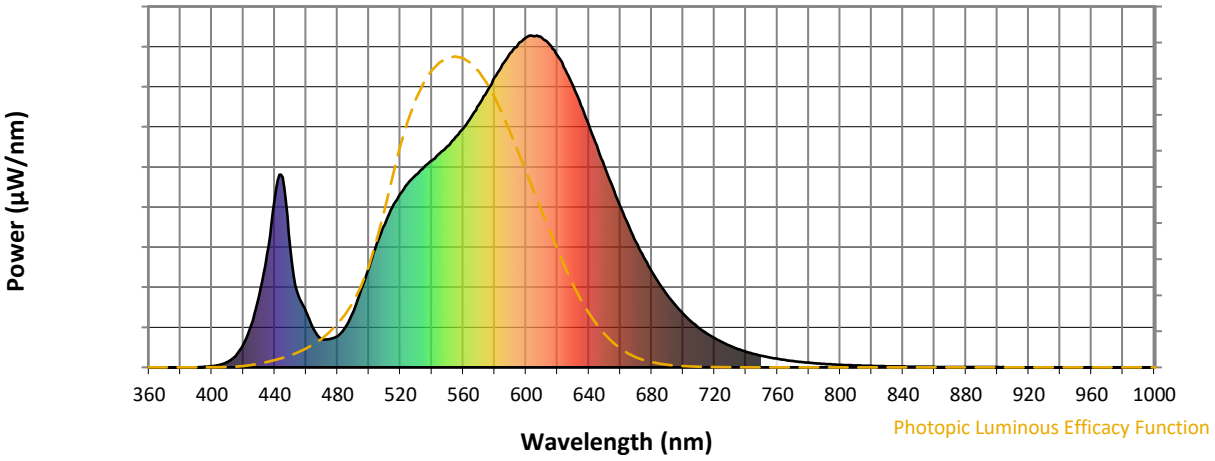



CCT = 3050K
CIE x = 0.4383
CIE y = 0.4131
Duv = 0.0034

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2408-195-9

## Photopic Flux vs. Wavelength

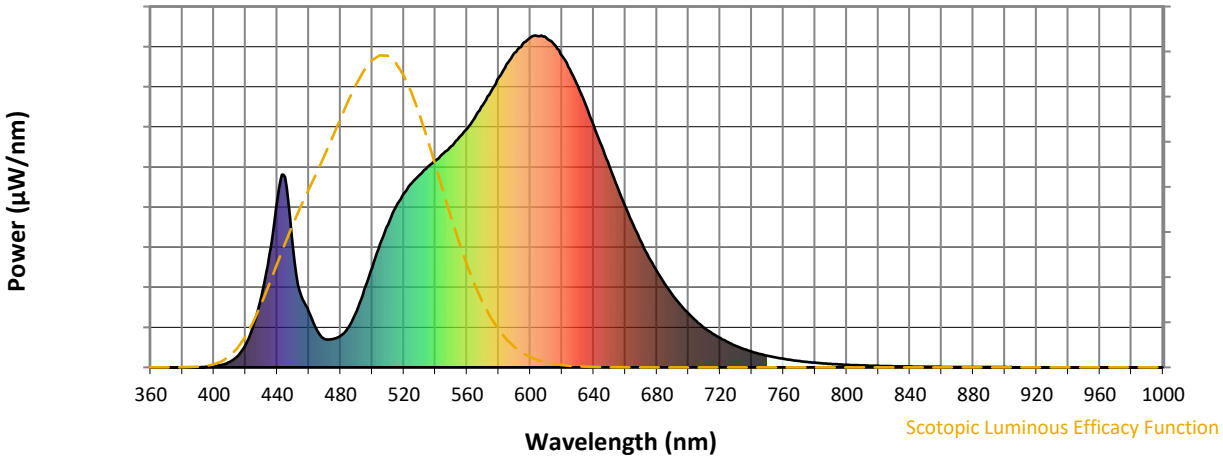



## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

## Scotopic Flux vs. Wavelength

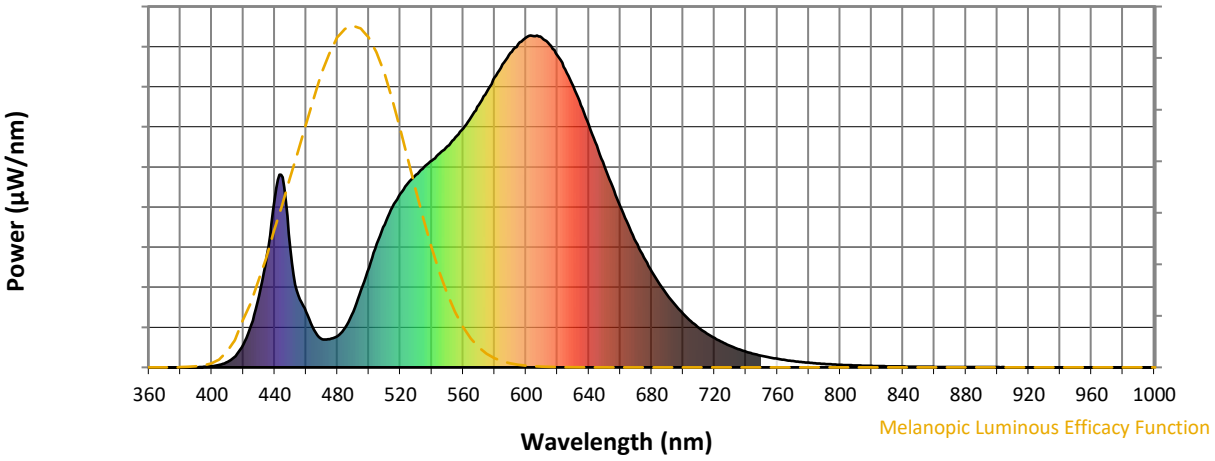



**Scotopic Lumens: NR** **S/P: 1.27**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.32**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

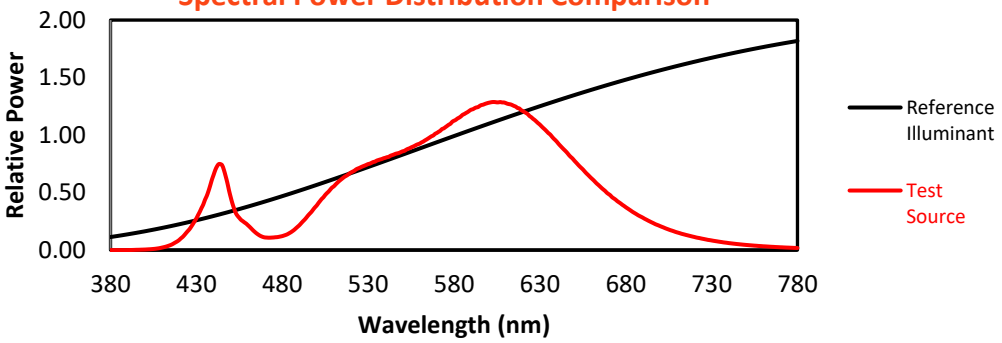
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

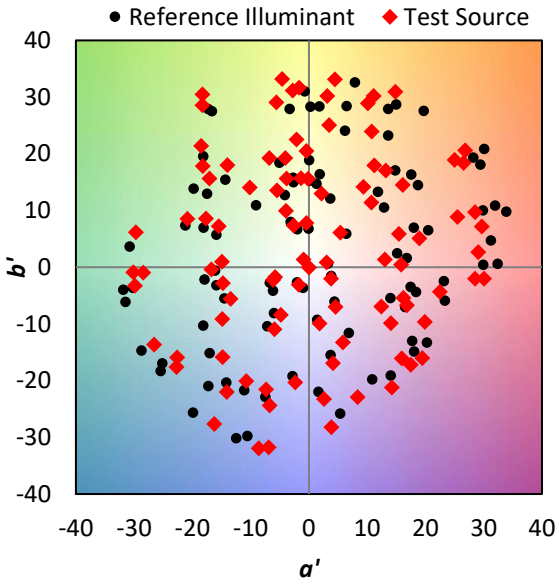
## Summary

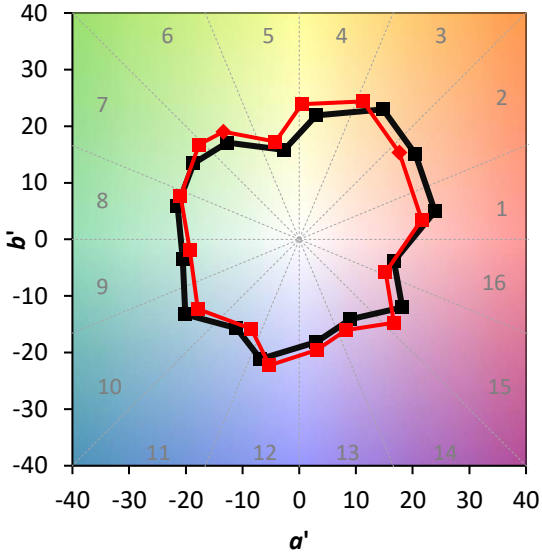
$R_f$ = 81.5
$R_g$ = 99.2
CIE $R_a$ = 81.0
$R_9$ = 7.1

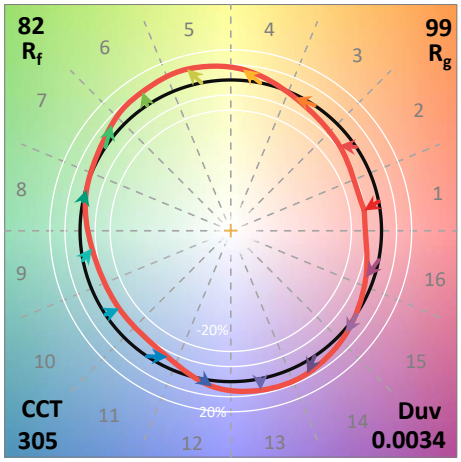
## Spectral Power Distribution Comparison

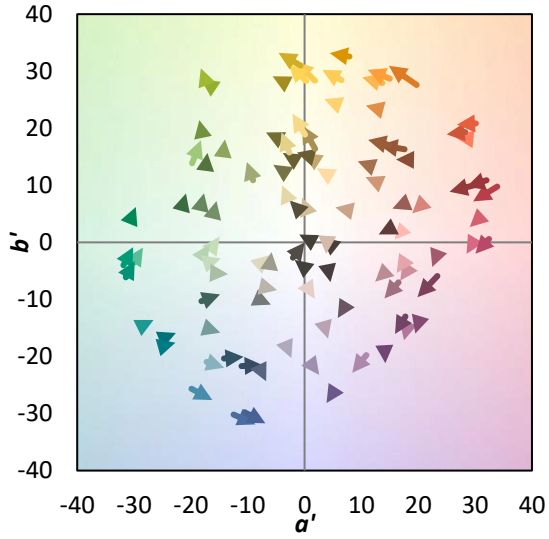



## Color Vector Graphics



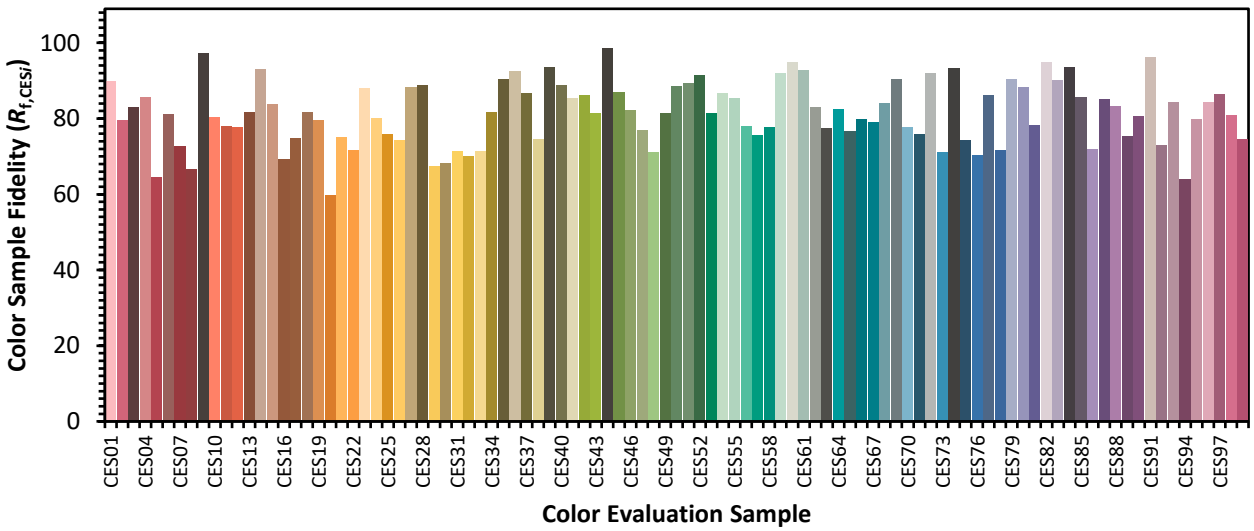



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

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

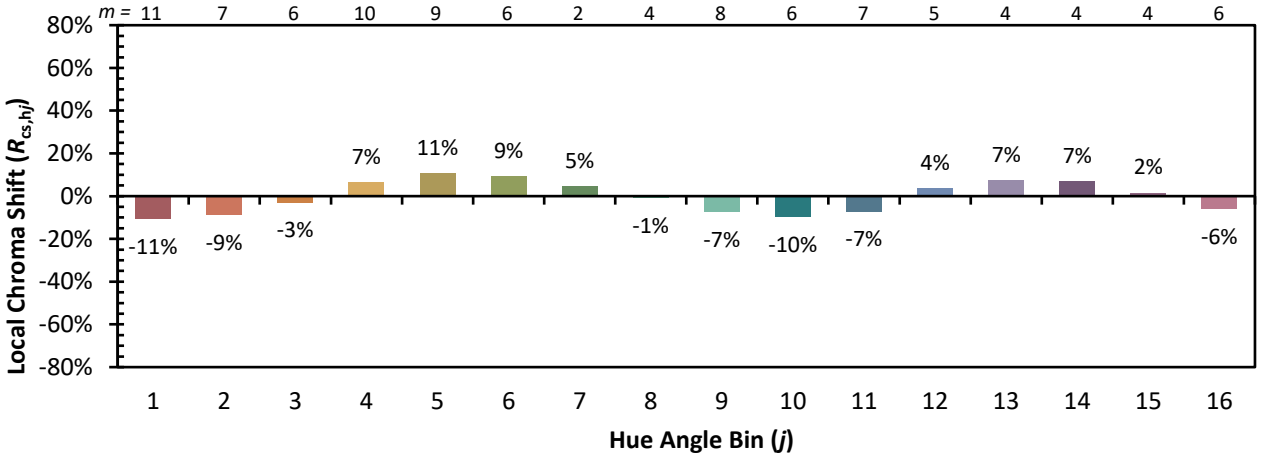
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |

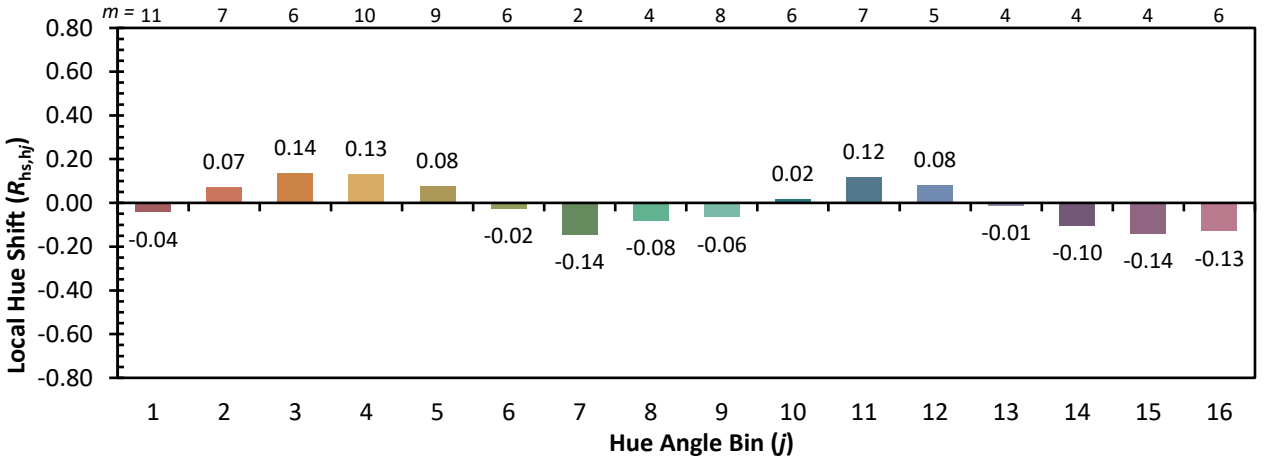


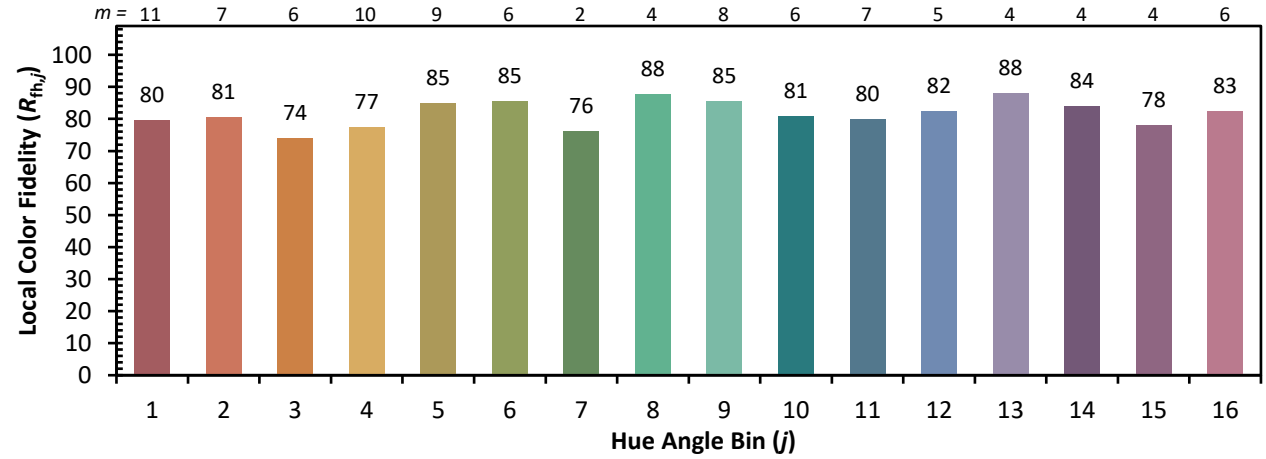
REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Color Rendition by Hue-Angle Bin



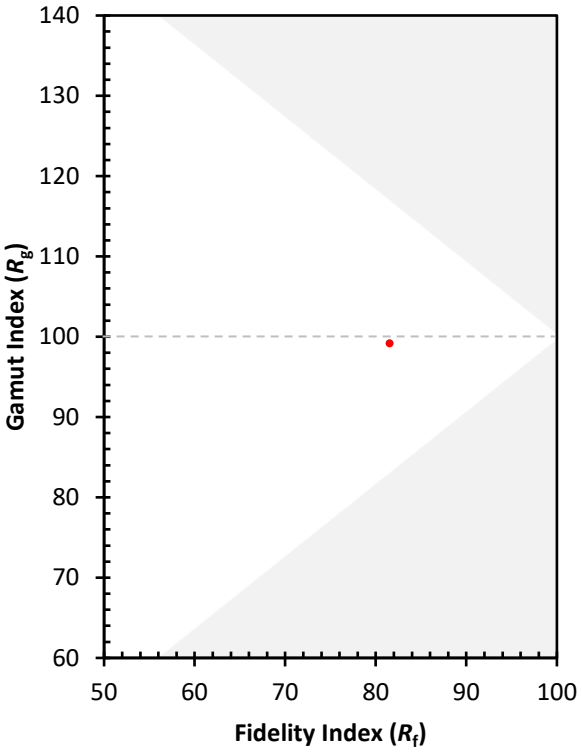



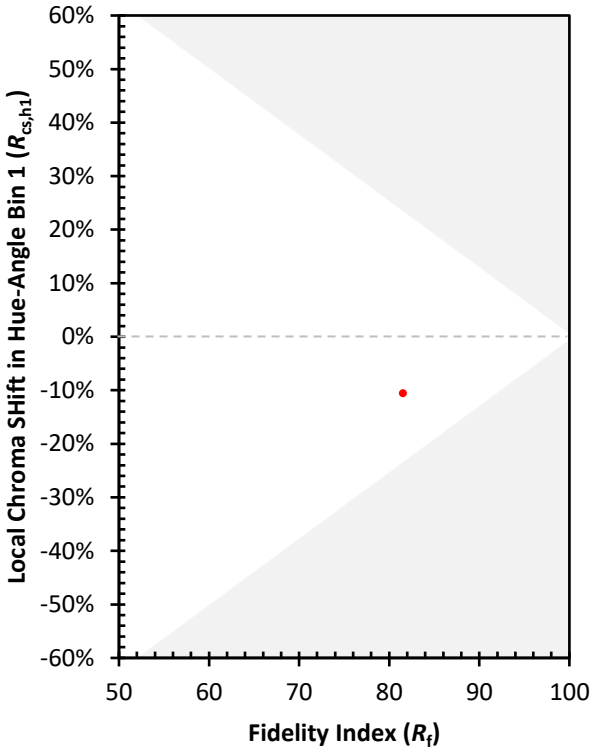



REPORT NUMBER: SP1-2408-195-9

# TM-30-18

## Measure Comparisons




(END OF REPORT)