

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



Scaled data based on original data using
LM-79-08 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: P437429

Luminaire Tested: **ISS-SA1C-830-U-T2-HSS**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437429
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-7)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: ISS-SA1C-830-U-T2-HSS
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 80 CRI, 3000K, 615mA LIGHTSQUARE WITH 16 LEDS AND TYPE II OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2800 lumens
Efficiency: N/A
Efficacy: 81.9 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B0 - U0 - G1

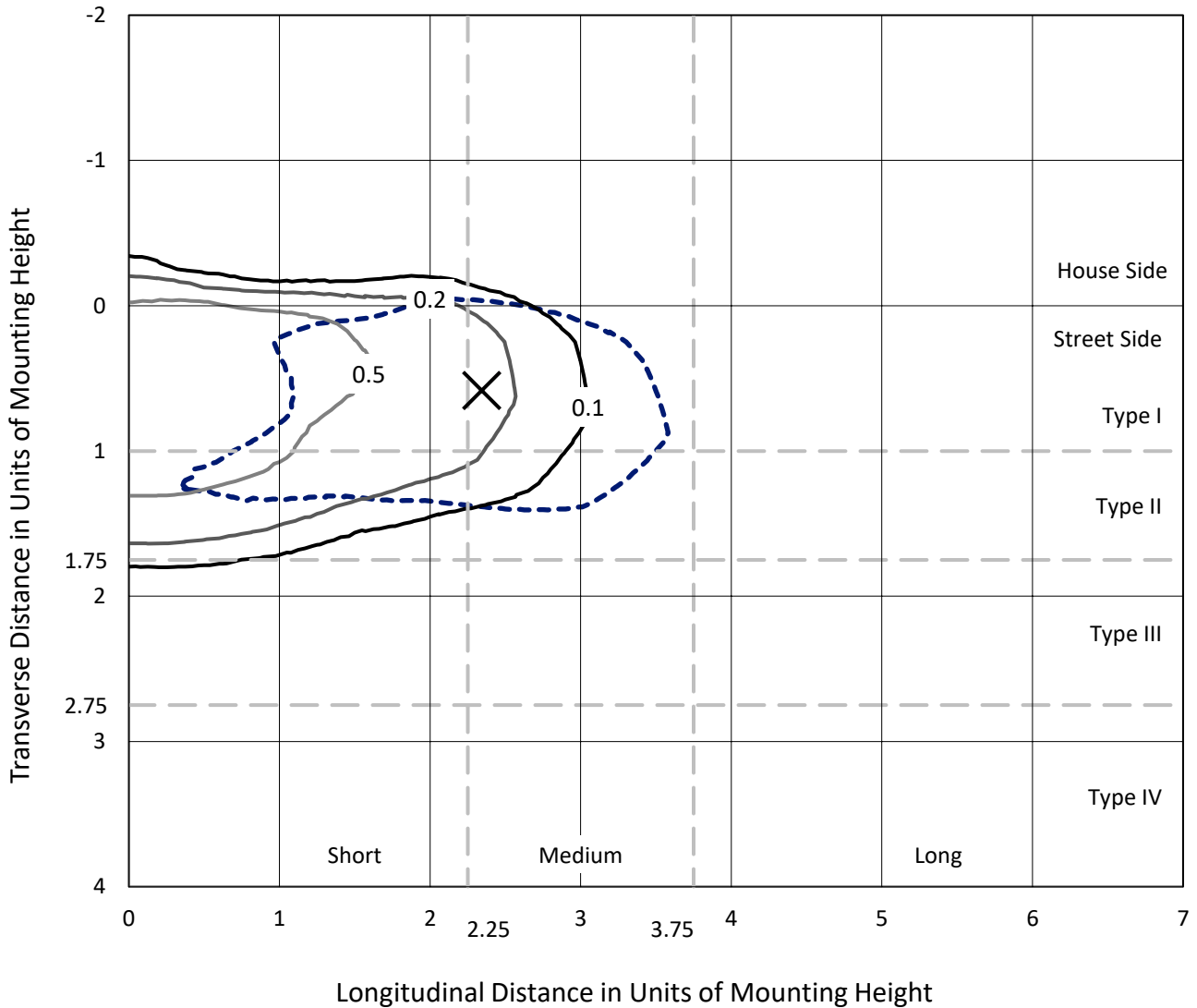
Input Watts (W): 34.2
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

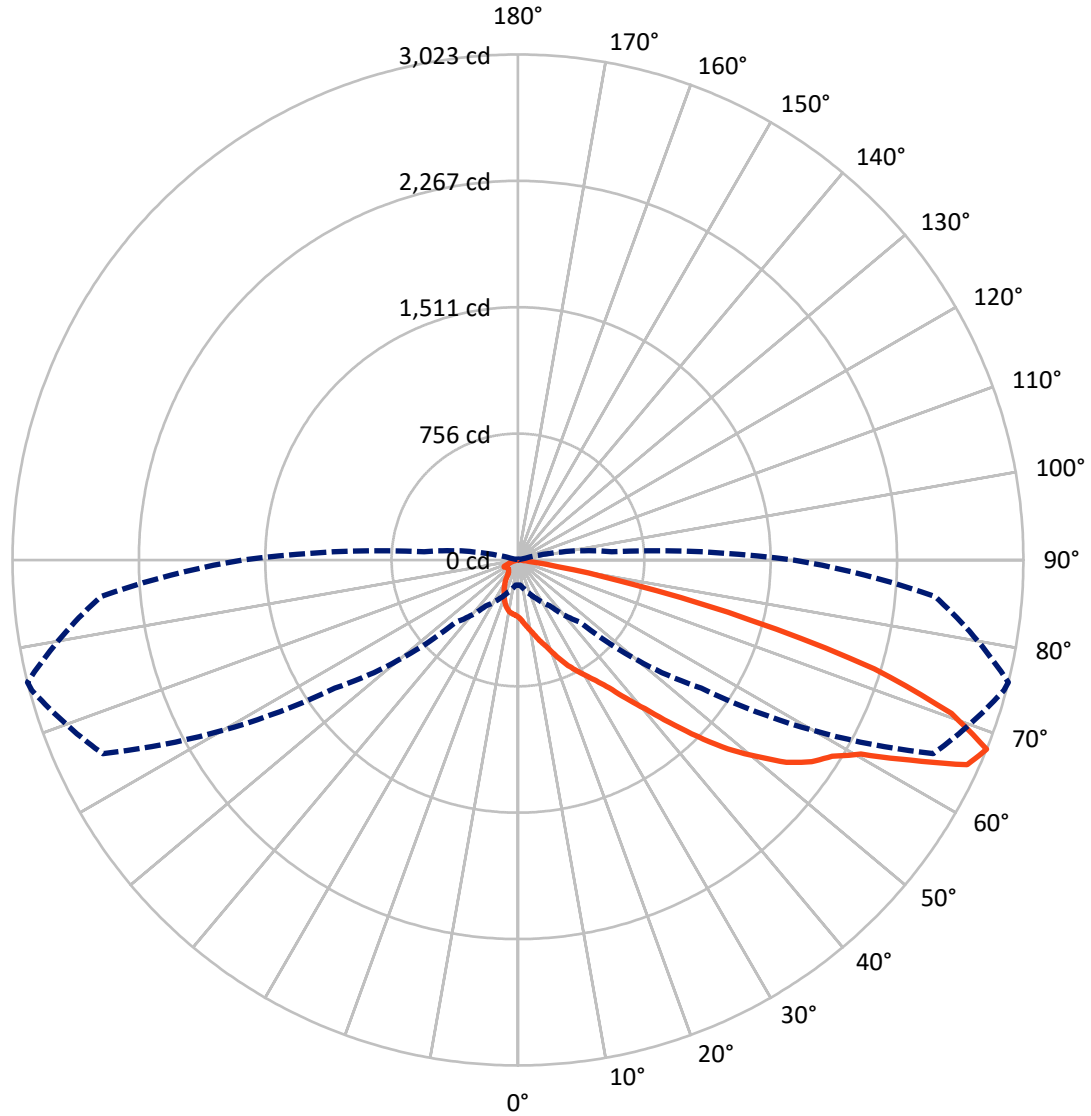
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.8 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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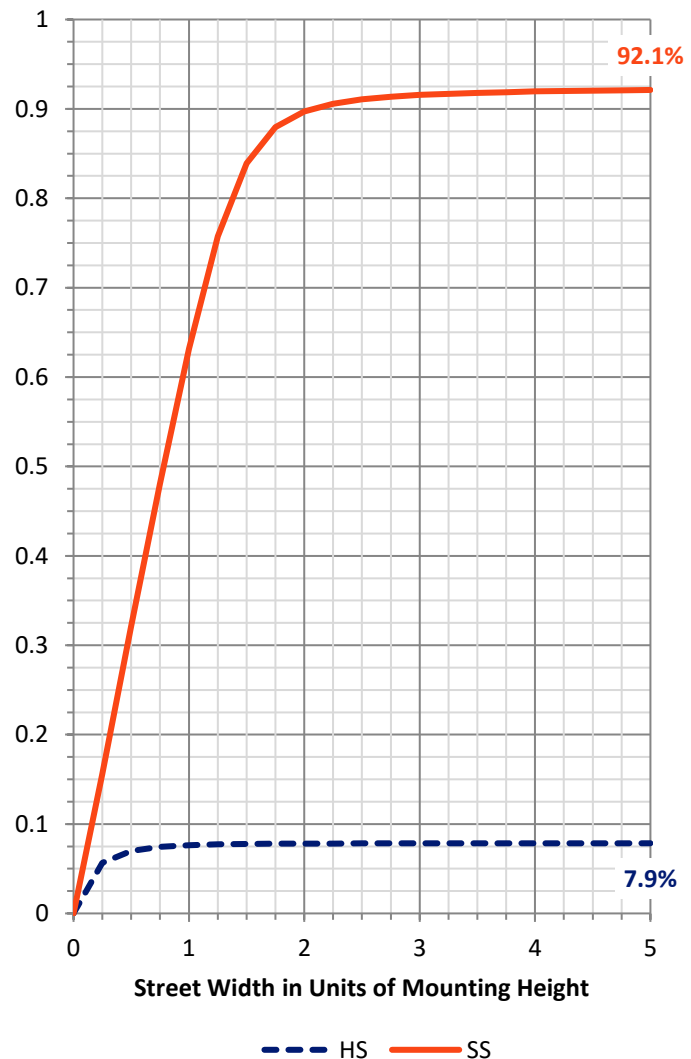
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 221.5 | 0.0 | 221.5 |
| | % Fixture | 7.9 | 0.0 | 7.9 |
| Street Side | Lumens | 2578.5 | 0.0 | 2578.5 |
| | % Fixture | 92.1 | 0.0 | 92.1 |
| Total | Lumens | 2800.0 | 0.0 | 2800.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 32.7 | 1.2 |
| 10°-20° | 91.0 | 3.2 |
| 20°-30° | 157.0 | 5.6 |
| 30°-40° | 279.7 | 10.0 |
| 40°-50° | 498.1 | 17.8 |
| 50°-60° | 746.9 | 26.7 |
| 60°-70° | 707.4 | 25.3 |
| 70°-80° | 275.7 | 9.8 |
| 80°-90° | 11.4 | 0.4 |
| 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° | 2800.0 | 100.0 |
| 0°-180° | 2800.0 | 100.0 |



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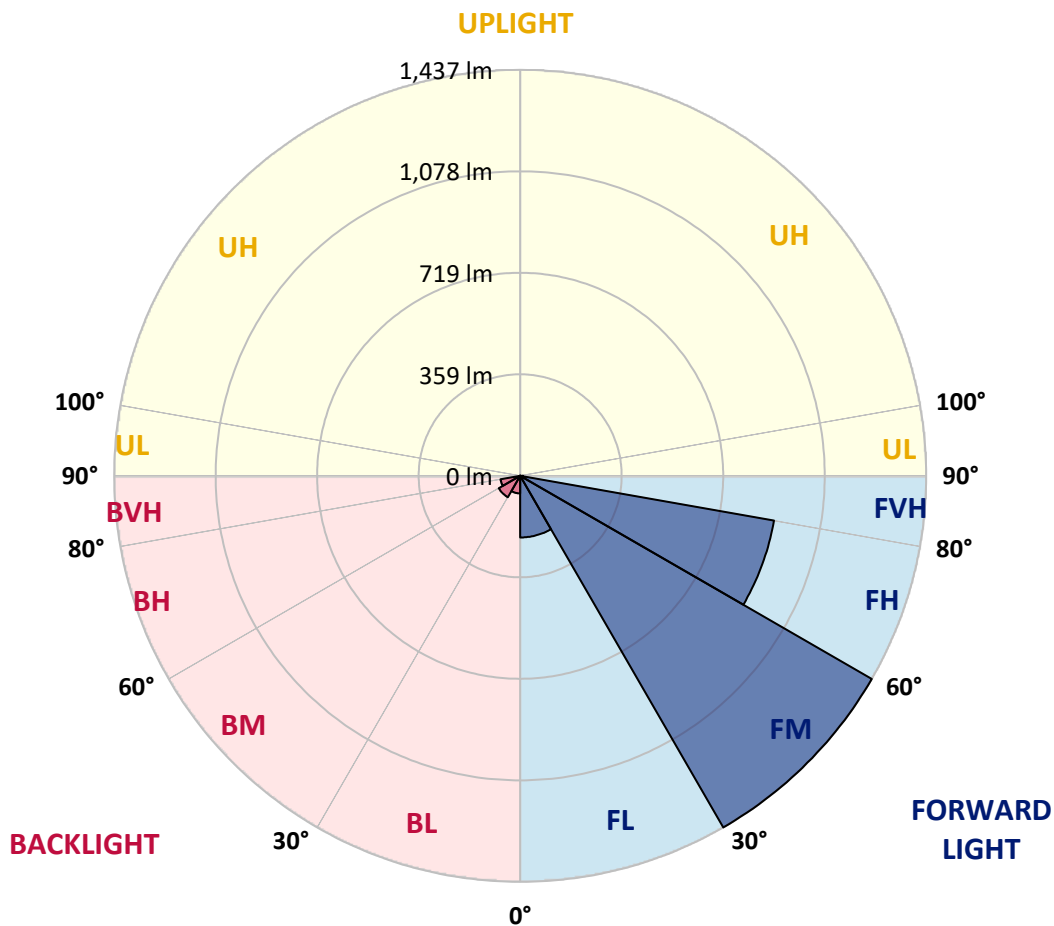
CATALOG NUMBER: ISS-SA1C-830-U-T2-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 218.3 | 7.8 | | | |
| FM (30°-60°) | 1437.3 | 51.3 | | | |
| FH (60°-80°) | 912.5 | 32.6 | | | G1/1800 |
| FVH (80°-90°) | 10.4 | 0.4 | | | G1/100 |
| BL (0°-30°) | 62.4 | 2.2 | B0/110 | | |
| BM (30°-60°) | 87.4 | 3.1 | B0/220 | | |
| BH (60°-80°) | 70.7 | 2.5 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.0 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G1

Type II Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 |
| 2.5° | 403.4 | 399.4 | 396.8 | 395.5 | 392.9 | 385.0 | 378.5 | 366.7 | 356.2 | 356.2 | 349.7 |
| 5° | 440.0 | 438.7 | 433.5 | 430.9 | 429.6 | 424.3 | 412.5 | 398.1 | 381.1 | 379.8 | 364.1 |
| 7.5° | 450.5 | 451.8 | 451.8 | 454.4 | 455.8 | 453.1 | 442.7 | 429.6 | 407.3 | 404.7 | 381.1 |
| 10° | 446.6 | 446.6 | 450.5 | 458.4 | 468.9 | 474.1 | 472.8 | 462.3 | 436.1 | 433.5 | 400.8 |
| 12.5° | 432.2 | 434.8 | 441.3 | 454.4 | 474.1 | 489.8 | 499.0 | 495.0 | 468.9 | 466.2 | 426.9 |
| 15° | 412.5 | 415.2 | 426.9 | 445.3 | 471.5 | 501.6 | 522.5 | 534.3 | 508.1 | 505.5 | 454.4 |
| 17.5° | 385.0 | 387.7 | 400.8 | 428.3 | 464.9 | 506.8 | 547.4 | 571.0 | 548.7 | 540.9 | 483.3 |
| 20° | 374.6 | 377.2 | 387.7 | 409.9 | 453.1 | 506.8 | 569.7 | 614.2 | 597.2 | 590.6 | 519.9 |
| 22.5° | 416.5 | 415.2 | 406.0 | 408.6 | 441.3 | 502.9 | 586.7 | 667.9 | 654.8 | 645.7 | 559.2 |
| 25° | 492.4 | 497.7 | 484.6 | 454.4 | 449.2 | 499.0 | 598.5 | 709.8 | 708.5 | 699.3 | 599.8 |
| 27.5° | 580.2 | 582.8 | 568.4 | 537.0 | 493.7 | 506.8 | 611.6 | 751.7 | 758.3 | 750.4 | 631.2 |
| 30° | 652.2 | 661.4 | 650.9 | 622.1 | 576.2 | 540.9 | 620.8 | 789.7 | 812.0 | 801.5 | 661.4 |
| 32.5° | 755.7 | 759.6 | 749.1 | 707.2 | 660.1 | 606.4 | 637.8 | 822.5 | 870.9 | 861.7 | 696.7 |
| 35° | 864.4 | 869.6 | 850.0 | 804.1 | 746.5 | 686.3 | 678.4 | 867.0 | 956.0 | 937.7 | 750.4 |
| 37.5° | 961.3 | 966.5 | 957.3 | 901.0 | 844.7 | 780.5 | 750.4 | 927.2 | 1059.5 | 1047.7 | 817.2 |
| 40° | 1038.5 | 1051.6 | 1049.0 | 1000.6 | 948.2 | 890.6 | 853.9 | 997.9 | 1178.7 | 1168.2 | 902.3 |
| 42.5° | 1117.1 | 1126.3 | 1121.1 | 1085.7 | 1049.0 | 1013.7 | 967.8 | 1096.2 | 1331.9 | 1326.7 | 1008.4 |
| 45° | 1215.3 | 1229.8 | 1223.2 | 1194.4 | 1149.9 | 1142.0 | 1098.8 | 1214.0 | 1513.9 | 1506.1 | 1136.8 |
| 47.5° | 1360.7 | 1373.8 | 1363.3 | 1324.0 | 1273.0 | 1258.6 | 1221.9 | 1347.6 | 1692.1 | 1688.1 | 1263.8 |
| 50° | 1439.3 | 1452.4 | 1479.9 | 1486.4 | 1452.4 | 1375.1 | 1331.9 | 1474.7 | 1851.8 | 1845.3 | 1385.6 |
| 52.5° | 1411.8 | 1423.6 | 1490.4 | 1553.2 | 1627.9 | 1562.4 | 1465.5 | 1612.2 | 1998.5 | 2010.3 | 1504.8 |
| 55° | 1293.9 | 1309.6 | 1405.2 | 1506.1 | 1686.8 | 1774.6 | 1663.2 | 1768.0 | 2113.8 | 2130.8 | 1583.4 |
| 57.5° | 1055.6 | 1073.9 | 1197.0 | 1352.9 | 1596.5 | 1828.3 | 1908.1 | 1982.8 | 2192.3 | 2214.6 | 1684.2 |
| 60° | 632.6 | 661.4 | 788.4 | 995.3 | 1333.2 | 1701.2 | 2082.3 | 2291.9 | 2345.6 | 2356.0 | 1899.0 |
| 62.5° | 351.0 | 344.4 | 446.6 | 616.8 | 919.4 | 1381.7 | 2056.1 | 2667.7 | 2635.0 | 2635.0 | 2265.7 |
| 65° | 210.9 | 217.4 | 269.8 | 366.7 | 534.3 | 911.5 | 1833.5 | 2899.5 | 2942.8 | 2951.9 | 2563.0 |
| 67.5° | 149.3 | 150.6 | 188.6 | 251.5 | 334.0 | 525.2 | 1337.1 | 2739.8 | 3009.6 | 3022.7 | 2504.0 |
| 70° | 96.9 | 98.2 | 134.9 | 179.4 | 238.4 | 289.4 | 817.2 | 2257.8 | 2756.8 | 2750.2 | 2214.6 |
| 72.5° | 58.9 | 61.6 | 85.1 | 132.3 | 183.3 | 163.7 | 440.0 | 1631.8 | 2184.5 | 2229.0 | 1737.9 |
| 75° | 36.7 | 39.3 | 51.1 | 91.7 | 128.3 | 111.3 | 193.8 | 1089.6 | 1409.2 | 1443.2 | 1122.4 |
| 77.5° | 21.0 | 23.6 | 32.7 | 52.4 | 91.7 | 77.3 | 91.7 | 572.3 | 682.3 | 704.6 | 450.5 |
| 80° | 7.9 | 9.2 | 17.0 | 26.2 | 56.3 | 47.1 | 41.9 | 193.8 | 217.4 | 243.6 | 137.5 |
| 82.5° | 1.3 | 2.6 | 7.9 | 15.7 | 22.3 | 22.3 | 18.3 | 58.9 | 60.2 | 64.2 | 36.7 |
| 85° | 0.0 | 0.0 | 2.6 | 3.9 | 3.9 | 3.9 | 6.5 | 11.8 | 18.3 | 18.3 | 10.5 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 1.3 | 1.3 | 2.6 | 2.6 | 2.6 | 2.6 |
| 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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CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 | 340.5 |
| 2.5° | 343.1 | 340.5 | 330.0 | 319.6 | 311.7 | 305.1 | 294.7 | 294.7 | 290.7 | 286.8 | 288.1 |
| 5° | 352.3 | 344.4 | 324.8 | 305.1 | 286.8 | 269.8 | 255.4 | 248.8 | 239.7 | 237.0 | 235.7 |
| 7.5° | 364.1 | 349.7 | 316.9 | 285.5 | 255.4 | 233.1 | 214.8 | 203.0 | 192.5 | 189.9 | 191.2 |
| 10° | 378.5 | 357.5 | 307.8 | 259.3 | 222.6 | 195.1 | 174.2 | 165.0 | 153.2 | 149.3 | 145.4 |
| 12.5° | 399.4 | 366.7 | 293.4 | 230.5 | 189.9 | 162.4 | 132.3 | 110.0 | 102.2 | 99.5 | 99.5 |
| 15° | 416.5 | 371.9 | 275.0 | 203.0 | 162.4 | 119.2 | 94.3 | 90.4 | 89.1 | 89.1 | 89.1 |
| 17.5° | 436.1 | 375.9 | 252.8 | 176.8 | 125.7 | 87.7 | 82.5 | 82.5 | 81.2 | 81.2 | 79.9 |
| 20° | 457.1 | 377.2 | 229.2 | 153.2 | 89.1 | 78.6 | 74.6 | 73.3 | 70.7 | 69.4 | 69.4 |
| 22.5° | 480.6 | 375.9 | 203.0 | 125.7 | 78.6 | 72.0 | 65.5 | 62.9 | 60.2 | 57.6 | 57.6 |
| 25° | 500.3 | 373.2 | 179.4 | 90.4 | 72.0 | 62.9 | 56.3 | 52.4 | 49.8 | 48.5 | 47.1 |
| 27.5° | 517.3 | 358.8 | 155.8 | 77.3 | 65.5 | 56.3 | 48.5 | 44.5 | 41.9 | 40.6 | 40.6 |
| 30° | 518.6 | 335.3 | 136.2 | 72.0 | 60.2 | 49.8 | 41.9 | 39.3 | 38.0 | 36.7 | 36.7 |
| 32.5° | 526.5 | 311.7 | 115.2 | 68.1 | 53.7 | 44.5 | 38.0 | 35.4 | 32.7 | 32.7 | 32.7 |
| 35° | 542.2 | 290.7 | 89.1 | 61.6 | 48.5 | 39.3 | 34.1 | 31.4 | 30.1 | 28.8 | 28.8 |
| 37.5° | 567.1 | 276.3 | 73.3 | 56.3 | 44.5 | 35.4 | 31.4 | 28.8 | 27.5 | 26.2 | 26.2 |
| 40° | 599.8 | 268.5 | 66.8 | 51.1 | 39.3 | 32.7 | 28.8 | 26.2 | 23.6 | 22.3 | 22.3 |
| 42.5° | 656.1 | 268.5 | 61.6 | 45.8 | 35.4 | 30.1 | 26.2 | 23.6 | 21.0 | 19.6 | 19.6 |
| 45° | 721.6 | 279.0 | 57.6 | 40.6 | 31.4 | 27.5 | 23.6 | 19.6 | 17.0 | 15.7 | 15.7 |
| 47.5° | 793.6 | 298.6 | 53.7 | 36.7 | 28.8 | 24.9 | 21.0 | 15.7 | 13.1 | 11.8 | 11.8 |
| 50° | 877.5 | 327.4 | 51.1 | 32.7 | 26.2 | 22.3 | 17.0 | 11.8 | 10.5 | 9.2 | 9.2 |
| 52.5° | 948.2 | 356.2 | 47.1 | 30.1 | 23.6 | 19.6 | 13.1 | 10.5 | 7.9 | 7.9 | 7.9 |
| 55° | 1015.0 | 387.7 | 44.5 | 27.5 | 22.3 | 15.7 | 10.5 | 7.9 | 6.5 | 6.5 | 6.5 |
| 57.5° | 1104.0 | 426.9 | 40.6 | 24.9 | 18.3 | 11.8 | 9.2 | 6.5 | 5.2 | 5.2 | 5.2 |
| 60° | 1286.1 | 514.7 | 35.4 | 22.3 | 15.7 | 10.5 | 7.9 | 6.5 | 5.2 | 3.9 | 3.9 |
| 62.5° | 1582.0 | 657.4 | 30.1 | 19.6 | 11.8 | 9.2 | 6.5 | 5.2 | 3.9 | 2.6 | 2.6 |
| 65° | 1769.3 | 692.8 | 24.9 | 15.7 | 9.2 | 6.5 | 5.2 | 3.9 | 2.6 | 1.3 | 1.3 |
| 67.5° | 1648.8 | 563.1 | 19.6 | 11.8 | 7.9 | 5.2 | 3.9 | 2.6 | 1.3 | 0.0 | 0.0 |
| 70° | 1392.1 | 425.6 | 14.4 | 7.9 | 6.5 | 3.9 | 2.6 | 1.3 | 0.0 | 0.0 | 0.0 |
| 72.5° | 1100.1 | 323.5 | 13.1 | 6.5 | 5.2 | 2.6 | 2.6 | 1.3 | 0.0 | 0.0 | 0.0 |
| 75° | 721.6 | 166.3 | 10.5 | 6.5 | 3.9 | 2.6 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 |
| 77.5° | 284.2 | 62.9 | 7.9 | 5.2 | 3.9 | 2.6 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 |
| 80° | 77.3 | 21.0 | 3.9 | 2.6 | 2.6 | 1.3 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 |
| 82.5° | 19.6 | 9.2 | 2.6 | 2.6 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 0.0 | 0.0 |
| 85° | 6.5 | 2.6 | 2.6 | 1.3 | 1.3 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.6 | 2.6 | 2.6 | 1.3 | 1.3 | 1.3 | 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 |

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



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.

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
 CIE u': 0.2476
 CIE v': 0.5251
 Duv: 0.0034
 CIE x: 0.4383
 CIE y: 0.4131
 CIE z: 0.1487
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 581
 Purity: 55.55201
 Rf: 81.5
 Rg: 99.2

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 81.0 | | |
| R1: | 79.6 | R9: | 7.1 |
| R2: | 85.6 | R10: | 67.0 |
| R3: | 92.0 | R11: | 82.7 |
| R4: | 82.6 | R12: | 63.2 |
| R5: | 78.9 | R13: | 80.3 |
| R6: | 81.7 | R14: | 95.0 |
| R7: | 85.2 | R15: | 71.7 |
| R8: | 62.0 | | |



Test Conditions

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

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| 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 |

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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 3000K 4-step quadrangle

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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 | | | |

Summary

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



Color Vector Graphics

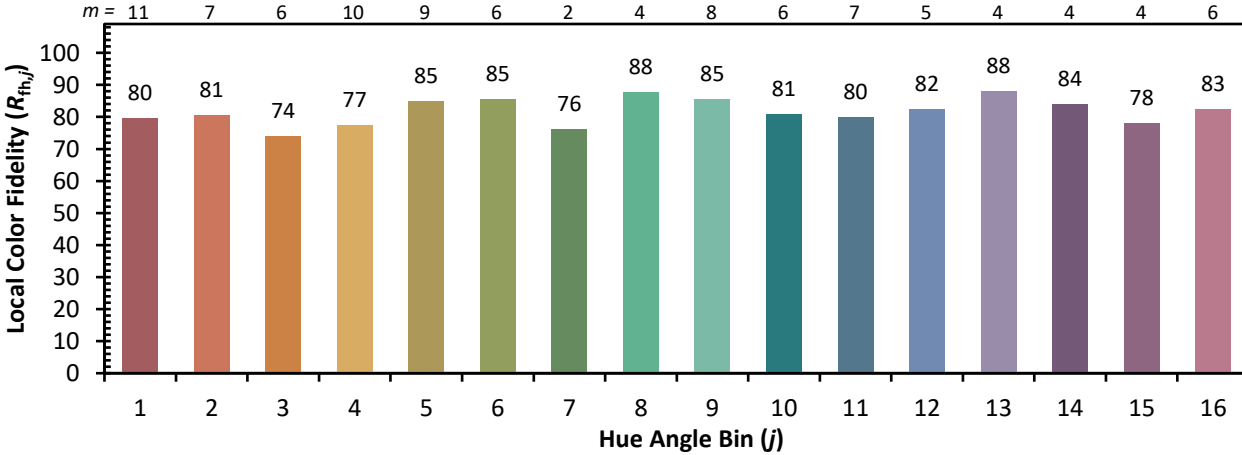
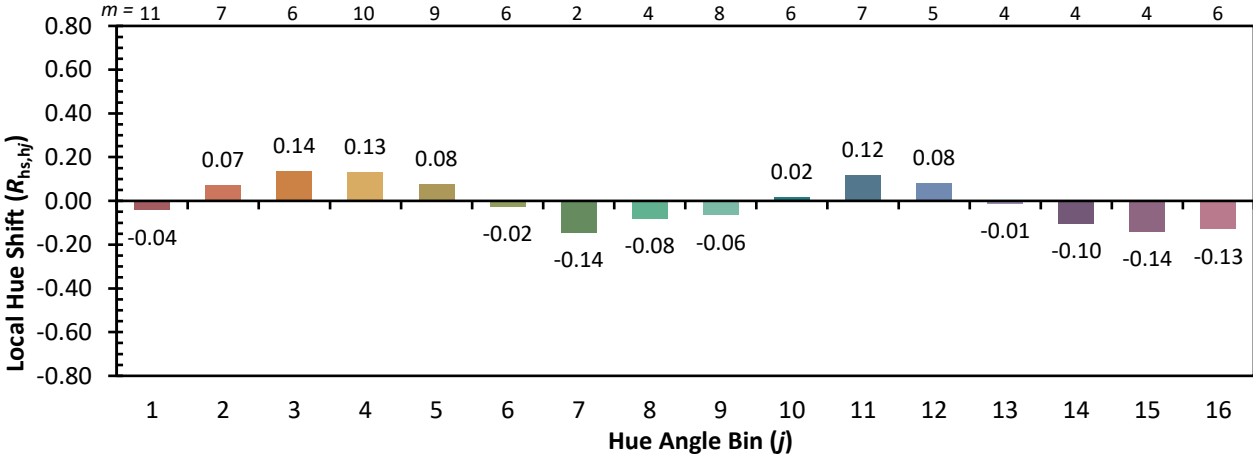
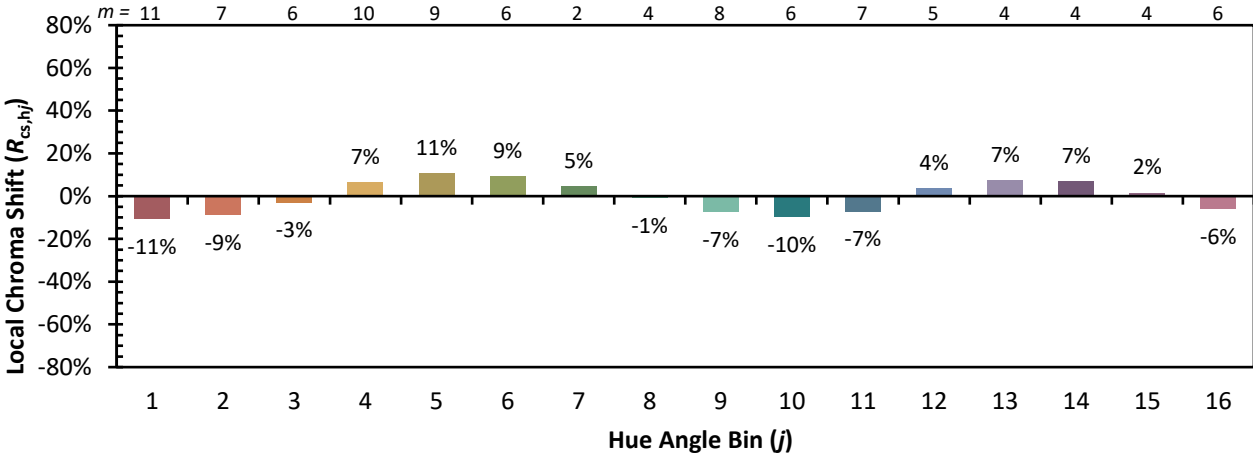


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| 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 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)