

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: P437263

Luminaire Tested: **ISS-SA1B-830-U-T4FT**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437263
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-10)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: ISS-SA1B-830-U-T4FT
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 80 CRI, 3000K, 450mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV FORWARD
THROW OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2731 lumens
Efficiency: N/A
Efficacy: 107.5 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G1

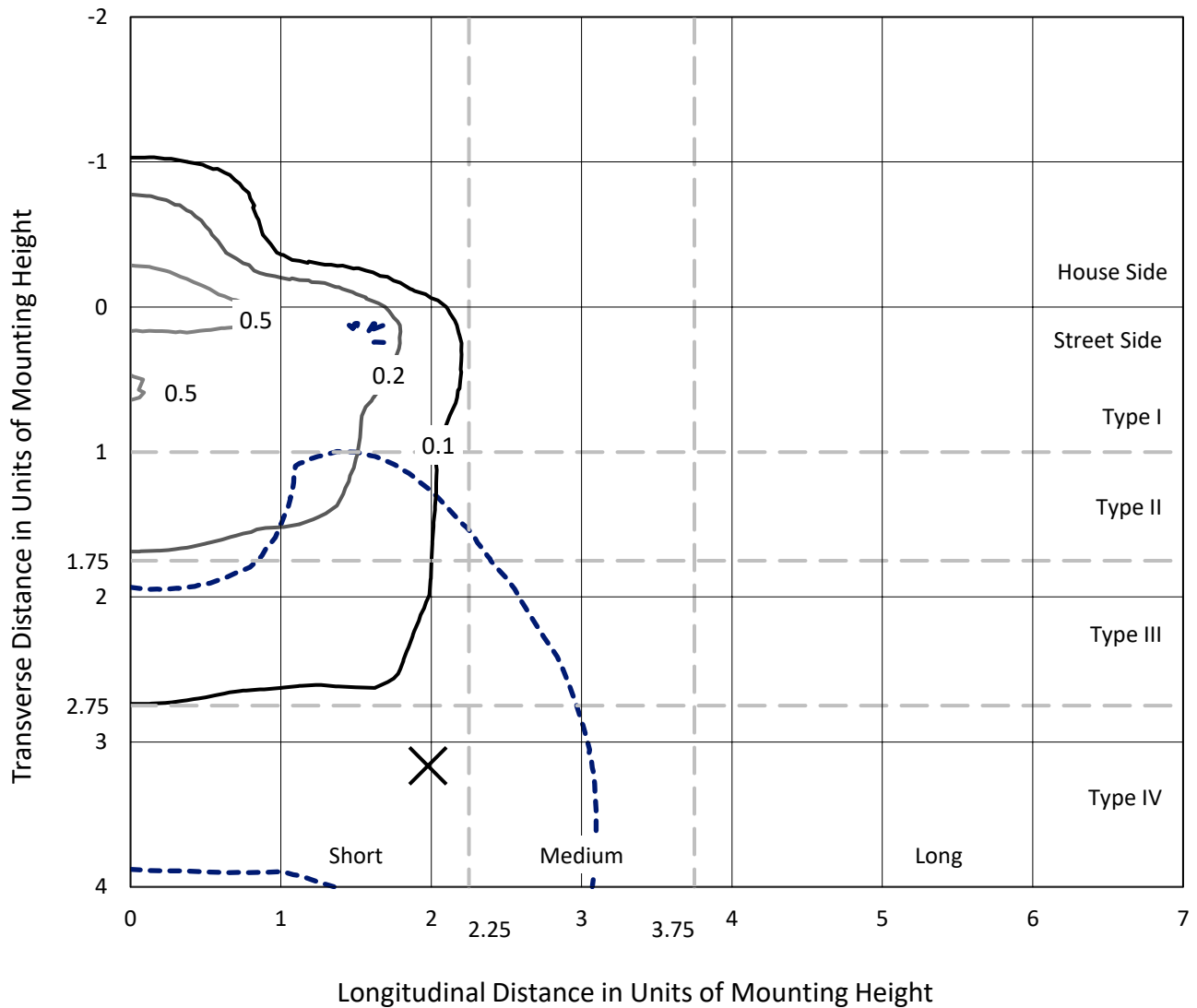
Input Watts (W): 25.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

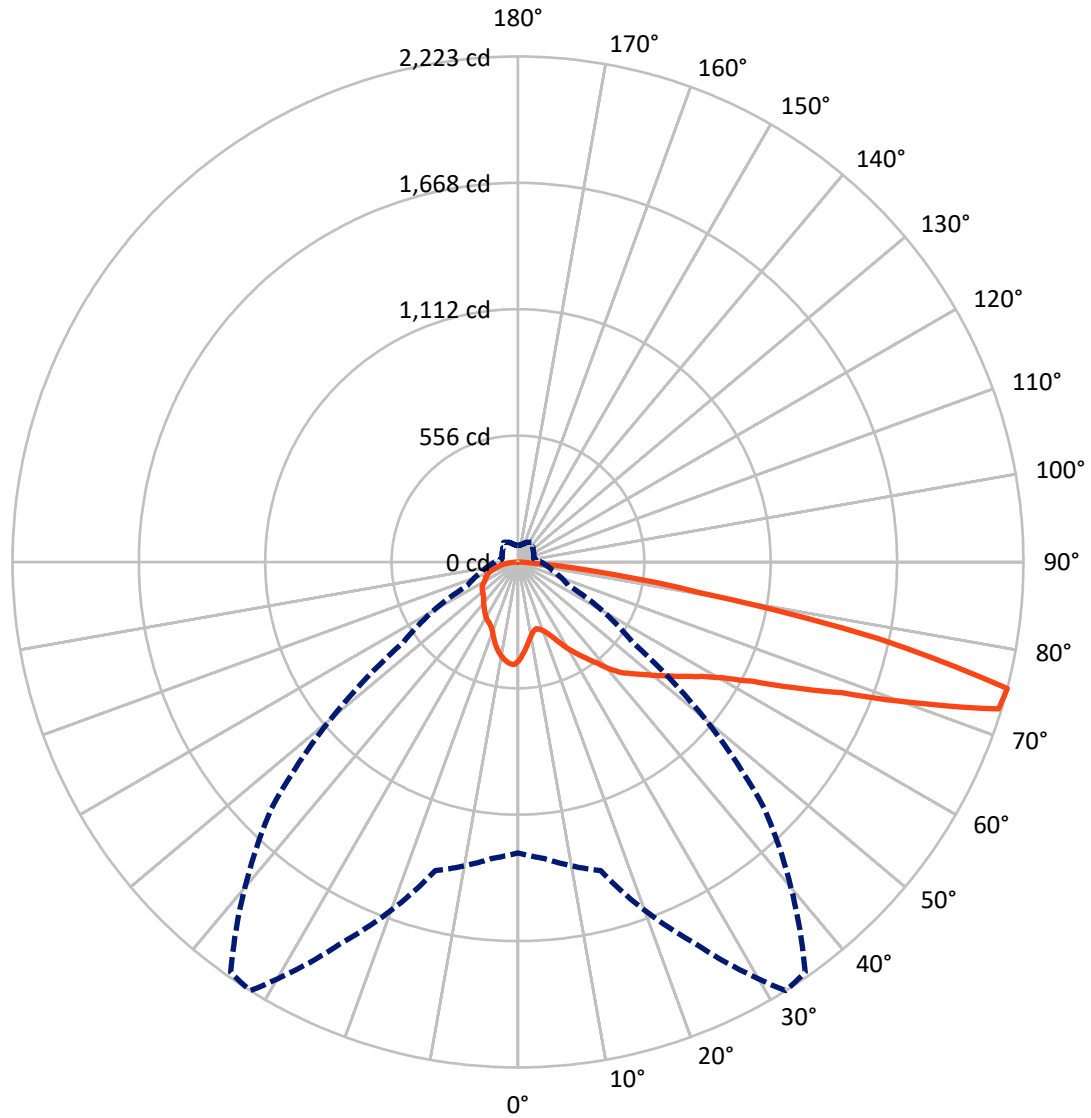
× Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.7 fc
 Type IV - Short - N/A

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CATALOG NUMBER: ISS-SA1B-830-U-T4FT

Luminous Intensity Polar Plot



— Vertical Plane Through 32-Deg Lateral - - - Horizontal Cone Through 75-Deg Vertical

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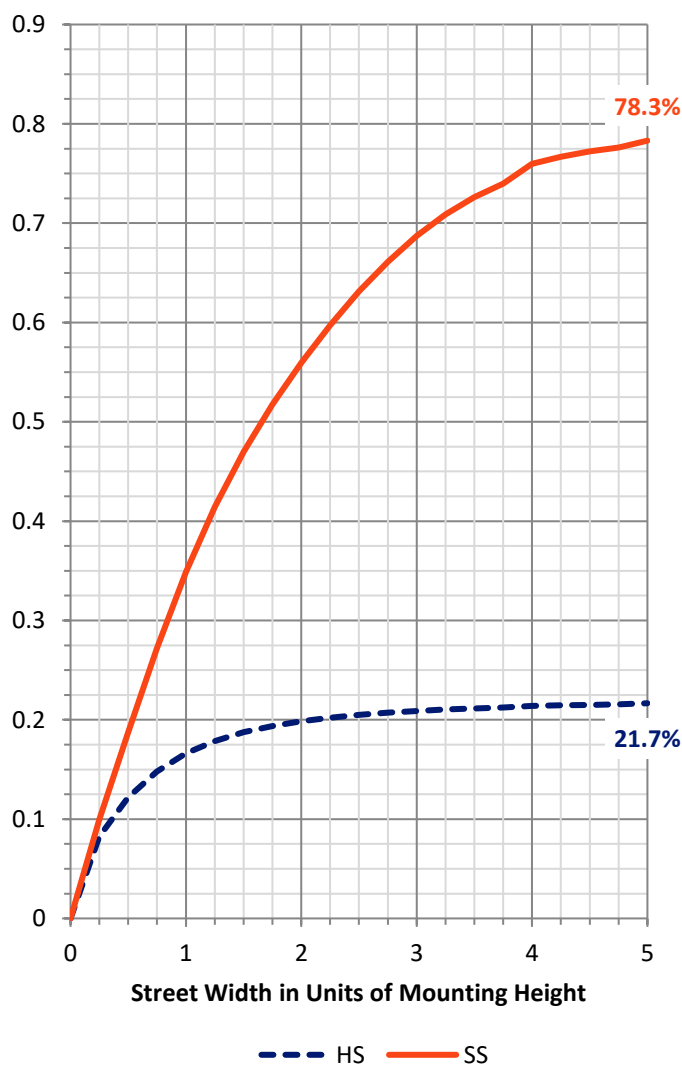
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 598.4 | 0.0 | 598.4 |
| | % Fixture | 21.9 | 0.0 | 21.9 |
| Street Side | Lumens | 2132.6 | 0.0 | 2132.6 |
| | % Fixture | 78.1 | 0.0 | 78.1 |
| Total | Lumens | 2731.0 | 0.0 | 2731.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 39.5 | 1.4 |
| 10°-20° | 107.9 | 4.0 |
| 20°-30° | 178.6 | 6.5 |
| 30°-40° | 266.2 | 9.7 |
| 40°-50° | 379.0 | 13.9 |
| 50°-60° | 521.4 | 19.1 |
| 60°-70° | 657.1 | 24.1 |
| 70°-80° | 531.2 | 19.5 |
| 80°-90° | 50.2 | 1.8 |
| 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° | 2731.0 | 100.0 |
| 0°-180° | 2731.0 | 100.0 |

Coefficient of Utilization

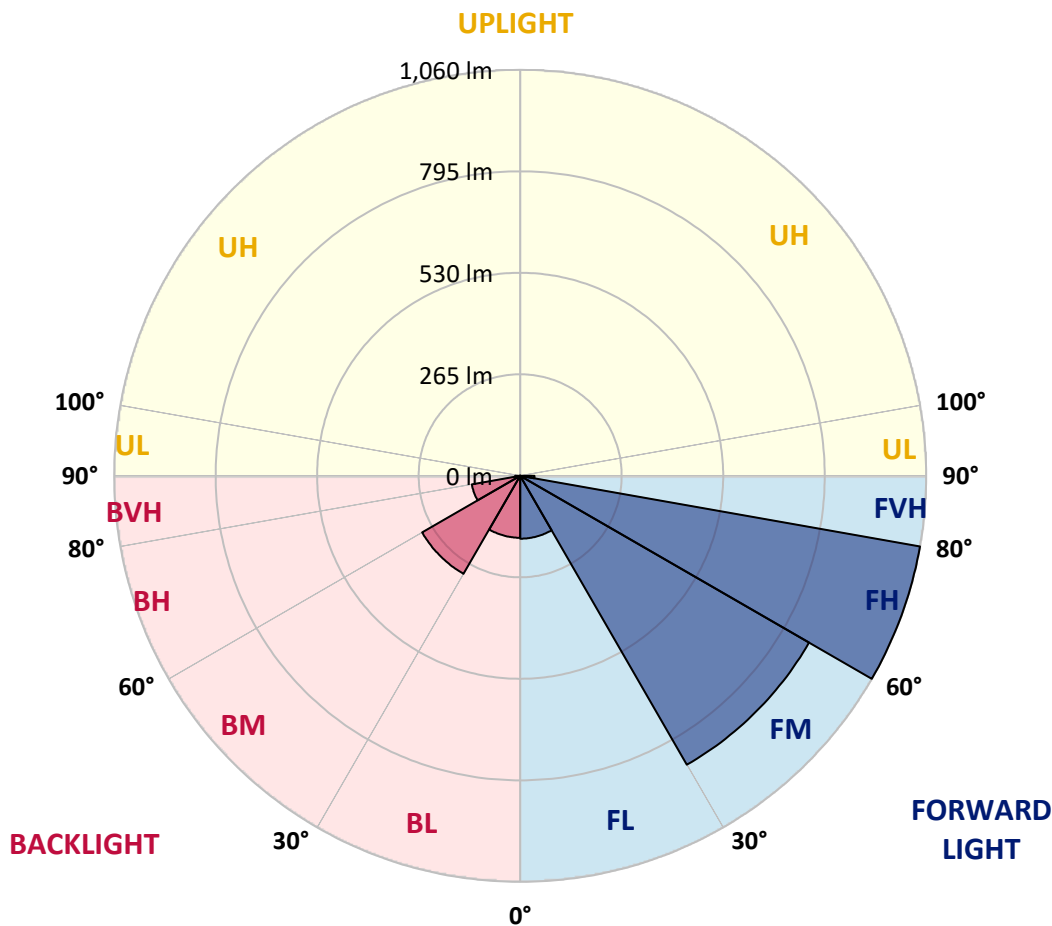


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 164.2 | 6.0 | | | |
| FM (30°-60°) | 871.0 | 31.9 | | | |
| FH (60°-80°) | 1060.1 | 38.8 | | | G1/1800 |
| FVH (80°-90°) | 37.3 | 1.4 | | | G1/100 |
| BL (0°-30°) | 161.8 | 5.9 | B1/500 | | |
| BM (30°-60°) | 295.6 | 10.8 | B1/1000 | | |
| BH (60°-80°) | 128.1 | 4.7 | B1/500 | | G1/500 |
| BVH (80°-90°) | 12.9 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G1
 Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 32° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|
| 0° | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 |
| 2.5° | 397.0 | 400.0 | 401.0 | 403.0 | 407.0 | 405.0 | 409.9 | 415.9 | 423.8 | 427.8 | 435.7 |
| 5° | 363.3 | 363.3 | 366.3 | 371.2 | 378.2 | 378.2 | 387.1 | 398.0 | 411.9 | 422.8 | 436.7 |
| 7.5° | 333.5 | 333.5 | 336.5 | 342.4 | 349.4 | 354.3 | 365.3 | 382.1 | 401.0 | 421.8 | 439.7 |
| 10° | 308.7 | 309.7 | 311.7 | 317.6 | 326.6 | 331.5 | 347.4 | 366.3 | 391.1 | 417.9 | 442.7 |
| 12.5° | 299.8 | 298.8 | 297.8 | 302.7 | 309.7 | 313.7 | 331.5 | 355.3 | 384.1 | 416.9 | 448.6 |
| 15° | 306.7 | 304.7 | 301.7 | 301.7 | 304.7 | 306.7 | 321.6 | 346.4 | 378.2 | 415.9 | 455.6 |
| 17.5° | 324.6 | 322.6 | 315.6 | 308.7 | 310.7 | 311.7 | 321.6 | 341.4 | 375.2 | 419.9 | 465.5 |
| 20° | 349.4 | 346.4 | 334.5 | 325.6 | 323.6 | 323.6 | 329.5 | 344.4 | 377.2 | 427.8 | 478.4 |
| 22.5° | 379.2 | 376.2 | 362.3 | 346.4 | 344.4 | 343.4 | 346.4 | 356.3 | 383.1 | 436.7 | 498.3 |
| 25° | 418.9 | 415.9 | 399.0 | 379.2 | 372.2 | 371.2 | 368.2 | 374.2 | 393.1 | 448.6 | 512.2 |
| 27.5° | 461.5 | 462.5 | 442.7 | 415.9 | 408.9 | 406.0 | 398.0 | 397.0 | 405.0 | 458.6 | 536.0 |
| 30° | 501.2 | 499.3 | 478.4 | 456.6 | 446.7 | 442.7 | 429.8 | 423.8 | 418.9 | 473.5 | 563.8 |
| 32.5° | 520.1 | 523.1 | 513.2 | 492.3 | 484.4 | 477.4 | 462.5 | 452.6 | 445.7 | 496.3 | 597.5 |
| 35° | 551.9 | 552.9 | 548.9 | 536.0 | 520.1 | 515.1 | 501.2 | 494.3 | 479.4 | 524.1 | 638.2 |
| 37.5° | 583.6 | 586.6 | 585.6 | 577.7 | 563.8 | 558.8 | 546.9 | 543.9 | 514.2 | 558.8 | 688.8 |
| 40° | 631.3 | 626.3 | 619.4 | 622.3 | 617.4 | 614.4 | 609.4 | 599.5 | 562.8 | 596.5 | 738.5 |
| 42.5° | 682.9 | 674.0 | 649.1 | 657.1 | 664.0 | 667.0 | 674.0 | 663.0 | 613.4 | 653.1 | 779.2 |
| 45° | 724.6 | 717.6 | 684.9 | 686.9 | 700.8 | 710.7 | 743.4 | 737.5 | 678.9 | 714.7 | 833.8 |
| 47.5° | 748.4 | 742.4 | 719.6 | 729.5 | 738.5 | 752.4 | 815.9 | 810.9 | 740.5 | 781.2 | 899.3 |
| 50° | 782.1 | 772.2 | 750.4 | 768.3 | 784.1 | 795.1 | 886.4 | 884.4 | 793.1 | 849.6 | 973.7 |
| 52.5° | 801.0 | 791.1 | 789.1 | 813.9 | 832.8 | 847.7 | 961.8 | 955.8 | 844.7 | 918.1 | 1044.2 |
| 55° | 826.8 | 828.8 | 841.7 | 860.6 | 887.4 | 912.2 | 1035.3 | 1005.5 | 892.3 | 985.6 | 1113.7 |
| 57.5° | 883.4 | 881.4 | 906.2 | 915.2 | 949.9 | 981.7 | 1122.6 | 1058.1 | 932.0 | 1034.3 | 1146.4 |
| 60° | 958.8 | 962.8 | 971.7 | 994.6 | 1032.3 | 1080.9 | 1207.0 | 1112.7 | 957.8 | 1069.0 | 1140.5 |
| 62.5° | 1101.8 | 1078.9 | 1075.0 | 1080.9 | 1155.4 | 1211.9 | 1289.4 | 1161.3 | 968.8 | 1070.0 | 1077.9 |
| 65° | 1246.7 | 1237.7 | 1207.0 | 1221.9 | 1330.0 | 1381.7 | 1395.6 | 1193.1 | 946.9 | 1008.5 | 939.0 |
| 67.5° | 1396.6 | 1395.6 | 1362.8 | 1405.5 | 1535.5 | 1596.1 | 1513.7 | 1187.1 | 875.5 | 864.5 | 721.6 |
| 70° | 1550.4 | 1557.3 | 1557.3 | 1678.4 | 1856.1 | 1872.0 | 1645.7 | 1130.5 | 733.5 | 612.4 | 421.8 |
| 72.5° | 1617.9 | 1621.9 | 1657.6 | 1926.6 | 2210.5 | 2215.4 | 1721.1 | 959.8 | 500.3 | 326.6 | 212.4 |
| 75° | 1279.4 | 1309.2 | 1405.5 | 1855.1 | 2223.4 | 2203.5 | 1533.5 | 614.4 | 244.2 | 162.8 | 118.1 |
| 77.5° | 502.2 | 513.2 | 708.7 | 1181.2 | 1619.9 | 1639.7 | 992.6 | 245.2 | 124.1 | 103.2 | 85.4 |
| 80° | 141.9 | 148.9 | 251.1 | 469.5 | 800.0 | 884.4 | 395.0 | 106.2 | 83.4 | 75.4 | 61.5 |
| 82.5° | 50.6 | 57.6 | 93.3 | 179.7 | 341.4 | 360.3 | 107.2 | 52.6 | 53.6 | 48.6 | 37.7 |
| 85° | 6.9 | 6.0 | 12.9 | 32.8 | 75.4 | 63.5 | 17.9 | 13.9 | 21.8 | 22.8 | 15.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 |
| 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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 CATALOG NUMBER: ISS-SA1B-830-U-T4FT

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 | 434.7 |
| 2.5° | 437.7 | 439.7 | 443.7 | 445.7 | 447.7 | 451.6 | 450.6 | 452.6 | 452.6 | 451.6 | 453.6 |
| 5° | 441.7 | 446.7 | 451.6 | 453.6 | 454.6 | 454.6 | 449.6 | 446.7 | 445.7 | 444.7 | 445.7 |
| 7.5° | 445.7 | 452.6 | 457.6 | 456.6 | 452.6 | 445.7 | 439.7 | 434.7 | 429.8 | 427.8 | 429.8 |
| 10° | 452.6 | 459.6 | 462.5 | 455.6 | 444.7 | 433.8 | 424.8 | 417.9 | 409.9 | 408.9 | 409.9 |
| 12.5° | 458.6 | 467.5 | 467.5 | 451.6 | 436.7 | 421.8 | 407.9 | 397.0 | 387.1 | 384.1 | 384.1 |
| 15° | 468.5 | 475.4 | 468.5 | 446.7 | 425.8 | 407.0 | 387.1 | 373.2 | 361.3 | 356.3 | 357.3 |
| 17.5° | 479.4 | 484.4 | 466.5 | 438.7 | 413.9 | 389.1 | 363.3 | 344.4 | 335.5 | 330.5 | 331.5 |
| 20° | 492.3 | 493.3 | 466.5 | 428.8 | 396.0 | 363.3 | 335.5 | 321.6 | 315.6 | 312.7 | 313.7 |
| 22.5° | 509.2 | 505.2 | 463.5 | 415.9 | 373.2 | 337.5 | 311.7 | 307.7 | 307.7 | 307.7 | 310.7 |
| 25° | 527.1 | 516.1 | 458.6 | 399.0 | 343.4 | 306.7 | 296.8 | 301.7 | 305.7 | 305.7 | 307.7 |
| 27.5° | 544.9 | 527.1 | 448.6 | 374.2 | 308.7 | 284.9 | 288.8 | 296.8 | 300.7 | 300.7 | 302.7 |
| 30° | 566.8 | 540.0 | 436.7 | 340.5 | 275.9 | 270.0 | 279.9 | 289.8 | 295.8 | 295.8 | 297.8 |
| 32.5° | 594.6 | 550.9 | 418.9 | 305.7 | 254.1 | 257.1 | 268.0 | 278.9 | 285.9 | 287.8 | 288.8 |
| 35° | 625.3 | 565.8 | 394.1 | 267.0 | 239.2 | 247.2 | 256.1 | 266.0 | 272.0 | 274.0 | 274.0 |
| 37.5° | 657.1 | 580.7 | 361.3 | 234.2 | 226.3 | 237.2 | 246.2 | 251.1 | 255.1 | 255.1 | 255.1 |
| 40° | 688.8 | 588.6 | 318.6 | 208.4 | 213.4 | 229.3 | 237.2 | 235.2 | 234.2 | 231.3 | 232.3 |
| 42.5° | 721.6 | 594.6 | 273.0 | 189.6 | 200.5 | 220.4 | 226.3 | 221.3 | 213.4 | 208.4 | 209.4 |
| 45° | 757.3 | 603.5 | 235.2 | 175.7 | 187.6 | 212.4 | 218.4 | 208.4 | 198.5 | 190.6 | 188.6 |
| 47.5° | 798.0 | 618.4 | 201.5 | 162.8 | 179.7 | 207.4 | 213.4 | 199.5 | 186.6 | 175.7 | 173.7 |
| 50° | 853.6 | 641.2 | 175.7 | 153.8 | 174.7 | 204.5 | 209.4 | 191.6 | 176.7 | 162.8 | 161.8 |
| 52.5° | 910.2 | 658.1 | 157.8 | 145.9 | 168.7 | 198.5 | 204.5 | 185.6 | 167.7 | 152.9 | 150.9 |
| 55° | 951.9 | 656.1 | 141.9 | 138.0 | 160.8 | 190.6 | 199.5 | 178.7 | 155.8 | 141.9 | 140.0 |
| 57.5° | 969.7 | 615.4 | 129.0 | 131.0 | 151.9 | 180.6 | 191.6 | 167.7 | 146.9 | 135.0 | 134.0 |
| 60° | 939.0 | 549.9 | 120.1 | 123.1 | 141.9 | 167.7 | 176.7 | 159.8 | 140.9 | 130.0 | 129.0 |
| 62.5° | 885.4 | 476.4 | 113.2 | 117.1 | 132.0 | 155.8 | 167.7 | 149.9 | 133.0 | 125.1 | 124.1 |
| 65° | 758.3 | 396.0 | 106.2 | 110.2 | 123.1 | 143.9 | 159.8 | 143.9 | 127.0 | 119.1 | 118.1 |
| 67.5° | 572.7 | 284.9 | 99.3 | 103.2 | 115.1 | 135.0 | 152.9 | 136.0 | 118.1 | 112.2 | 112.2 |
| 70° | 341.4 | 174.7 | 90.3 | 96.3 | 105.2 | 124.1 | 141.9 | 125.1 | 107.2 | 105.2 | 103.2 |
| 72.5° | 166.8 | 111.2 | 82.4 | 87.3 | 94.3 | 110.2 | 126.1 | 111.2 | 93.3 | 88.3 | 87.3 |
| 75° | 100.2 | 80.4 | 71.5 | 77.4 | 82.4 | 92.3 | 106.2 | 95.3 | 81.4 | 73.5 | 72.5 |
| 77.5° | 72.5 | 60.5 | 60.5 | 66.5 | 66.5 | 76.4 | 91.3 | 81.4 | 68.5 | 63.5 | 62.5 |
| 80° | 51.6 | 45.7 | 49.6 | 53.6 | 51.6 | 64.5 | 77.4 | 68.5 | 55.6 | 51.6 | 50.6 |
| 82.5° | 33.7 | 31.8 | 37.7 | 36.7 | 36.7 | 49.6 | 63.5 | 51.6 | 40.7 | 33.7 | 31.8 |
| 85° | 13.9 | 15.9 | 21.8 | 20.8 | 20.8 | 27.8 | 32.8 | 26.8 | 18.9 | 14.9 | 14.9 |
| 87.5° | 0.0 | 1.0 | 3.0 | 2.0 | 2.0 | 3.0 | 1.0 | 1.0 | 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.

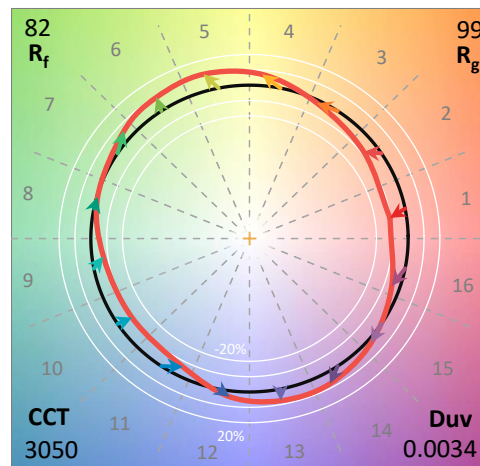
Test Information

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 | | |



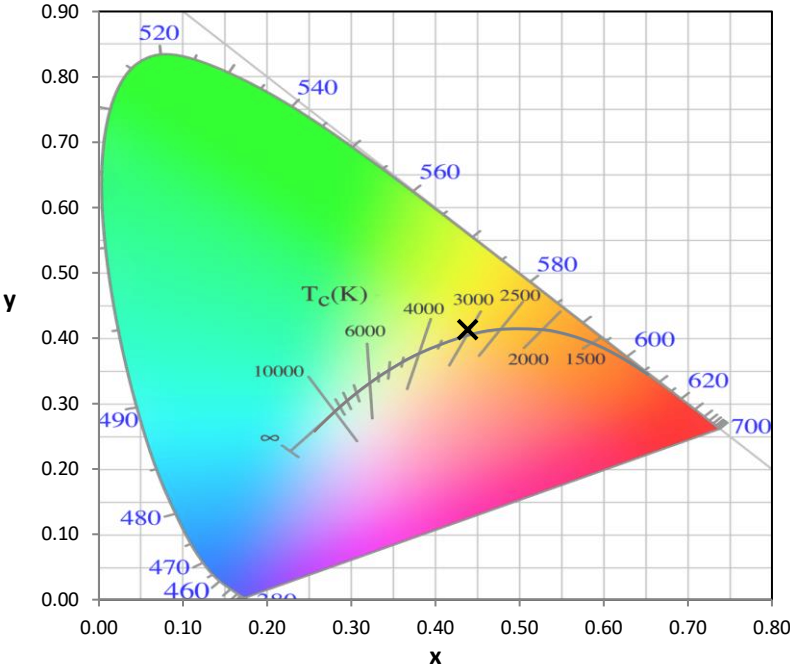
Test Conditions
 Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

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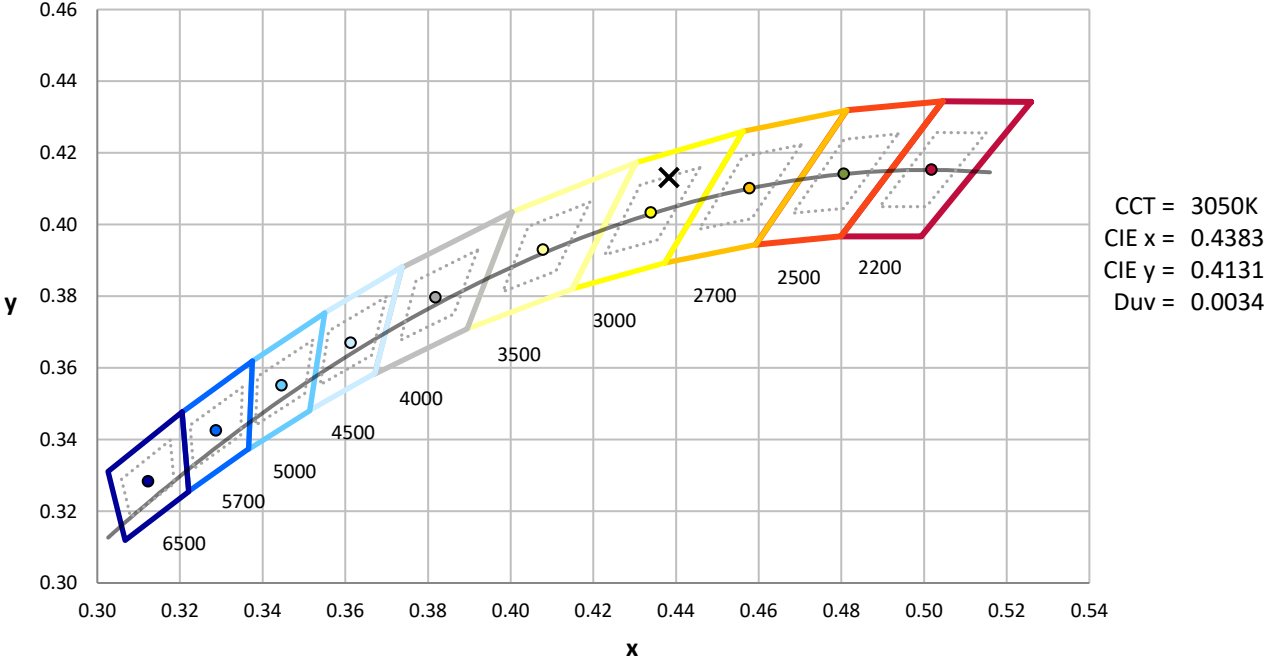
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 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



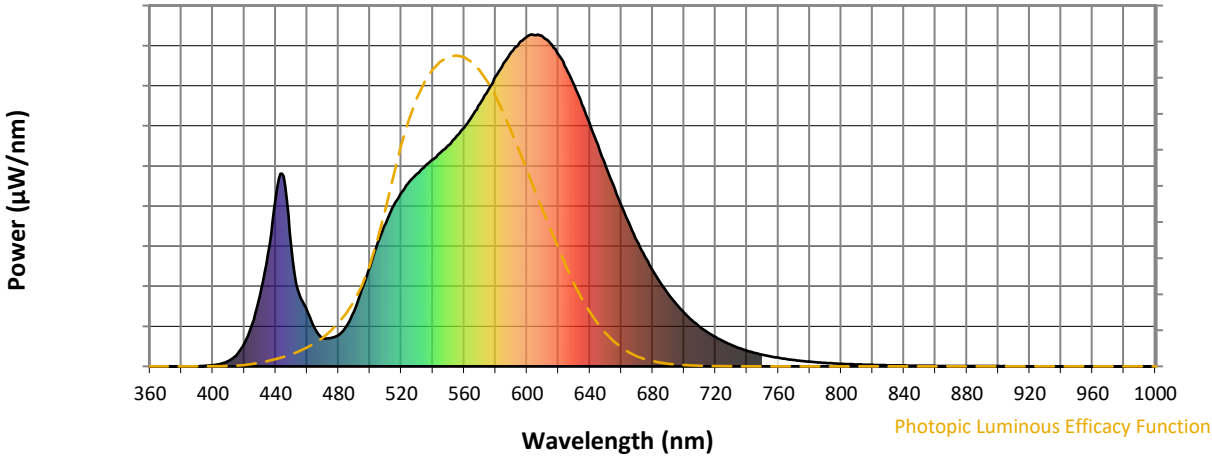
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

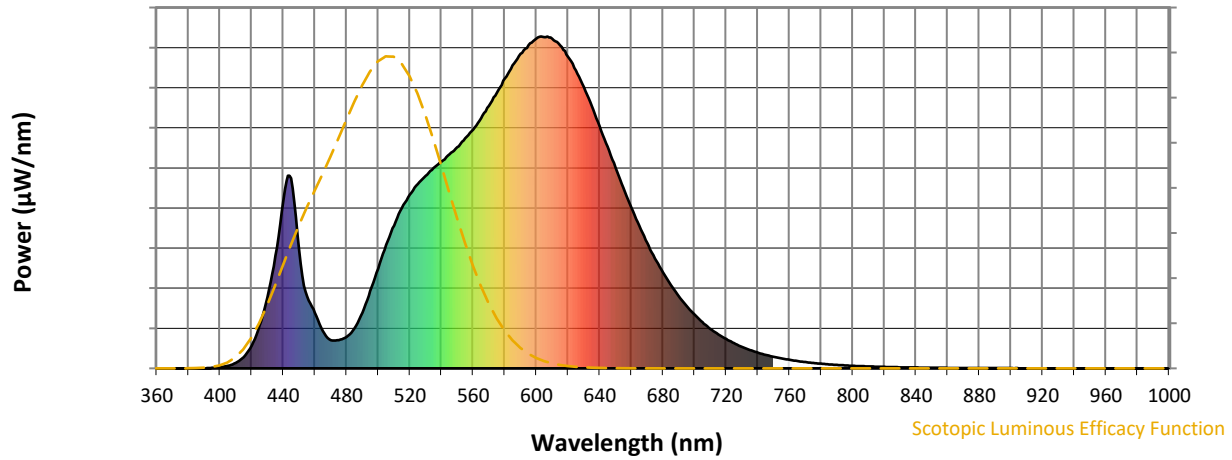


Photopic Lumens: NR

| 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



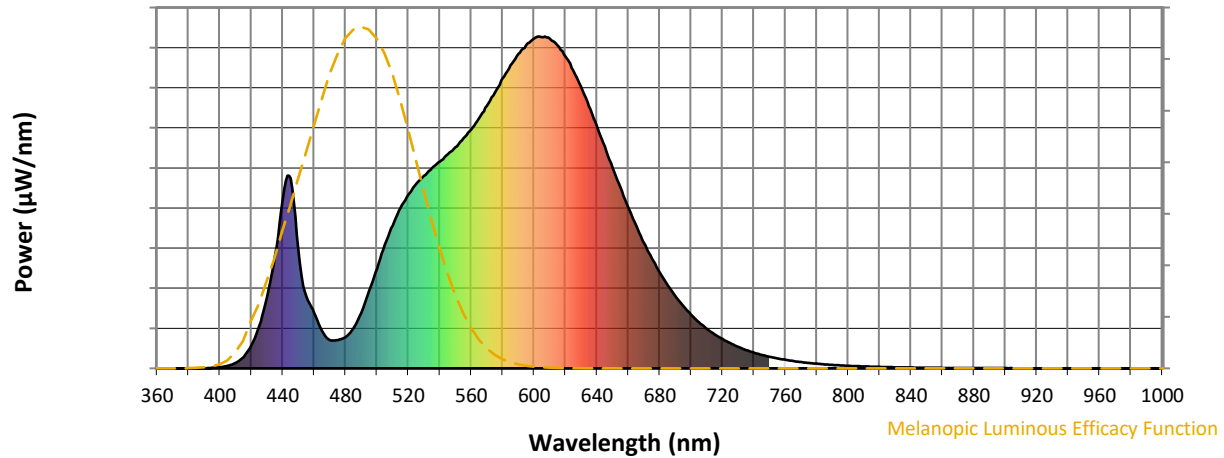
Scotopic Lumens: NR

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



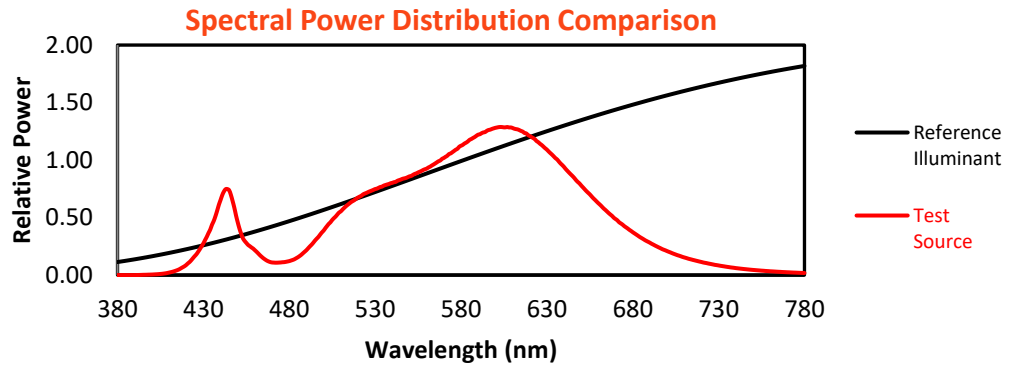
Melanopic Lumens: NR

M/P: 2.32

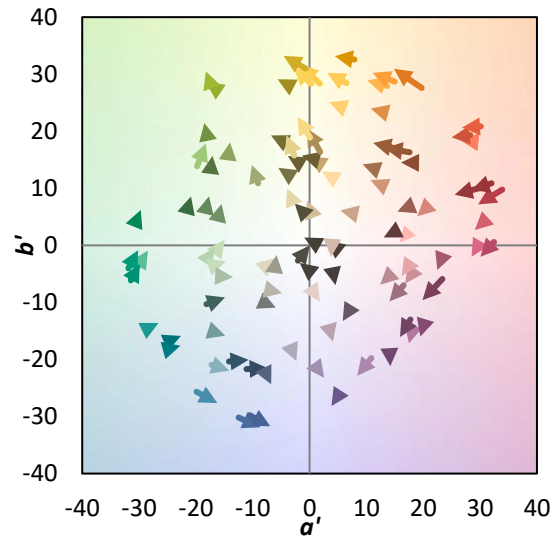
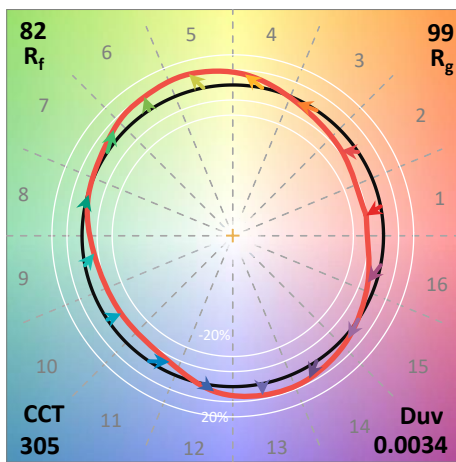
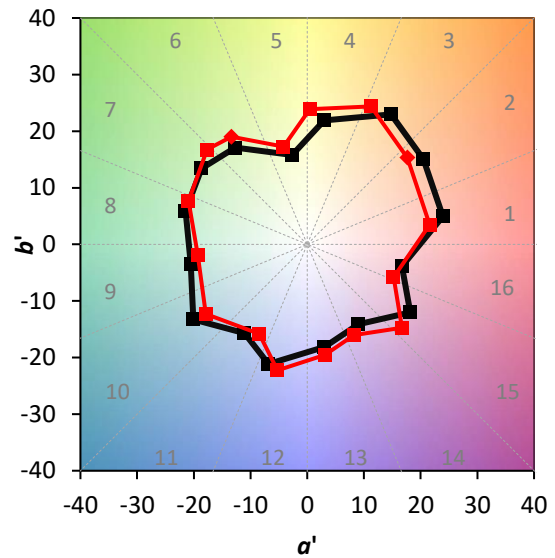
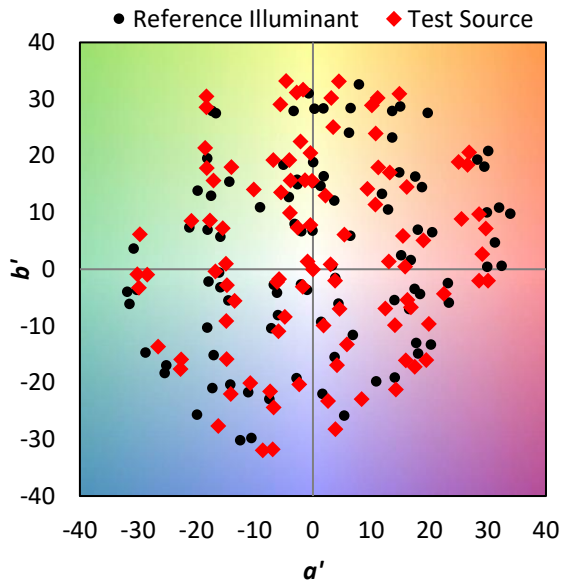
| λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) |
|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|
| 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

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

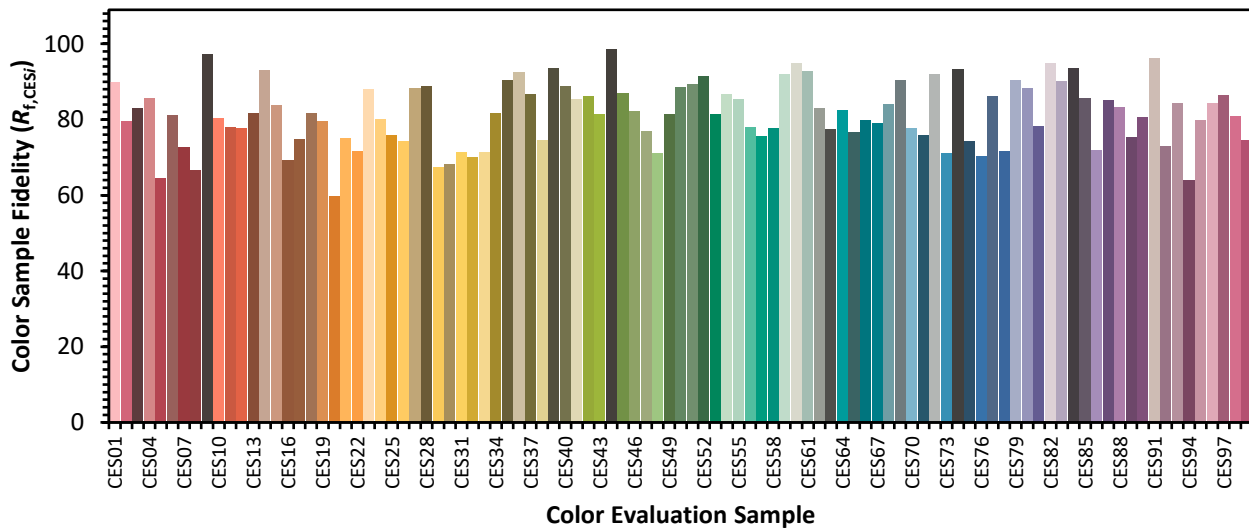


Color Vector Graphics

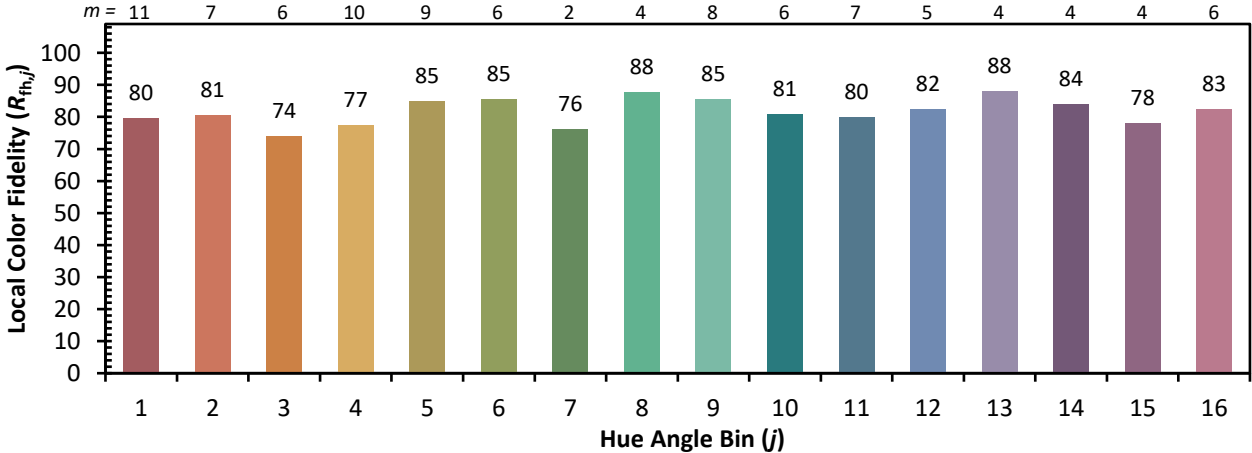
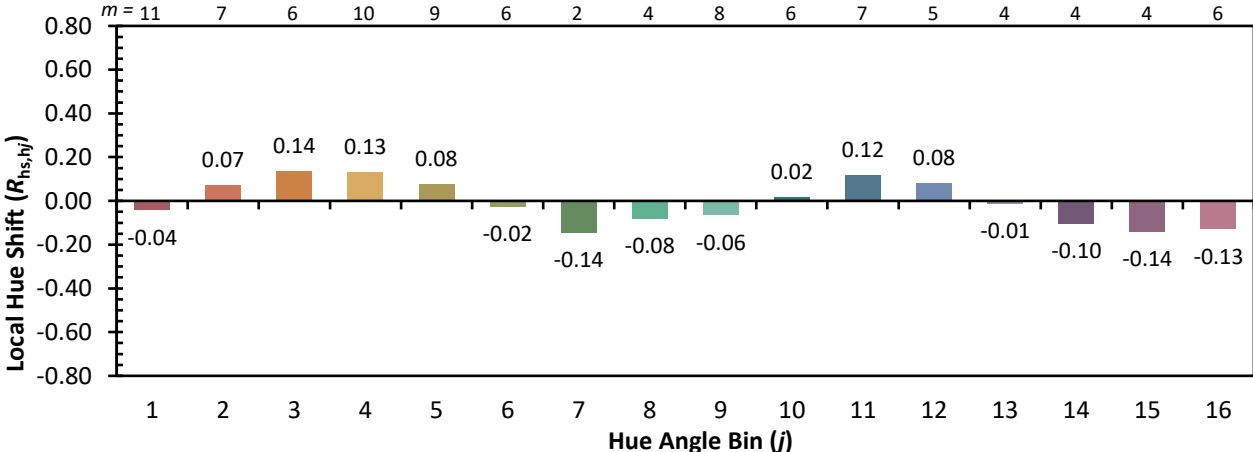
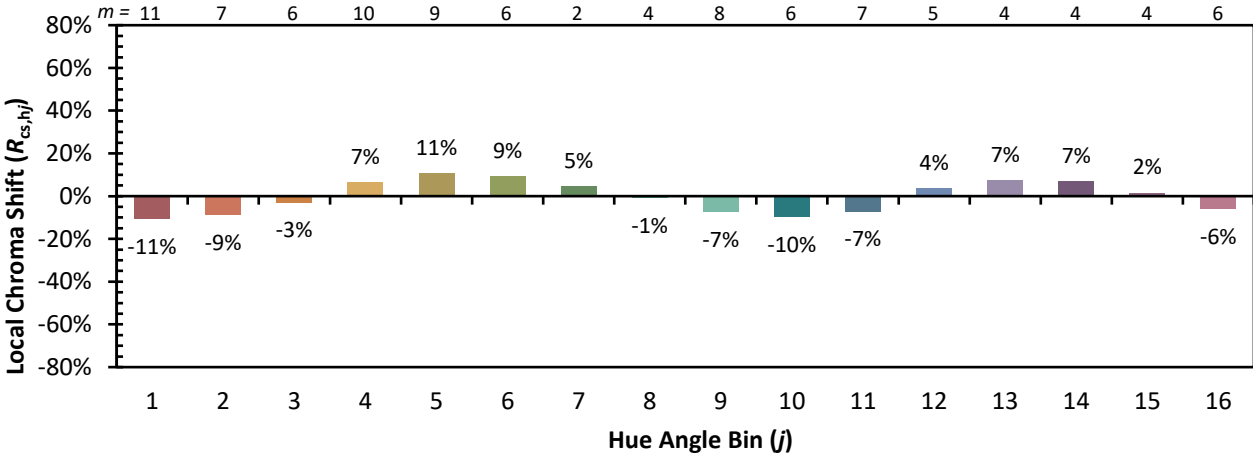


Individual Sample Fidelity Index ($R_{f,i}$)

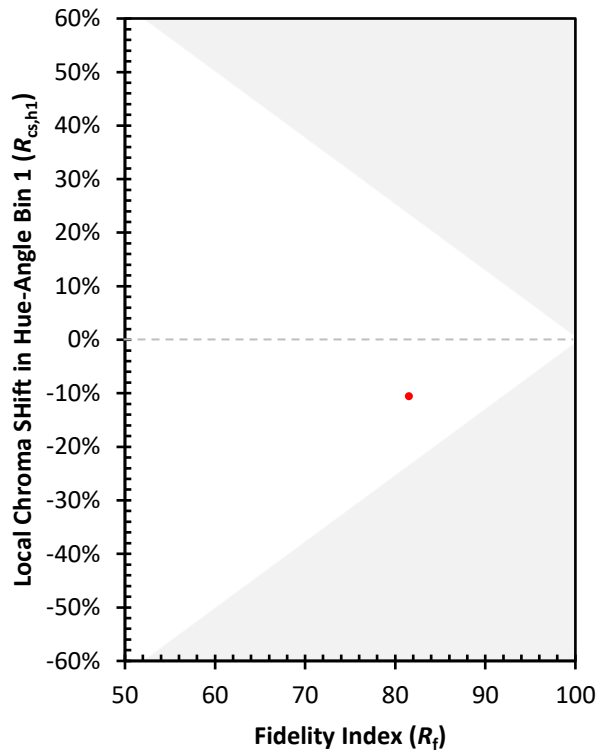
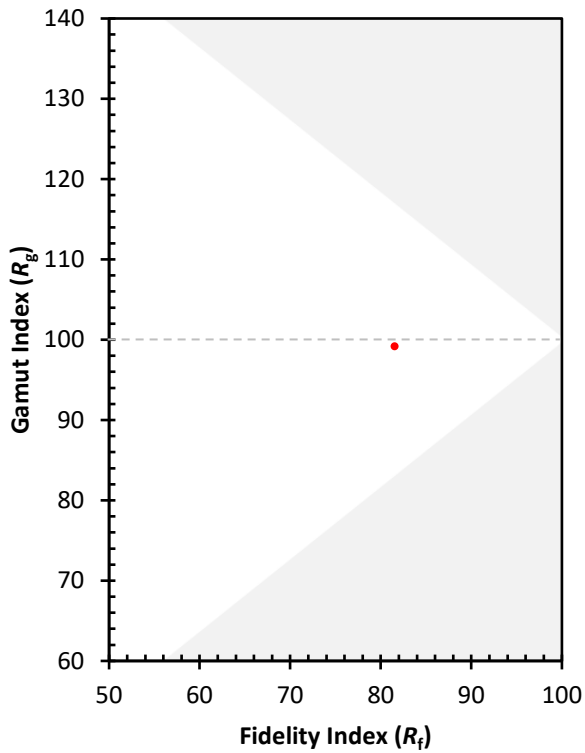
| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 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)