

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: STREETWORKS

Report Number: P856288

Luminaire Tested: **FFX-CLB-30-722-U-FG**

Issue Date: 07/16/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P856288  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/16/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: FFX-CLB-30-722-U-FG  
Description: FAIRFAX POST TOP FIXTURE w/ FROSTED GLOBE  
Light Source: (6) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

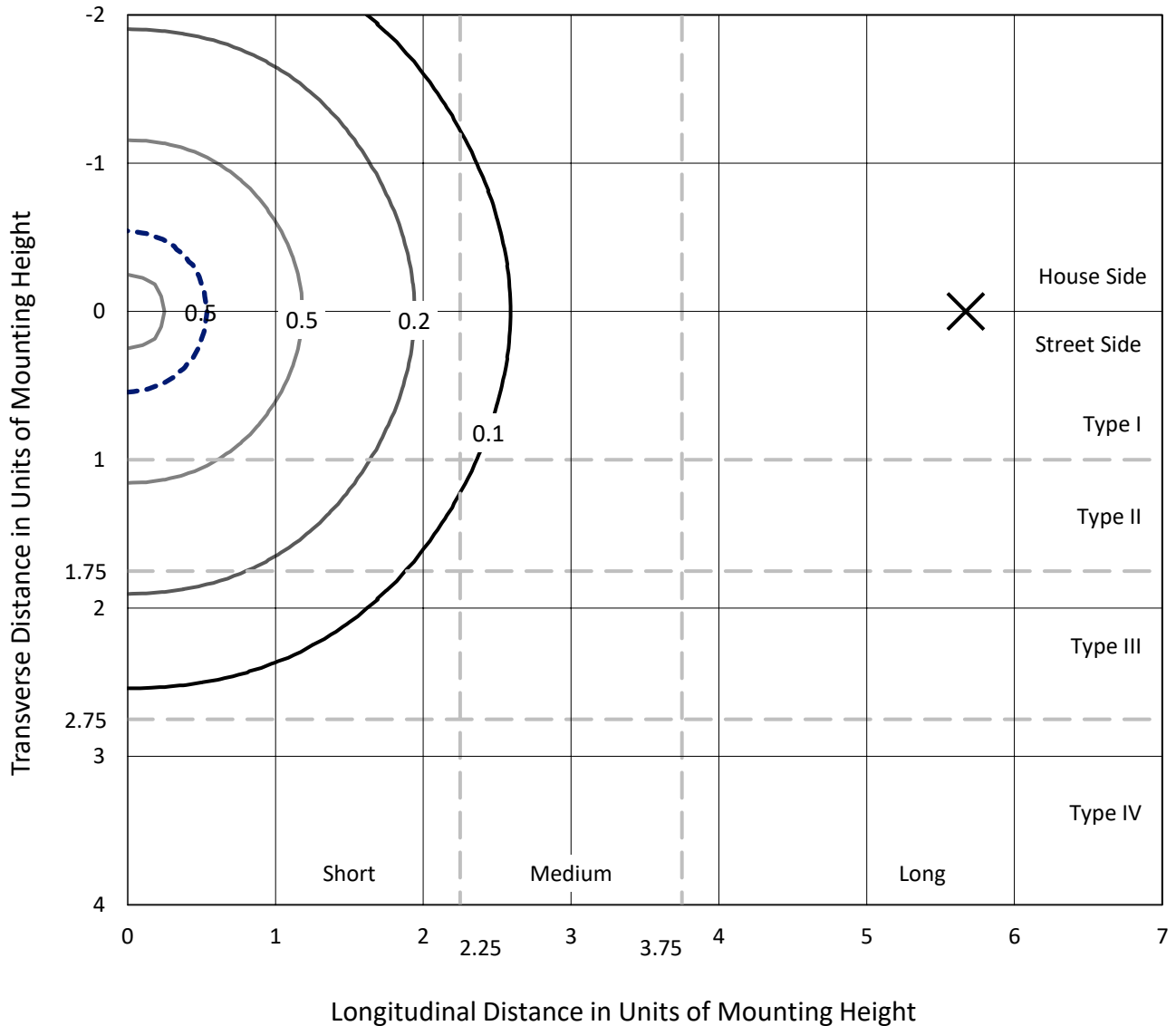
Lumens per Lamp: N/A  
Luminaire Lumens: 4406.4 lumens  
Efficiency: N/A  
Efficacy: 144.5 lumens/watt  
Luminous Opening: Vertical Cylinder (Dia: 1.58' x H: 1.5')  
IES Classification: Type V - Short  
BUG Rating: B1 - U5 - G3

Input Watts (W): 30.5  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 10.6%%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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 CATALOG NUMBER: FFX-CLB-30-722-U-FG

### Iso-Footcandle Lines of Horizontal Illumination

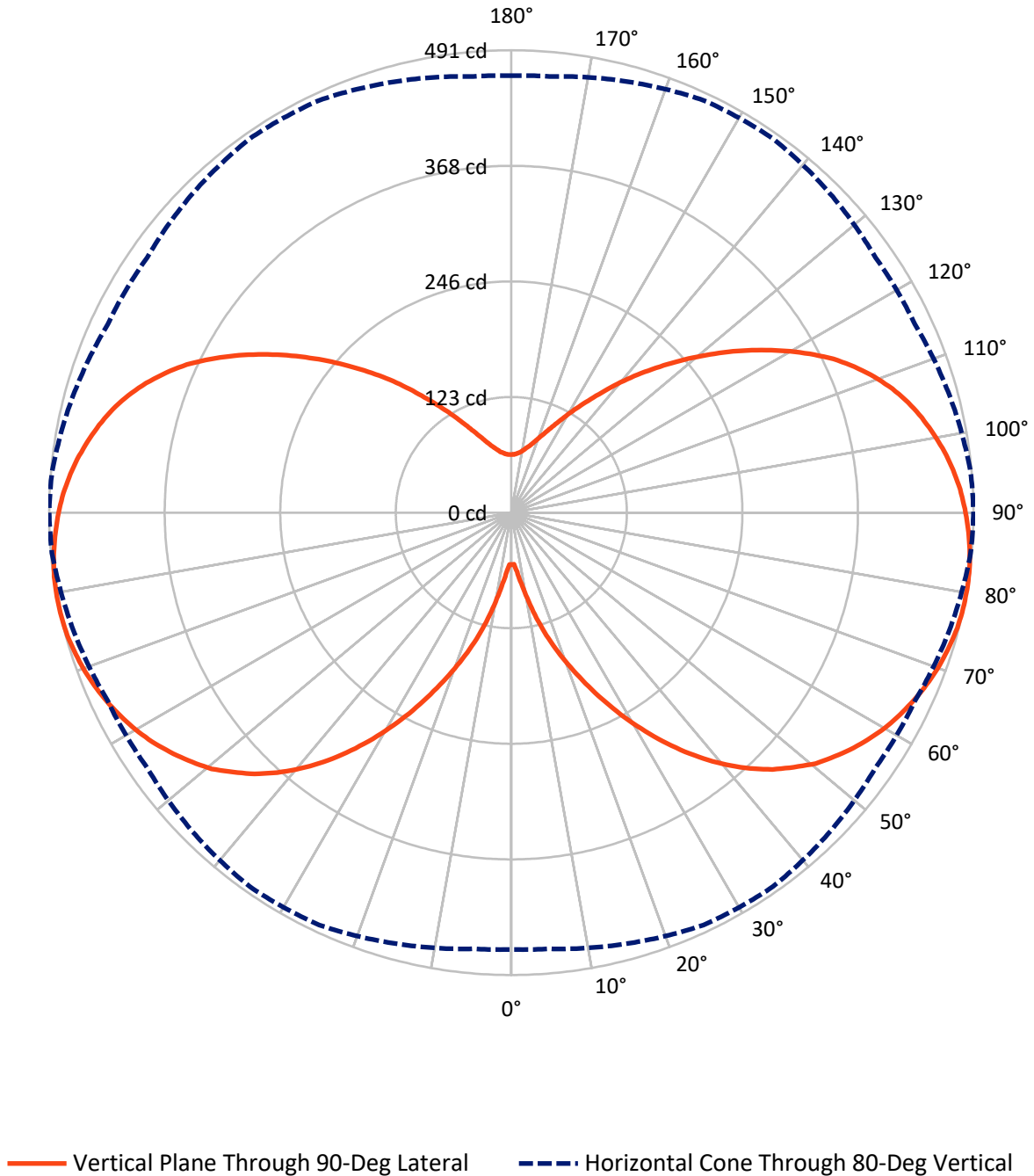
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 0.8 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



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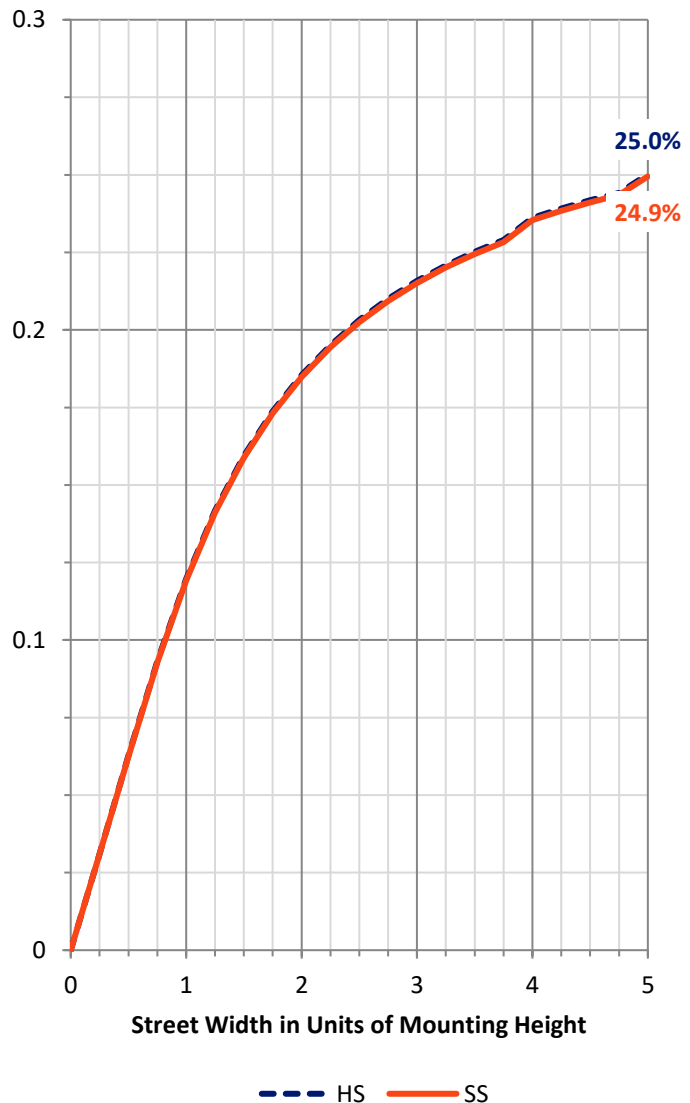
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1253.7   | 949.5  | 2203.2 |
|                    | % Fixture | 28.5     | 21.5   | 50.0   |
| <b>Street Side</b> | Lumens    | 1253.7   | 949.5  | 2203.2 |
|                    | % Fixture | 28.5     | 21.5   | 50.0   |
| <b>Total</b>       | Lumens    | 2507.3   | 1899.1 | 4406.4 |
|                    | % Fixture | 56.9     | 43.1   | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 7.0    | 0.2       |
| 10°-20°   | 38.4   | 0.9       |
| 20°-30°   | 101.1  | 2.3       |
| 30°-40°   | 193.3  | 4.4       |
| 40°-50°   | 297.1  | 6.7       |
| 50°-60°   | 389.2  | 8.8       |
| 60°-70°   | 459.4  | 10.4      |
| 70°-80°   | 504.0  | 11.4      |
| 80°-90°   | 517.8  | 11.8      |
| 90°-100°  | 498.9  | 11.3      |
| 100°-110° | 447.3  | 10.2      |
| 110°-120° | 363.5  | 8.2       |
| 120°-130° | 259.7  | 5.9       |
| 130°-140° | 164.3  | 3.7       |
| 140°-150° | 92.0   | 2.1       |
| 150°-160° | 46.3   | 1.1       |
| 160°-170° | 21.0   | 0.5       |
| 170°-180° | 6.1    | 0.1       |
| 0°-90°    | 2507.3 | 56.9      |
| 0°-180°   | 4406.4 | 100.0     |



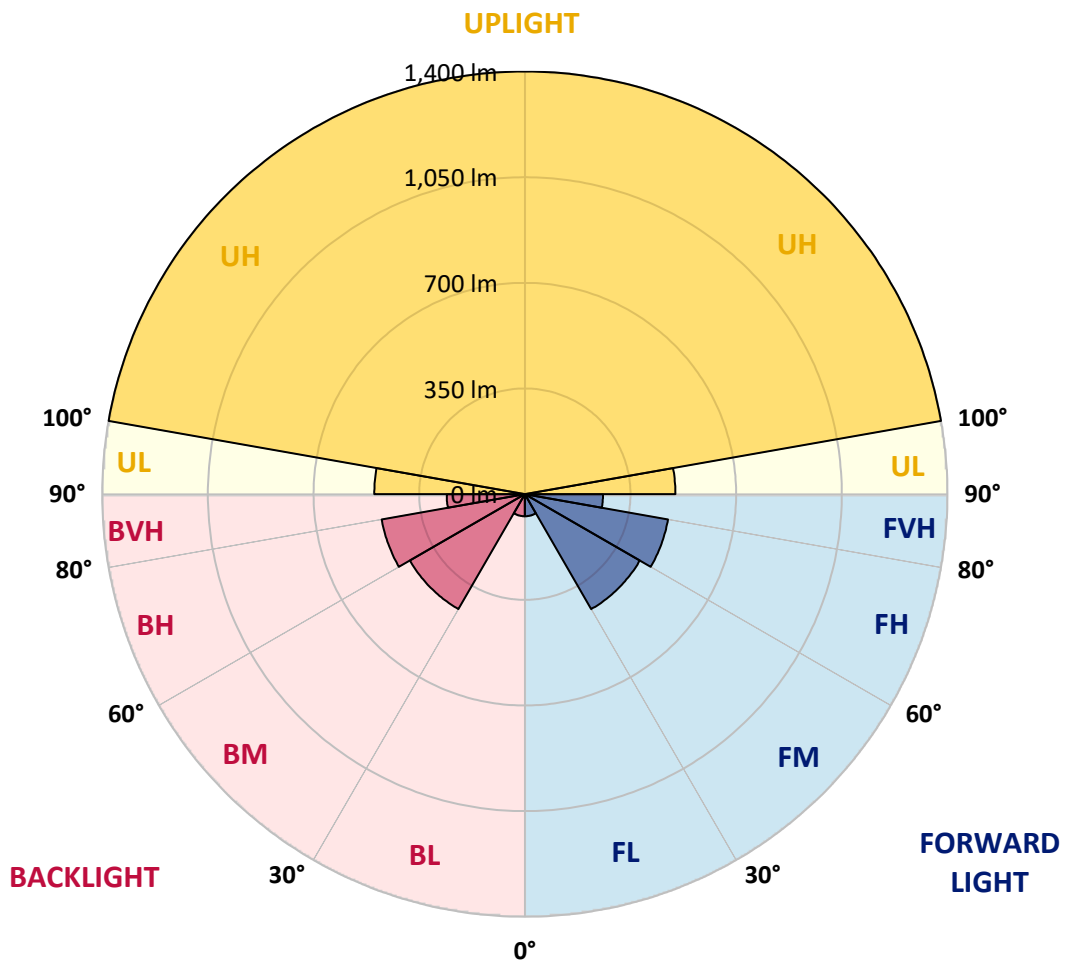
REPORT NUMBER: P856288  
 CATALOG NUMBER: FFX-CLB-30-722-U-FG

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |        |        |
|----------------|--------|-----------|-------------------------|--------|--------|
|                |        |           | B                       | U      | G      |
| FL (0°-30°)    | 73.3   | 1.7       |                         |        |        |
| FM (30°-60°)   | 439.8  | 10.0      |                         |        |        |
| FH (60°-80°)   | 481.7  | 10.9      |                         |        | G0/660 |
| FVH (80°-90°)  | 258.9  | 5.9       |                         |        | G3/500 |
| BL (0°-30°)    | 73.3   | 1.7       | B0/110                  |        |        |
| BM (30°-60°)   | 439.8  | 10.0      | B1/1000                 |        |        |
| BH (60°-80°)   | 481.7  | 10.9      | B1/500                  |        | G0/660 |
| BVH (80°-90°)  | 258.9  | 5.9       |                         |        | G3/500 |
| UL (90°-100°)  | 498.9  | 11.3      |                         | U3/500 |        |
| UH (100°-180°) | 1400.2 | 31.8      |                         | U5     |        |

**BUG Rating: B1-U5-G3**

Type V Short





REPORT NUMBER: P856288

CATALOG NUMBER: FFX-CLB-30-722-U-FG

**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°   | 75°   | 85°   | 90°   |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°     | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  | 55.3  |
| 2.5°   | 58.0  | 58.0  | 57.8  | 57.2  | 56.9  | 56.7  | 56.1  | 55.3  | 55.0  | 55.0  | 55.0  |
| 5°     | 63.2  | 63.5  | 63.5  | 63.2  | 63.5  | 62.9  | 62.9  | 62.4  | 62.6  | 62.6  | 62.9  |
| 7.5°   | 75.9  | 75.9  | 76.2  | 76.2  | 76.5  | 75.9  | 76.2  | 75.9  | 76.2  | 76.2  | 75.9  |
| 10°    | 92.5  | 92.5  | 93.0  | 92.5  | 92.7  | 92.2  | 91.9  | 91.9  | 92.7  | 92.5  | 92.2  |
| 12.5°  | 111.2 | 111.7 | 111.4 | 111.2 | 111.7 | 111.2 | 110.6 | 110.9 | 112.0 | 111.4 | 111.2 |
| 15°    | 131.0 | 131.5 | 132.1 | 131.2 | 131.5 | 131.2 | 131.0 | 131.2 | 132.3 | 131.8 | 131.5 |
| 17.5°  | 151.0 | 151.3 | 151.9 | 150.8 | 151.0 | 151.3 | 151.0 | 151.3 | 152.1 | 151.9 | 151.6 |
| 20°    | 171.1 | 171.6 | 172.2 | 171.1 | 171.4 | 171.6 | 171.4 | 171.6 | 172.7 | 172.2 | 171.9 |
| 22.5°  | 192.3 | 192.5 | 193.6 | 192.3 | 192.8 | 193.1 | 192.5 | 193.1 | 194.2 | 193.6 | 193.3 |
| 25°    | 214.2 | 213.9 | 215.6 | 214.5 | 214.8 | 215.3 | 214.8 | 215.3 | 216.7 | 216.7 | 215.8 |
| 27.5°  | 236.7 | 236.7 | 238.1 | 237.3 | 237.8 | 237.5 | 238.1 | 238.6 | 240.0 | 240.3 | 239.4 |
| 30°    | 259.2 | 259.2 | 261.4 | 260.0 | 260.9 | 261.1 | 261.1 | 261.7 | 263.3 | 263.8 | 262.8 |
| 32.5°  | 281.7 | 281.7 | 282.8 | 283.1 | 283.6 | 283.9 | 284.5 | 284.5 | 286.6 | 286.9 | 286.4 |
| 35°    | 303.7 | 303.7 | 304.8 | 305.3 | 306.7 | 306.1 | 307.0 | 307.0 | 309.4 | 309.7 | 309.4 |
| 37.5°  | 324.6 | 324.9 | 326.2 | 326.8 | 327.8 | 327.8 | 328.4 | 328.9 | 331.1 | 331.9 | 331.6 |
| 40°    | 344.4 | 344.9 | 346.0 | 347.1 | 348.2 | 348.2 | 348.4 | 349.3 | 351.7 | 352.5 | 352.2 |
| 42.5°  | 362.3 | 362.5 | 364.2 | 365.8 | 366.9 | 366.9 | 367.2 | 367.7 | 370.4 | 371.5 | 371.5 |
| 45°    | 378.0 | 378.8 | 381.0 | 383.2 | 384.2 | 384.0 | 384.0 | 384.8 | 387.8 | 389.1 | 389.1 |
| 47.5°  | 392.6 | 393.7 | 396.2 | 398.3 | 399.4 | 399.4 | 399.2 | 400.0 | 403.2 | 404.9 | 404.0 |
| 50°    | 405.7 | 406.5 | 409.2 | 412.4 | 413.3 | 413.3 | 412.4 | 413.3 | 416.8 | 419.0 | 419.0 |
| 52.5°  | 416.5 | 417.3 | 420.6 | 424.1 | 425.2 | 424.9 | 423.8 | 424.6 | 428.2 | 430.6 | 430.3 |
| 55°    | 425.7 | 426.8 | 430.3 | 434.7 | 435.8 | 434.9 | 433.6 | 434.4 | 438.2 | 441.5 | 441.2 |
| 57.5°  | 434.1 | 434.9 | 439.0 | 443.6 | 445.3 | 443.9 | 442.0 | 442.8 | 447.2 | 450.7 | 450.9 |
| 60°    | 441.2 | 442.0 | 446.6 | 452.0 | 453.4 | 451.8 | 449.3 | 450.1 | 455.0 | 459.1 | 459.6 |
| 62.5°  | 447.2 | 448.0 | 453.1 | 459.1 | 461.0 | 458.5 | 455.6 | 456.4 | 461.8 | 466.4 | 466.7 |
| 65°    | 452.0 | 452.8 | 458.8 | 465.0 | 466.9 | 464.2 | 460.7 | 461.5 | 467.5 | 472.6 | 473.2 |
| 67.5°  | 455.8 | 456.9 | 463.7 | 470.5 | 472.1 | 468.8 | 464.8 | 465.6 | 472.1 | 478.1 | 478.6 |
| 70°    | 459.1 | 460.4 | 467.5 | 474.8 | 476.7 | 472.9 | 468.0 | 469.1 | 476.4 | 482.4 | 483.2 |
| 72.5°  | 461.5 | 462.9 | 470.5 | 478.3 | 480.5 | 475.9 | 470.5 | 471.6 | 479.4 | 485.9 | 486.7 |
| 75°    | 463.2 | 464.5 | 472.6 | 481.0 | 482.9 | 478.1 | 472.1 | 473.2 | 481.3 | 488.4 | 489.5 |
| 77.5°  | 464.0 | 465.3 | 474.0 | 482.7 | 484.6 | 478.9 | 472.6 | 473.7 | 482.1 | 489.7 | 490.8 |
| 80°    | 464.0 | 465.0 | 474.0 | 483.2 | 484.8 | 479.1 | 472.4 | 473.2 | 481.9 | 490.0 | 491.1 |
| 82.5°  | 463.2 | 464.2 | 473.5 | 482.7 | 484.3 | 478.1 | 471.0 | 472.1 | 481.0 | 489.2 | 490.5 |
| 85°    | 461.3 | 462.3 | 471.6 | 481.0 | 482.7 | 475.9 | 468.6 | 469.7 | 478.6 | 487.3 | 488.6 |
| 87.5°  | 458.5 | 459.9 | 468.8 | 478.3 | 479.7 | 472.6 | 465.6 | 466.1 | 475.6 | 484.6 | 485.7 |
| 90°    | 455.3 | 456.6 | 465.0 | 474.5 | 475.9 | 468.8 | 461.5 | 462.3 | 471.6 | 480.8 | 481.9 |
| 92.5°  | 451.5 | 452.6 | 460.7 | 469.4 | 471.0 | 463.7 | 456.6 | 457.7 | 466.9 | 476.2 | 477.5 |
| 95°    | 446.6 | 447.4 | 455.0 | 463.2 | 464.5 | 458.0 | 450.9 | 452.0 | 461.3 | 470.2 | 471.6 |
| 97.5°  | 440.6 | 441.2 | 448.0 | 455.3 | 456.9 | 450.7 | 444.2 | 445.3 | 454.2 | 463.2 | 464.8 |
| 100°   | 433.9 | 434.1 | 440.1 | 446.3 | 447.7 | 442.5 | 436.6 | 437.9 | 446.3 | 455.6 | 456.6 |
| 102.5° | 426.0 | 426.0 | 430.9 | 436.0 | 437.7 | 433.3 | 428.2 | 429.5 | 437.7 | 446.3 | 447.7 |
| 105°   | 417.3 | 416.5 | 420.0 | 424.1 | 426.0 | 422.7 | 419.0 | 420.0 | 427.6 | 436.0 | 437.7 |
| 107.5° | 406.5 | 405.7 | 408.1 | 411.6 | 413.5 | 411.1 | 408.1 | 409.7 | 416.2 | 424.1 | 425.7 |
| 110°   | 394.3 | 393.2 | 394.3 | 397.0 | 399.2 | 397.5 | 395.9 | 397.3 | 403.5 | 410.8 | 411.9 |



REPORT NUMBER: P856288  
 CATALOG NUMBER: FFX-CLB-30-722-U-FG

**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°   | 75°   | 85°   | 90°   |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 112.5° | 380.2 | 378.8 | 379.1 | 381.0 | 382.9 | 382.6 | 381.5 | 383.7 | 388.9 | 394.8 | 396.2 |
| 115°   | 363.9 | 362.5 | 361.7 | 362.8 | 364.4 | 365.5 | 366.6 | 368.0 | 372.0 | 376.9 | 379.1 |
| 117.5° | 346.8 | 344.7 | 343.3 | 343.3 | 345.2 | 347.1 | 349.0 | 350.9 | 353.6 | 358.2 | 359.0 |
| 120°   | 327.0 | 325.7 | 323.8 | 323.8 | 325.4 | 327.3 | 330.3 | 332.4 | 334.1 | 337.3 | 338.4 |
| 122.5° | 307.5 | 305.6 | 303.7 | 303.7 | 304.8 | 307.5 | 311.6 | 313.5 | 314.3 | 316.2 | 317.0 |
| 125°   | 287.7 | 285.5 | 283.4 | 283.4 | 284.5 | 287.2 | 291.8 | 293.4 | 293.9 | 294.8 | 295.6 |
| 127.5° | 267.6 | 265.5 | 263.6 | 262.8 | 264.4 | 266.6 | 271.2 | 273.3 | 273.6 | 273.6 | 274.1 |
| 130°   | 247.6 | 245.9 | 244.0 | 243.2 | 244.9 | 246.8 | 251.9 | 254.1 | 253.0 | 253.0 | 253.3 |
| 132.5° | 228.6 | 227.0 | 225.1 | 224.5 | 225.6 | 228.1 | 232.7 | 234.6 | 233.7 | 232.7 | 232.9 |
| 135°   | 210.2 | 208.8 | 206.4 | 206.1 | 207.7 | 208.8 | 213.1 | 215.0 | 214.2 | 213.1 | 213.4 |
| 137.5° | 192.5 | 191.2 | 189.0 | 188.7 | 190.4 | 191.7 | 195.0 | 196.9 | 195.8 | 194.7 | 195.0 |
| 140°   | 175.7 | 174.1 | 172.5 | 172.2 | 173.3 | 174.6 | 177.6 | 178.7 | 177.6 | 176.8 | 177.1 |
| 142.5° | 160.0 | 158.9 | 157.0 | 157.0 | 157.5 | 158.6 | 161.1 | 162.2 | 161.1 | 160.0 | 159.4 |
| 145°   | 145.1 | 143.7 | 142.6 | 142.4 | 142.9 | 144.0 | 145.6 | 146.7 | 145.6 | 144.8 | 144.3 |
| 147.5° | 131.8 | 130.7 | 129.6 | 129.6 | 129.9 | 130.7 | 132.1 | 132.3 | 131.5 | 131.0 | 130.4 |
| 150°   | 119.6 | 118.5 | 118.0 | 117.7 | 118.0 | 118.2 | 119.3 | 119.9 | 119.0 | 118.5 | 118.0 |
| 152.5° | 108.5 | 107.7 | 107.1 | 107.4 | 107.4 | 107.7 | 107.9 | 108.2 | 107.4 | 107.4 | 106.8 |
| 155°   | 98.7  | 98.2  | 97.6  | 97.9  | 97.9  | 97.9  | 98.2  | 98.2  | 97.6  | 97.6  | 97.3  |
| 157.5° | 90.6  | 90.0  | 89.8  | 90.0  | 90.0  | 89.8  | 90.0  | 90.0  | 89.5  | 89.5  | 89.2  |
| 160°   | 83.5  | 83.0  | 83.0  | 83.0  | 83.0  | 82.7  | 83.2  | 83.0  | 82.7  | 82.4  | 82.4  |
| 162.5° | 77.8  | 77.3  | 77.3  | 77.6  | 77.3  | 77.3  | 77.3  | 77.3  | 77.0  | 77.0  | 76.7  |
| 165°   | 73.2  | 72.7  | 72.7  | 72.9  | 72.7  | 72.7  | 72.7  | 72.7  | 72.4  | 72.4  | 72.4  |
| 167.5° | 69.4  | 69.1  | 69.1  | 69.1  | 69.1  | 68.9  | 69.1  | 69.1  | 68.9  | 68.9  | 68.9  |
| 170°   | 66.4  | 66.2  | 66.2  | 66.2  | 66.2  | 66.2  | 66.2  | 66.2  | 66.2  | 65.9  | 65.9  |
| 172.5° | 64.5  | 64.3  | 64.3  | 64.3  | 64.3  | 64.3  | 64.3  | 64.3  | 64.0  | 64.0  | 64.0  |
| 175°   | 63.2  | 62.9  | 62.9  | 62.9  | 62.9  | 62.9  | 62.9  | 62.9  | 62.9  | 62.6  | 62.6  |
| 177.5° | 62.4  | 62.1  | 62.1  | 62.1  | 62.1  | 62.1  | 62.1  | 62.1  | 62.1  | 61.8  | 61.8  |
| 180°   | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  | 61.8  |



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

Streetworks

Report Number: SP1-2406-133-2

Test Date: 07/11/2024

Luminaire Tested: FFX-CLB-100-722-U-FR-T5

Data in this report applies to families of products including FFX-CLB-100-722-U-FR-T5.

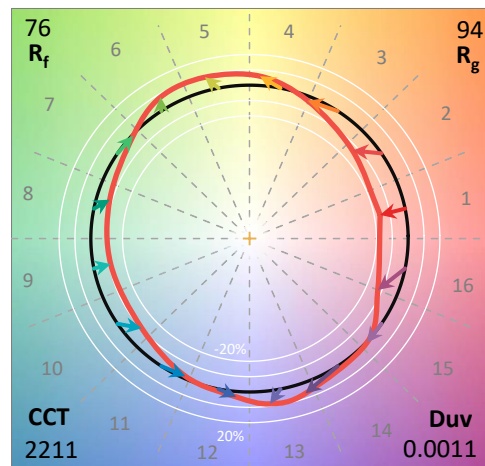
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2406-133-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 07/12/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **FFX-CLB-100-722-U-FR-T5**  
 Description: FAIRFAX ACORN W/ FAIRFAX REFRACTOR 100W T5

**Spectral Parameters**

CCT (K): 2211  
 CIE u': 0.2892  
 CIE v': 0.5376  
 Duv: 0.0011  
 CIE x: 0.5069  
 CIE y: 0.4188  
 CIE z: 0.0743  
 Peak Wavelength (nm): 606  
 Dominant Wavelength (nm): 586  
 Purity: 77.8805  
 Rf: 76.1  
 Rg: 94.3

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.4 |      |       |
| R1:       | 68.2 | R9:  | -29.2 |
| R2:       | 85.0 | R10: | 67.8  |
| R3:       | 94.0 | R11: | 60.7  |
| R4:       | 65.1 | R12: | 59.0  |
| R5:       | 66.6 | R13: | 71.3  |
| R6:       | 81.8 | R14: | 97.6  |
| R7:       | 73.4 | R15: | 58.9  |
| R8:       | 37.3 |      |       |



**Test Conditions**

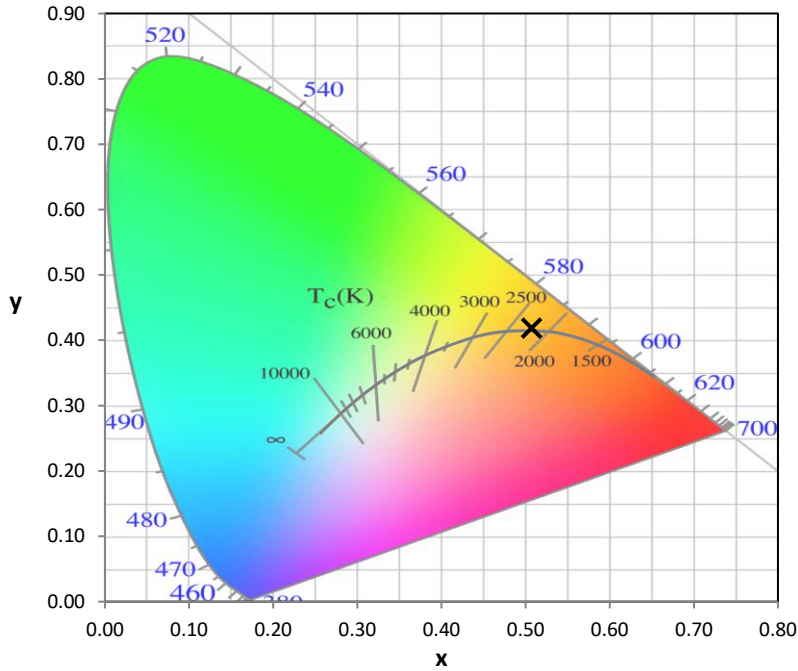
Stabilization Time: 0.813563M  
 Operation Time: 1H  
 Sphere Temperature (°C): 24.7

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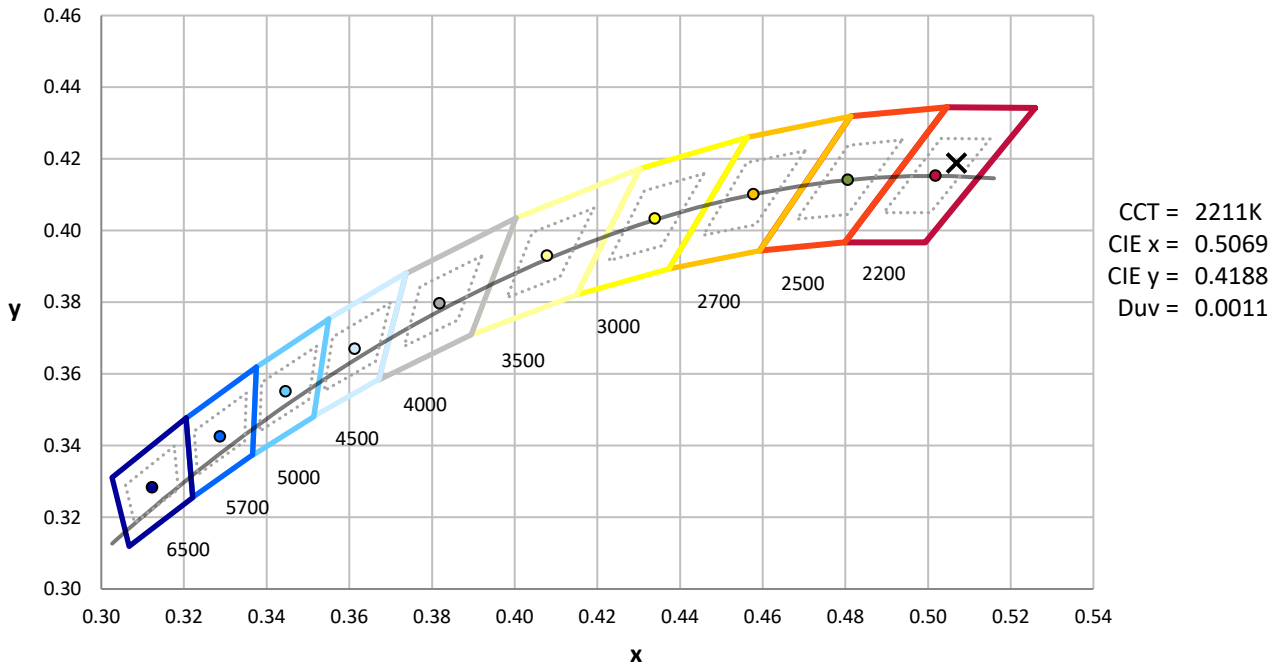
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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



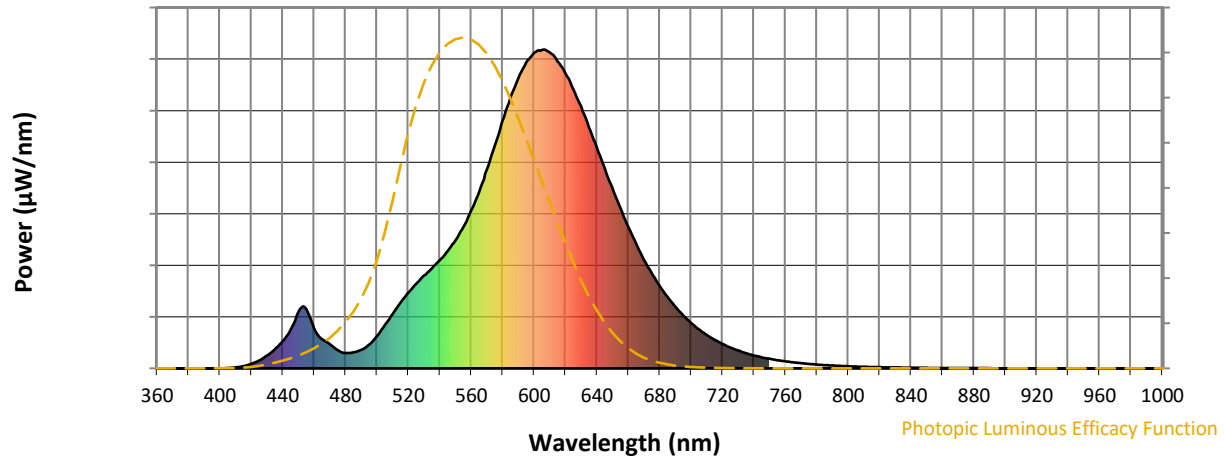
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2200K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

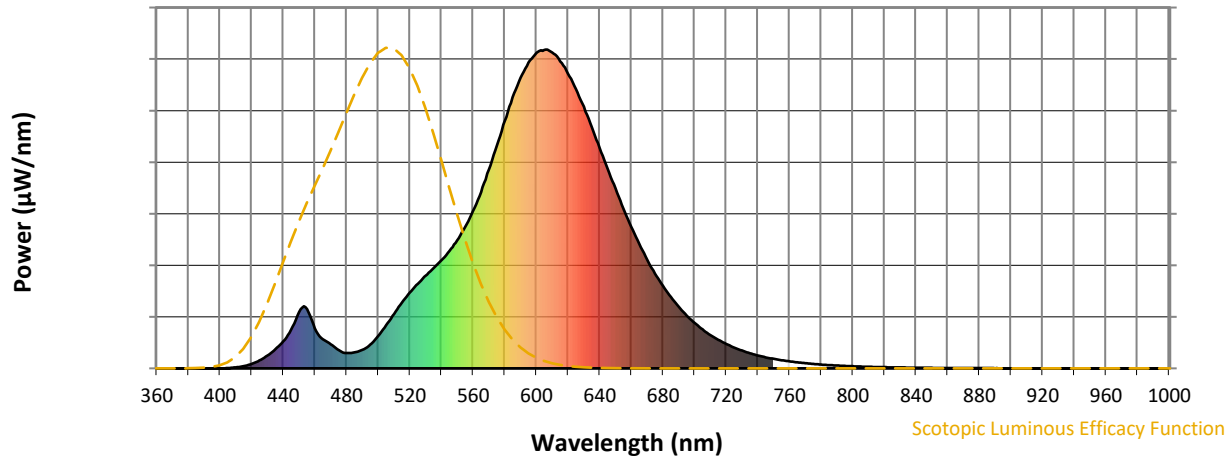


**Photopic Lumens: NR**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 58                       | NR            | 620    | 925                      | NR            | 750    | 30                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 75                       | NR            | 625    | 877                      | NR            | 755    | 26                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 101                      | NR            | 630    | 821                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 135                      | NR            | 635    | 756                      | NR            | 765    | 19                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 171                      | NR            | 640    | 692                      | NR            | 770    | 16                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 206                      | NR            | 645    | 626                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 238                      | NR            | 650    | 564                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 265                      | NR            | 655    | 502                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 291                      | NR            | 660    | 444                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 1                        | NR            | 535    | 314                      | NR            | 665    | 390                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 339                      | NR            | 670    | 341                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 7                        | NR            | 545    | 368                      | NR            | 675    | 298                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 14                       | NR            | 550    | 401                      | NR            | 680    | 259                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 25                       | NR            | 555    | 444                      | NR            | 685    | 224                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 40                       | NR            | 560    | 495                      | NR            | 690    | 194                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 60                       | NR            | 565    | 553                      | NR            | 695    | 166                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 85                       | NR            | 570    | 623                      | NR            | 700    | 142                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 121                      | NR            | 575    | 699                      | NR            | 705    | 122                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 177                      | NR            | 580    | 777                      | NR            | 710    | 105                      | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 186                      | NR            | 585    | 850                      | NR            | 715    | 90                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 126                      | NR            | 590    | 912                      | NR            | 720    | 77                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 92                       | NR            | 595    | 960                      | NR            | 725    | 65                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 76                       | NR            | 600    | 990                      | NR            | 730    | 56                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 57                       | NR            | 605    | 998                      | NR            | 735    | 48                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 48                       | NR            | 610    | 991                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 50                       | NR            | 615    | 963                      | NR            | 745    | 35                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



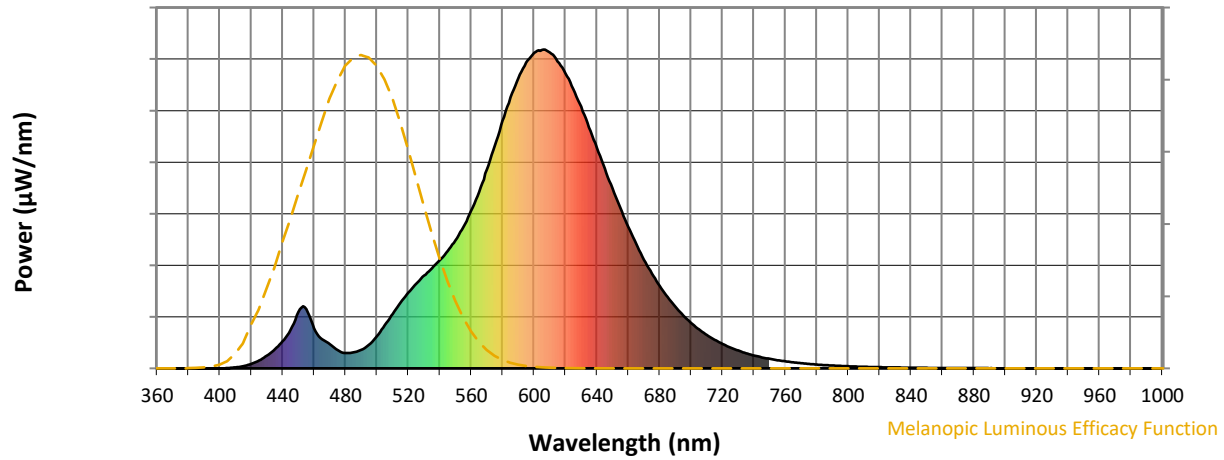
**Scotopic Lumens: NR**

**S/P: 0.87**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 58                       | NR            | 620    | 925                      | NR            | 750    | 30                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 75                       | NR            | 625    | 877                      | NR            | 755    | 26                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 101                      | NR            | 630    | 821                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 135                      | NR            | 635    | 756                      | NR            | 765    | 19                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 171                      | NR            | 640    | 692                      | NR            | 770    | 16                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 206                      | NR            | 645    | 626                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 238                      | NR            | 650    | 564                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 265                      | NR            | 655    | 502                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 291                      | NR            | 660    | 444                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 1                        | NR            | 535    | 314                      | NR            | 665    | 390                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 339                      | NR            | 670    | 341                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 7                        | NR            | 545    | 368                      | NR            | 675    | 298                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 14                       | NR            | 550    | 401                      | NR            | 680    | 259                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 25                       | NR            | 555    | 444                      | NR            | 685    | 224                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 40                       | NR            | 560    | 495                      | NR            | 690    | 194                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 60                       | NR            | 565    | 553                      | NR            | 695    | 166                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 85                       | NR            | 570    | 623                      | NR            | 700    | 142                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 121                      | NR            | 575    | 699                      | NR            | 705    | 122                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 177                      | NR            | 580    | 777                      | NR            | 710    | 105                      | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 186                      | NR            | 585    | 850                      | NR            | 715    | 90                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 126                      | NR            | 590    | 912                      | NR            | 720    | 77                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 92                       | NR            | 595    | 960                      | NR            | 725    | 65                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 76                       | NR            | 600    | 990                      | NR            | 730    | 56                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 57                       | NR            | 605    | 998                      | NR            | 735    | 48                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 48                       | NR            | 610    | 991                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 50                       | NR            | 615    | 963                      | NR            | 745    | 35                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.42

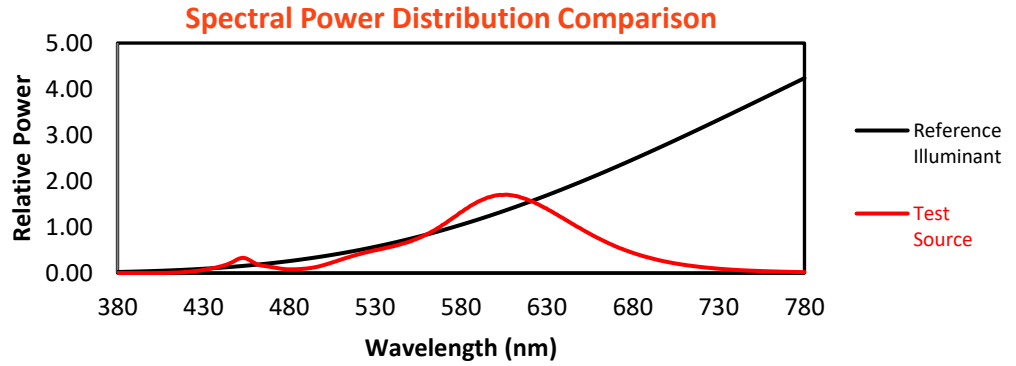
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 58                       | NR            | 620    | 925                      | NR            | 750    | 30                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 75                       | NR            | 625    | 877                      | NR            | 755    | 26                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 101                      | NR            | 630    | 821                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 135                      | NR            | 635    | 756                      | NR            | 765    | 19                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 171                      | NR            | 640    | 692                      | NR            | 770    | 16                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 206                      | NR            | 645    | 626                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 238                      | NR            | 650    | 564                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 0                        | NR            | 525    | 265                      | NR            | 655    | 502                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 0                        | NR            | 530    | 291                      | NR            | 660    | 444                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 1                        | NR            | 535    | 314                      | NR            | 665    | 390                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 339                      | NR            | 670    | 341                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 7                        | NR            | 545    | 368                      | NR            | 675    | 298                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 14                       | NR            | 550    | 401                      | NR            | 680    | 259                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 25                       | NR            | 555    | 444                      | NR            | 685    | 224                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 40                       | NR            | 560    | 495                      | NR            | 690    | 194                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 60                       | NR            | 565    | 553                      | NR            | 695    | 166                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 85                       | NR            | 570    | 623                      | NR            | 700    | 142                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 121                      | NR            | 575    | 699                      | NR            | 705    | 122                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 177                      | NR            | 580    | 777                      | NR            | 710    | 105                      | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 186                      | NR            | 585    | 850                      | NR            | 715    | 90                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 126                      | NR            | 590    | 912                      | NR            | 720    | 77                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 92                       | NR            | 595    | 960                      | NR            | 725    | 65                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 76                       | NR            | 600    | 990                      | NR            | 730    | 56                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 57                       | NR            | 605    | 998                      | NR            | 735    | 48                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 48                       | NR            | 610    | 991                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 50                       | NR            | 615    | 963                      | NR            | 745    | 35                       | NR            | 875    | 1                        | NR            |        |                          |               |

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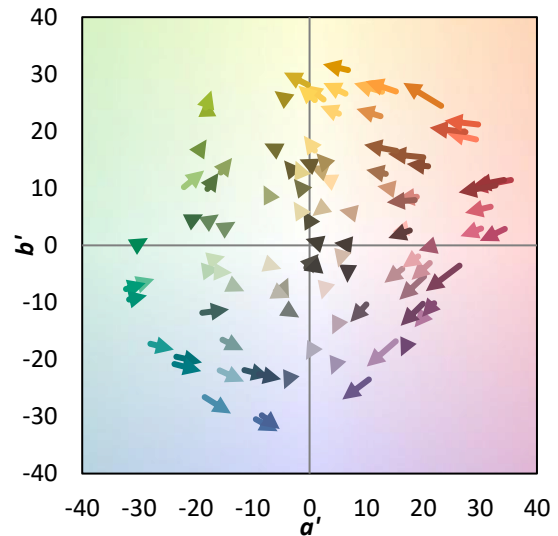
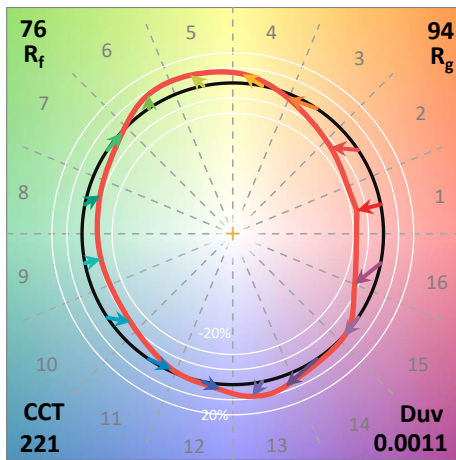
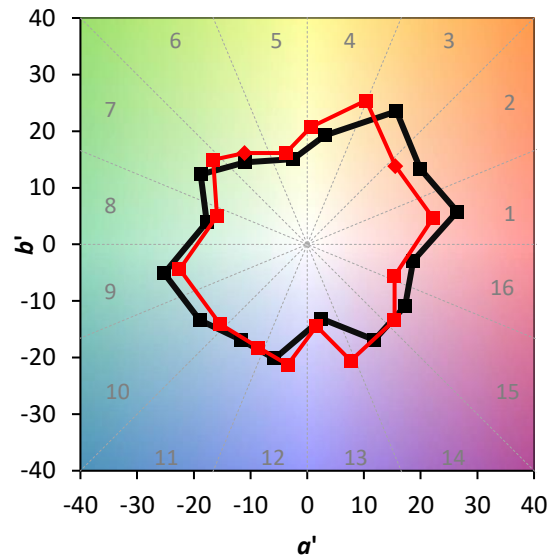
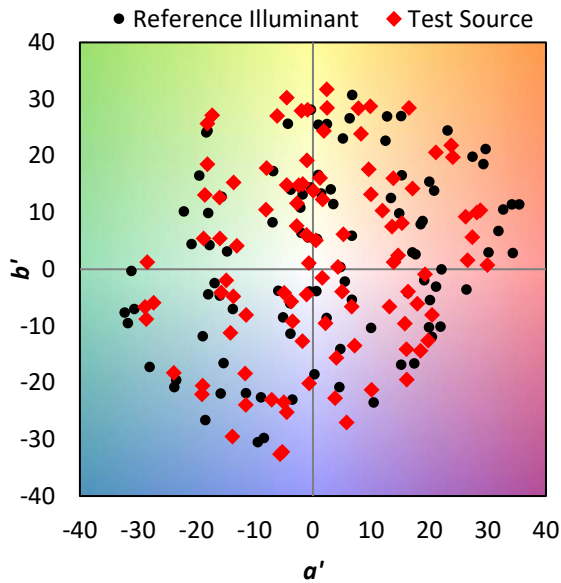
TM-30-18

**Summary**

$R_f = 76.1$   
 $R_g = 94.3$   
 CIE  $R_a = 71.4$   
 $R_g = -29.2$



**Color Vector Graphics**



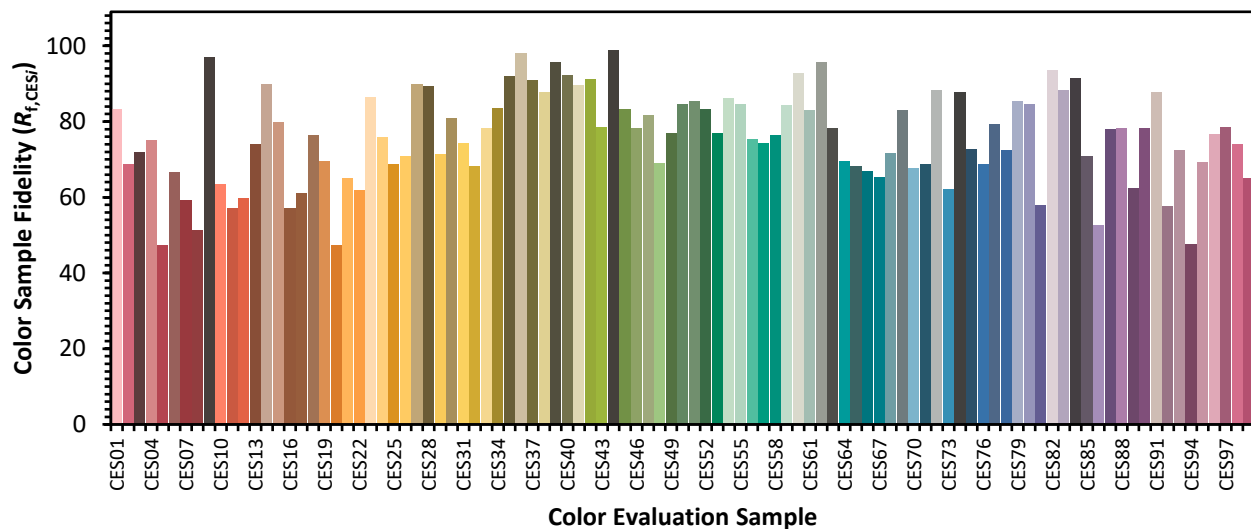


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

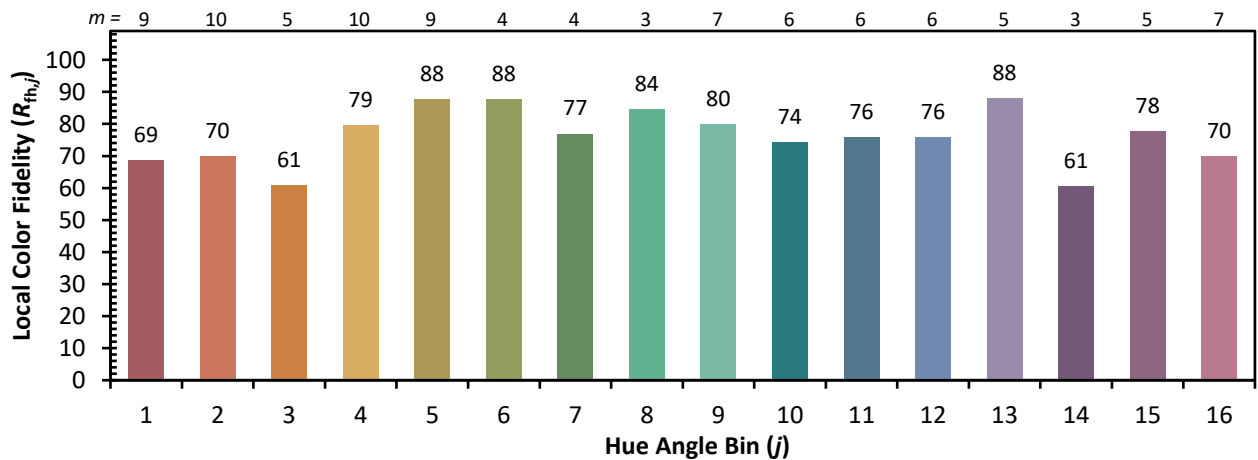
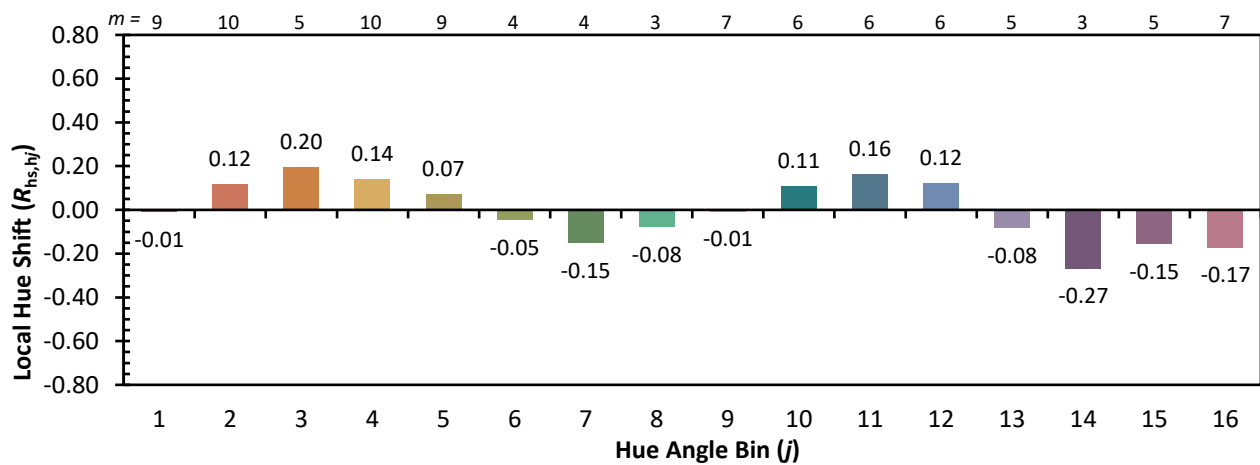
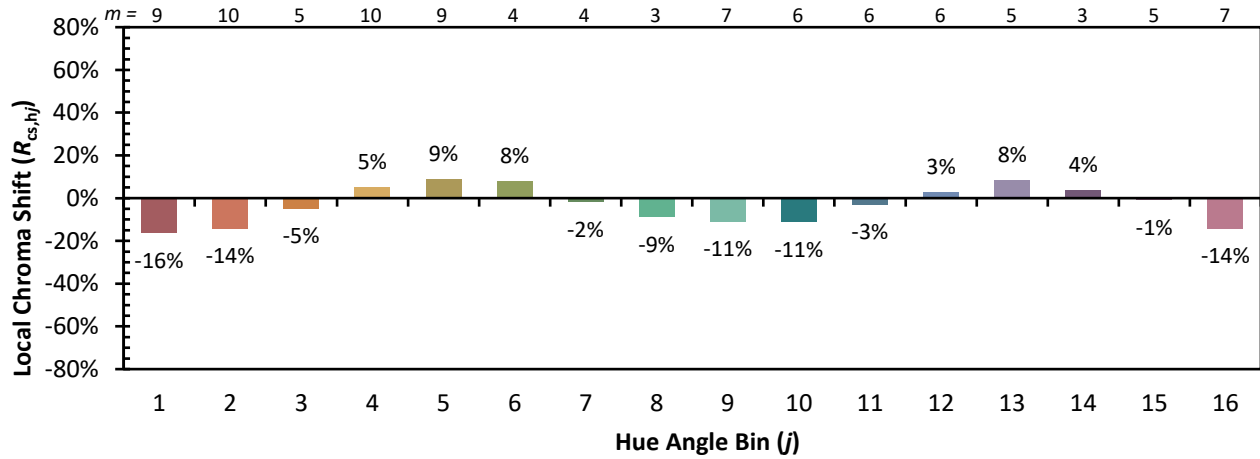
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 71 | CES51 = 85 | CES76 = 69 |
| CES02 = 65 | CES27 = 90 | CES52 = 83 | CES77 = 79 |
| CES03 = 32 | CES28 = 89 | CES53 = 77 | CES78 = 72 |
| CES04 = 72 | CES29 = 71 | CES54 = 86 | CES79 = 86 |
| CES05 = 52 | CES30 = 81 | CES55 = 85 | CES80 = 85 |
| CES06 = 52 | CES31 = 74 | CES56 = 75 | CES81 = 58 |
| CES07 = 44 | CES32 = 68 | CES57 = 74 | CES82 = 93 |
| CES08 = 42 | CES33 = 78 | CES58 = 76 | CES83 = 88 |
| CES09 = 29 | CES34 = 84 | CES59 = 84 | CES84 = 92 |
| CES10 = 79 | CES35 = 92 | CES60 = 93 | CES85 = 71 |
| CES11 = 62 | CES36 = 98 | CES61 = 83 | CES86 = 53 |
| CES12 = 68 | CES37 = 91 | CES62 = 96 | CES87 = 78 |
| CES13 = 45 | CES38 = 88 | CES63 = 78 | CES88 = 78 |
| CES14 = 75 | CES39 = 96 | CES64 = 69 | CES89 = 63 |
| CES15 = 72 | CES40 = 92 | CES65 = 68 | CES90 = 78 |
| CES16 = 49 | CES41 = 90 | CES66 = 67 | CES91 = 88 |
| CES17 = 51 | CES42 = 91 | CES67 = 65 | CES92 = 58 |
| CES18 = 57 | CES43 = 79 | CES68 = 72 | CES93 = 72 |
| CES19 = 74 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 68 | CES45 = 83 | CES70 = 68 | CES95 = 69 |
| CES21 = 88 | CES46 = 78 | CES71 = 69 | CES96 = 77 |
| CES22 = 81 | CES47 = 82 | CES72 = 88 | CES97 = 79 |
| CES23 = 92 | CES48 = 69 | CES73 = 62 | CES98 = 74 |
| CES24 = 92 | CES49 = 77 | CES74 = 88 | CES99 = 65 |
| CES25 = 74 | CES50 = 85 | CES75 = 73 |            |



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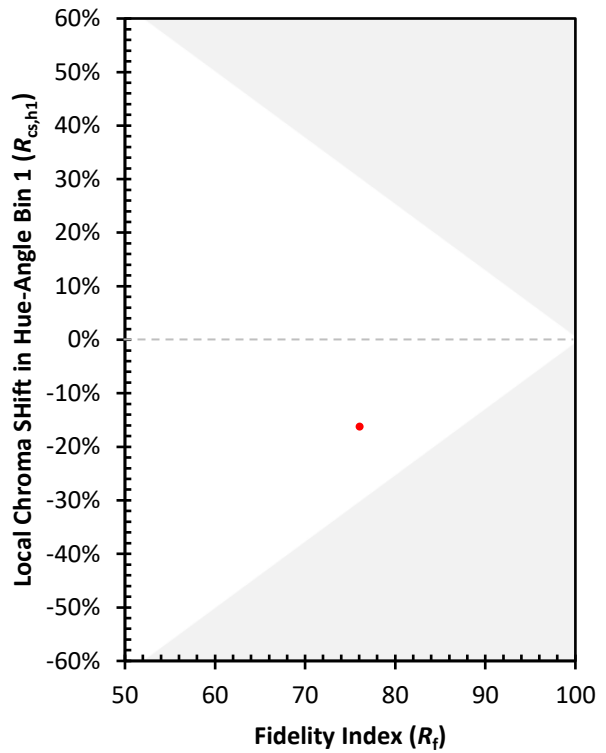
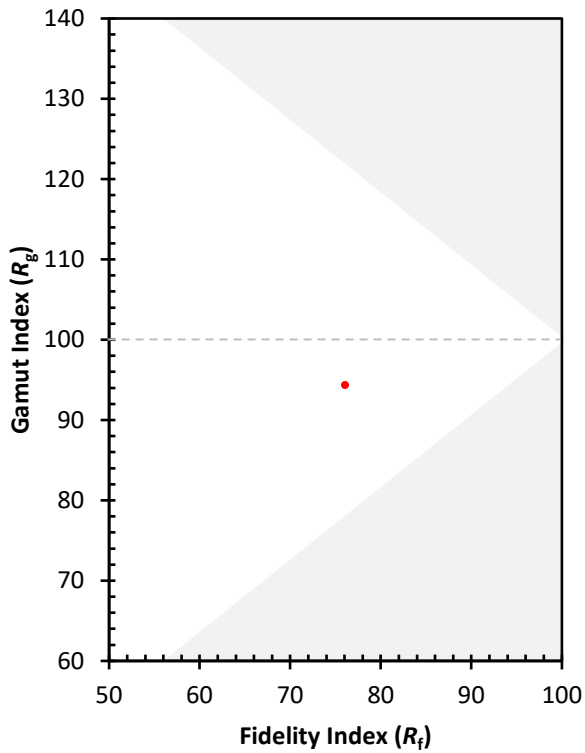
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)