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: P856352

Luminaire Tested: **FFX-CLB-20-730-U-VM8**

Issue Date: 07/16/2024

Report Generated By 670245763

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-08 |
| Report Number: | P856352 |
| Test Lab: | INNOVATION CENTER(G3) |
| Issue Date: | 07/16/2024 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS (FORMERLY EATON) |
| Product Line: | STREETWORKS |
| Catalog Number: | FFX-CLB-20-730-U-VM8 |
| Description: | FAIRFAX POST TOP FIXTURE w/ ULA ACORN 8 INCH NECK |
| Light Source: | (6) 3000K CCT, 70 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 3180.5 lumens |
| Efficiency: | N/A |
| Efficacy: | 163.1 lumens/watt |
| Luminous Opening: | Vertical Cylinder (Dia: 1.33' x H: 2.08') |
| IES Classification: | Type V - Short |
| BUG Rating: | B1 - U5 - G2 |

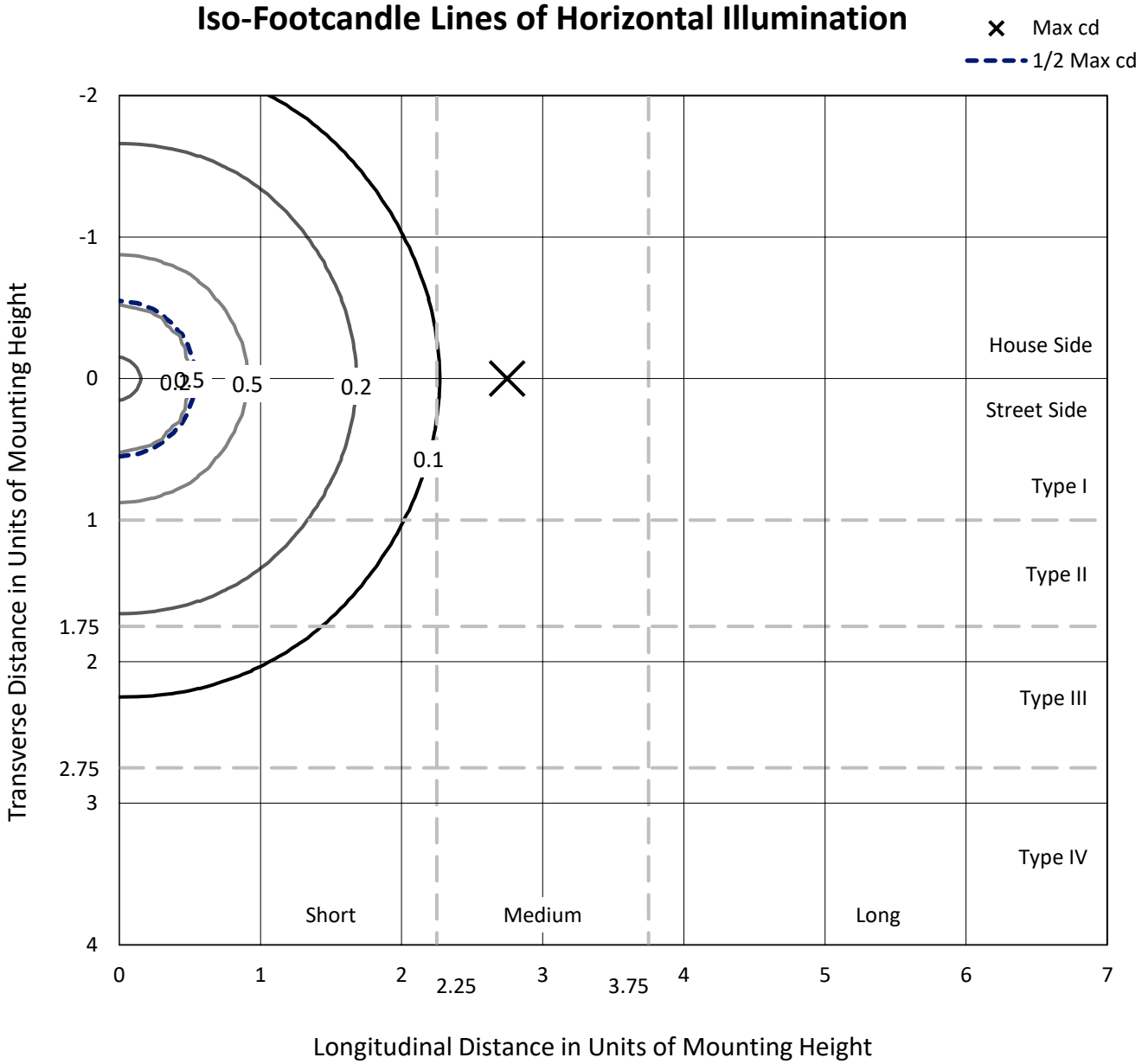
| | |
|---|---|
| Input Watts (W): | 19.5 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.99 |
| Total Harmonic Distortion (THDi): | 9.8%% |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 24 FT |

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

Scaled Data Report

REPORT NUMBER: P856352
CATALOG NUMBER: FFX-CLB-20-730-U-VM8

## Iso-Footcandle Lines of Horizontal Illumination




Based on 15 foot mounting height. Maximum calculated value = 0.6 fc
Type V - Short - N/A

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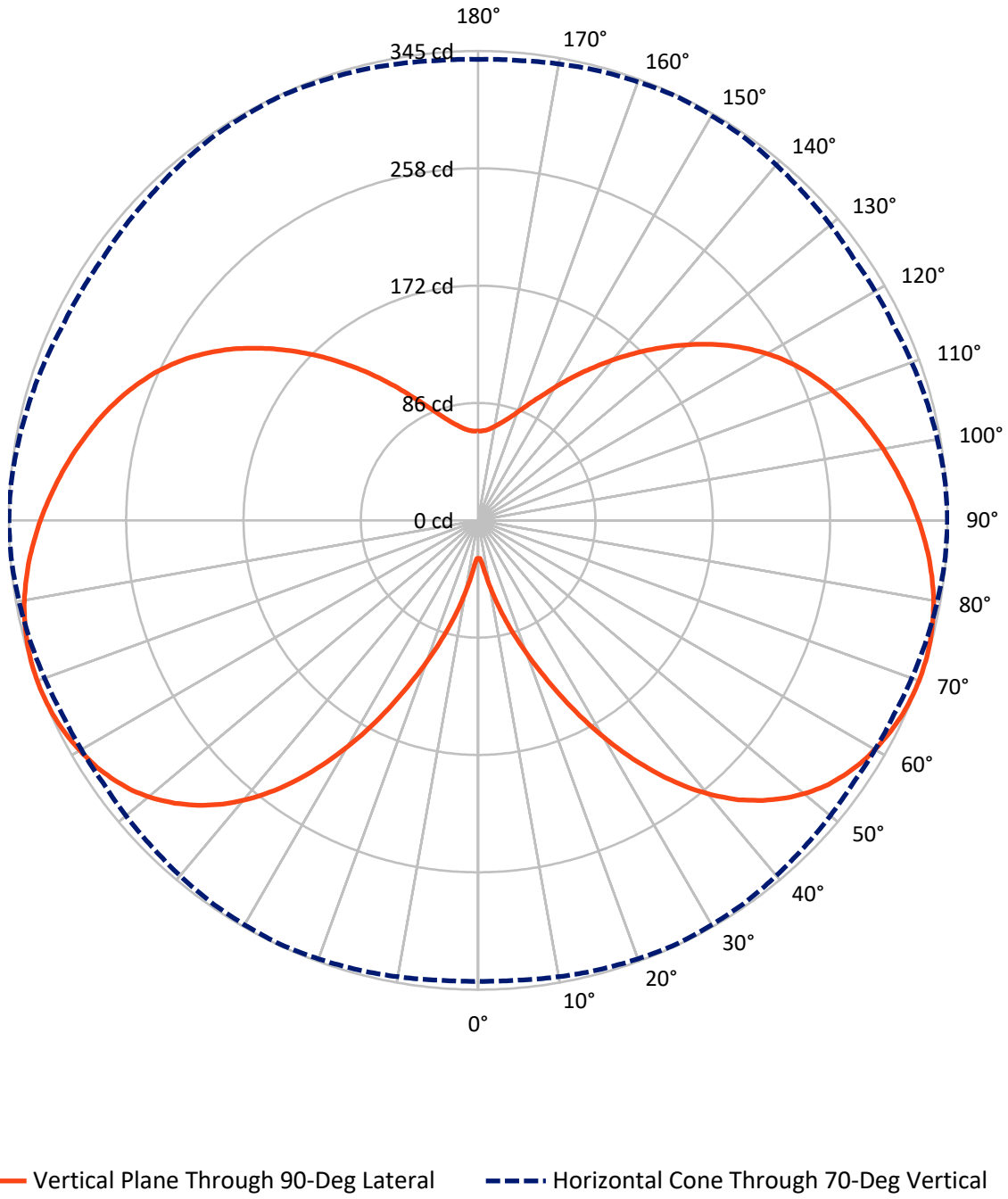
Peachtree City, GA 30269

Scaled Data Report

REPORT NUMBER: P856352
CATALOG NUMBER: FFX-CLB-20-730-U-VM8

## Luminous Intensity Polar Plot



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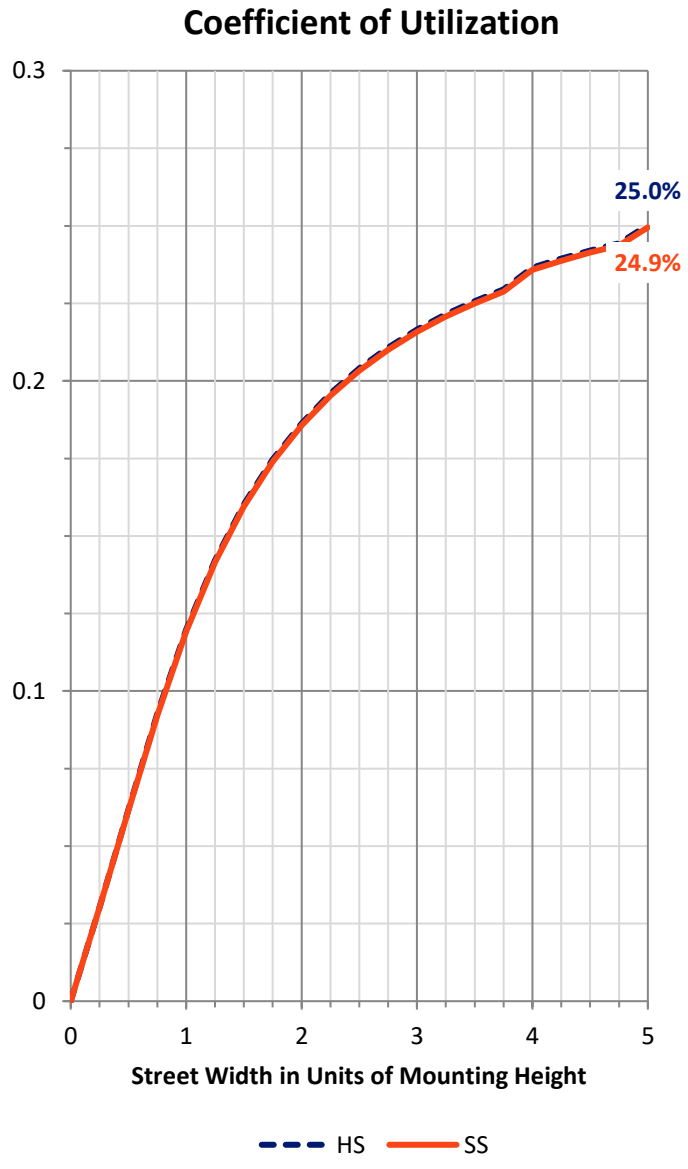
REPORT NUMBER: P856352
CATALOG NUMBER: FFX-CLB-20-730-U-VM8

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 900.7 | 689.6 | 1590.2 |
| | % Fixture | 28.3 | 21.7 | 50.0 |
| **Street Side** | Lumens | 900.7 | 689.6 | 1590.2 |
| | % Fixture | 28.3 | 21.7 | 50.0 |
| **Total** | Lumens | 1801.3 | 1379.1 | 3180.5 |
| | % Fixture | 56.6 | 43.4 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 3.7 | 0.1 |
| 10°-20° | 22.8 | 0.7 |
| 20°-30° | 67.9 | 2.1 |
| 30°-40° | 142.1 | 4.5 |
| 40°-50° | 222.9 | 7.0 |
| 50°-60° | 289.4 | 9.1 |
| 60°-70° | 335.0 | 10.5 |
| 70°-80° | 358.6 | 11.3 |
| 80°-90° | 358.9 | 11.3 |
| 90°-100° | 338.5 | 10.6 |
| 100°-110° | 302.8 | 9.5 |
| 110°-120° | 254.6 | 8.0 |
| 120°-130° | 195.3 | 6.1 |
| 130°-140° | 133.6 | 4.2 |
| 140°-150° | 81.5 | 2.6 |
| 150°-160° | 44.6 | 1.4 |
| 160°-170° | 21.6 | 0.7 |
| 170°-180° | 6.4 | 0.2 |
| 0°-90° | 1801.3 | 56.6 |
| 0°-180° | 3180.5 | 100.0 |



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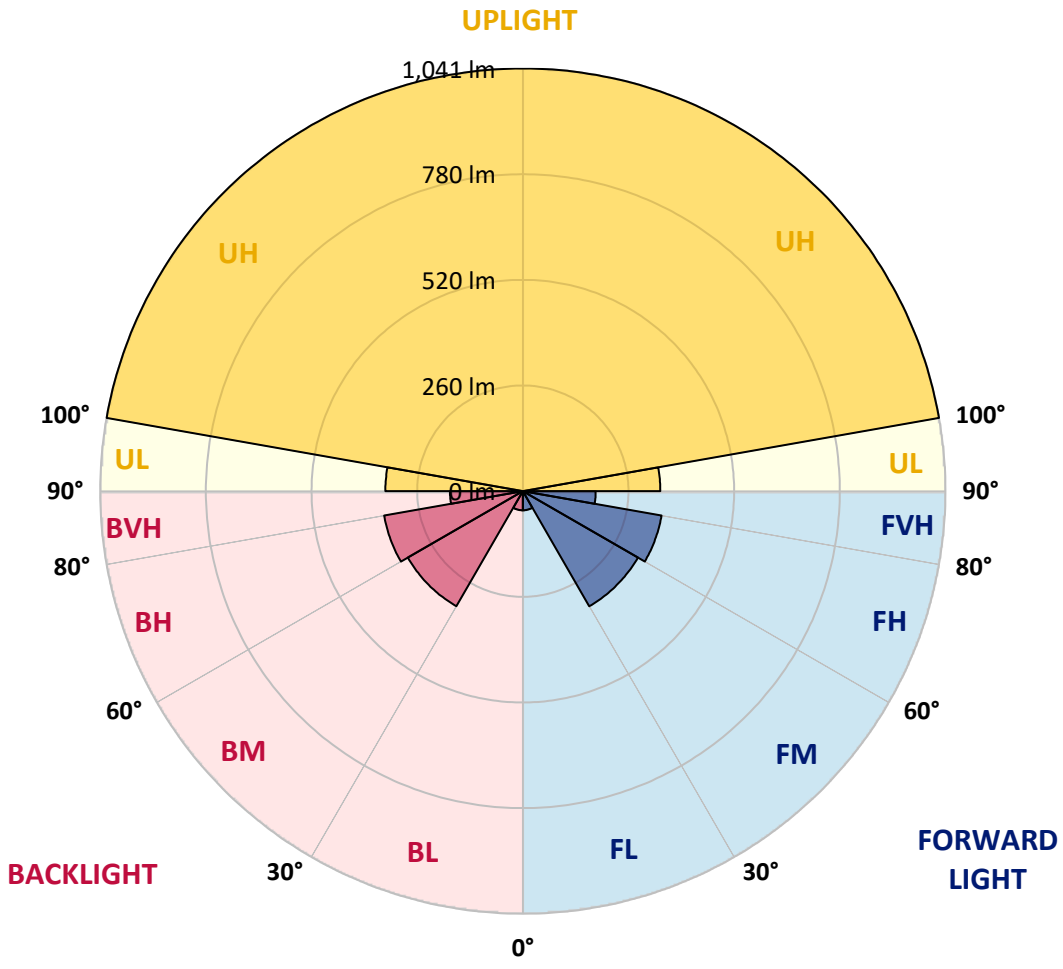
REPORT NUMBER: P856352
CATALOG NUMBER: FFX-CLB-20-730-U-VM8

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 47.2 | 1.5 | | | |
| FM | (30°-60°) | 327.2 | 10.3 | | | |
| FH | (60°-80°) | 346.8 | 10.9 | | | G0/660 |
| FVH | (80°-90°) | 179.5 | 5.6 | | | G2/225 |
| BL | (0°-30°) | 47.2 | 1.5 | B0/110 | | |
| BM | (30°-60°) | 327.2 | 10.3 | B1/1000 | | |
| BH | (60°-80°) | 346.8 | 10.9 | B1/500 | | G0/660 |
| BVH | (80°-90°) | 179.5 | 5.6 | | | G2/225 |
| UL | (90°-100°) | 338.5 | 10.6 | | U3/500 | |
| UH | (100°-180°) | 1040.6 | 32.7 | | U5 | |

**BUG Rating: B1-U5-G2**
Type V Short



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Scaled Data Report

REPORT NUMBER: P856352
CATALOG NUMBER: FFX-CLB-20-730-U-VM8

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 27.9 | 27.9 | 27.9 | 27.9 | 27.9 | 27.9 | 27.9 | 27.9 | 27.9 | 27.9 | *27.9* |
| 2.5° | 29.1 | 29.1 | 28.9 | 28.9 | 28.7 | 28.5 | 28.5 | 28.5 | 28.3 | 28.3 | *28.1* |
| 5° | 33.2 | 33.0 | 33.0 | 32.8 | 33.0 | 32.8 | 32.8 | 32.8 | 32.8 | 32.4 | *32.4* |
| 7.5° | 41.2 | 41.0 | 41.0 | 40.8 | 41.2 | 40.8 | 40.8 | 41.0 | 41.0 | 40.8 | *40.8* |
| 10° | 51.6 | 51.4 | 51.4 | 51.0 | 51.4 | 51.2 | 51.2 | 50.8 | 51.0 | 50.8 | *51.0* |
| 12.5° | 64.0 | 63.4 | 63.4 | 63.2 | 63.6 | 63.4 | 63.2 | 62.8 | 63.2 | 63.0 | *63.0* |
| 15° | 76.8 | 77.0 | 76.8 | 76.6 | 77.0 | 77.0 | 76.8 | 76.4 | 76.8 | 76.4 | *76.6* |
| 17.5° | 91.1 | 91.1 | 91.1 | 90.5 | 91.1 | 91.3 | 91.1 | 90.7 | 90.9 | 91.1 | *91.1* |
| 20° | 106.6 | 106.6 | 106.8 | 106.4 | 107.4 | 106.8 | 106.6 | 106.4 | 106.6 | 106.8 | *107.0* |
| 22.5° | 123.7 | 123.7 | 123.9 | 123.7 | 124.3 | 124.3 | 124.1 | 124.1 | 124.3 | 124.7 | *124.7* |
| 25° | 142.7 | 142.9 | 142.9 | 142.3 | 143.7 | 144.1 | 143.7 | 143.7 | 144.1 | 144.7 | *144.7* |
| 27.5° | 162.2 | 163.1 | 162.7 | 162.7 | 164.5 | 164.7 | 164.5 | 164.7 | 165.3 | 165.9 | *166.1* |
| 30° | 182.4 | 183.0 | 183.9 | 183.2 | 185.3 | 185.5 | 185.7 | 185.9 | 186.7 | 187.7 | *187.7* |
| 32.5° | 202.6 | 203.2 | 203.6 | 203.6 | 206.3 | 206.1 | 205.9 | 206.7 | 207.9 | 208.3 | *208.9* |
| 35° | 222.8 | 222.8 | 223.2 | 223.4 | 226.0 | 225.8 | 226.3 | 226.9 | 228.1 | 228.9 | *229.3* |
| 37.5° | 240.9 | 240.5 | 241.5 | 241.9 | 244.0 | 244.2 | 244.4 | 245.4 | 246.8 | 247.9 | *248.3* |
| 40° | 257.4 | 257.0 | 258.3 | 258.9 | 260.7 | 260.7 | 261.1 | 262.3 | 264.0 | 265.0 | *265.2* |
| 42.5° | 272.1 | 271.9 | 273.1 | 273.9 | 275.8 | 275.6 | 275.4 | 277.0 | 278.8 | 280.1 | *280.5* |
| 45° | 284.8 | 284.5 | 286.2 | 287.2 | 288.6 | 288.2 | 288.2 | 289.6 | 291.7 | 293.1 | *293.3* |
| 47.5° | 295.6 | 295.6 | 297.4 | 298.6 | 299.8 | 299.2 | 298.8 | 300.2 | 302.3 | 304.3 | *304.5* |
| 50° | 305.1 | 304.9 | 307.0 | 308.4 | 309.4 | 308.6 | 308.0 | 309.4 | 311.7 | 313.7 | *314.1* |
| 52.5° | 312.7 | 313.1 | 315.1 | 317.0 | 317.8 | 316.5 | 315.5 | 317.0 | 319.4 | 321.6 | *322.1* |
| 55° | 319.2 | 319.4 | 321.6 | 323.9 | 324.3 | 322.7 | 321.4 | 322.7 | 325.3 | 327.8 | *328.2* |
| 57.5° | 324.3 | 324.7 | 327.4 | 329.4 | 329.6 | 327.8 | 326.3 | 327.4 | 330.2 | 332.7 | *333.3* |
| 60° | 328.8 | 329.2 | 331.6 | 333.9 | 334.1 | 331.8 | 330.0 | 330.8 | 333.9 | 336.7 | *337.1* |
| 62.5° | 332.2 | 332.9 | 335.5 | 337.5 | 337.5 | 334.9 | 332.7 | 333.5 | 336.7 | 339.8 | *340.2* |
| 65° | 335.1 | 335.7 | 338.4 | 340.4 | 340.2 | 337.1 | 334.7 | 335.5 | 339.0 | 342.0 | *342.6* |
| 67.5° | 337.1 | 337.5 | 340.4 | 342.4 | 341.6 | 338.4 | 335.9 | 336.5 | 340.2 | 343.3 | *343.9* |
| 70° | *338.4* | *338.8* | *341.6* | *343.5* | *342.2* | *338.8* | *336.1* | *336.9* | *340.6* | *343.9* | *344.5* |
| 72.5° | 339.0 | 339.6 | 342.2 | 343.9 | 342.4 | 338.6 | 335.7 | 336.7 | 340.4 | 343.9 | *344.3* |
| 75° | 338.8 | 339.2 | 341.8 | 343.3 | 341.4 | 337.7 | 334.7 | 335.7 | 339.6 | 342.6 | *343.3* |
| 77.5° | 337.7 | 338.2 | 340.6 | 341.8 | 339.6 | 335.9 | 333.1 | 334.1 | 337.7 | 340.8 | *341.4* |
| 80° | 336.1 | 336.5 | 338.8 | 339.6 | 337.3 | 333.7 | 331.0 | 332.0 | 335.5 | 338.4 | *339.0* |
| 82.5° | 333.5 | 334.1 | 336.1 | 336.5 | 334.1 | 330.8 | 328.2 | 329.2 | 332.4 | 335.1 | *335.5* |
| 85° | 330.2 | 330.6 | 332.4 | 332.7 | 330.2 | 327.4 | 325.1 | 326.1 | 329.0 | 331.0 | *331.6* |
| 87.5° | 326.5 | 326.5 | 328.4 | 328.4 | 325.7 | 323.1 | 321.4 | 322.3 | 324.9 | 326.5 | *327.1* |
| 90° | 322.1 | 322.3 | 323.5 | 323.3 | 320.8 | 318.6 | 317.2 | 318.2 | 320.4 | 321.8 | *322.3* |
| 92.5° | 317.2 | 317.4 | 318.4 | 318.0 | 315.5 | 313.7 | 312.5 | 313.7 | 315.7 | 316.8 | *317.2* |
| 95° | 311.9 | 312.1 | 312.9 | 312.1 | 309.8 | 308.4 | 307.4 | 308.8 | 310.4 | 311.5 | *311.9* |
| 97.5° | 306.4 | 306.6 | 307.2 | 306.4 | 303.9 | 302.7 | 302.3 | 303.5 | 305.1 | 305.9 | *306.4* |
| 100° | 300.7 | 300.7 | 301.1 | 299.8 | 297.8 | 296.8 | 296.6 | 298.0 | 299.6 | 300.4 | *300.9* |
| 102.5° | 294.3 | 294.5 | 294.5 | 293.3 | 291.3 | 290.7 | 290.7 | 292.3 | 293.9 | 294.5 | *294.9* |
| 105° | 287.8 | 287.8 | 287.8 | 286.8 | 284.5 | 284.1 | 284.3 | 286.0 | 287.8 | 288.6 | *289.0* |
| 107.5° | 280.7 | 280.9 | 280.5 | 279.5 | 277.6 | 277.2 | 277.6 | 279.9 | 281.5 | 282.3 | *282.7* |
| 110° | 273.1 | 273.3 | 273.1 | 271.9 | 270.3 | 270.1 | 270.7 | 272.9 | 274.6 | 275.4 | *276.0* |

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

Scaled Data Report

REPORT NUMBER: P856352
CATALOG NUMBER: FFX-CLB-20-730-U-VM8

**CANDELA DISTRIBUTION (continued):**

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 112.5° | 265.2 | 265.4 | 265.2 | 264.2 | 262.5 | 262.5 | 263.3 | 265.6 | 267.4 | 268.0 | *268.6* |
| 115° | 256.8 | 257.0 | 256.6 | 255.8 | 254.2 | 254.6 | 255.4 | 257.6 | 259.5 | 260.1 | *260.9* |
| 117.5° | 247.9 | 248.1 | 247.9 | 246.8 | 245.4 | 245.8 | 247.0 | 249.3 | 250.9 | 251.5 | *252.3* |
| 120° | 238.1 | 238.1 | 238.1 | 237.1 | 235.6 | 236.4 | 237.7 | 240.1 | 241.5 | 241.9 | *242.8* |
| 122.5° | 228.1 | 227.7 | 227.7 | 227.1 | 225.4 | 226.5 | 227.7 | 230.1 | 231.6 | 231.8 | *232.4* |
| 125° | 217.1 | 217.3 | 216.7 | 216.3 | 214.8 | 216.1 | 217.1 | 219.5 | 220.7 | 221.0 | *221.6* |
| 127.5° | 205.3 | 205.9 | 205.3 | 204.6 | 203.6 | 204.8 | 206.1 | 208.3 | 209.3 | 209.5 | *209.9* |
| 130° | 194.3 | 194.3 | 193.6 | 193.2 | 192.2 | 193.4 | 194.7 | 196.7 | 197.7 | 197.7 | *198.1* |
| 132.5° | 183.2 | 182.6 | 182.4 | 182.0 | 180.8 | 182.2 | 183.0 | 185.1 | 185.9 | 185.7 | *186.1* |
| 135° | 171.2 | 171.2 | 170.6 | 170.4 | 169.4 | 170.8 | 171.6 | 173.5 | 174.1 | 173.9 | *174.3* |
| 137.5° | 160.0 | 160.0 | 159.6 | 159.2 | 158.6 | 159.8 | 160.6 | 162.0 | 162.7 | 162.0 | *162.7* |
| 140° | 149.0 | 149.0 | 148.8 | 148.4 | 147.8 | 149.0 | 149.6 | 150.8 | 151.4 | 150.8 | *151.2* |
| 142.5° | 138.8 | 138.4 | 138.2 | 138.0 | 137.2 | 138.4 | 138.8 | 140.0 | 140.2 | 139.8 | *140.4* |
| 145° | 128.0 | 128.2 | 128.0 | 127.8 | 127.2 | 128.2 | 128.6 | 129.6 | 129.8 | 129.4 | *130.0* |
| 147.5° | 119.0 | 118.4 | 118.6 | 118.4 | 117.8 | 118.8 | 119.0 | 119.6 | 120.1 | 119.6 | *120.1* |
| 150° | 110.1 | 109.7 | 109.7 | 109.5 | 109.0 | 109.9 | 110.1 | 110.7 | 110.9 | 110.5 | *110.9* |
| 152.5° | 102.1 | 101.9 | 101.9 | 101.7 | 101.3 | 101.9 | 102.1 | 102.5 | 102.7 | 102.3 | *102.5* |
| 155° | 95.0 | 94.8 | 94.8 | 94.6 | 94.2 | 94.8 | 94.8 | 95.2 | 95.4 | 95.2 | *95.4* |
| 157.5° | 88.7 | 88.5 | 88.5 | 88.5 | 88.1 | 88.5 | 88.5 | 88.9 | 88.9 | 88.7 | *88.9* |
| 160° | 83.6 | 83.2 | 83.4 | 83.2 | 82.8 | 83.2 | 83.2 | 83.4 | 83.4 | 83.4 | *83.4* |
| 162.5° | 78.9 | 78.9 | 78.9 | 78.7 | 78.5 | 78.7 | 78.7 | 78.9 | 78.9 | 78.9 | *78.7* |
| 165° | 75.2 | 75.2 | 75.2 | 75.0 | 74.8 | 75.0 | 75.0 | 75.0 | 75.0 | 75.0 | *75.0* |
| 167.5° | 72.2 | 72.0 | 72.2 | 72.0 | 71.7 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | *72.0* |
| 170° | 69.5 | 69.5 | 69.5 | 69.5 | 69.3 | 69.5 | 69.5 | 69.5 | 69.5 | 69.5 | *69.5* |
| 172.5° | 67.9 | 67.7 | 67.7 | 67.7 | 67.5 | 67.7 | 67.5 | 67.7 | 67.5 | 67.7 | *67.5* |
| 175° | 66.4 | 66.4 | 66.4 | 66.4 | 66.2 | 66.2 | 66.2 | 66.2 | 66.2 | 66.2 | *66.2* |
| 177.5° | 65.6 | 65.6 | 65.6 | 65.6 | 65.6 | 65.6 | 65.6 | 65.6 | 65.6 | 65.6 | *65.6* |
| 180° | 65.4 | 65.4 | 65.4 | 65.4 | 65.4 | 65.4 | 65.4 | 65.4 | 65.4 | 65.4 | *65.4* |

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: SP1-2406-133-4

Test Date: 07/12/2024

Luminaire Tested: FFX-CLB-100-730-U-FR-T5

Data in this report applies to families of products including FFX-CLB-100-730-U-FR-T5.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.03

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

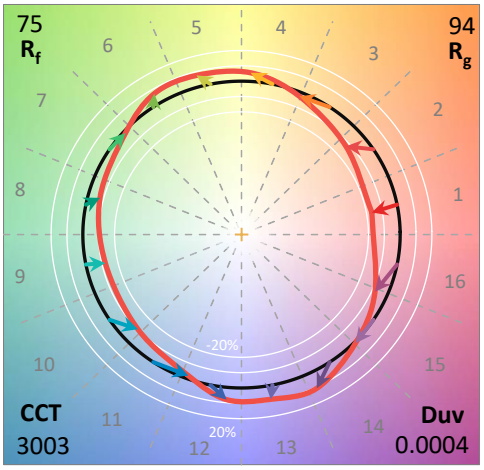
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2406-133-4 |
| 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-100-730-U-FR-T5** |
| Description: | FAIRFAX ACORN W/ FAIRFAX REFRACTOR 100W T5 |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3003 |
| CIE u': | 0.2503 |
| CIE v': | 0.5219 |
| Duv: | 0.0004 |
| CIE x: | 0.4373 |
| CIE y: | 0.4053 |
| CIE z: | 0.1573 |
| Peak Wavelength (nm): | 595 |
| Dominant Wavelength (nm): | 582 |
| Purity: | 52.93545 |
| Rf: | 75.2 |
| Rg: | 93.8 |

| | | | | | |
|---|---|---|---|---|---|
| CRI (Ra): | 71.9 | | | | |
| R1: | 68.2 | R9: | -33.7 | | |
| R2: | 82.2 | R10: | 59.0 | | |
| R3: | 93.9 | R11: | 62.4 | | |
| R4: | 67.6 | R12: | 48.5 | | |
| R5: | 67.2 | R13: | 70.8 | | |
| R6: | 75.3 | R14: | 96.6 | | |
| R7: | 77.6 | R15: | 60.0 | | |
| R8: | 43.1 | | | | |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 0.794393M |
| Operation Time: | 1H |
| Sphere Temperature (°C): | 24.7 |

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

REPORT NUMBER: SP1-2406-133-4

| 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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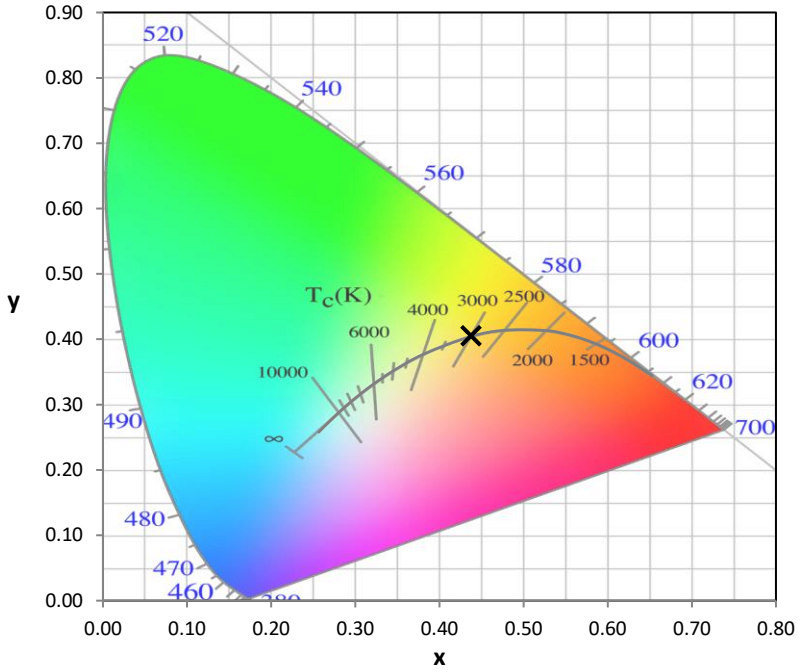
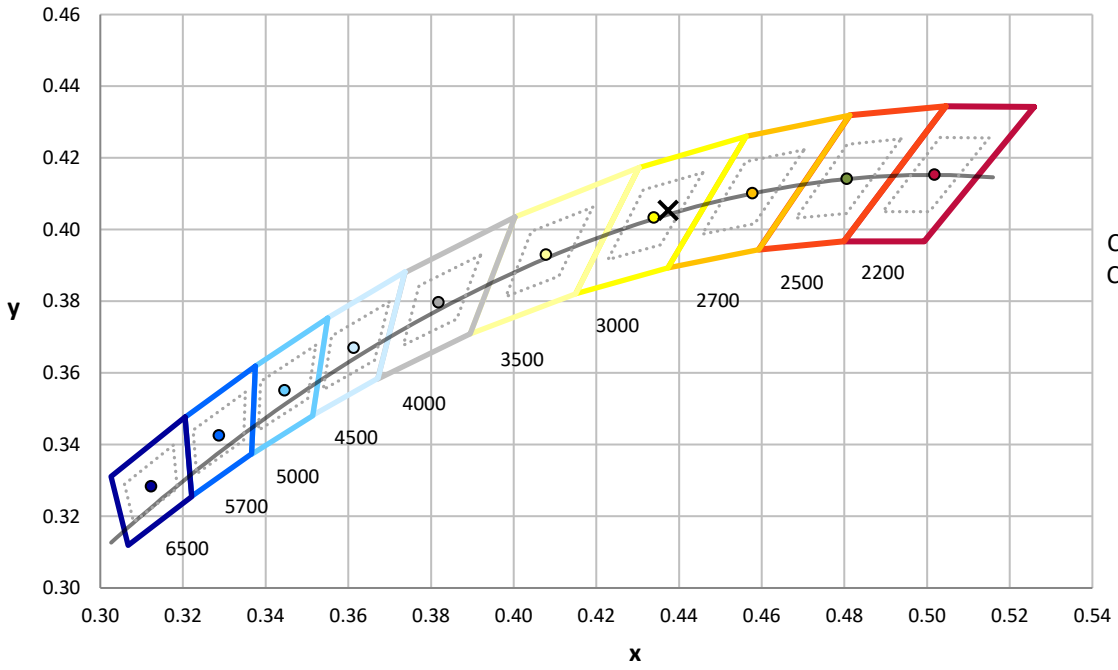
REPORT NUMBER: SP1-2406-133-4

## CIE 1931 Chromaticity Diagram




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




CCT = 3003K
CIE x = 0.4373
CIE y = 0.4053
Duv = 0.0004

Point lies inside the ANSI 3000K 4-step quadrangle

Cooper Lighting Solutions Photometric Lab
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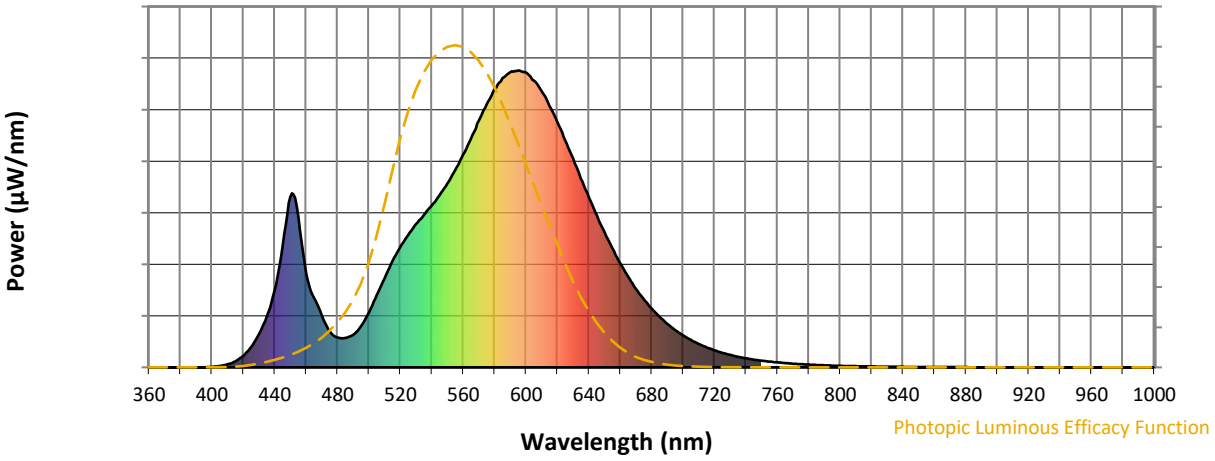
Peachtree City, GA 30269

REPORT NUMBER: SP1-2406-133-4

## 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 | 110 | NR | 620 | 825 | NR | 750 | 23 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 139 | NR | 625 | 765 | NR | 755 | 19 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 186 | NR | 630 | 702 | NR | 760 | 17 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 243 | NR | 635 | 635 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 301 | NR | 640 | 572 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 357 | NR | 645 | 512 | NR | 775 | 11 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 406 | NR | 650 | 455 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 445 | NR | 655 | 400 | NR | 785 | 8 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 483 | NR | 660 | 350 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 514 | NR | 665 | 305 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 545 | NR | 670 | 264 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 581 | NR | 675 | 229 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 39 | NR | 550 | 620 | NR | 680 | 198 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 69 | NR | 555 | 666 | NR | 685 | 170 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 112 | NR | 560 | 716 | NR | 690 | 147 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 174 | NR | 565 | 771 | NR | 695 | 125 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 260 | NR | 570 | 831 | NR | 700 | 107 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 410 | NR | 575 | 887 | NR | 705 | 92 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 574 | NR | 580 | 937 | NR | 710 | 79 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 508 | NR | 585 | 974 | NR | 715 | 67 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 319 | NR | 590 | 994 | NR | 720 | 57 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 234 | NR | 595 | 1000 | NR | 725 | 49 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 174 | NR | 600 | 992 | NR | 730 | 42 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 121 | NR | 605 | 966 | NR | 735 | 36 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 100 | NR | 610 | 929 | NR | 740 | 30 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 99 | NR | 615 | 880 | NR | 745 | 26 | NR | 875 | 1 | NR | | | |

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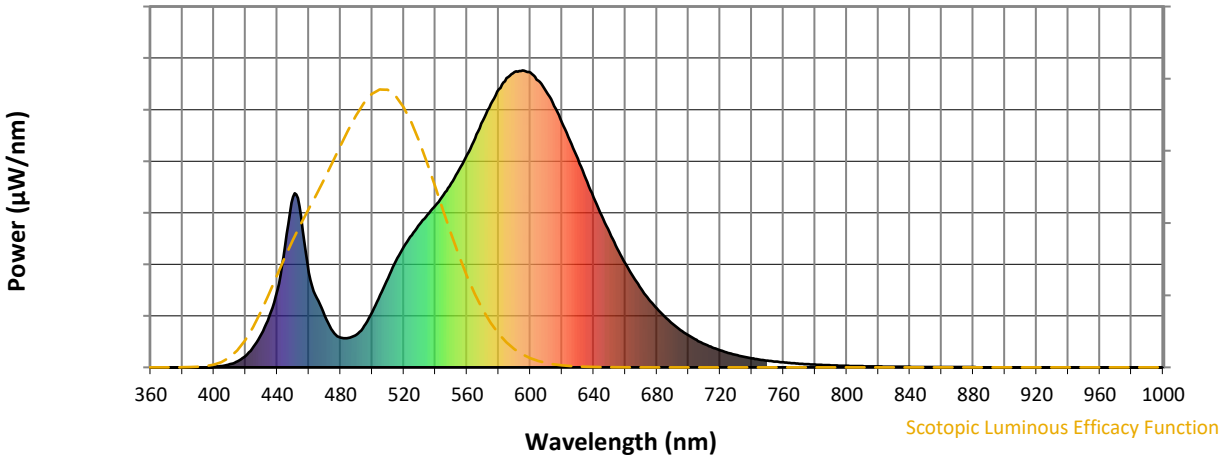
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.21**

| 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 | 110 | NR | 620 | 825 | NR | 750 | 23 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 139 | NR | 625 | 765 | NR | 755 | 19 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 186 | NR | 630 | 702 | NR | 760 | 17 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 243 | NR | 635 | 635 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 301 | NR | 640 | 572 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 357 | NR | 645 | 512 | NR | 775 | 11 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 406 | NR | 650 | 455 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 445 | NR | 655 | 400 | NR | 785 | 8 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 483 | NR | 660 | 350 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 514 | NR | 665 | 305 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 545 | NR | 670 | 264 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 581 | NR | 675 | 229 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 39 | NR | 550 | 620 | NR | 680 | 198 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 69 | NR | 555 | 666 | NR | 685 | 170 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 112 | NR | 560 | 716 | NR | 690 | 147 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 174 | NR | 565 | 771 | NR | 695 | 125 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 260 | NR | 570 | 831 | NR | 700 | 107 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 410 | NR | 575 | 887 | NR | 705 | 92 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 574 | NR | 580 | 937 | NR | 710 | 79 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 508 | NR | 585 | 974 | NR | 715 | 67 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 319 | NR | 590 | 994 | NR | 720 | 57 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 234 | NR | 595 | 1000 | NR | 725 | 49 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 174 | NR | 600 | 992 | NR | 730 | 42 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 121 | NR | 605 | 966 | NR | 735 | 36 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 100 | NR | 610 | 929 | NR | 740 | 30 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 99 | NR | 615 | 880 | NR | 745 | 26 | NR | 875 | 1 | NR | | | |

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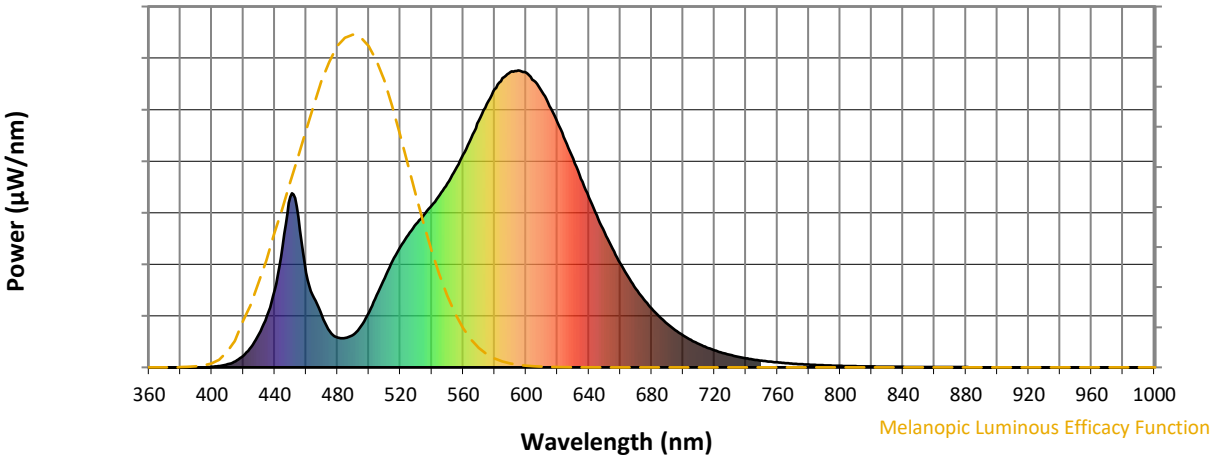
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.22**

| 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 | 110 | NR | 620 | 825 | NR | 750 | 23 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 139 | NR | 625 | 765 | NR | 755 | 19 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 186 | NR | 630 | 702 | NR | 760 | 17 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 243 | NR | 635 | 635 | NR | 765 | 14 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 301 | NR | 640 | 572 | NR | 770 | 12 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 357 | NR | 645 | 512 | NR | 775 | 11 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 406 | NR | 650 | 455 | NR | 780 | 9 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 445 | NR | 655 | 400 | NR | 785 | 8 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 483 | NR | 660 | 350 | NR | 790 | 7 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 514 | NR | 665 | 305 | NR | 795 | 6 | NR | 925 | 0 | NR |
| 410 | 10 | NR | 540 | 545 | NR | 670 | 264 | NR | 800 | 5 | NR | 930 | 0 | NR |
| 415 | 21 | NR | 545 | 581 | NR | 675 | 229 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 39 | NR | 550 | 620 | NR | 680 | 198 | NR | 810 | 4 | NR | 940 | 0 | NR |
| 425 | 69 | NR | 555 | 666 | NR | 685 | 170 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 112 | NR | 560 | 716 | NR | 690 | 147 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 174 | NR | 565 | 771 | NR | 695 | 125 | NR | 825 | 3 | NR | 955 | 0 | NR |
| 440 | 260 | NR | 570 | 831 | NR | 700 | 107 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 410 | NR | 575 | 887 | NR | 705 | 92 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 574 | NR | 580 | 937 | NR | 710 | 79 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 508 | NR | 585 | 974 | NR | 715 | 67 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 319 | NR | 590 | 994 | NR | 720 | 57 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 234 | NR | 595 | 1000 | NR | 725 | 49 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 174 | NR | 600 | 992 | NR | 730 | 42 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 121 | NR | 605 | 966 | NR | 735 | 36 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 100 | NR | 610 | 929 | NR | 740 | 30 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 99 | NR | 615 | 880 | NR | 745 | 26 | NR | 875 | 1 | NR | | | |

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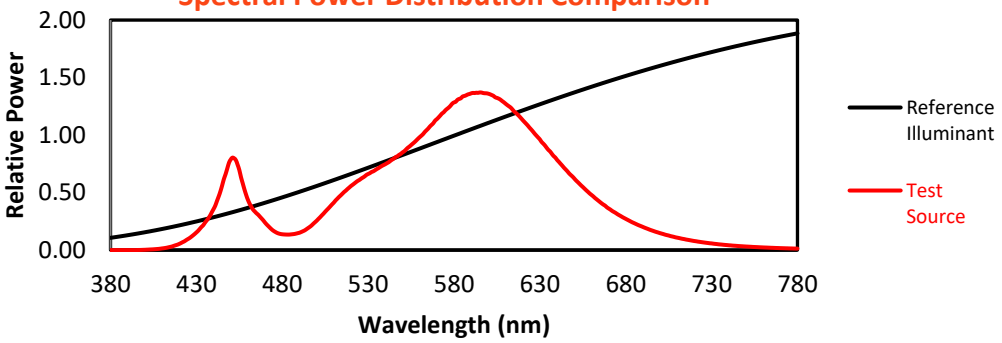
# TM-30-18

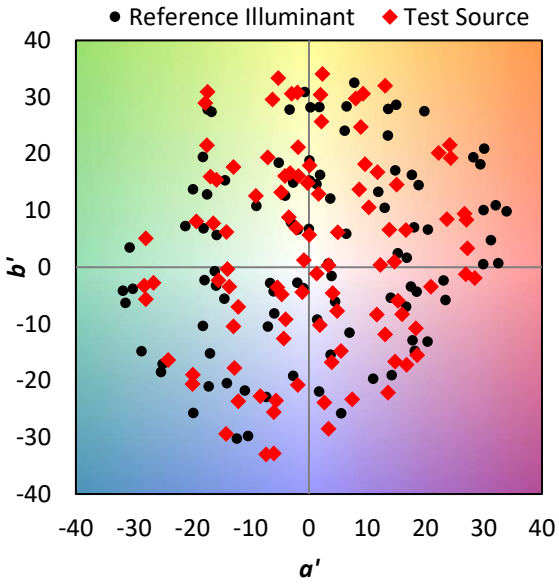
## Summary

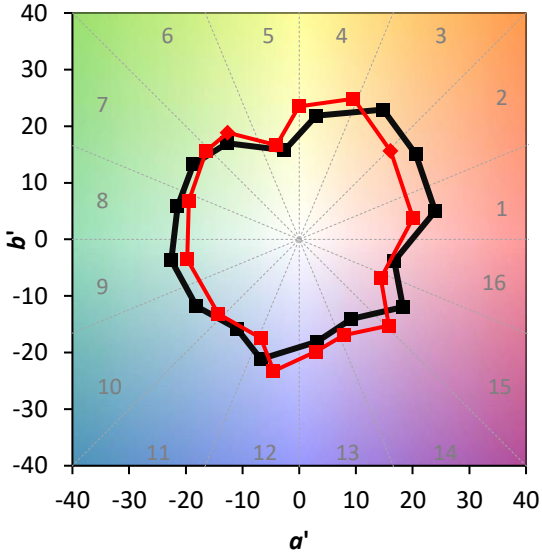
$R_f$ = 75.2
$R_g$ = 93.8
CIE $R_a$ = 71.9
$R_9$ = -33.7

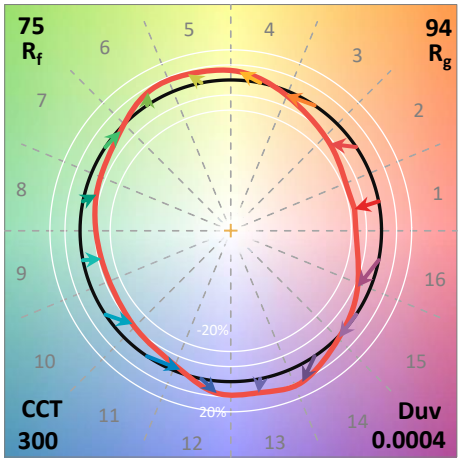
## Spectral Power Distribution Comparison

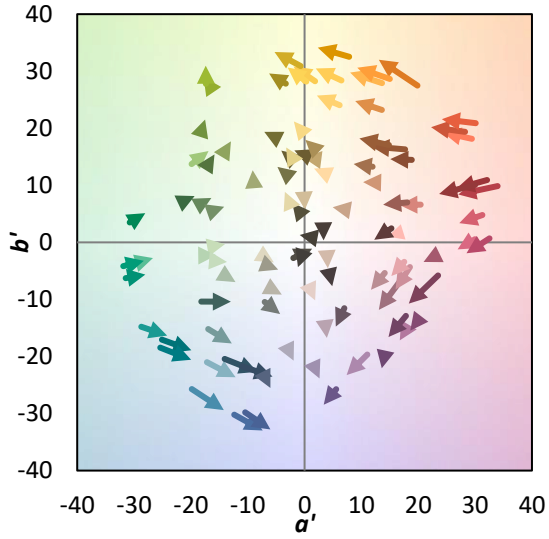



## Color Vector Graphics



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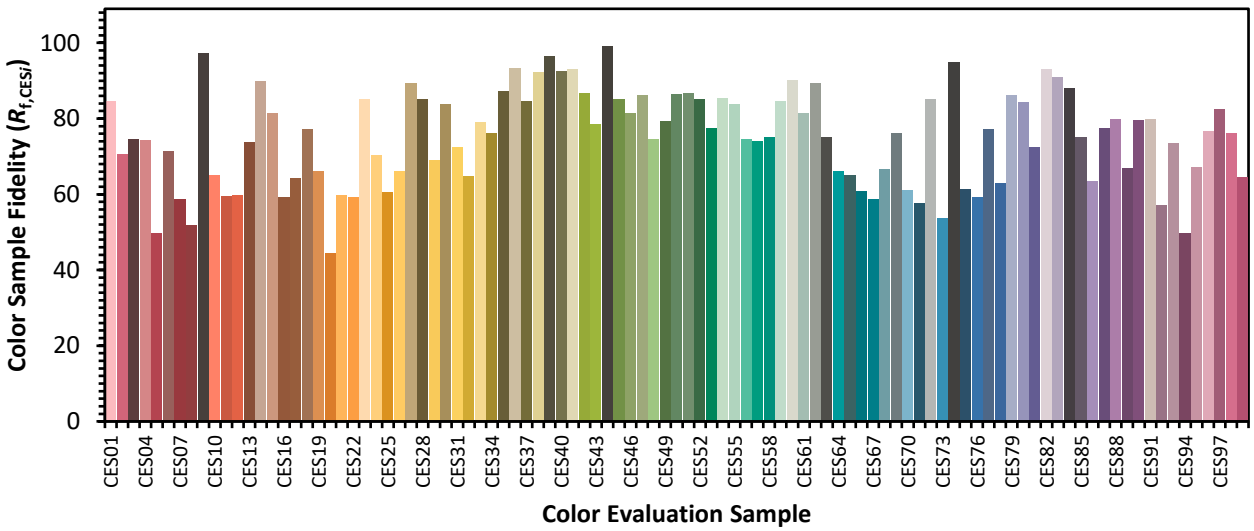
# TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 66 | CES51 = 87 | CES76 = 59 |
| CES02 = 62 | CES27 = 89 | CES52 = 85 | CES77 = 77 |
| CES03 = 31 | CES28 = 85 | CES53 = 77 | CES78 = 63 |
| CES04 = 71 | CES29 = 69 | CES54 = 86 | CES79 = 86 |
| CES05 = 49 | CES30 = 84 | CES55 = 84 | CES80 = 84 |
| CES06 = 51 | CES31 = 72 | CES56 = 75 | CES81 = 72 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 93 |
| CES08 = 40 | CES33 = 79 | CES58 = 75 | CES83 = 91 |
| CES09 = 29 | CES34 = 76 | CES59 = 85 | CES84 = 88 |
| CES10 = 76 | CES35 = 87 | CES60 = 90 | CES85 = 75 |
| CES11 = 59 | CES36 = 93 | CES61 = 81 | CES86 = 63 |
| CES12 = 65 | CES37 = 85 | CES62 = 89 | CES87 = 77 |
| CES13 = 43 | CES38 = 92 | CES63 = 75 | CES88 = 80 |
| CES14 = 74 | CES39 = 97 | CES64 = 66 | CES89 = 67 |
| CES15 = 71 | CES40 = 93 | CES65 = 65 | CES90 = 80 |
| CES16 = 47 | CES41 = 93 | CES66 = 61 | CES91 = 80 |
| CES17 = 50 | CES42 = 87 | CES67 = 59 | CES92 = 57 |
| CES18 = 56 | CES43 = 79 | CES68 = 67 | CES93 = 73 |
| CES19 = 73 | CES44 = 99 | CES69 = 76 | CES94 = 50 |
| CES20 = 66 | CES45 = 85 | CES70 = 61 | CES95 = 67 |
| CES21 = 87 | CES46 = 81 | CES71 = 58 | CES96 = 77 |
| CES22 = 79 | CES47 = 86 | CES72 = 85 | CES97 = 83 |
| CES23 = 92 | CES48 = 75 | CES73 = 54 | CES98 = 76 |
| CES24 = 91 | CES49 = 79 | CES74 = 95 | CES99 = 65 |
| CES25 = 73 | CES50 = 86 | CES75 = 61 | |



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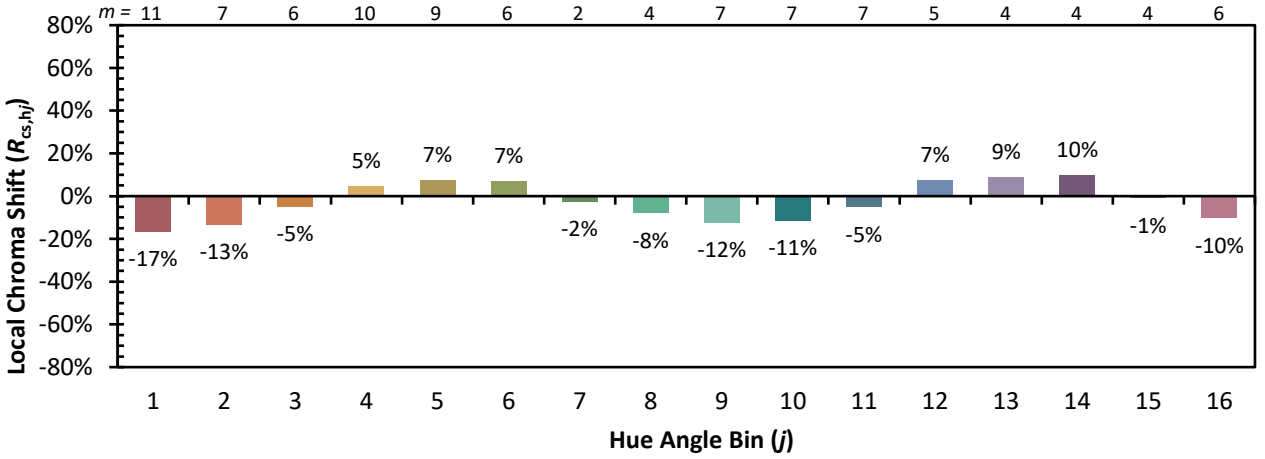
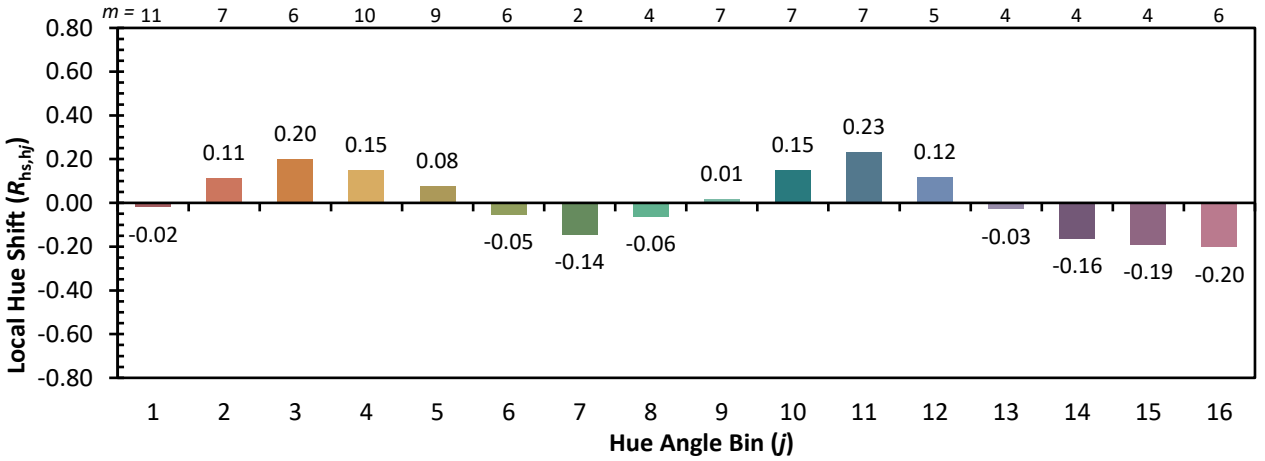
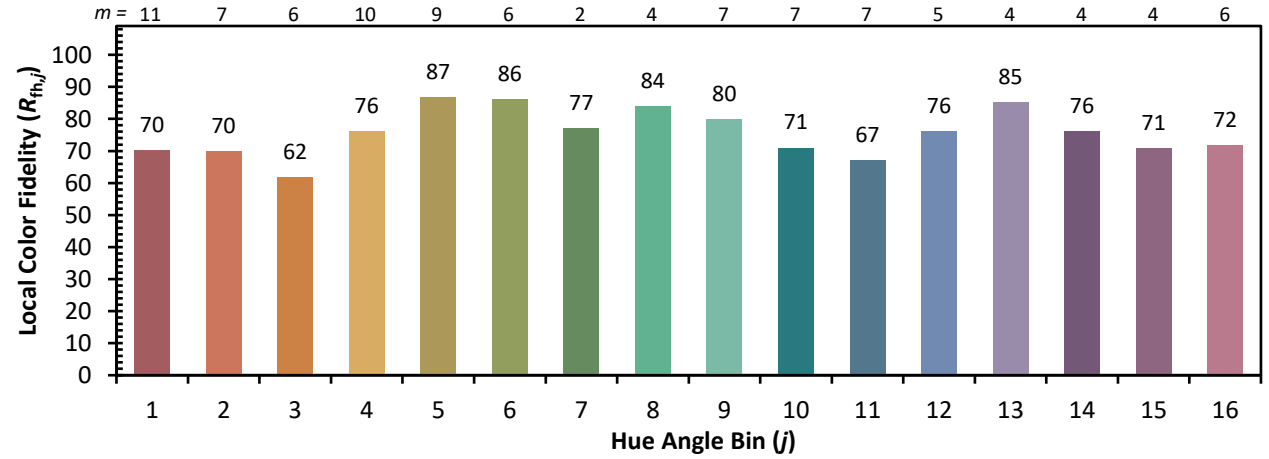
## TM-30-18

### Color Rendition by Hue-Angle Bin



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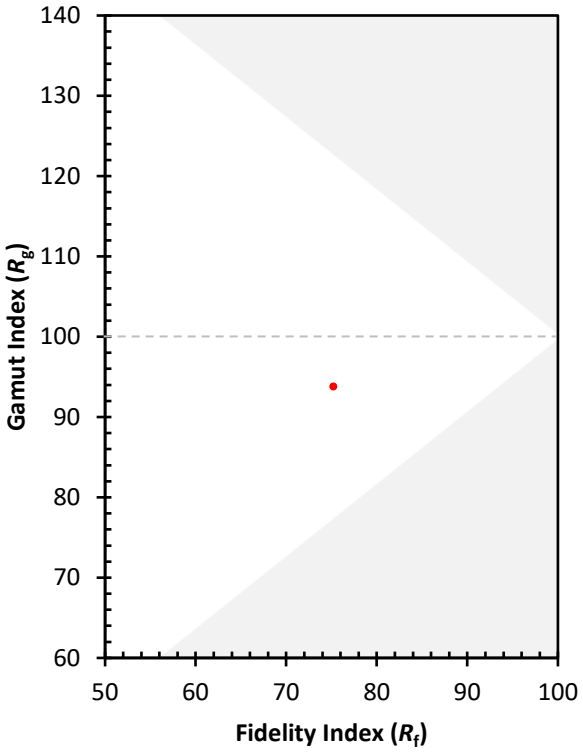
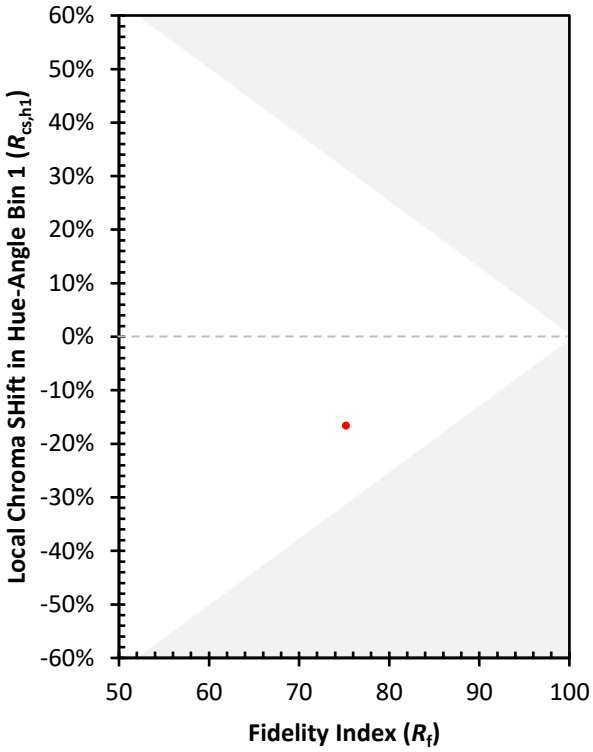
## TM-30-18

### Measure Comparisons




(END OF REPORT)