

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: INVUE

Report Number: P553717

Luminaire Tested: **LXS-VA1-830-U-SYM-C**

Issue Date: 7/13/2021

**Test Information**

Test Method: LM-79-08  
Report Number: P553717  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1803-687-11-R2)  
Test Lab: INNOVATION CENTER  
Issue Date: 7/13/2021  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: LXS-VA1-830-U-SYM-C  
Description: LUXESCAPE OUTDOOR ARCHITECTURAL LUMINAIRE  
80 CRI, 3000K LEDS AND TYPE V OPTIC, CANTILEVER MOUNT  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2113 lumens  
Efficiency: N/A  
Efficacy: 100.6 lumens/watt  
Luminous Opening: Circular (Dia: 1.62' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B2 - U0 - G1

Input Watts (W): 21  
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



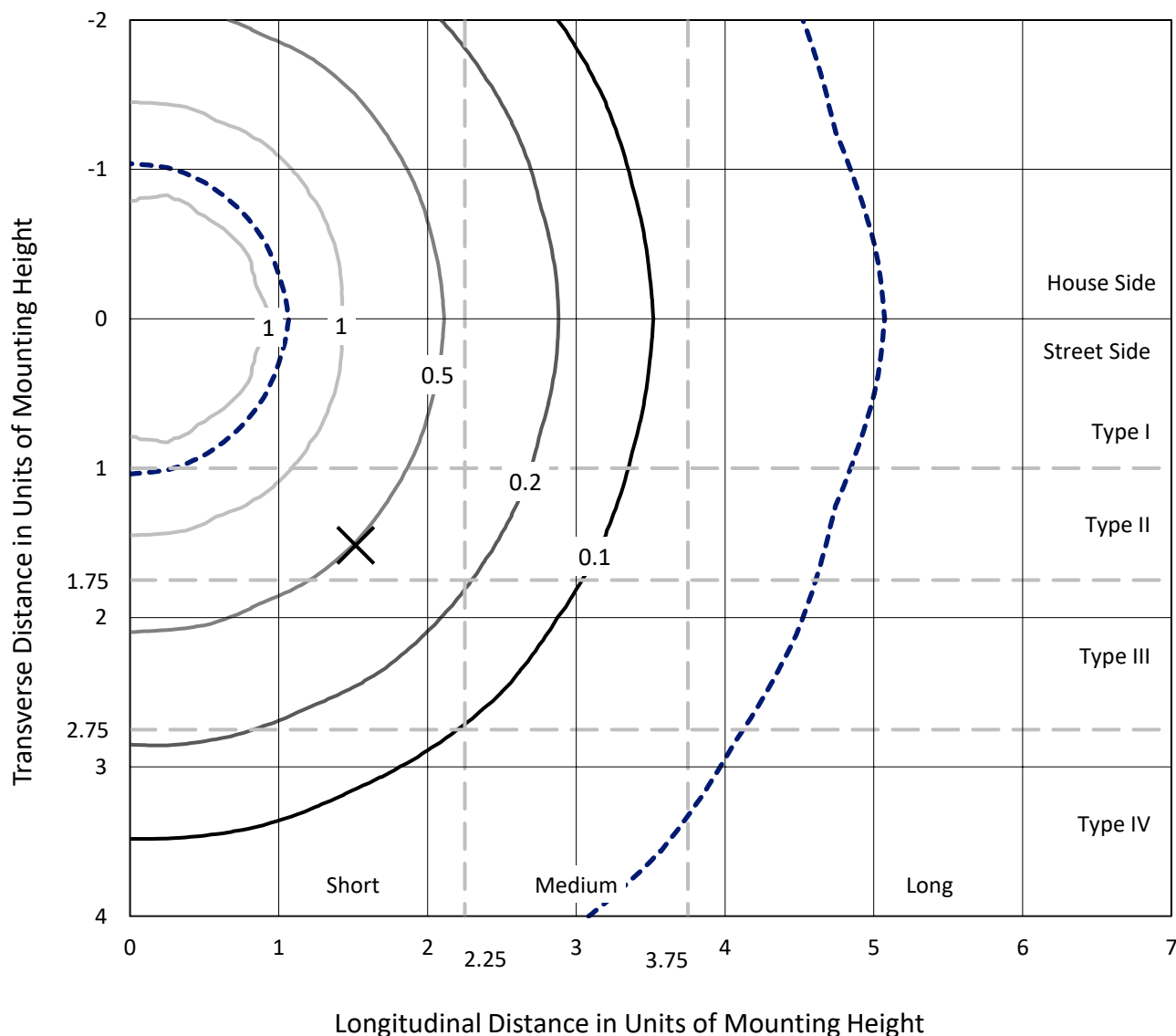
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CATALOG NUMBER: LXS-VA1-830-U-SYM-C

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

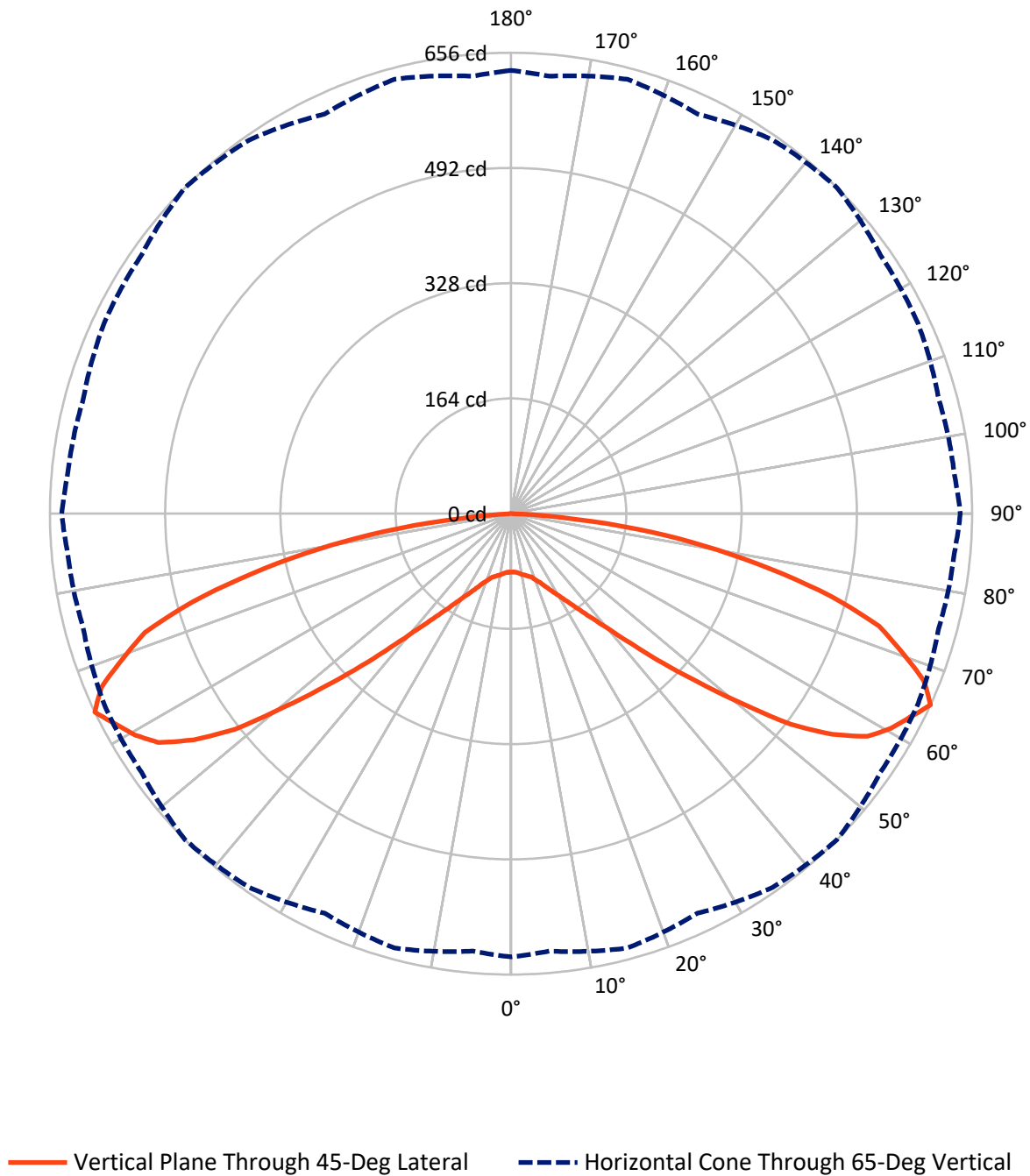


Based on 10 foot mounting height. Maximum calculated value = 1.1 fc  
 Type V - Short - N/A

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## Luminous Intensity Polar Plot



REPORT NUMBER: P553717

CATALOG NUMBER: LXS-VA1-830-U-SYM-C

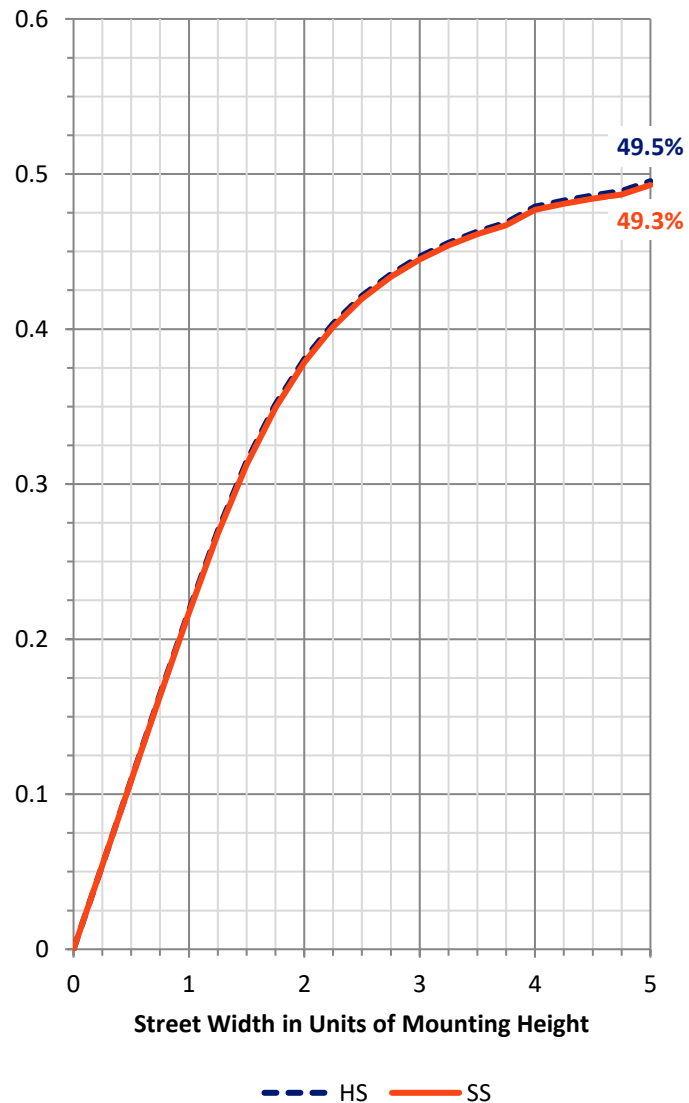
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1056.5   | 0.0    | 1056.5 |
|                    | % Fixture | 50.0     | 0.0    | 50.0   |
| <b>Street Side</b> | Lumens    | 1056.5   | 0.0    | 1056.5 |
|                    | % Fixture | 50.0     | 0.0    | 50.0   |
| <b>Total</b>       | Lumens    | 2113.0   | 0.0    | 2113.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 8.2    | 0.4       |
| 10°-20°   | 26.4   | 1.3       |
| 20°-30°   | 54.3   | 2.6       |
| 30°-40°   | 109.3  | 5.2       |
| 40°-50°   | 239.6  | 11.3      |
| 50°-60°   | 480.5  | 22.7      |
| 60°-70°   | 617.4  | 29.2      |
| 70°-80°   | 470.9  | 22.3      |
| 80°-90°   | 106.5  | 5.0       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 2113.0 | 100.0     |
| 0°-180°   | 2113.0 | 100.0     |

**Coefficient of Utilization**



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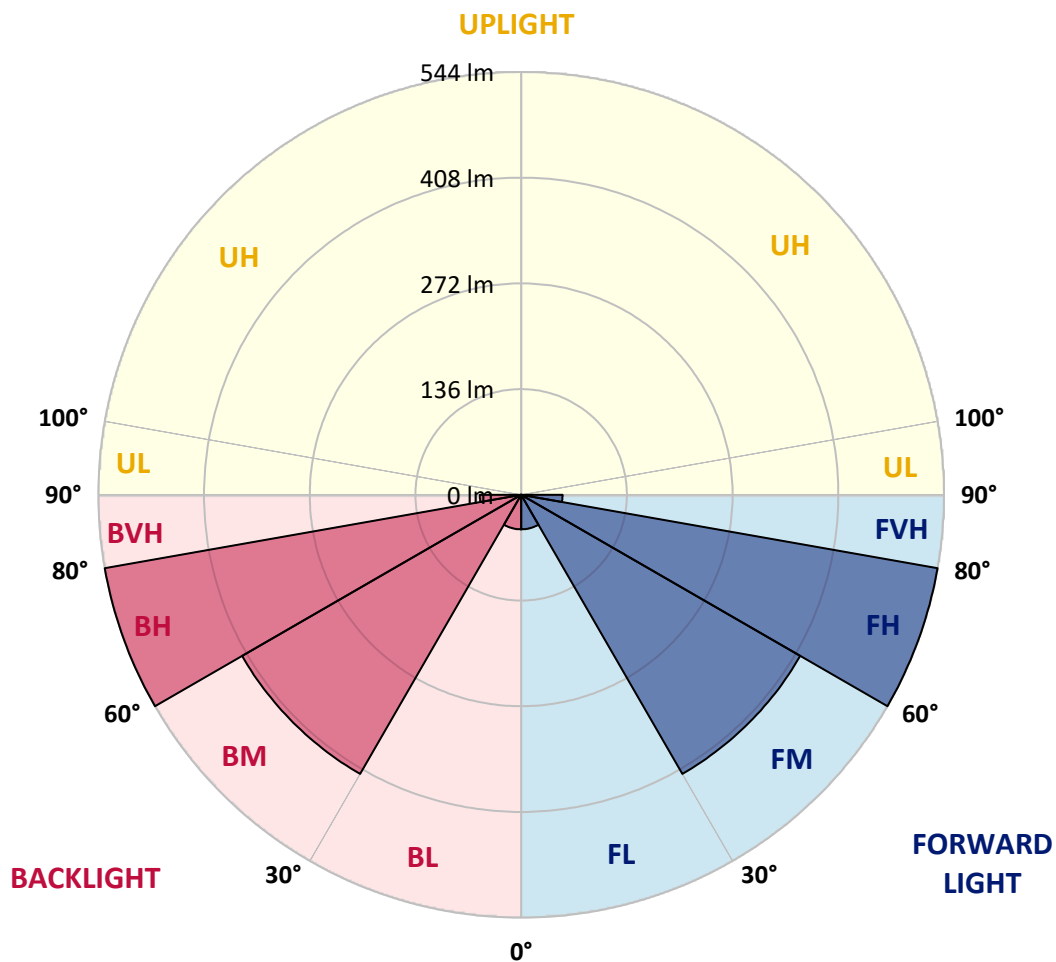
CATALOG NUMBER: LXS-VA1-830-U-SYM-C

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|--------|-----------|-------------------------|------|--------|
|      |             |        |           | B                       | U    | G      |
| FL   | (0°-30°)    | 44.4   | 2.1       |                         |      |        |
| FM   | (30°-60°)   | 414.7  | 19.6      |                         |      |        |
| FH   | (60°-80°)   | 544.1  | 25.8      |                         |      | G0/660 |
| FVH  | (80°-90°)   | 53.2   | 2.5       |                         |      | G1/100 |
| BL   | (0°-30°)    | 44.4   | 2.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 414.7  | 19.6      | B1/1000                 |      |        |
| BH   | (60°-80°)   | 544.1  | 25.8      | B2/1000                 |      | G0/660 |
| BVH  | (80°-90°)   | 53.2   | 2.5       |                         |      | G1/100 |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |        |

**BUG Rating: B2-U0-G1**

Type V Short



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CATALOG NUMBER: LXS-VA1-830-U-SYM-C

**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°   | 75°   | 85°   | 90°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  |
| 2.5°  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  | 83.1  |
| 5°    | 84.8  | 84.8  | 83.9  | 83.9  | 83.9  | 83.9  | 83.9  | 83.9  | 83.9  | 83.9  | 83.9  |
| 7.5°  | 86.4  | 86.4  | 86.4  | 86.4  | 85.6  | 85.6  | 85.6  | 85.6  | 85.6  | 85.6  | 85.6  |
| 10°   | 89.0  | 89.0  | 88.1  | 88.1  | 88.1  | 88.1  | 87.3  | 87.3  | 87.3  | 87.3  | 87.3  |
| 12.5° | 91.5  | 90.6  | 90.6  | 90.6  | 90.6  | 89.8  | 89.8  | 89.8  | 89.8  | 89.8  | 89.8  |
| 15°   | 94.0  | 93.2  | 93.2  | 92.3  | 92.3  | 92.3  | 90.6  | 90.6  | 91.5  | 92.3  | 92.3  |
| 17.5° | 96.5  | 96.5  | 95.7  | 94.8  | 94.8  | 94.8  | 94.0  | 92.3  | 93.2  | 94.8  | 94.8  |
| 20°   | 102.4 | 102.4 | 101.6 | 99.9  | 100.7 | 100.7 | 99.0  | 98.2  | 99.0  | 99.9  | 99.9  |
| 22.5° | 109.9 | 109.9 | 108.3 | 106.6 | 107.4 | 106.6 | 105.8 | 104.1 | 104.1 | 105.8 | 105.8 |
| 25°   | 119.2 | 119.2 | 116.7 | 115.0 | 115.0 | 115.0 | 113.3 | 112.5 | 111.6 | 112.5 | 112.5 |
| 27.5° | 130.1 | 130.1 | 127.6 | 125.9 | 125.1 | 125.1 | 123.4 | 122.5 | 121.7 | 120.9 | 120.0 |
| 30°   | 145.2 | 145.2 | 141.0 | 139.3 | 138.5 | 136.0 | 135.1 | 135.1 | 134.3 | 132.6 | 132.6 |
| 32.5° | 160.3 | 160.3 | 156.9 | 153.6 | 153.6 | 150.2 | 149.4 | 150.2 | 148.6 | 147.7 | 146.9 |
| 35°   | 177.1 | 177.1 | 172.9 | 172.1 | 172.1 | 167.9 | 165.3 | 166.2 | 166.2 | 165.3 | 164.5 |
| 37.5° | 198.1 | 198.1 | 192.2 | 192.2 | 193.0 | 189.7 | 186.3 | 187.2 | 188.8 | 187.2 | 185.5 |
| 40°   | 224.1 | 224.9 | 218.2 | 219.9 | 220.7 | 217.4 | 214.0 | 213.2 | 216.5 | 213.2 | 209.8 |
| 42.5° | 260.2 | 261.0 | 254.3 | 255.1 | 256.8 | 255.1 | 252.6 | 251.0 | 255.1 | 248.4 | 245.1 |
| 45°   | 303.8 | 306.3 | 301.3 | 301.3 | 303.0 | 303.0 | 301.3 | 300.5 | 301.3 | 292.1 | 288.7 |
| 47.5° | 357.5 | 360.1 | 353.3 | 354.2 | 358.4 | 357.5 | 357.5 | 356.7 | 353.3 | 345.0 | 338.2 |
| 50°   | 416.3 | 418.8 | 413.8 | 414.6 | 420.5 | 422.2 | 419.6 | 417.1 | 413.8 | 405.4 | 400.3 |
| 52.5° | 487.6 | 488.5 | 489.3 | 485.1 | 491.8 | 497.7 | 491.0 | 491.8 | 486.8 | 477.6 | 470.8 |
| 55°   | 543.0 | 544.7 | 548.1 | 543.0 | 554.8 | 553.9 | 554.8 | 551.4 | 542.2 | 535.5 | 532.1 |
| 57.5° | 580.8 | 579.1 | 590.0 | 580.0 | 594.2 | 597.6 | 589.2 | 588.3 | 580.8 | 574.1 | 573.2 |
| 60°   | 600.9 | 602.6 | 614.4 | 604.3 | 615.2 | 620.2 | 611.0 | 615.2 | 603.5 | 600.9 | 602.6 |
| 62.5° | 611.8 | 621.1 | 637.0 | 624.4 | 648.8 | 637.0 | 642.1 | 639.5 | 627.8 | 623.6 | 624.4 |
| 65°   | 630.3 | 624.4 | 639.5 | 627.0 | 648.8 | 655.5 | 641.2 | 638.7 | 629.5 | 632.8 | 638.7 |
| 67.5° | 604.3 | 608.5 | 627.8 | 618.6 | 631.2 | 632.8 | 619.4 | 623.6 | 611.0 | 617.7 | 619.4 |
| 70°   | 560.7 | 577.4 | 582.5 | 574.1 | 600.1 | 589.2 | 587.5 | 585.0 | 571.6 | 584.2 | 583.3 |
| 72.5° | 519.5 | 518.7 | 525.4 | 518.7 | 538.8 | 547.2 | 533.0 | 531.3 | 519.5 | 528.8 | 534.6 |
| 75°   | 444.0 | 450.7 | 461.6 | 453.2 | 459.9 | 470.8 | 452.4 | 459.1 | 452.4 | 457.4 | 464.1 |
| 77.5° | 354.2 | 367.6 | 371.0 | 363.4 | 376.8 | 376.8 | 366.8 | 367.6 | 364.3 | 375.2 | 375.2 |
| 80°   | 269.4 | 272.8 | 271.1 | 267.7 | 281.2 | 279.5 | 275.3 | 273.6 | 267.7 | 280.3 | 285.4 |
| 82.5° | 176.3 | 176.3 | 176.3 | 172.1 | 180.4 | 182.1 | 178.8 | 178.8 | 172.9 | 183.0 | 187.2 |
| 85°   | 75.5  | 76.4  | 74.7  | 63.8  | 73.9  | 72.2  | 74.7  | 72.2  | 72.2  | 80.6  | 78.1  |
| 87.5° | 4.2   | 4.2   | 4.2   | 3.4   | 3.4   | 3.4   | 3.4   | 3.4   | 3.4   | 2.5   | 1.7   |
| 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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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

(formerly Eaton)

INVUE

Report Number: SP1-2205-670-2

Test Date: 07/01/2022

Luminaire Tested: LXS-VA2-830-U-SYM-C

Data in this report applies to families of products including LXS-VA2-830.



### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2205-670-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 07/01/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: INVUE  
 Catalog Number: **LXS-VA2-830-U-SYM-C**  
 Description: INVUE LUXESCAPE

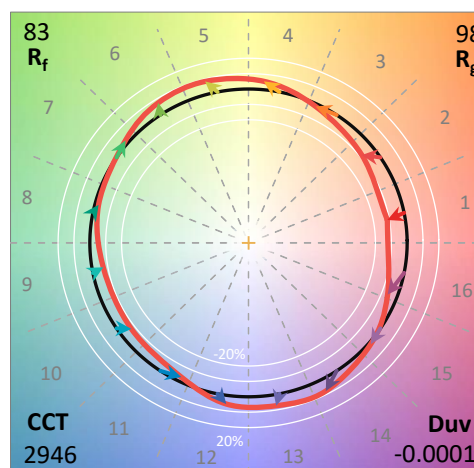
CANTILEVER MOUNT

### Spectral Parameters

CCT (K): 2946  
 CIE  $u'$ : 0.2525  
 CIE  $v'$ : 0.5223  
 Duv: -0.0001  
 CIE x: 0.4406  
 CIE y: 0.4050  
 CIE z: 0.1544  
 Peak Wavelength (nm): 605  
 Dominant Wavelength (nm): 583  
 Purity: 53.9  
 R<sub>f</sub>: 82.5  
 R<sub>g</sub>: 98.2

CRI (Ra): 81.3

|     |      |      |      |
|-----|------|------|------|
| R1: | 79.2 | R9:  | 5.4  |
| R2: | 88.2 | R10: | 73.5 |
| R3: | 96.1 | R11: | 79.6 |
| R4: | 80.2 | R12: | 68.9 |
| R5: | 79.2 | R13: | 80.9 |
| R6: | 85.2 | R14: | 97.9 |
| R7: | 83.2 |      |      |
| R8: | 58.9 |      |      |



### Test Conditions

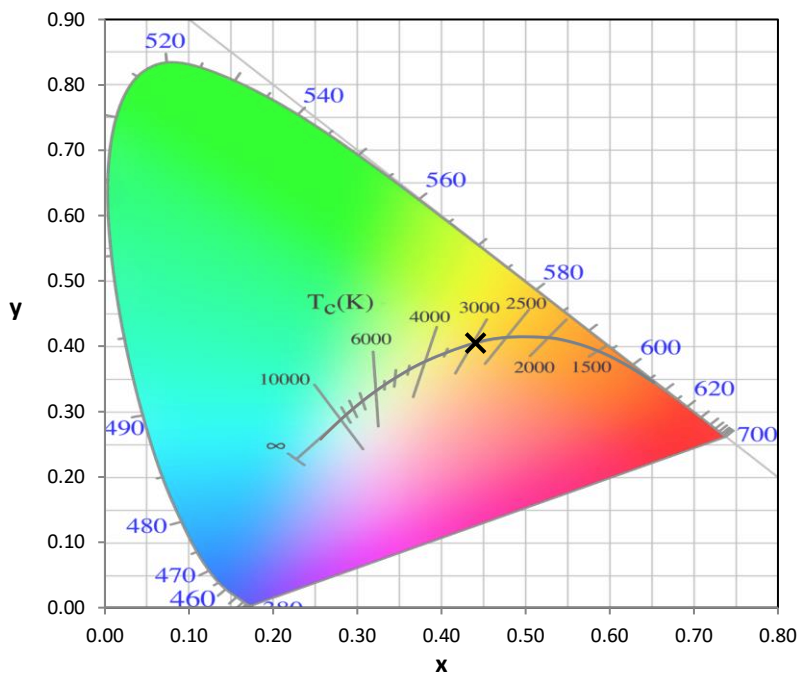
Stabilization Time: 165M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.4/61%  
 Sphere Temperature (°C): 24.8

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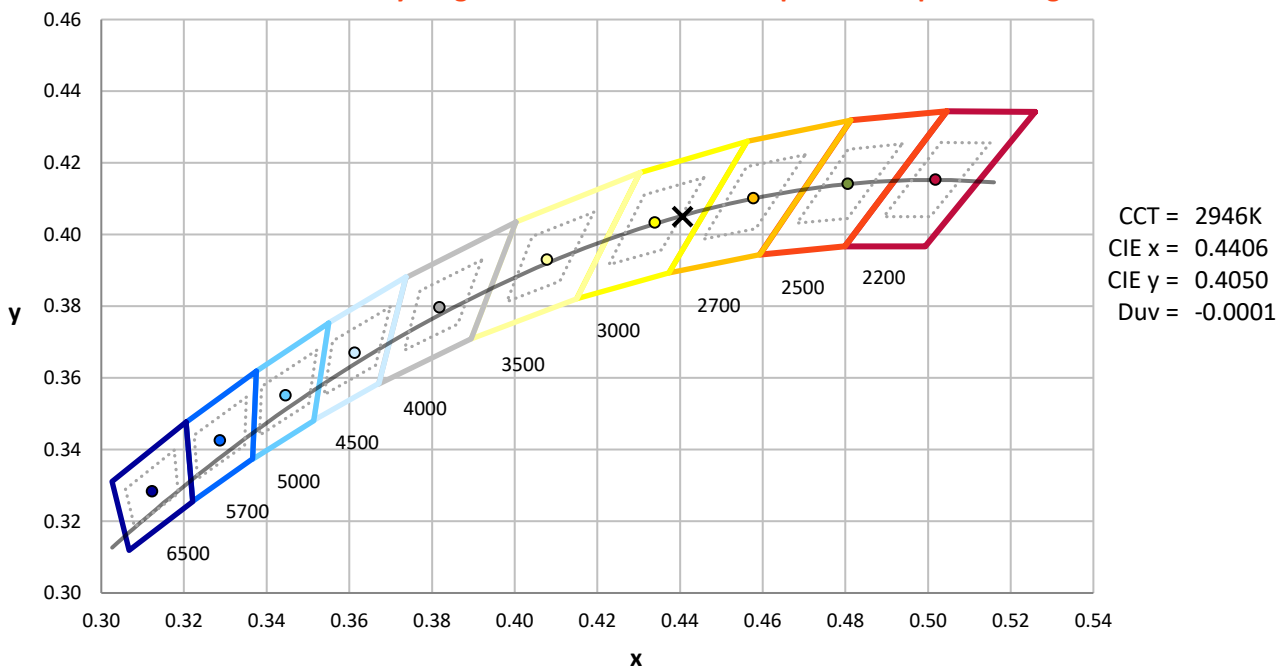
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 2/7/2022         | 8/7/2022             |
| Power Meter                    | XITRON 2801 IN0071    | 11/29/2021       | 11/29/2022           |
| AC Power Source                | CHROMA 61603 IN0063   | 11/29/2021       | 11/29/2022           |
| DC Power Source                | AGILENT E3634A IN0208 | 11/29/2021       | 11/29/2022           |
| Sphere Thermometer             | ONSET IN0085          | 11/29/2021       | 11/29/2022           |
| Room Thermometer               | ONSET IN0046          | 11/29/2021       | 11/29/2022           |

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**CIE 1931 Chromaticity Diagram**



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

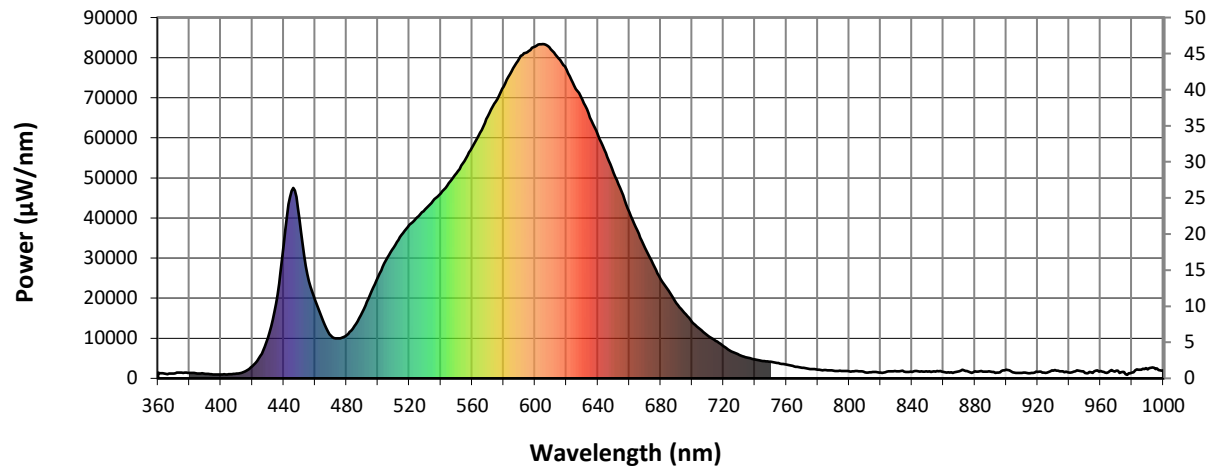


Point lies inside the ANSI 3000K 4-step quadrangle

CCT = 2946K  
 CIE x = 0.4406  
 CIE y = 0.4050  
 Duv = -0.0001

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**Photopic Flux vs. Wavelength**

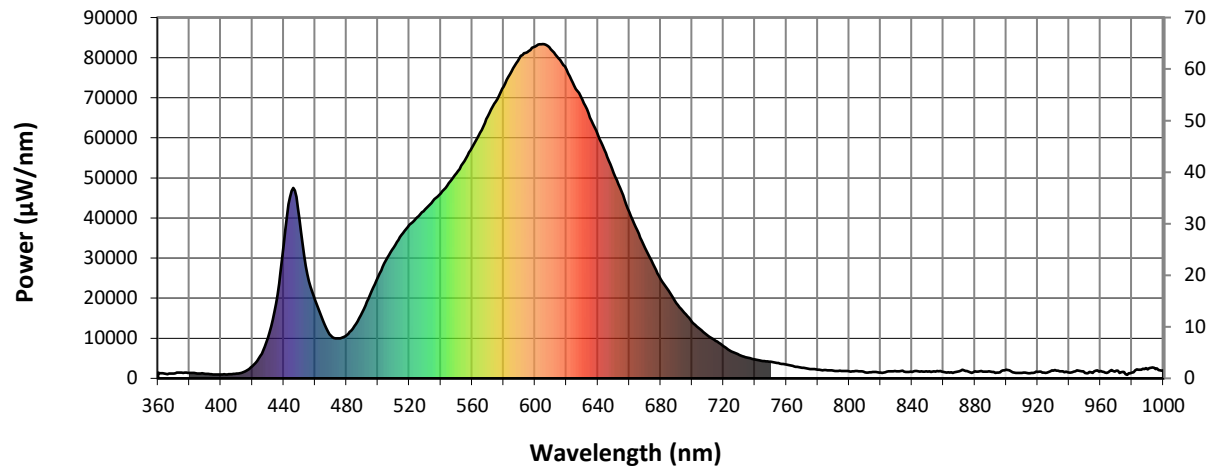


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1420             | NR               | 490       | 16514            | NR               | 620       | 77010            | NR               | 750       | 4160             | NR               | 880       | 1762             | NR               |
| 365       | 1119             | NR               | 495       | 20848            | NR               | 625       | 72968            | NR               | 755       | 3799             | NR               | 885       | 1708             | NR               |
| 370       | 1220             | NR               | 500       | 25312            | NR               | 630       | 69621            | NR               | 760       | 3466             | NR               | 890       | 1652             | NR               |
| 375       | 1467             | NR               | 505       | 29412            | NR               | 635       | 65088            | NR               | 765       | 2959             | NR               | 895       | 1448             | NR               |
| 380       | 1377             | NR               | 510       | 32642            | NR               | 640       | 60775            | NR               | 770       | 2669             | NR               | 900       | 2147             | NR               |
| 385       | 1218             | NR               | 515       | 35719            | NR               | 645       | 56160            | NR               | 775       | 2323             | NR               | 905       | 1442             | NR               |
| 390       | 1140             | NR               | 520       | 38312            | NR               | 650       | 51260            | NR               | 780       | 2193             | NR               | 910       | 1354             | NR               |
| 395       | 993              | NR               | 525       | 40145            | NR               | 655       | 46645            | NR               | 785       | 2066             | NR               | 915       | 1289             | NR               |
| 400       | 970              | NR               | 530       | 42169            | NR               | 660       | 41488            | NR               | 790       | 1919             | NR               | 920       | 1620             | NR               |
| 405       | 1007             | NR               | 535       | 44277            | NR               | 665       | 36962            | NR               | 795       | 1855             | NR               | 925       | 1376             | NR               |
| 410       | 1171             | NR               | 540       | 46132            | NR               | 670       | 32536            | NR               | 800       | 1774             | NR               | 930       | 1957             | NR               |
| 415       | 1658             | NR               | 545       | 48654            | NR               | 675       | 28594            | NR               | 805       | 1859             | NR               | 935       | 1749             | NR               |
| 420       | 3022             | NR               | 550       | 51200            | NR               | 680       | 24774            | NR               | 810       | 1499             | NR               | 940       | 1429             | NR               |
| 425       | 5554             | NR               | 555       | 54216            | NR               | 685       | 21857            | NR               | 815       | 1560             | NR               | 945       | 1972             | NR               |
| 430       | 10172            | NR               | 560       | 57652            | NR               | 690       | 18796            | NR               | 820       | 1460             | NR               | 950       | 1386             | NR               |
| 435       | 18521            | NR               | 565       | 61264            | NR               | 695       | 16368            | NR               | 825       | 1779             | NR               | 955       | 1357             | NR               |
| 440       | 33279            | NR               | 570       | 65389            | NR               | 700       | 14086            | NR               | 830       | 1786             | NR               | 960       | 1800             | NR               |
| 445       | 46769            | NR               | 575       | 69020            | NR               | 705       | 12272            | NR               | 835       | 1700             | NR               | 965       | 1500             | NR               |
| 450       | 39883            | NR               | 580       | 72747            | NR               | 710       | 10582            | NR               | 840       | 1604             | NR               | 970       | 1903             | NR               |
| 455       | 25958            | NR               | 585       | 76555            | NR               | 715       | 9375             | NR               | 845       | 1660             | NR               | 975       | 1631             | NR               |
| 460       | 19577            | NR               | 590       | 79922            | NR               | 720       | 7989             | NR               | 850       | 1661             | NR               | 980       | 1405             | NR               |
| 465       | 14390            | NR               | 595       | 81358            | NR               | 725       | 6739             | NR               | 855       | 1690             | NR               | 985       | 2143             | NR               |
| 470       | 10591            | NR               | 600       | 82761            | NR               | 730       | 5847             | NR               | 860       | 1607             | NR               | 990       | 2213             | NR               |
| 475       | 9960             | NR               | 605       | 83375            | NR               | 735       | 5164             | NR               | 865       | 1492             | NR               | 995       | 2325             | NR               |
| 480       | 10779            | NR               | 610       | 82032            | NR               | 740       | 4742             | NR               | 870       | 1768             | NR               | 1000      | 2016             | NR               |
| 485       | 12985            | NR               | 615       | 79853            | NR               | 745       | 4333             | NR               | 875       | 1864             | NR               |           |                  |                  |

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**Scotopic Flux vs. Wavelength**



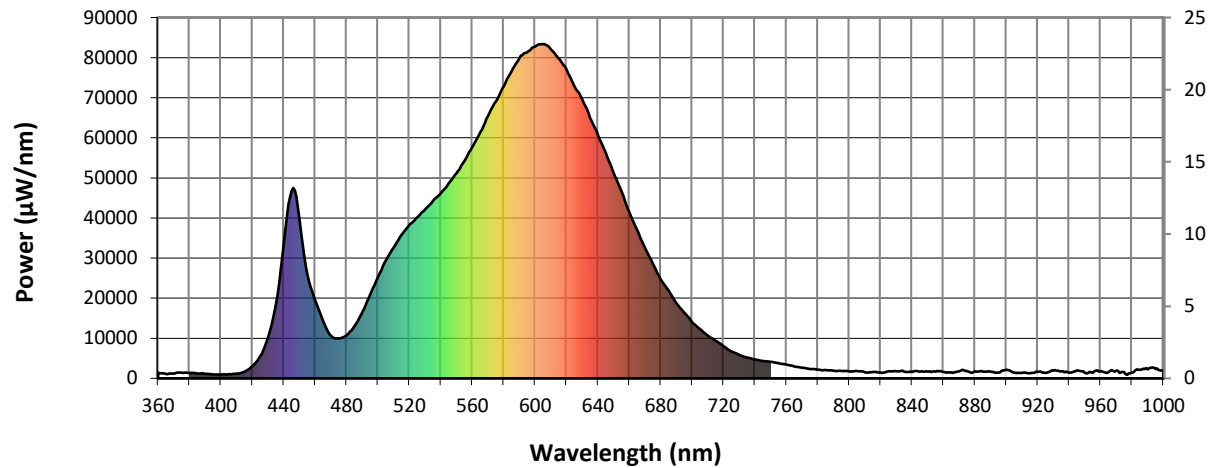
**Scotopic Lumens: 5220.3**

**S/P: 1.28**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1420             | NR               | 490       | 16514            | NR               | 620       | 77010            | NR               | 750       | 4160             | NR               | 880       | 1762             | NR               |
| 365       | 1119             | NR               | 495       | 20848            | NR               | 625       | 72968            | NR               | 755       | 3799             | NR               | 885       | 1708             | NR               |
| 370       | 1220             | NR               | 500       | 25312            | NR               | 630       | 69621            | NR               | 760       | 3466             | NR               | 890       | 1652             | NR               |
| 375       | 1467             | NR               | 505       | 29412            | NR               | 635       | 65088            | NR               | 765       | 2959             | NR               | 895       | 1448             | NR               |
| 380       | 1377             | NR               | 510       | 32642            | NR               | 640       | 60775            | NR               | 770       | 2669             | NR               | 900       | 2147             | NR               |
| 385       | 1218             | NR               | 515       | 35719            | NR               | 645       | 56160            | NR               | 775       | 2323             | NR               | 905       | 1442             | NR               |
| 390       | 1140             | NR               | 520       | 38312            | NR               | 650       | 51260            | NR               | 780       | 2193             | NR               | 910       | 1354             | NR               |
| 395       | 993              | NR               | 525       | 40145            | NR               | 655       | 46645            | NR               | 785       | 2066             | NR               | 915       | 1289             | NR               |
| 400       | 970              | NR               | 530       | 42169            | NR               | 660       | 41488            | NR               | 790       | 1919             | NR               | 920       | 1620             | NR               |
| 405       | 1007             | NR               | 535       | 44277            | NR               | 665       | 36962            | NR               | 795       | 1855             | NR               | 925       | 1376             | NR               |
| 410       | 1171             | NR               | 540       | 46132            | NR               | 670       | 32536            | NR               | 800       | 1774             | NR               | 930       | 1957             | NR               |
| 415       | 1658             | NR               | 545       | 48654            | NR               | 675       | 28594            | NR               | 805       | 1859             | NR               | 935       | 1749             | NR               |
| 420       | 3022             | NR               | 550       | 51200            | NR               | 680       | 24774            | NR               | 810       | 1499             | NR               | 940       | 1429             | NR               |
| 425       | 5554             | NR               | 555       | 54216            | NR               | 685       | 21857            | NR               | 815       | 1560             | NR               | 945       | 1972             | NR               |
| 430       | 10172            | NR               | 560       | 57652            | NR               | 690       | 18796            | NR               | 820       | 1460             | NR               | 950       | 1386             | NR               |
| 435       | 18521            | NR               | 565       | 61264            | NR               | 695       | 16368            | NR               | 825       | 1779             | NR               | 955       | 1357             | NR               |
| 440       | 33279            | NR               | 570       | 65389            | NR               | 700       | 14086            | NR               | 830       | 1786             | NR               | 960       | 1800             | NR               |
| 445       | 46769            | NR               | 575       | 69020            | NR               | 705       | 12272            | NR               | 835       | 1700             | NR               | 965       | 1500             | NR               |
| 450       | 39883            | NR               | 580       | 72747            | NR               | 710       | 10582            | NR               | 840       | 1604             | NR               | 970       | 1903             | NR               |
| 455       | 25958            | NR               | 585       | 76555            | NR               | 715       | 9375             | NR               | 845       | 1660             | NR               | 975       | 1631             | NR               |
| 460       | 19577            | NR               | 590       | 79922            | NR               | 720       | 7989             | NR               | 850       | 1661             | NR               | 980       | 1405             | NR               |
| 465       | 14390            | NR               | 595       | 81358            | NR               | 725       | 6739             | NR               | 855       | 1690             | NR               | 985       | 2143             | NR               |
| 470       | 10591            | NR               | 600       | 82761            | NR               | 730       | 5847             | NR               | 860       | 1607             | NR               | 990       | 2213             | NR               |
| 475       | 9960             | NR               | 605       | 83375            | NR               | 735       | 5164             | NR               | 865       | 1492             | NR               | 995       | 2325             | NR               |
| 480       | 10779            | NR               | 610       | 82032            | NR               | 740       | 4742             | NR               | 870       | 1768             | NR               | 1000      | 2016             | NR               |
| 485       | 12985            | NR               | 615       | 79853            | NR               | 745       | 4333             | NR               | 875       | 1864             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1923.7 S/P: 0.47**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 1420             | NR               | 490       | 16514            | NR               | 620       | 77010            | NR               | 750       | 4160             | NR               | 880       | 1762             | NR               |
| 365       | 1119             | NR               | 495       | 20848            | NR               | 625       | 72968            | NR               | 755       | 3799             | NR               | 885       | 1708             | NR               |
| 370       | 1220             | NR               | 500       | 25312            | NR               | 630       | 69621            | NR               | 760       | 3466             | NR               | 890       | 1652             | NR               |
| 375       | 1467             | NR               | 505       | 29412            | NR               | 635       | 65088            | NR               | 765       | 2959             | NR               | 895       | 1448             | NR               |
| 380       | 1377             | NR               | 510       | 32642            | NR               | 640       | 60775            | NR               | 770       | 2669             | NR               | 900       | 2147             | NR               |
| 385       | 1218             | NR               | 515       | 35719            | NR               | 645       | 56160            | NR               | 775       | 2323             | NR               | 905       | 1442             | NR               |
| 390       | 1140             | NR               | 520       | 38312            | NR               | 650       | 51260            | NR               | 780       | 2193             | NR               | 910       | 1354             | NR               |
| 395       | 993              | NR               | 525       | 40145            | NR               | 655       | 46645            | NR               | 785       | 2066             | NR               | 915       | 1289             | NR               |
| 400       | 970              | NR               | 530       | 42169            | NR               | 660       | 41488            | NR               | 790       | 1919             | NR               | 920       | 1620             | NR               |
| 405       | 1007             | NR               | 535       | 44277            | NR               | 665       | 36962            | NR               | 795       | 1855             | NR               | 925       | 1376             | NR               |
| 410       | 1171             | NR               | 540       | 46132            | NR               | 670       | 32536            | NR               | 800       | 1774             | NR               | 930       | 1957             | NR               |
| 415       | 1658             | NR               | 545       | 48654            | NR               | 675       | 28594            | NR               | 805       | 1859             | NR               | 935       | 1749             | NR               |
| 420       | 3022             | NR               | 550       | 51200            | NR               | 680       | 24774            | NR               | 810       | 1499             | NR               | 940       | 1429             | NR               |
| 425       | 5554             | NR               | 555       | 54216            | NR               | 685       | 21857            | NR               | 815       | 1560             | NR               | 945       | 1972             | NR               |
| 430       | 10172            | NR               | 560       | 57652            | NR               | 690       | 18796            | NR               | 820       | 1460             | NR               | 950       | 1386             | NR               |
| 435       | 18521            | NR               | 565       | 61264            | NR               | 695       | 16368            | NR               | 825       | 1779             | NR               | 955       | 1357             | NR               |
| 440       | 33279            | NR               | 570       | 65389            | NR               | 700       | 14086            | NR               | 830       | 1786             | NR               | 960       | 1800             | NR               |
| 445       | 46769            | NR               | 575       | 69020            | NR               | 705       | 12272            | NR               | 835       | 1700             | NR               | 965       | 1500             | NR               |
| 450       | 39883            | NR               | 580       | 72747            | NR               | 710       | 10582            | NR               | 840       | 1604             | NR               | 970       | 1903             | NR               |
| 455       | 25958            | NR               | 585       | 76555            | NR               | 715       | 9375             | NR               | 845       | 1660             | NR               | 975       | 1631             | NR               |
| 460       | 19577            | NR               | 590       | 79922            | NR               | 720       | 7989             | NR               | 850       | 1661             | NR               | 980       | 1405             | NR               |
| 465       | 14390            | NR               | 595       | 81358            | NR               | 725       | 6739             | NR               | 855       | 1690             | NR               | 985       | 2143             | NR               |
| 470       | 10591            | NR               | 600       | 82761            | NR               | 730       | 5847             | NR               | 860       | 1607             | NR               | 990       | 2213             | NR               |
| 475       | 9960             | NR               | 605       | 83375            | NR               | 735       | 5164             | NR               | 865       | 1492             | NR               | 995       | 2325             | NR               |
| 480       | 10779            | NR               | 610       | 82032            | NR               | 740       | 4742             | NR               | 870       | 1768             | NR               | 1000      | 2016             | NR               |
| 485       | 12985            | NR               | 615       | 79853            | NR               | 745       | 4333             | NR               | 875       | 1864             | NR               |           |                  |                  |

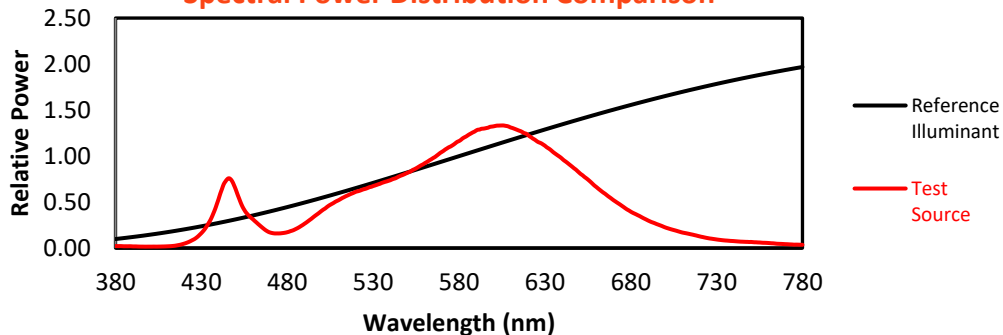
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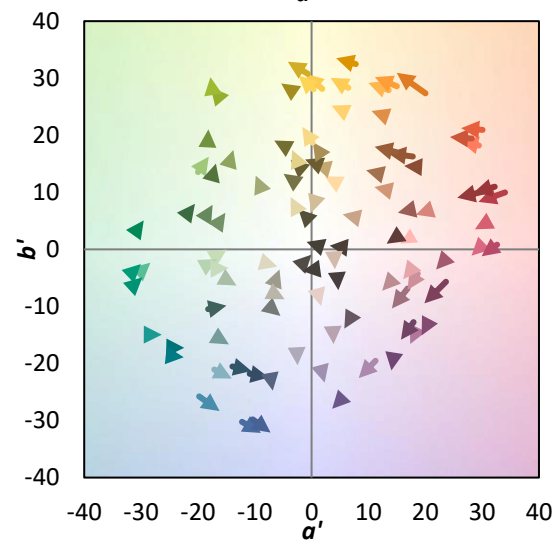
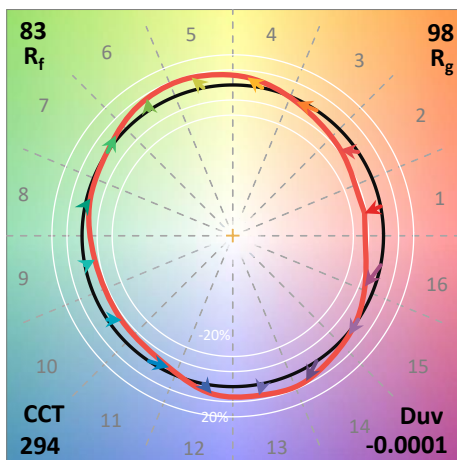
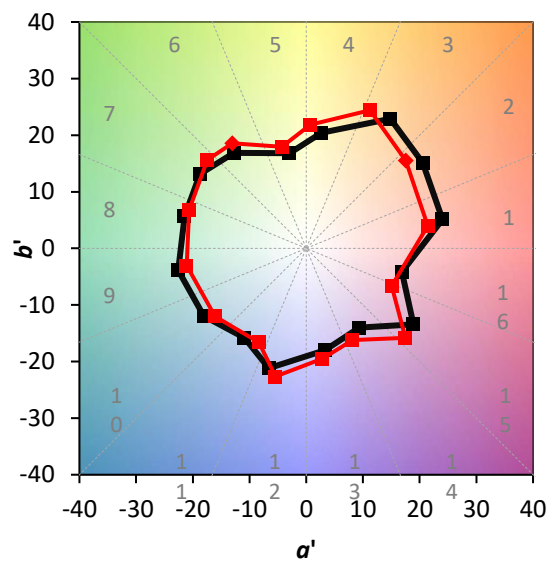
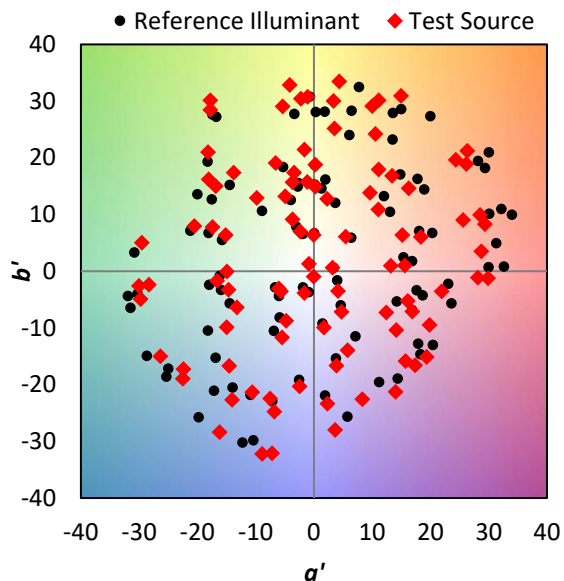
### Summary

$R_f = 82.5$   
 $R_g = 98.2$   
 CIE  $R_a = 81.3$   
 $R_g = 5.4$

### Spectral Power Distribution Comparison



### Color Vector Graphics

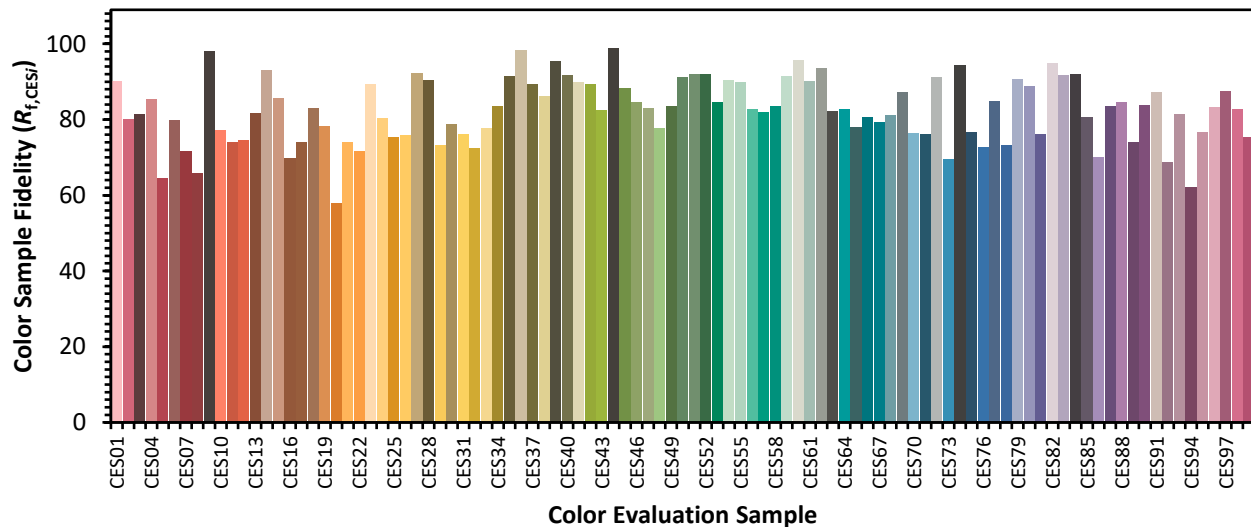


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Individual Sample Fidelity Index ( $R_{f,i}$ )

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 76 | CES51 = 92 | CES76 = 73 |
| CES02 = 63 | CES27 = 92 | CES52 = 92 | CES77 = 85 |
| CES03 = 31 | CES28 = 90 | CES53 = 85 | CES78 = 73 |
| CES04 = 71 | CES29 = 73 | CES54 = 90 | CES79 = 91 |
| CES05 = 50 | CES30 = 79 | CES55 = 90 | CES80 = 89 |
| CES06 = 51 | CES31 = 76 | CES56 = 83 | CES81 = 76 |
| CES07 = 42 | CES32 = 73 | CES57 = 82 | CES82 = 95 |
| CES08 = 41 | CES33 = 78 | CES58 = 84 | CES83 = 92 |
| CES09 = 29 | CES34 = 83 | CES59 = 91 | CES84 = 92 |
| CES10 = 76 | CES35 = 92 | CES60 = 96 | CES85 = 81 |
| CES11 = 59 | CES36 = 98 | CES61 = 90 | CES86 = 70 |
| CES12 = 65 | CES37 = 89 | CES62 = 93 | CES87 = 84 |
| CES13 = 44 | CES38 = 86 | CES63 = 82 | CES88 = 85 |
| CES14 = 74 | CES39 = 95 | CES64 = 83 | CES89 = 74 |
| CES15 = 72 | CES40 = 92 | CES65 = 78 | CES90 = 84 |
| CES16 = 48 | CES41 = 90 | CES66 = 81 | CES91 = 87 |
| CES17 = 50 | CES42 = 89 | CES67 = 79 | CES92 = 69 |
| CES18 = 57 | CES43 = 82 | CES68 = 81 | CES93 = 81 |
| CES19 = 72 | CES44 = 99 | CES69 = 87 | CES94 = 62 |
| CES20 = 67 | CES45 = 88 | CES70 = 76 | CES95 = 77 |
| CES21 = 87 | CES46 = 85 | CES71 = 76 | CES96 = 83 |
| CES22 = 79 | CES47 = 83 | CES72 = 91 | CES97 = 88 |
| CES23 = 92 | CES48 = 78 | CES73 = 70 | CES98 = 83 |
| CES24 = 91 | CES49 = 84 | CES74 = 94 | CES99 = 75 |
| CES25 = 72 | CES50 = 91 | CES75 = 77 |            |

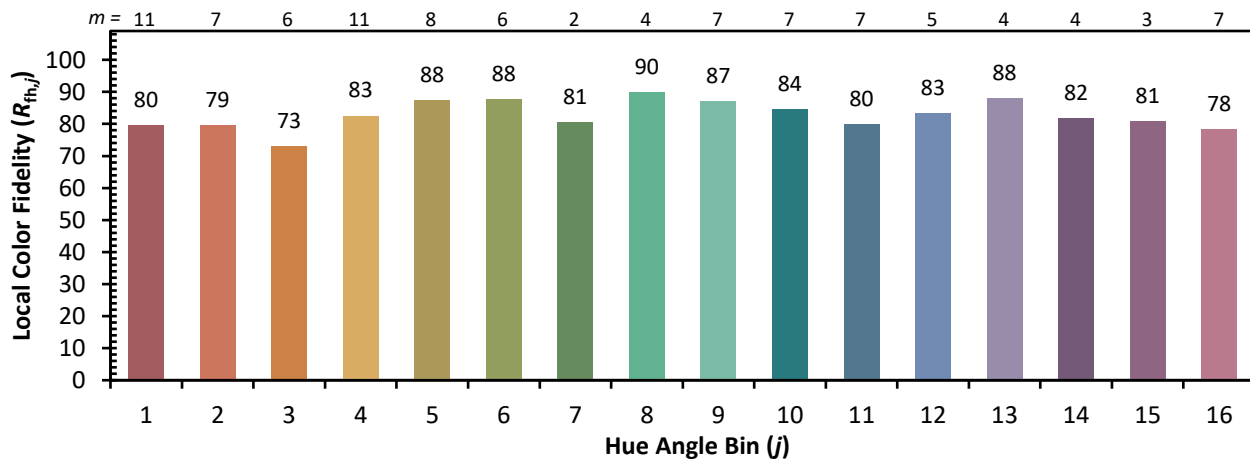
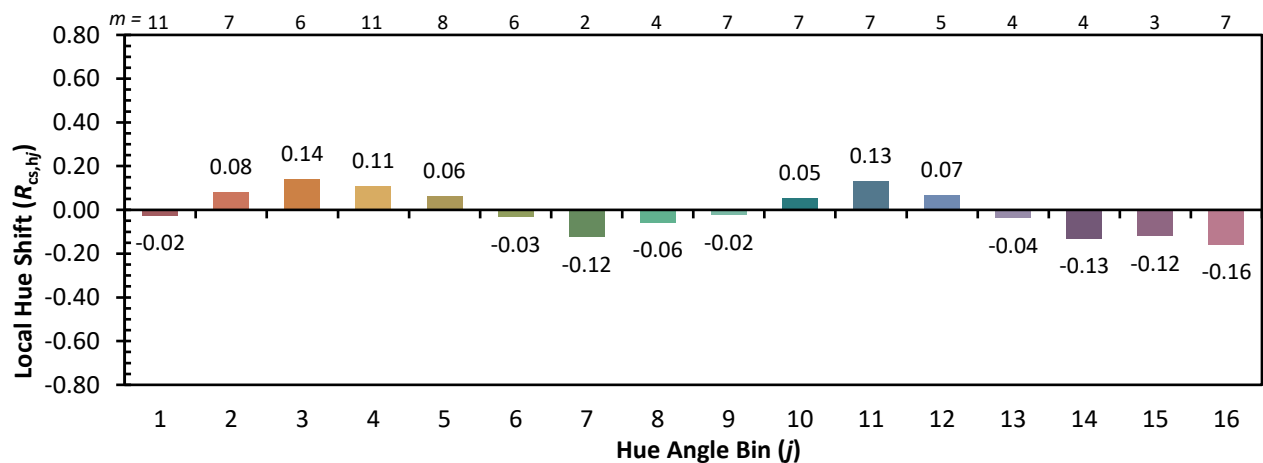
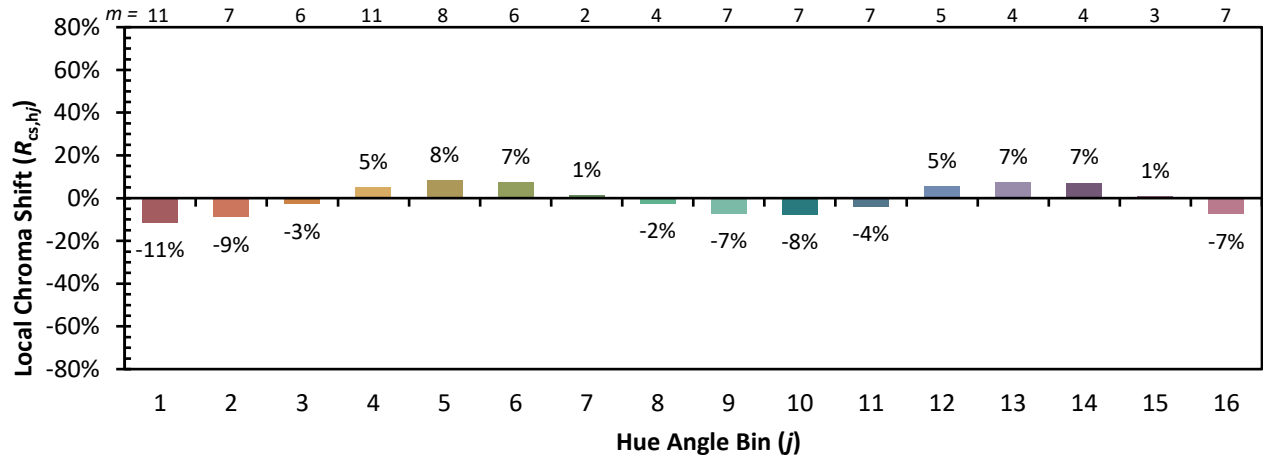




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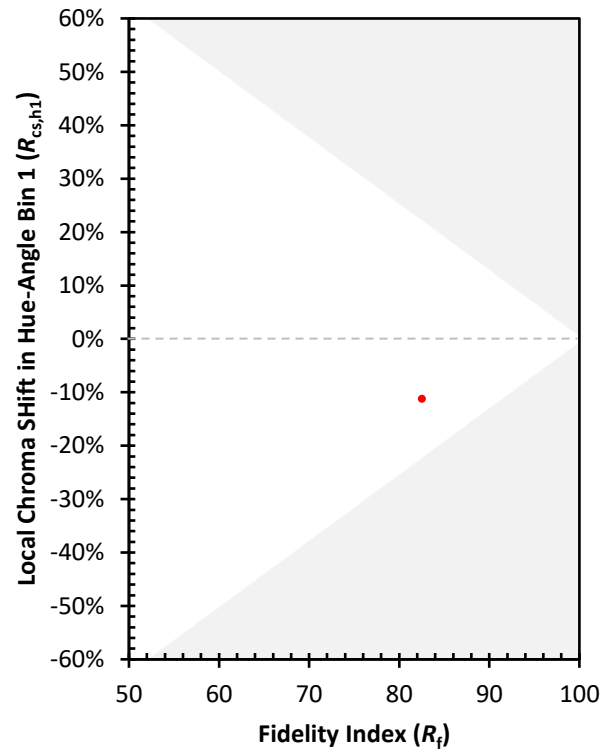
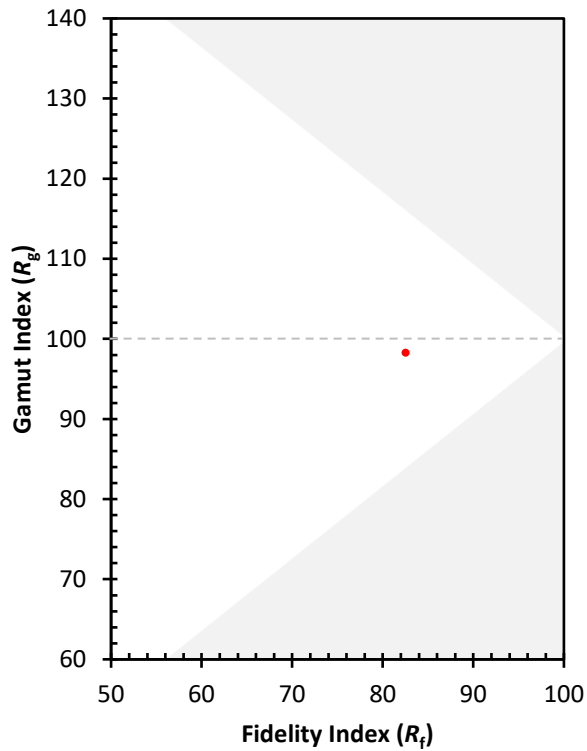
**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



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