

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: P869218

Luminaire Tested: **EMM2-HTN-SA3A-AMB-U-T5M**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P869218
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA3A-AMB-U-T5M
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 46W 0CRI 1540K FIXTURE
w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC
Light Source: (30) 1540K CCT, 0 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

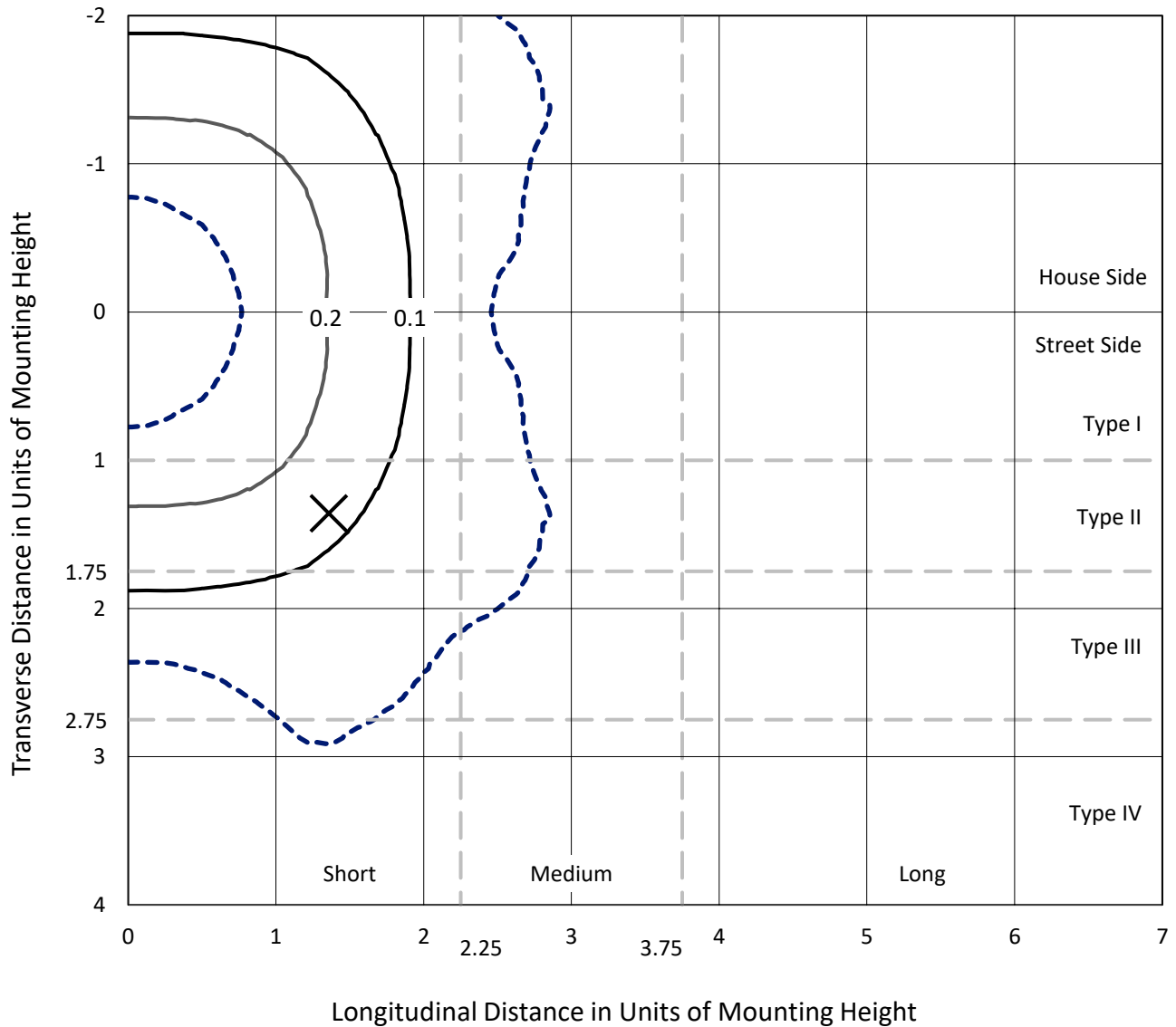
Lumens per Lamp: N/A
Luminaire Lumens: 1486.2 lumens
Efficiency: N/A
Efficacy: 32.3 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B1 - U0 - G0

Input Watts (W): 46
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.98
Total Harmonic Distortion (THDi): 6.75%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Iso-Footcandle Lines of Horizontal Illumination

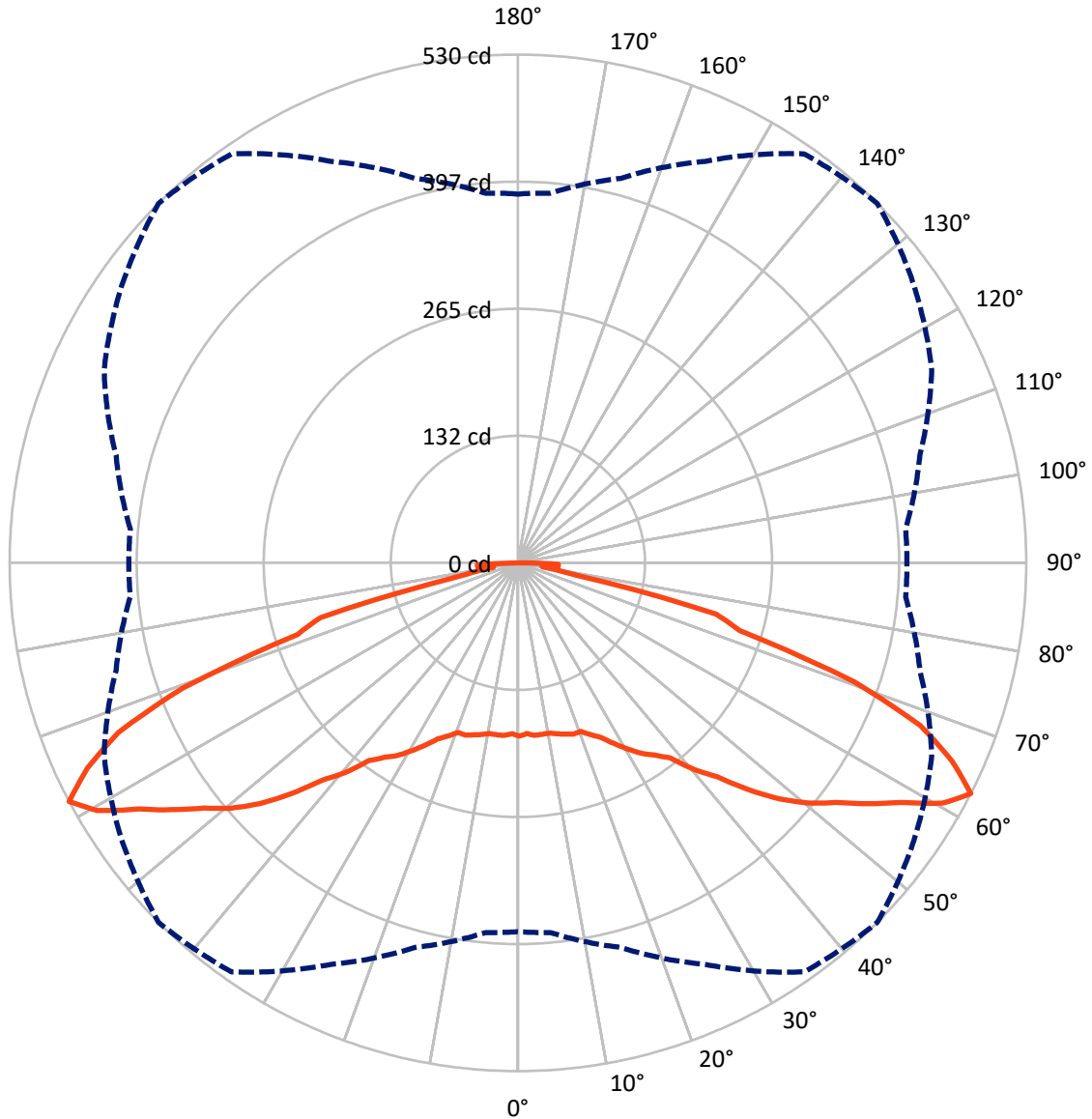
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 0.5 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 62.5-Deg Vertical

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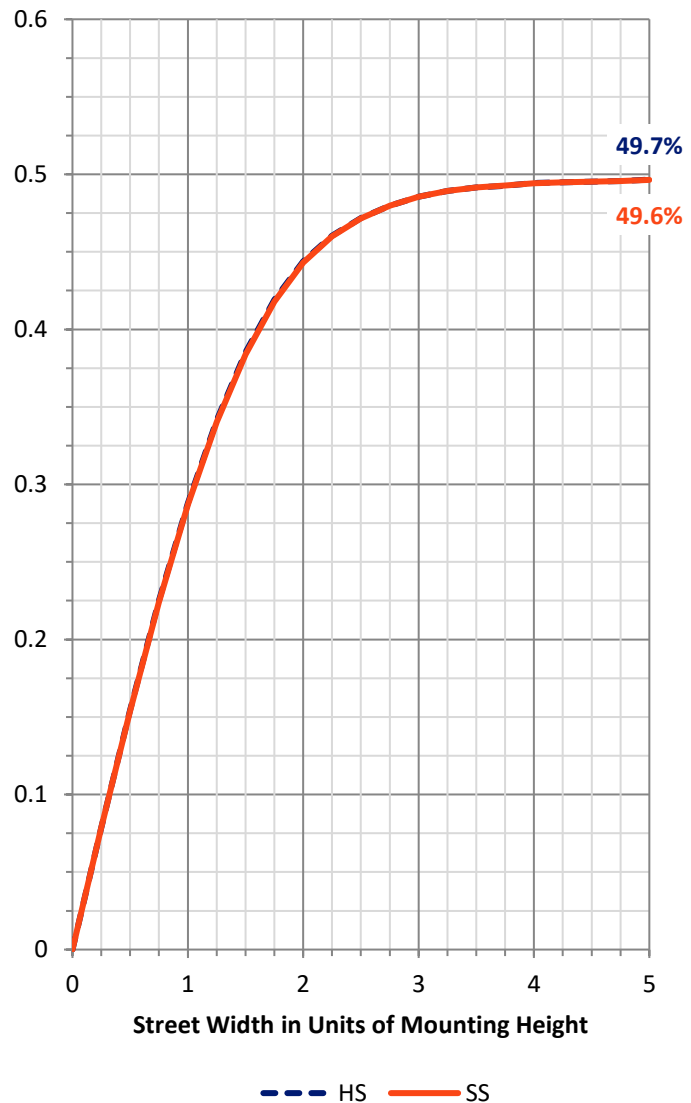
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 743.1 | 0.0 | 743.1 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| Street Side | Lumens | 743.1 | 0.0 | 743.1 |
| | % Fixture | 50.0 | 0.0 | 50.0 |
| Total | Lumens | 1486.2 | 0.0 | 1486.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 17.1 | 1.2 |
| 10°-20° | 52.5 | 3.5 |
| 20°-30° | 93.7 | 6.3 |
| 30°-40° | 157.7 | 10.6 |
| 40°-50° | 249.5 | 16.8 |
| 50°-60° | 370.4 | 24.9 |
| 60°-70° | 392.6 | 26.4 |
| 70°-80° | 134.9 | 9.1 |
| 80°-90° | 17.9 | 1.2 |
| 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° | 1486.2 | 100.0 |
| 0°-180° | 1486.2 | 100.0 |



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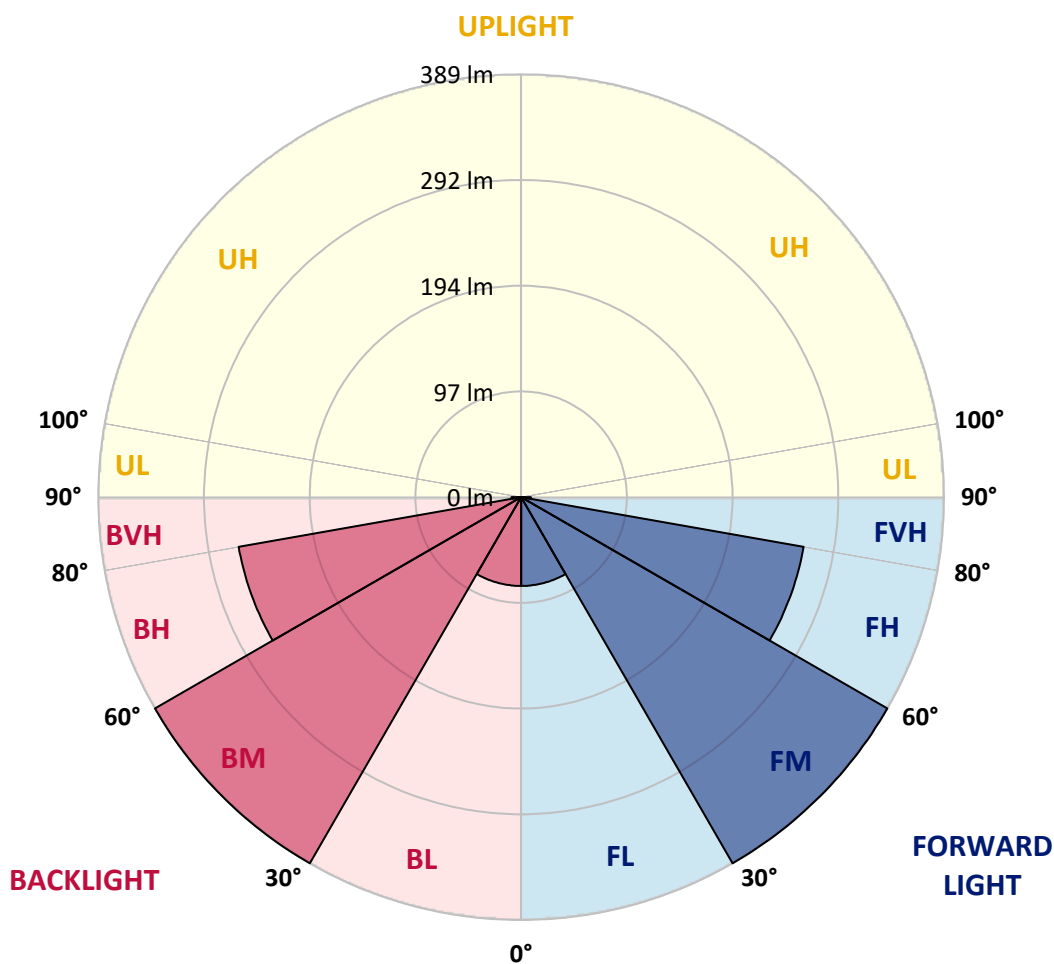
CATALOG NUMBER: EMM2-HTN-SA3A-AMB-U-T5M

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 81.6 | 5.5 | | | |
| FM (30°-60°) | 388.8 | 26.2 | | | |
| FH (60°-80°) | 263.7 | 17.7 | | | G0/660 |
| FVH (80°-90°) | 9.0 | 0.6 | | | G0/10 |
| BL (0°-30°) | 81.6 | 5.5 | B0/110 | | |
| BM (30°-60°) | 388.8 | 26.2 | B1/1000 | | |
| BH (60°-80°) | 263.7 | 17.7 | B1/500 | | G0/660 |
| BVH (80°-90°) | 9.0 | 0.6 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G0

Type V Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 |
| 2.5° | 178.1 | 178.1 | 178.1 | 178.1 | 178.1 | 178.1 | 178.1 | 178.1 | 178.1 | 180.4 | 180.4 |
| 5° | 178.1 | 178.1 | 178.1 | 180.4 | 180.4 | 180.4 | 178.1 | 178.1 | 178.1 | 178.1 | 178.1 |
| 7.5° | 178.1 | 178.1 | 178.1 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 178.1 | 178.1 | 178.1 |
| 10° | 180.4 | 180.4 | 180.4 | 182.8 | 182.8 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 | 180.4 |
| 12.5° | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 | 182.8 |
| 15° | 185.1 | 185.1 | 185.1 | 185.1 | 185.1 | 185.1 | 185.1 | 182.8 | 185.1 | 185.1 | 185.1 |
| 17.5° | 187.5 | 187.5 | 185.1 | 185.1 | 187.5 | 187.5 | 187.5 | 187.5 | 187.5 | 187.5 | 187.5 |
| 20° | 187.5 | 187.5 | 187.5 | 187.5 | 187.5 | 187.5 | 189.8 | 187.5 | 187.5 | 189.8 | 189.8 |
| 22.5° | 187.5 | 187.5 | 189.8 | 192.1 | 194.5 | 194.5 | 194.5 | 192.1 | 192.1 | 189.8 | 189.8 |
| 25° | 192.1 | 194.5 | 199.2 | 201.5 | 201.5 | 201.5 | 201.5 | 199.2 | 196.8 | 194.5 | 194.5 |
| 27.5° | 213.2 | 210.9 | 203.9 | 206.2 | 210.9 | 213.2 | 213.2 | 213.2 | 206.2 | 206.2 | 208.5 |
| 30° | 215.6 | 217.9 | 222.6 | 220.3 | 222.6 | 225.0 | 225.0 | 222.6 | 225.0 | 222.6 | 222.6 |
| 32.5° | 232.0 | 232.0 | 234.3 | 239.0 | 236.7 | 236.7 | 236.7 | 236.7 | 236.7 | 243.7 | 241.4 |
| 35° | 250.7 | 248.4 | 243.7 | 248.4 | 253.1 | 246.0 | 248.4 | 248.4 | 250.7 | 253.1 | 250.7 |
| 37.5° | 260.1 | 260.1 | 262.4 | 260.1 | 262.4 | 257.8 | 262.4 | 269.5 | 267.1 | 262.4 | 262.4 |
| 40° | 274.2 | 271.8 | 276.5 | 283.5 | 276.5 | 283.5 | 285.9 | 283.5 | 278.8 | 276.5 | 276.5 |
| 42.5° | 292.9 | 290.6 | 290.6 | 297.6 | 304.6 | 304.6 | 309.3 | 299.9 | 295.2 | 290.6 | 290.6 |
| 45° | 307.0 | 307.0 | 309.3 | 316.3 | 332.7 | 337.4 | 332.7 | 323.4 | 311.6 | 307.0 | 307.0 |
| 47.5° | 321.0 | 321.0 | 328.1 | 344.5 | 358.5 | 367.9 | 360.9 | 344.5 | 335.1 | 328.1 | 325.7 |
| 50° | 332.7 | 332.7 | 349.1 | 367.9 | 386.6 | 393.7 | 386.6 | 372.6 | 356.2 | 346.8 | 342.1 |
| 52.5° | 358.5 | 358.5 | 365.5 | 391.3 | 412.4 | 414.8 | 412.4 | 398.3 | 386.6 | 367.9 | 365.5 |
| 55° | 379.6 | 381.9 | 393.7 | 412.4 | 433.5 | 442.9 | 438.2 | 417.1 | 405.4 | 393.7 | 389.0 |
| 57.5° | 396.0 | 398.3 | 412.4 | 435.8 | 459.3 | 471.0 | 464.0 | 440.5 | 421.8 | 414.8 | 414.8 |
| 60° | 398.3 | 398.3 | 417.1 | 449.9 | 494.4 | 508.5 | 499.1 | 464.0 | 438.2 | 424.1 | 421.8 |
| 62.5° | 384.3 | 386.6 | 414.8 | 461.6 | 520.2 | 529.6 | 503.8 | 475.7 | 433.5 | 405.4 | 405.4 |
| 65° | 318.7 | 328.1 | 367.9 | 428.8 | 496.8 | 496.8 | 468.6 | 426.5 | 356.2 | 321.0 | 318.7 |
| 67.5° | 250.7 | 250.7 | 281.2 | 358.5 | 438.2 | 452.2 | 403.0 | 337.4 | 290.6 | 267.1 | 262.4 |
| 70° | 210.9 | 215.6 | 246.0 | 304.6 | 365.5 | 372.6 | 344.5 | 309.3 | 269.5 | 250.7 | 250.7 |
| 72.5° | 128.9 | 135.9 | 206.2 | 281.2 | 267.1 | 241.4 | 285.9 | 264.8 | 171.1 | 124.2 | 117.2 |
| 75° | 30.5 | 32.8 | 56.2 | 100.8 | 189.8 | 213.2 | 145.3 | 77.3 | 44.5 | 39.8 | 42.2 |
| 77.5° | 21.1 | 21.1 | 28.1 | 37.5 | 46.9 | 63.3 | 37.5 | 30.5 | 25.8 | 25.8 | 25.8 |
| 80° | 18.7 | 18.7 | 21.1 | 28.1 | 28.1 | 25.8 | 23.4 | 21.1 | 18.7 | 18.7 | 16.4 |
| 82.5° | 16.4 | 16.4 | 18.7 | 25.8 | 30.5 | 25.8 | 23.4 | 18.7 | 16.4 | 14.1 | 11.7 |
| 85° | 11.7 | 11.7 | 14.1 | 21.1 | 39.8 | 42.2 | 21.1 | 11.7 | 11.7 | 7.0 | 7.0 |
| 87.5° | 4.7 | 4.7 | 7.0 | 14.1 | 28.1 | 42.2 | 11.7 | 4.7 | 4.7 | 4.7 | 2.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P869218
 CATALOG NUMBER: EMM2-HTN-SA3A-AMB-U-T5M

CANDELA DISTRIBUTION (continued):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 112.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 122.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 140° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 167.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 170° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 175° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-1

Test Date: 08/06/2024

Luminaire Tested: MEM2-HTN-SA-45-AMB-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-45-AMB-U-5WQ-2

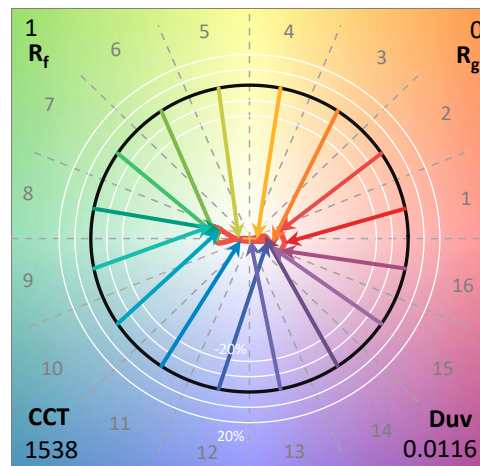
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-45-AMB-U-5WQ-2**
 Description: Epic Modern Light Square 45W 5WQ Optic and Flare Trim AMBER LED

Spectral Parameters

CCT (K): 1538
 CIE u': 0.3530
 CIE v': 0.5469
 Duv: 0.0116
 CIE x: 0.5918
 CIE y: 0.4076
 CIE z: 0.0006
 Peak Wavelength (nm): 597
 Dominant Wavelength (nm): 592
 Purity: 99.98881
 Rf: 1.1
 Rg: 0

| | | | |
|-----------|--------|------|--------|
| CRI (Ra): | -21.8 | | |
| R1: | -34.3 | R9: | -386.6 |
| R2: | 52.3 | R10: | 28.9 |
| R3: | 17.0 | R11: | -95.5 |
| R4: | -68.4 | R12: | -10.5 |
| R5: | -40.8 | R13: | -15.5 |
| R6: | 41.5 | R14: | 45.9 |
| R7: | -7.2 | R15: | -67.7 |
| R8: | -134.5 | | |



Test Conditions

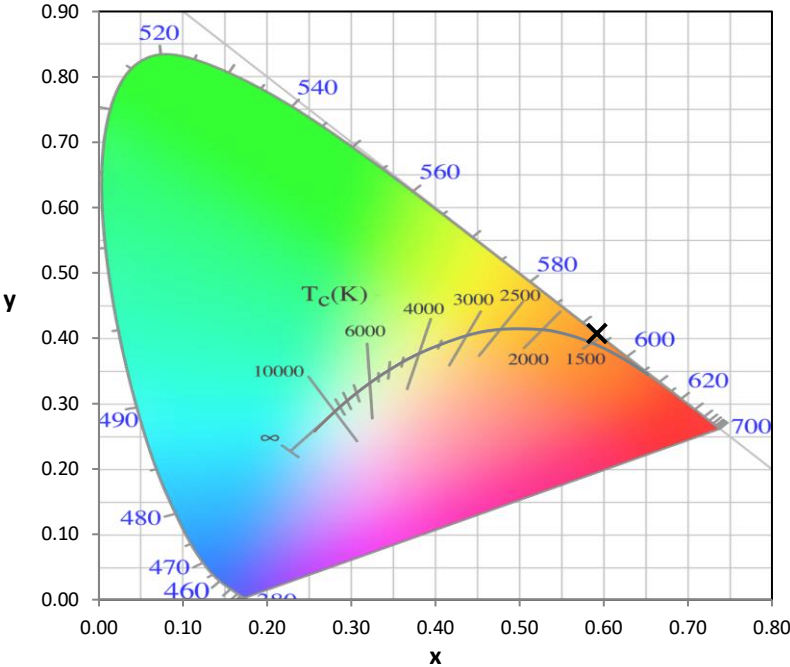
Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-1

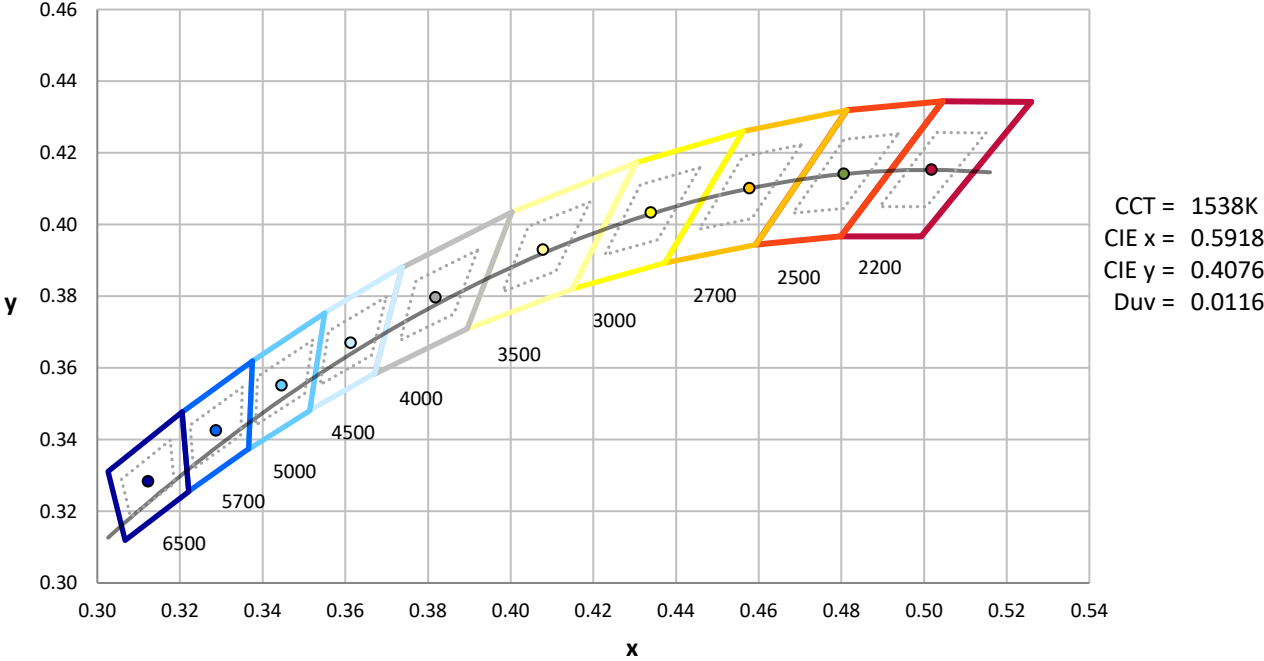
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 |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



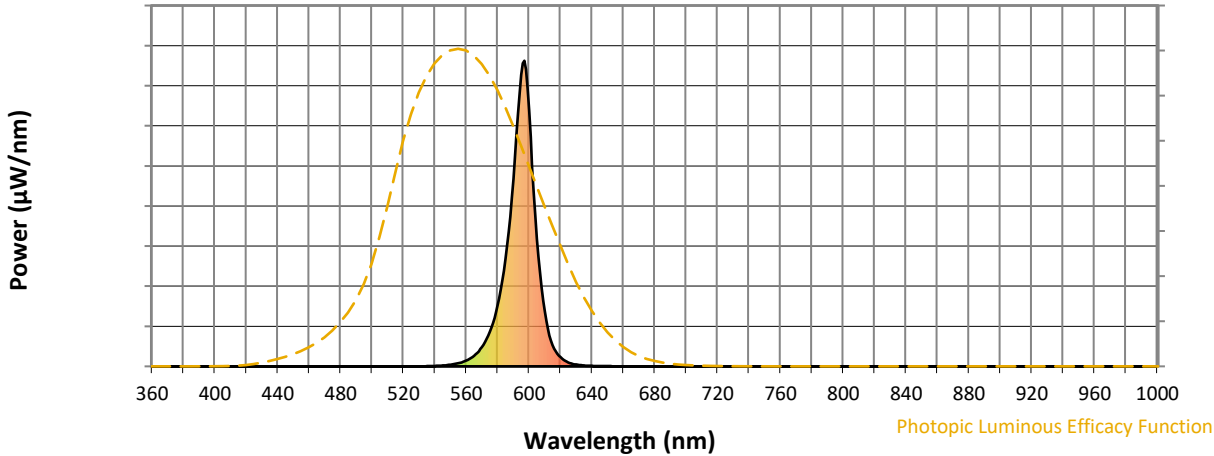
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies outside the range

REPORT NUMBER: SP1-2407-157-1

Photopic Flux vs. Wavelength

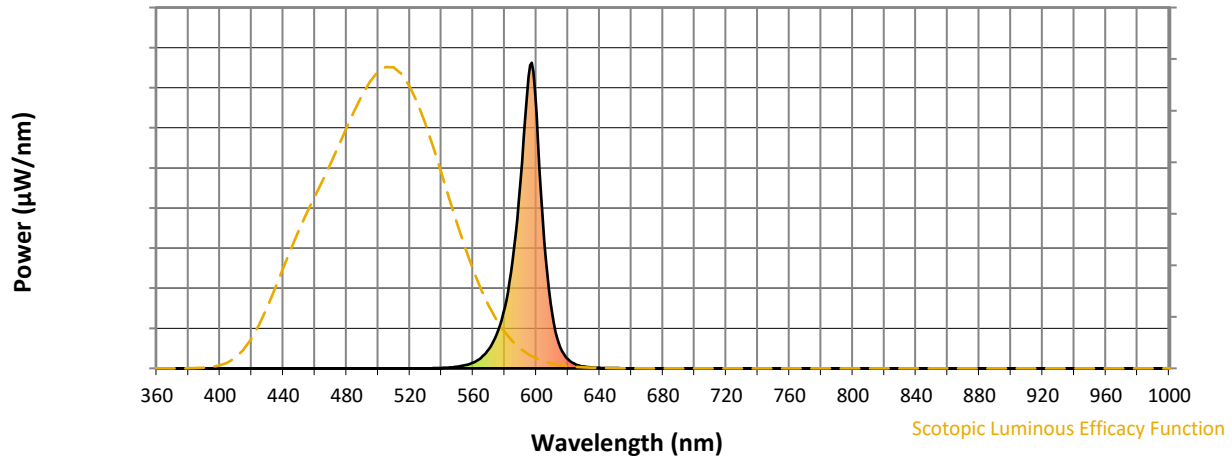


Photopic Lumens: NR

| 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 | 0 | NR | 620 | 30 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 13 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 6 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 3 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 2 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 1 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 1 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 0 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 0 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 1 | NR | 665 | 0 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 1 | NR | 670 | 0 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 3 | NR | 675 | 0 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 5 | NR | 680 | 0 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 10 | NR | 685 | 0 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 19 | NR | 690 | 0 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 34 | NR | 695 | 0 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 63 | NR | 700 | 0 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 113 | NR | 705 | 0 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 199 | NR | 710 | 0 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 352 | NR | 715 | 0 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 614 | NR | 720 | 0 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 954 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 837 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 417 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 179 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 69 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-1

Scotopic Flux vs. Wavelength



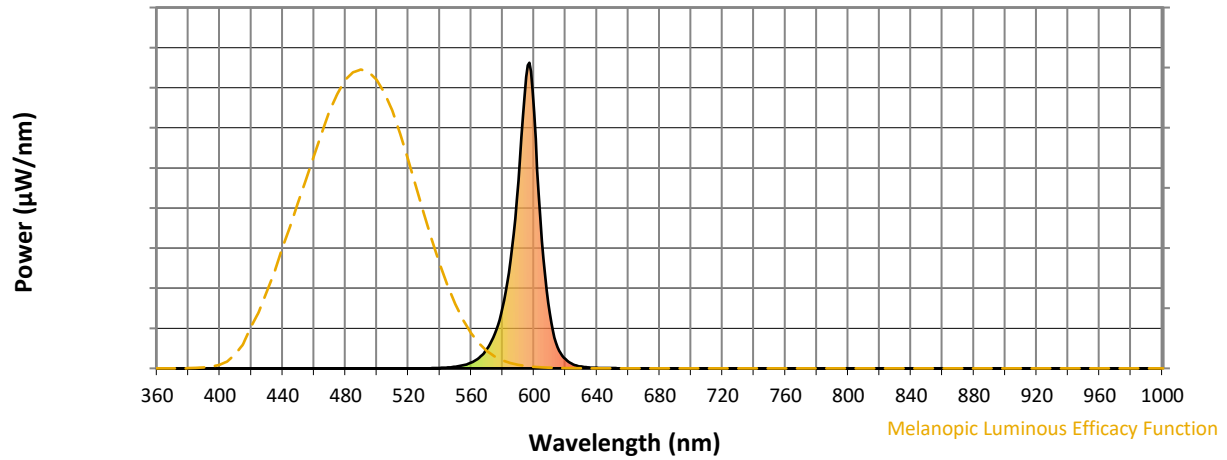
Scotopic Lumens: NR

S/P: 0.22

| 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 | 0 | NR | 620 | 30 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 13 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 6 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 3 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 2 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 1 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 1 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 0 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 0 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 1 | NR | 665 | 0 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 1 | NR | 670 | 0 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 3 | NR | 675 | 0 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 5 | NR | 680 | 0 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 10 | NR | 685 | 0 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 19 | NR | 690 | 0 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 34 | NR | 695 | 0 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 63 | NR | 700 | 0 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 113 | NR | 705 | 0 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 199 | NR | 710 | 0 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 352 | NR | 715 | 0 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 614 | NR | 720 | 0 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 954 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 837 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 417 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 179 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 69 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-1

Melanopic Flux vs. Wavelength



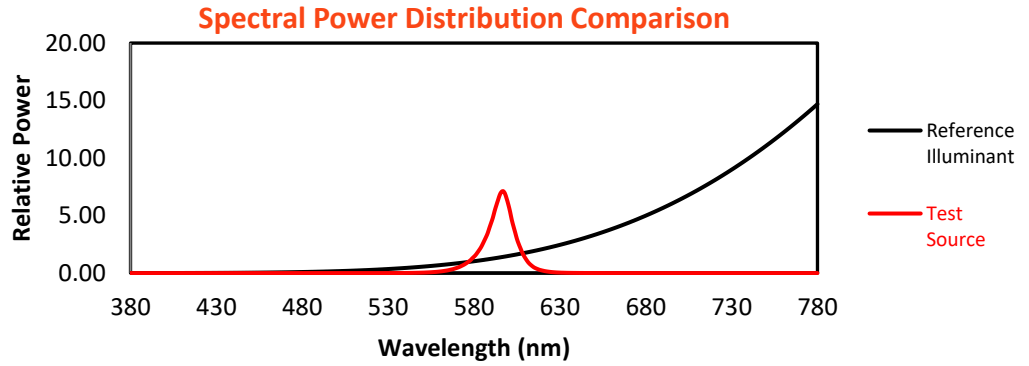
Melanopic Lumens: NR

M/P: 0.12

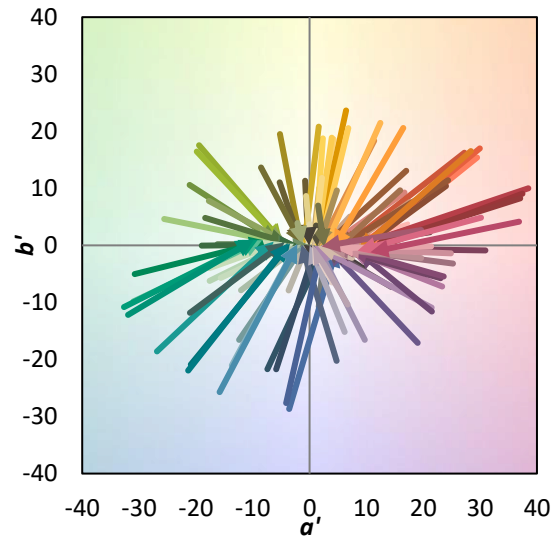
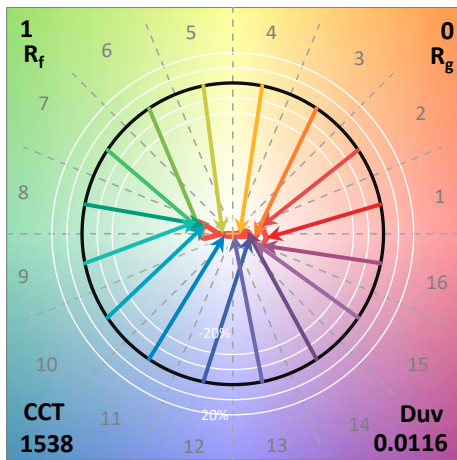
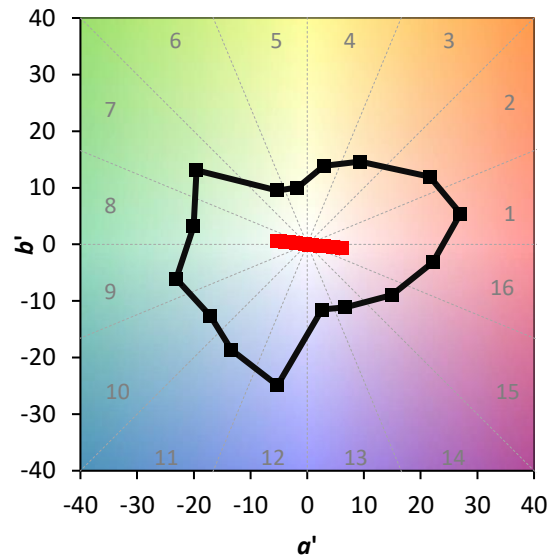
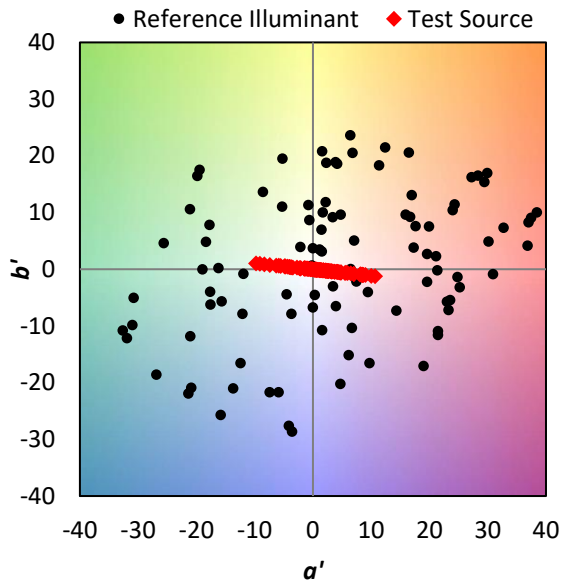
| λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) | λ (nm) | Power W^{\wedge}/nm | Lumens (ϕ/nm) |
|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|----------------|-----------------------|----------------------|
| 360 | 0 | NR | 490 | 0 | NR | 620 | 30 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 13 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 6 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 3 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 2 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 1 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 1 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 0 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 0 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 1 | NR | 665 | 0 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 1 | NR | 670 | 0 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 3 | NR | 675 | 0 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 5 | NR | 680 | 0 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 10 | NR | 685 | 0 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 19 | NR | 690 | 0 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 34 | NR | 695 | 0 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 63 | NR | 700 | 0 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 113 | NR | 705 | 0 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 199 | NR | 710 | 0 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 352 | NR | 715 | 0 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 614 | NR | 720 | 0 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 954 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 837 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 417 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 179 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 69 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 1.1$
 $R_g = 0$
 $CIE R_a = -21.8$
 $R_g = -386.6$

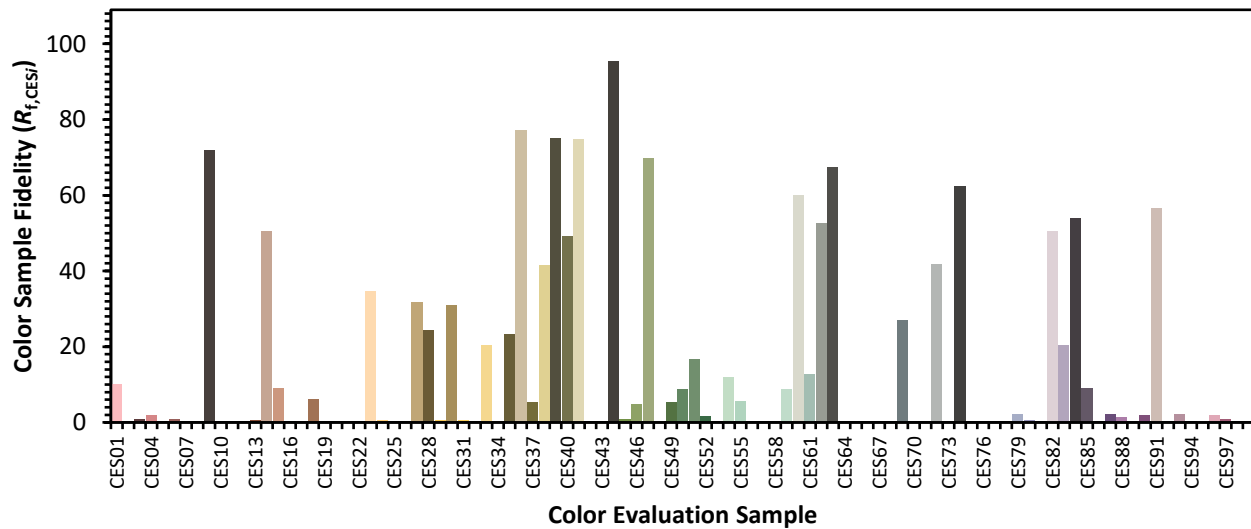


Color Vector Graphics

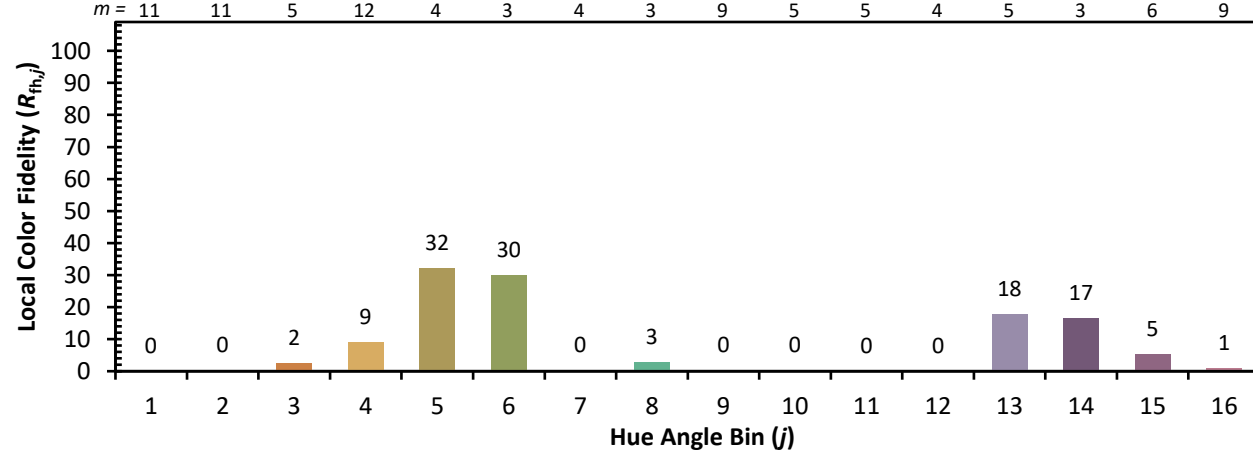
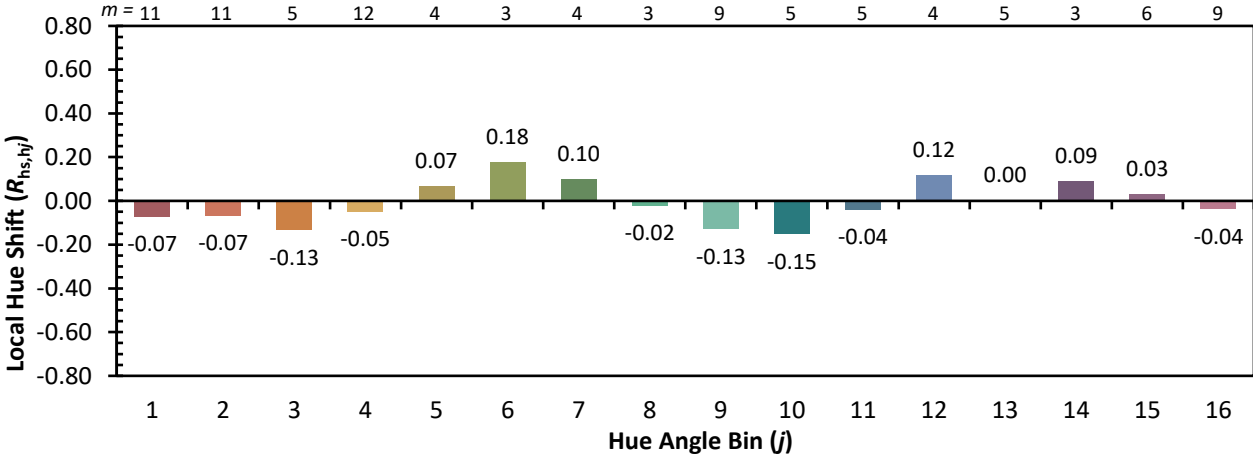
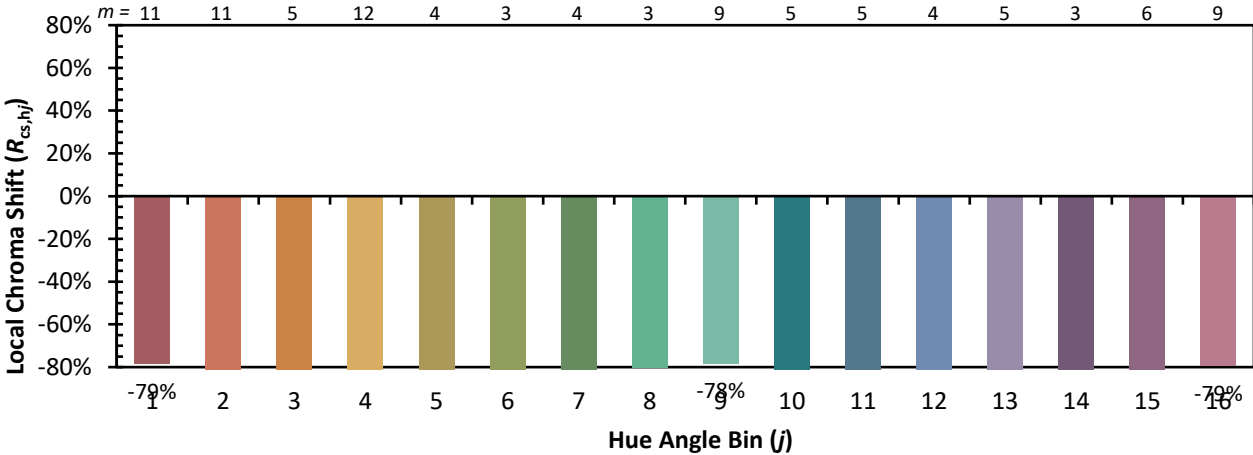


Individual Sample Fidelity Index ($R_{f,i}$)

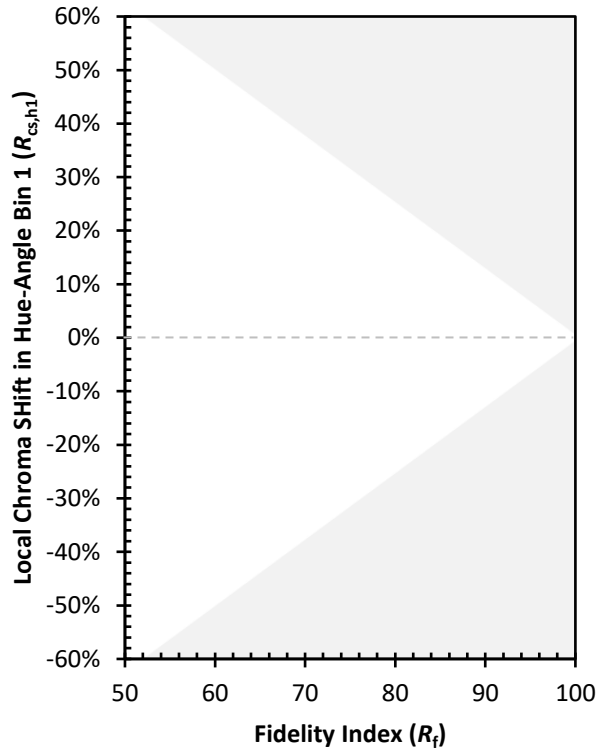
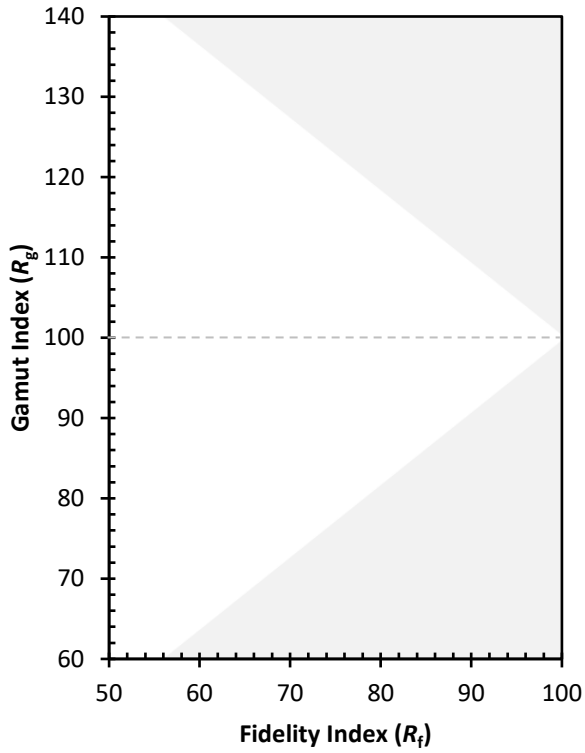
| | | | |
|------------|------------|------------|------------|
| CES01 = 90 | CES26 = 0 | CES51 = 17 | CES76 = 0 |
| CES02 = 70 | CES27 = 32 | CES52 = 2 | CES77 = 0 |
| CES03 = 31 | CES28 = 24 | CES53 = 0 | CES78 = 0 |
| CES04 = 77 | CES29 = 1 | CES54 = 12 | CES79 = 2 |
| CES05 = 52 | CES30 = 31 | CES55 = 6 | CES80 = 1 |
| CES06 = 56 | CES31 = 1 | CES56 = 0 | CES81 = 0 |
| CES07 = 41 | CES32 = 0 | CES57 = 0 | CES82 = 50 |
| CES08 = 38 | CES33 = 21 | CES58 = 0 | CES83 = 21 |
| CES09 = 29 | CES34 = 0 | CES59 = 9 | CES84 = 54 |
| CES10 = 87 | CES35 = 23 | CES60 = 60 | CES85 = 9 |
| CES11 = 70 | CES36 = 77 | CES61 = 13 | CES86 = 0 |
| CES12 = 76 | CES37 = 5 | CES62 = 53 | CES87 = 2 |
| CES13 = 47 | CES38 = 41 | CES63 = 68 | CES88 = 1 |
| CES14 = 77 | CES39 = 75 | CES64 = 0 | CES89 = 0 |
| CES15 = 74 | CES40 = 49 | CES65 = 0 | CES90 = 2 |
| CES16 = 49 | CES41 = 75 | CES66 = 0 | CES91 = 57 |
| CES17 = 56 | CES42 = 0 | CES67 = 0 | CES92 = 0 |
| CES18 = 60 | CES43 = 0 | CES68 = 0 | CES93 = 2 |
| CES19 = 80 | CES44 = 95 | CES69 = 27 | CES94 = 0 |
| CES20 = 71 | CES45 = 1 | CES70 = 0 | CES95 = 0 |
| CES21 = 94 | CES46 = 5 | CES71 = 0 | CES96 = 2 |
| CES22 = 87 | CES47 = 70 | CES72 = 42 | CES97 = 1 |
| CES23 = 94 | CES48 = 0 | CES73 = 0 | CES98 = 0 |
| CES24 = 95 | CES49 = 5 | CES74 = 62 | CES99 = 0 |
| CES25 = 79 | CES50 = 9 | CES75 = 0 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)