

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: P869198

Luminaire Tested: **EMM2-HTN-SA1A-AMB-U-T2U-HSS**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P869198
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA1A-AMB-U-T2U-HSS
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 15W 0CRI 1540K FIXTURE
w/ TYPE II URBAN DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (10) 1540K CCT, 0 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

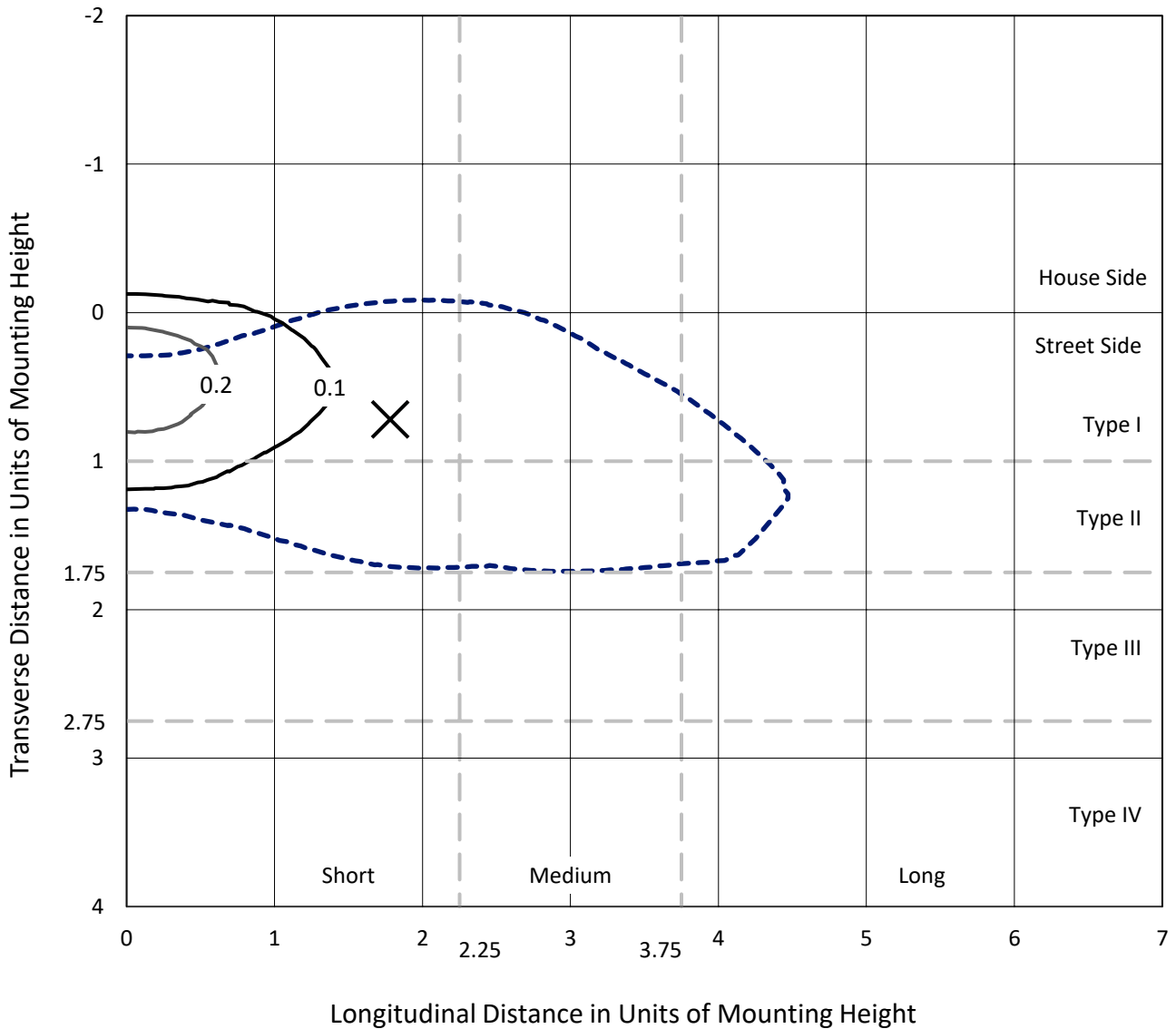
Lumens per Lamp: N/A
Luminaire Lumens: 405.7 lumens
Efficiency: N/A
Efficacy: 25.4 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type II - Short
BUG Rating: B0 - U0 - G0

Input Watts (W): 16
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.98
Total Harmonic Distortion (THDi): 9.98%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P869198
 CATALOG NUMBER: EMM2-HTN-SA1A-AMB-U-T2U-HSS

Iso-Footcandle Lines of Horizontal Illumination

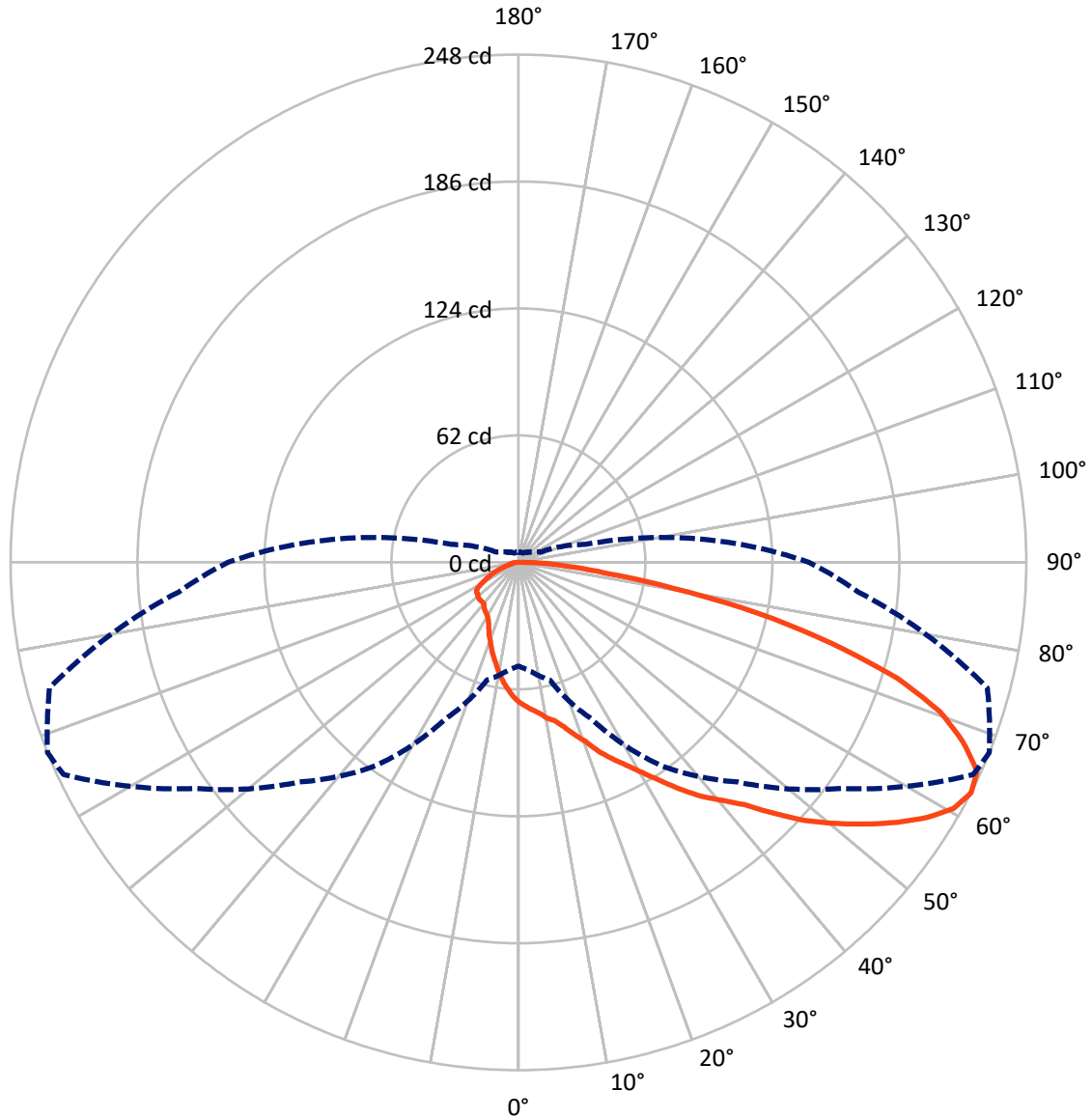
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 0.3 fc
 Type II - Short - N/A

REPORT NUMBER: P869198
CATALOG NUMBER: EMM2-HTN-SA1A-AMB-U-T2U-HSS

Luminous Intensity Polar Plot



— Vertical Plane Through 68-Deg Lateral - - - Horizontal Cone Through 62.5-Deg Vertical

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 CATALOG NUMBER: EMM2-HTN-SA1A-AMB-U-T2U-HSS

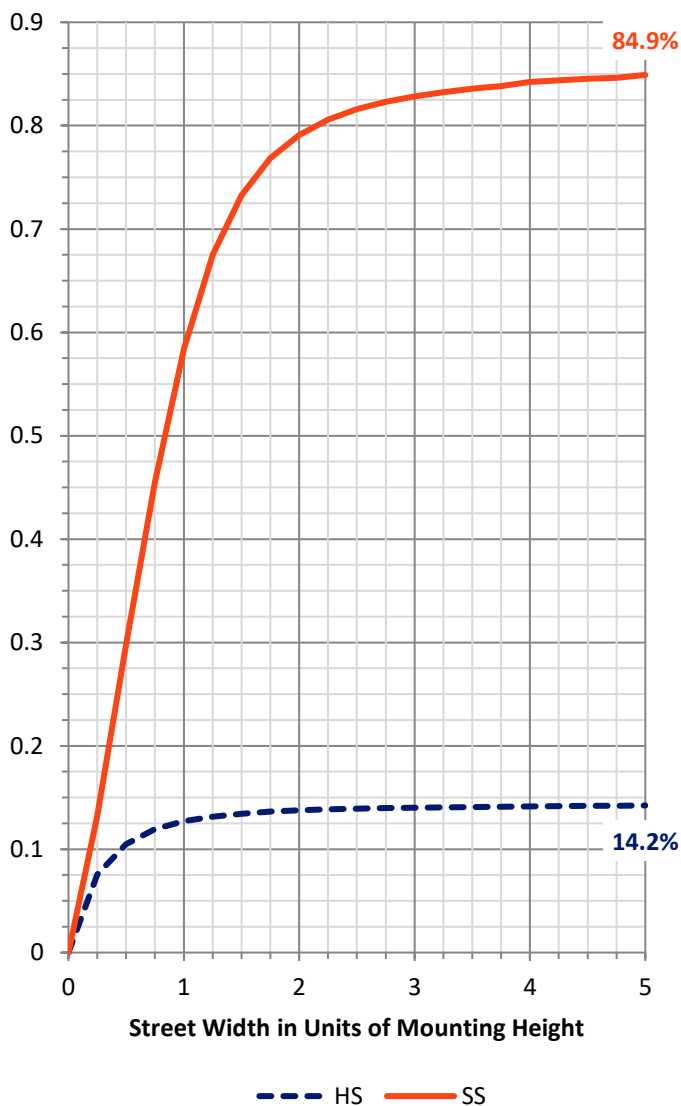
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|-------|
| House Side | Lumens | 58.5 | 0.0 | 58.5 |
| | % Fixture | 14.4 | 0.0 | 14.4 |
| Street Side | Lumens | 347.2 | 0.0 | 347.2 |
| | % Fixture | 85.6 | 0.0 | 85.6 |
| Total | Lumens | 405.7 | 0.0 | 405.7 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 6.3 | 1.5 |
| 10°-20° | 19.4 | 4.8 |
| 20°-30° | 34.9 | 8.6 |
| 30°-40° | 53.5 | 13.2 |
| 40°-50° | 74.9 | 18.5 |
| 50°-60° | 84.9 | 20.9 |
| 60°-70° | 76.2 | 18.8 |
| 70°-80° | 45.0 | 11.1 |
| 80°-90° | 10.7 | 2.6 |
| 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° | 405.7 | 100.0 |
| 0°-180° | 405.7 | 100.0 |

Coefficient of Utilization



REPORT NUMBER: P869198

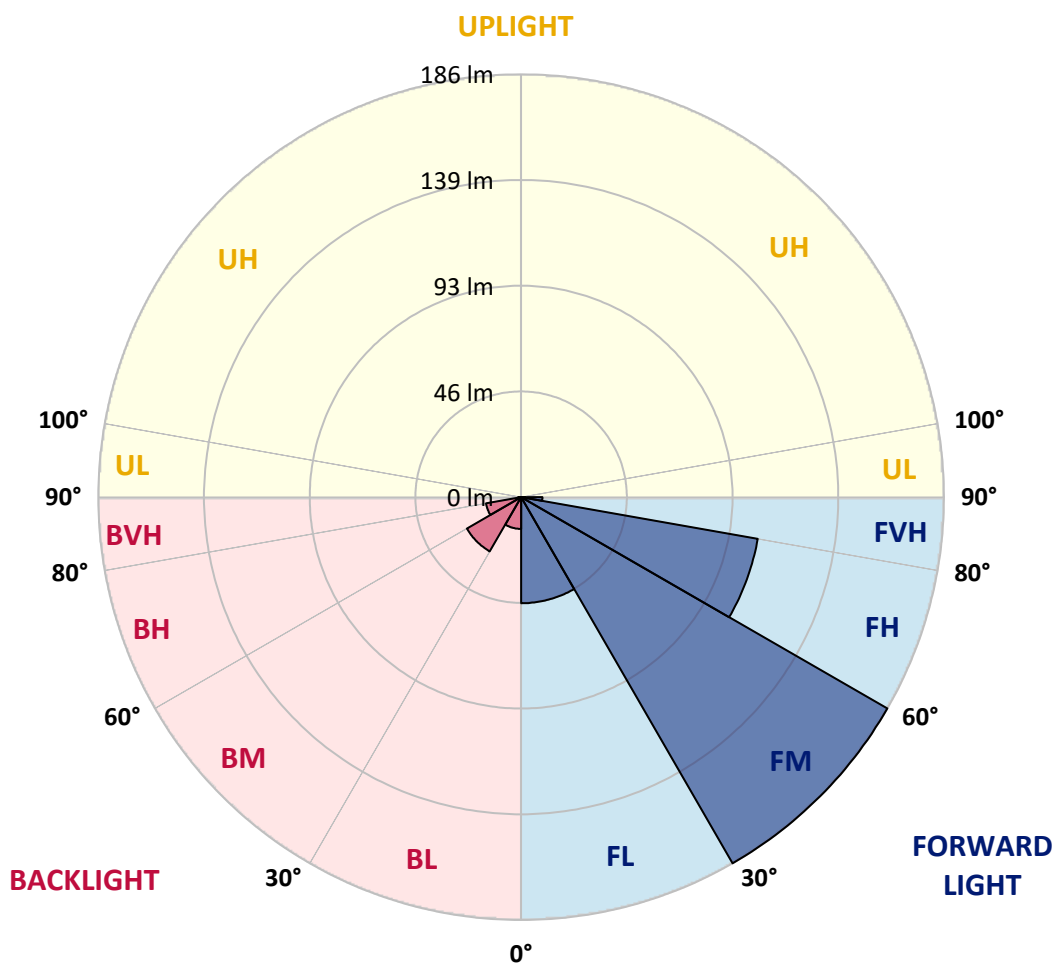
CATALOG NUMBER: EMM2-HTN-SA1A-AMB-U-T2U-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 46.6 | 11.5 | | | |
| FM (30°-60°) | 185.7 | 45.8 | | | |
| FH (60°-80°) | 105.5 | 26.0 | | | G0/660 |
| FVH (80°-90°) | 9.3 | 2.3 | | | G0/10 |
| BL (0°-30°) | 14.0 | 3.4 | B0/110 | | |
| BM (30°-60°) | 27.5 | 6.8 | B0/220 | | |
| BH (60°-80°) | 15.7 | 3.9 | B0/110 | | G0/110 |
| BVH (80°-90°) | 1.3 | 0.3 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G0

Type II Short





REPORT NUMBER: P869198

CATALOG NUMBER: EMM2-HTN-SA1A-AMB-U-T2U-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 68° | 75° | 85° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 |
| 2.5° | 74.4 | 74.4 | 74.4 | 74.4 | 73.4 | 73.4 | 72.4 | 71.4 | 70.4 | 70.4 | 69.4 |
| 5° | 78.4 | 78.4 | 78.4 | 78.4 | 77.4 | 76.4 | 75.4 | 73.4 | 72.4 | 71.4 | 69.4 |
| 7.5° | 86.3 | 86.3 | 86.3 | 83.3 | 82.3 | 80.3 | 78.4 | 75.4 | 74.4 | 73.4 | 70.4 |
| 10° | 97.2 | 98.2 | 96.2 | 94.2 | 90.3 | 86.3 | 81.3 | 78.4 | 77.4 | 74.4 | 71.4 |
| 12.5° | 109.1 | 108.1 | 107.1 | 104.1 | 99.2 | 94.2 | 87.3 | 81.3 | 79.3 | 76.4 | 72.4 |
| 15° | 120.0 | 120.0 | 119.0 | 114.1 | 109.1 | 102.2 | 94.2 | 86.3 | 83.3 | 79.3 | 73.4 |
| 17.5° | 131.9 | 131.9 | 128.9 | 124.0 | 118.0 | 109.1 | 101.2 | 91.2 | 88.3 | 81.3 | 75.4 |
| 20° | 138.8 | 138.8 | 137.9 | 133.9 | 127.9 | 118.0 | 108.1 | 97.2 | 93.2 | 85.3 | 76.4 |
| 22.5° | 141.8 | 141.8 | 141.8 | 139.8 | 134.9 | 126.9 | 115.0 | 104.1 | 100.2 | 89.3 | 79.3 |
| 25° | 141.8 | 141.8 | 142.8 | 143.8 | 141.8 | 134.9 | 124.0 | 110.1 | 106.1 | 94.2 | 81.3 |
| 27.5° | 139.8 | 139.8 | 141.8 | 142.8 | 143.8 | 140.8 | 131.9 | 117.0 | 112.1 | 100.2 | 84.3 |
| 30° | 143.8 | 143.8 | 143.8 | 143.8 | 145.8 | 145.8 | 138.8 | 124.0 | 119.0 | 106.1 | 87.3 |
| 32.5° | 153.7 | 153.7 | 153.7 | 150.7 | 148.8 | 149.8 | 145.8 | 131.9 | 126.9 | 113.1 | 91.2 |
| 35° | 161.7 | 160.7 | 161.7 | 161.7 | 156.7 | 154.7 | 152.7 | 139.8 | 135.9 | 123.0 | 97.2 |
| 37.5° | 167.6 | 168.6 | 168.6 | 169.6 | 167.6 | 163.6 | 159.7 | 149.8 | 144.8 | 130.9 | 103.1 |
| 40° | 171.6 | 172.6 | 175.5 | 176.5 | 174.6 | 172.6 | 168.6 | 157.7 | 152.7 | 137.9 | 107.1 |
| 42.5° | 172.6 | 175.5 | 180.5 | 183.5 | 178.5 | 177.5 | 175.5 | 166.6 | 161.7 | 148.8 | 113.1 |
| 45° | 171.6 | 172.6 | 182.5 | 183.5 | 181.5 | 181.5 | 184.5 | 177.5 | 174.6 | 160.7 | 120.0 |
| 47.5° | 164.6 | 164.6 | 170.6 | 178.5 | 179.5 | 184.5 | 192.4 | 190.4 | 188.4 | 173.6 | 128.9 |
| 50° | 151.7 | 150.7 | 161.7 | 169.6 | 174.6 | 185.5 | 199.3 | 203.3 | 200.3 | 186.5 | 136.9 |
| 52.5° | 126.0 | 126.9 | 140.8 | 159.7 | 168.6 | 184.5 | 204.3 | 215.2 | 212.2 | 198.4 | 143.8 |
| 55° | 105.1 | 106.1 | 120.0 | 144.8 | 161.7 | 180.5 | 208.3 | 226.1 | 224.1 | 209.3 | 151.7 |
| 57.5° | 83.3 | 85.3 | 98.2 | 124.0 | 149.8 | 170.6 | 209.3 | 236.0 | 235.1 | 221.2 | 158.7 |
| 60° | 64.5 | 66.4 | 76.4 | 104.1 | 136.9 | 162.7 | 204.3 | 242.0 | 244.0 | 231.1 | 163.6 |
| 62.5° | 50.6 | 52.6 | 59.5 | 84.3 | 121.0 | 151.7 | 192.4 | 245.0 | 247.9 | 237.0 | 166.6 |
| 65° | 40.7 | 41.7 | 46.6 | 67.4 | 106.1 | 138.8 | 177.5 | 236.0 | 246.0 | 237.0 | 166.6 |
| 67.5° | 32.7 | 34.7 | 38.7 | 52.6 | 89.3 | 123.0 | 158.7 | 220.2 | 234.1 | 233.1 | 160.7 |
| 70° | 27.8 | 27.8 | 31.7 | 41.7 | 73.4 | 102.2 | 135.9 | 198.4 | 218.2 | 220.2 | 145.8 |
| 72.5° | 22.8 | 22.8 | 25.8 | 33.7 | 59.5 | 81.3 | 112.1 | 170.6 | 193.4 | 200.3 | 126.9 |
| 75° | 19.8 | 19.8 | 21.8 | 27.8 | 46.6 | 62.5 | 85.3 | 136.9 | 157.7 | 169.6 | 104.1 |
| 77.5° | 16.9 | 16.9 | 18.8 | 21.8 | 32.7 | 46.6 | 65.5 | 103.1 | 120.0 | 130.9 | 78.4 |
| 80° | 13.9 | 13.9 | 15.9 | 17.9 | 23.8 | 30.7 | 43.6 | 68.4 | 76.4 | 82.3 | 50.6 |
| 82.5° | 12.9 | 12.9 | 12.9 | 14.9 | 17.9 | 20.8 | 27.8 | 37.7 | 42.6 | 47.6 | 31.7 |
| 85° | 9.9 | 9.9 | 9.9 | 11.9 | 12.9 | 14.9 | 17.9 | 21.8 | 23.8 | 28.8 | 18.8 |
| 87.5° | 6.0 | 6.0 | 6.0 | 6.9 | 7.9 | 8.9 | 9.9 | 10.9 | 11.9 | 13.9 | 7.9 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P869198
 CATALOG NUMBER: EMM2-HTN-SA1A-AMB-U-T2U-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| 0° | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 | 68.4 |
| 2.5° | 68.4 | 68.4 | 66.4 | 65.5 | 64.5 | 63.5 | 62.5 | 61.5 | 60.5 | 61.5 | 60.5 |
| 5° | 68.4 | 67.4 | 64.5 | 61.5 | 58.5 | 55.5 | 53.6 | 51.6 | 50.6 | 49.6 | 49.6 |
| 7.5° | 68.4 | 66.4 | 62.5 | 57.5 | 52.6 | 48.6 | 44.6 | 41.7 | 40.7 | 39.7 | 39.7 |
| 10° | 68.4 | 65.5 | 59.5 | 53.6 | 46.6 | 41.7 | 37.7 | 34.7 | 32.7 | 31.7 | 31.7 |
| 12.5° | 69.4 | 65.5 | 57.5 | 48.6 | 40.7 | 35.7 | 30.7 | 27.8 | 26.8 | 25.8 | 25.8 |
| 15° | 69.4 | 65.5 | 55.5 | 44.6 | 35.7 | 29.8 | 25.8 | 23.8 | 22.8 | 21.8 | 21.8 |
| 17.5° | 70.4 | 65.5 | 53.6 | 40.7 | 30.7 | 25.8 | 22.8 | 20.8 | 19.8 | 18.8 | 18.8 |
| 20° | 71.4 | 65.5 | 50.6 | 36.7 | 26.8 | 21.8 | 19.8 | 17.9 | 16.9 | 16.9 | 16.9 |
| 22.5° | 73.4 | 66.4 | 48.6 | 33.7 | 23.8 | 19.8 | 17.9 | 16.9 | 15.9 | 15.9 | 15.9 |
| 25° | 75.4 | 66.4 | 46.6 | 29.8 | 21.8 | 17.9 | 15.9 | 14.9 | 14.9 | 13.9 | 13.9 |
| 27.5° | 76.4 | 67.4 | 44.6 | 26.8 | 18.8 | 15.9 | 14.9 | 13.9 | 13.9 | 13.9 | 13.9 |
| 30° | 79.3 | 68.4 | 43.6 | 24.8 | 17.9 | 14.9 | 13.9 | 12.9 | 12.9 | 12.9 | 12.9 |
| 32.5° | 83.3 | 71.4 | 42.6 | 23.8 | 16.9 | 13.9 | 12.9 | 11.9 | 11.9 | 11.9 | 11.9 |
| 35° | 86.3 | 73.4 | 42.6 | 22.8 | 15.9 | 12.9 | 11.9 | 11.9 | 11.9 | 11.9 | 11.9 |
| 37.5° | 91.2 | 77.4 | 41.7 | 21.8 | 15.9 | 12.9 | 11.9 | 10.9 | 10.9 | 10.9 | 10.9 |
| 40° | 93.2 | 78.4 | 39.7 | 20.8 | 15.9 | 11.9 | 10.9 | 10.9 | 10.9 | 9.9 | 9.9 |
| 42.5° | 98.2 | 81.3 | 38.7 | 20.8 | 14.9 | 11.9 | 9.9 | 9.9 | 9.9 | 9.9 | 9.9 |
| 45° | 105.1 | 86.3 | 38.7 | 20.8 | 14.9 | 11.9 | 9.9 | 8.9 | 8.9 | 8.9 | 8.9 |
| 47.5° | 111.1 | 91.2 | 38.7 | 20.8 | 14.9 | 10.9 | 9.9 | 8.9 | 8.9 | 7.9 | 7.9 |
| 50° | 117.0 | 95.2 | 37.7 | 20.8 | 13.9 | 10.9 | 8.9 | 7.9 | 7.9 | 7.9 | 7.9 |
| 52.5° | 124.0 | 98.2 | 37.7 | 19.8 | 13.9 | 9.9 | 7.9 | 7.9 | 6.9 | 6.9 | 6.9 |
| 55° | 130.9 | 101.2 | 37.7 | 19.8 | 12.9 | 8.9 | 7.9 | 6.9 | 6.9 | 6.0 | 6.0 |
| 57.5° | 135.9 | 104.1 | 36.7 | 18.8 | 11.9 | 8.9 | 6.9 | 6.9 | 6.0 | 6.0 | 6.0 |
| 60° | 139.8 | 106.1 | 34.7 | 15.9 | 9.9 | 7.9 | 6.9 | 6.0 | 5.0 | 5.0 | 5.0 |
| 62.5° | 141.8 | 106.1 | 33.7 | 11.9 | 8.9 | 6.9 | 6.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 65° | 139.8 | 102.2 | 30.7 | 8.9 | 7.9 | 6.9 | 6.0 | 5.0 | 4.0 | 4.0 | 4.0 |
| 67.5° | 134.9 | 97.2 | 25.8 | 7.9 | 6.9 | 6.0 | 5.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| 70° | 121.0 | 87.3 | 18.8 | 6.0 | 6.0 | 5.0 | 5.0 | 4.0 | 3.0 | 3.0 | 3.0 |
| 72.5° | 106.1 | 73.4 | 12.9 | 5.0 | 5.0 | 4.0 | 4.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 75° | 84.3 | 55.5 | 8.9 | 4.0 | 4.0 | 4.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 77.5° | 60.5 | 35.7 | 6.9 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 |
| 80° | 37.7 | 20.8 | 5.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 |
| 82.5° | 21.8 | 11.9 | 4.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 |
| 85° | 10.9 | 6.0 | 3.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 87.5° | 4.0 | 2.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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
 R_f: 1.1
 R_g: 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 |

REPORT NUMBER: SP1-2407-157-1

CIE 1931 Chromaticity Diagram



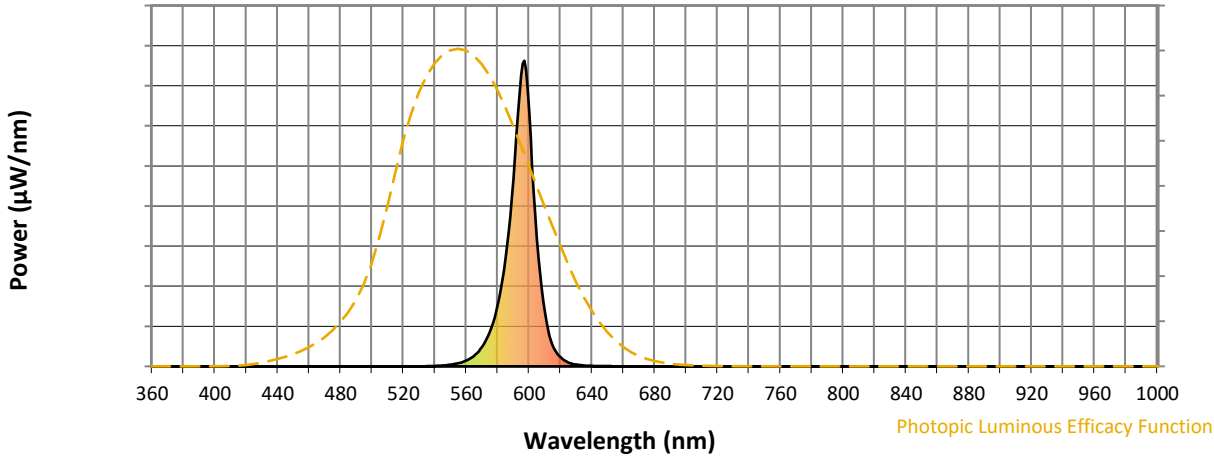
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



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 [^] /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 | | | |

Summary

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



Color Vector Graphics



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

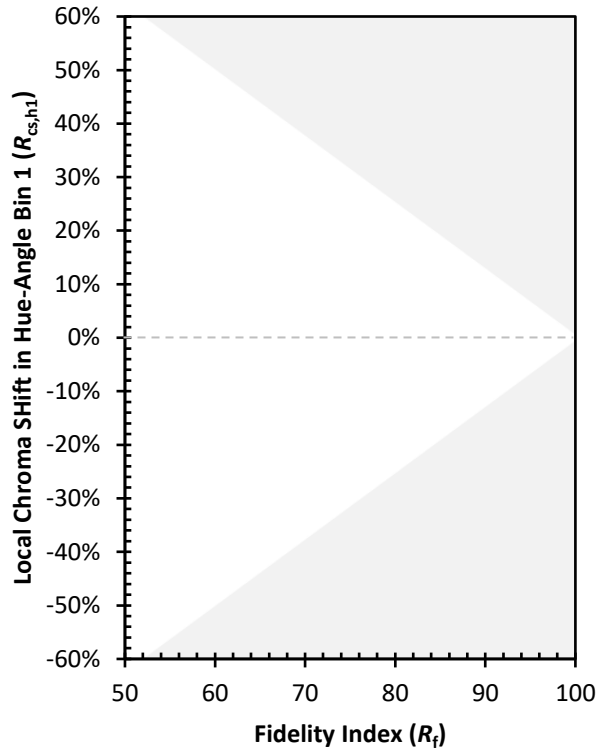
| | | | |
|------------|------------|------------|------------|
| CES01 = 90 | CES26 = 0 | CES51 = 17 | CES76 = 0 |
| CES02 = 70 | CES27 = 32 | CES52 = 2 | CES77 = 0 |
| CES03 = 31 | CES28 = 24 | CES53 = 0 | CES78 = 0 |
| CES04 = 77 | CES29 = 1 | CES54 = 12 | CES79 = 2 |
| CES05 = 52 | CES30 = 31 | CES55 = 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)