

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: HALO

Report Number: P995456

Luminaire Tested: **LTT406FSMB-935**

Issue Date: 06/09/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P995456  
Test Lab: INNOVATION CENTER (G1)  
Issue Date: 06/09/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: LTT406FSMB-935  
Description: HALO LT BLACK TRIM DRIVER ON BOARD 4 inch 90 CRI COLOR SELECTABLE  
FIXTURE  
Light Source: 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

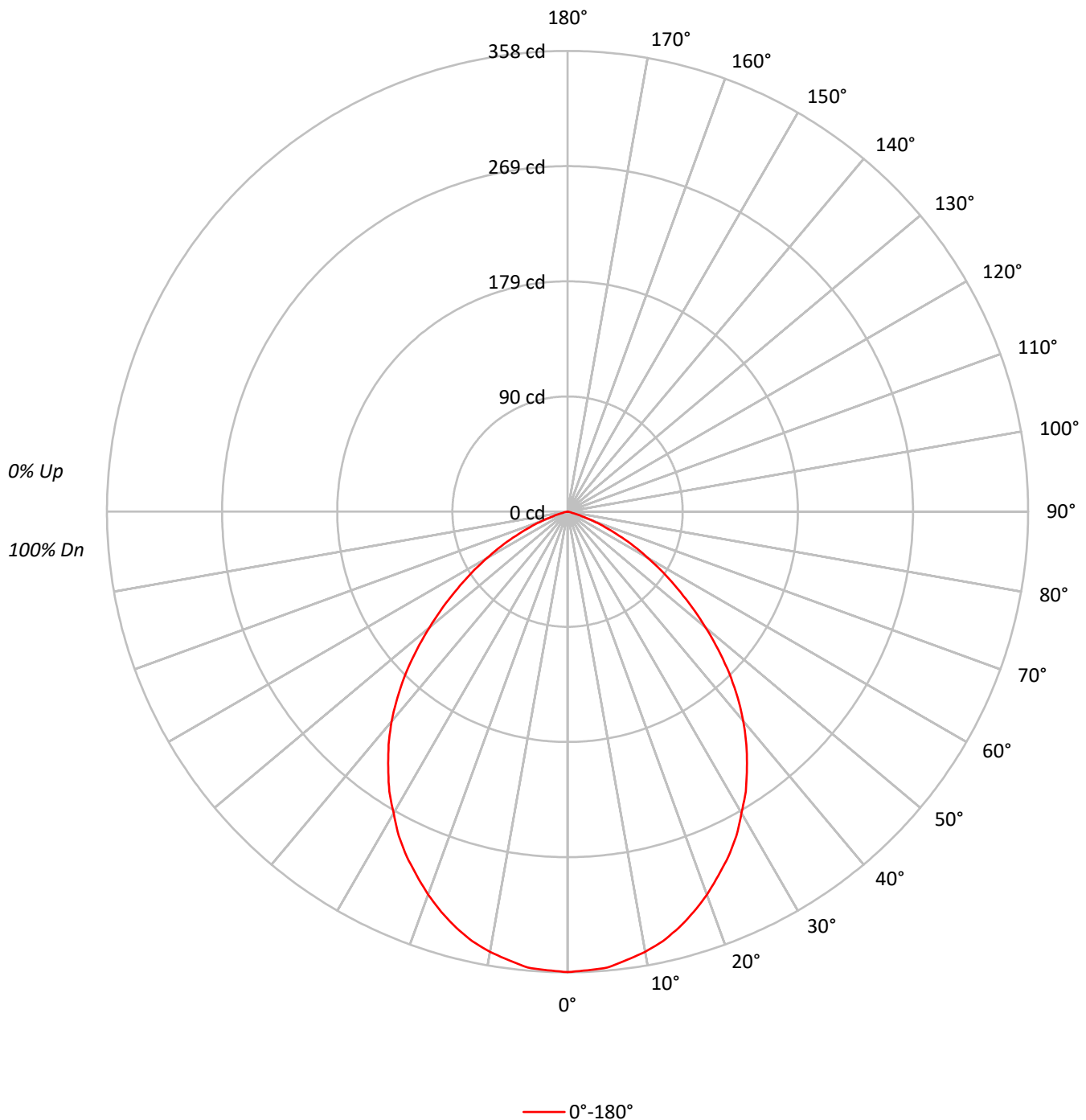
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 697.6 lumens  
Efficiency: N/A  
Efficacy: 94.3 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 1.14 / 1.22  
Luminous Opening: Circular (Dia: 0.3' x H: 0')  
CIE Type: Direct

Input Watts (W): 7.4  
Input Voltage (V): 120  
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: 25 FT

TEST NUMBER: P995456  
CATALOG NUMBER: LTT406FSMB-935

### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 10  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 |
| 1   | 111 | 108 | 104 | 101 | 109 | 105 | 102 | 100 | 101 | 99  | 97  |  | 97  | 96  | 94  |  | 94  |
| 2   | 103 | 96  | 91  | 86  | 101 | 95  | 90  | 85  | 91  | 87  | 83  |  | 88  | 85  | 82  |  | 85  |
| 3   | 95  | 87  | 80  | 74  | 93  | 85  | 79  | 74  | 82  | 77  | 72  |  | 80  | 75  | 71  |  | 77  |
| 4   | 88  | 78  | 70  | 65  | 86  | 77  | 70  | 64  | 74  | 68  | 63  |  | 72  | 67  | 63  |  | 70  |
| 5   | 82  | 71  | 63  | 57  | 80  | 70  | 62  | 57  | 68  | 61  | 56  |  | 66  | 60  | 56  |  | 64  |
| 6   | 76  | 64  | 56  | 51  | 74  | 63  | 56  | 50  | 62  | 55  | 50  |  | 60  | 54  | 50  |  | 59  |
| 7   | 71  | 59  | 51  | 45  | 69  | 58  | 50  | 45  | 56  | 50  | 45  |  | 55  | 49  | 45  |  | 54  |
| 8   | 66  | 54  | 46  | 41  | 65  | 53  | 46  | 41  | 52  | 45  | 41  |  | 51  | 45  | 40  |  | 50  |
| 9   | 62  | 50  | 42  | 37  | 61  | 49  | 42  | 37  | 48  | 42  | 37  |  | 47  | 41  | 37  |  | 46  |
| 10  | 58  | 46  | 39  | 34  | 57  | 46  | 39  | 34  | 45  | 38  | 34  |  | 44  | 38  | 34  |  | 43  |

**AVERAGE LUMINANCE (cd/sqm):**

|     |       |
|-----|-------|
|     | 0°    |
| 0°  | 54485 |
| 5°  | 54372 |
| 10° | 53702 |
| 15° | 52750 |
| 20° | 51322 |
| 25° | 49684 |
| 30° | 47546 |
| 35° | 45192 |
| 40° | 42262 |
| 45° | 38290 |
| 50° | 33166 |
| 55° | 27664 |
| 60° | 22111 |
| 65° | 15926 |
| 70° | 9350  |
| 75° | 3118  |
| 80° | 0     |
| 85° | 0     |



TEST NUMBER: P995456  
 CATALOG NUMBER: LTT406FSMB-935

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 33.6   | 4.8       |
| 10°-20°   | 94.1   | 13.5      |
| 20°-30°   | 135.9  | 19.5      |
| 30°-40°   | 151.8  | 21.8      |
| 40°-50°   | 136.4  | 19.6      |
| 50°-60°   | 93.8   | 13.5      |
| 60°-70°   | 44.5   | 6.4       |
| 70°-80°   | 7.5    | 1.1       |
| 80°-90°   | 0.0    | 0.0       |
| 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°-30°    | 263.7  | 37.8      |
| 0°-40°    | 415.4  | 59.5      |
| 0°-60°    | 645.7  | 92.6      |
| 0°-90°    | 697.6  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 697.6  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | Flux |
|-----|-----|------|
| 0°  | 358 |      |
| 5°  | 356 | 34   |
| 15° | 335 | 94   |
| 25° | 296 | 136  |
| 35° | 243 | 152  |
| 45° | 178 | 136  |
| 55° | 104 | 94   |
| 65° | 44  | 44   |
| 75° | 5   | 7    |
| 85° | 0   | 0    |
| 90° | 0   |      |



TEST NUMBER: P995456  
CATALOG NUMBER: LTT406FSMB-935

**CANDELA DISTRIBUTION (FULL):**

| 0°    |       |
|-------|-------|
| 0°    | 357.8 |
| 2.5°  | 356.7 |
| 5°    | 355.7 |
| 7.5°  | 351.5 |
| 10°   | 347.3 |
| 12.5° | 342.0 |
| 15°   | 334.6 |
| 17.5° | 326.2 |
| 20°   | 316.7 |
| 22.5° | 306.2 |
| 25°   | 295.7 |
| 27.5° | 284.1 |
| 30°   | 270.4 |
| 32.5° | 257.8 |
| 35°   | 243.1 |
| 37.5° | 228.4 |
| 40°   | 212.6 |
| 42.5° | 195.7 |
| 45°   | 177.8 |
| 47.5° | 158.9 |
| 50°   | 140.0 |
| 52.5° | 122.1 |
| 55°   | 104.2 |
| 57.5° | 88.4  |
| 60°   | 72.6  |
| 62.5° | 57.9  |
| 65°   | 44.2  |
| 67.5° | 31.6  |
| 70°   | 21.0  |
| 72.5° | 11.6  |
| 75°   | 5.3   |
| 77.5° | 1.1   |
| 80°   | 0.0   |
| 82.5° | 0.0   |
| 85°   | 0.0   |
| 87.5° | 0.0   |
| 90°   | 0.0   |

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**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 22.66            | 24.09 | 23.02 | 24.40 | 24.71 | 22.66          | 24.09 | 23.02 | 24.40 | 24.71 |
|                 | 3H   | 23.12            | 24.38 | 23.50 | 24.71 | 25.07 | 23.12          | 24.38 | 23.50 | 24.71 | 25.07 |
|                 | 4H   | 23.09            | 24.27 | 23.50 | 24.62 | 25.00 | 23.09          | 24.27 | 23.50 | 24.62 | 25.00 |
|                 | 6H   | 23.02            | 24.11 | 23.44 | 24.47 | 24.87 | 23.02          | 24.11 | 23.44 | 24.47 | 24.87 |
|                 | 8H   | 22.98            | 24.01 | 23.41 | 24.40 | 24.80 | 22.98          | 24.01 | 23.41 | 24.40 | 24.80 |
|                 | 12H  | 22.95            | 23.93 | 23.38 | 24.31 | 24.74 | 22.95          | 23.93 | 23.38 | 24.31 | 24.74 |
| 4H              | 2H   | 22.88            | 24.06 | 23.28 | 24.41 | 24.79 | 22.88          | 24.06 | 23.28 | 24.41 | 24.79 |
|                 | 3H   | 23.40            | 24.36 | 23.81 | 24.76 | 25.16 | 23.40          | 24.36 | 23.81 | 24.76 | 25.16 |
|                 | 4H   | 23.37            | 24.22 | 23.80 | 24.64 | 25.08 | 23.37          | 24.22 | 23.80 | 24.64 | 25.08 |
|                 | 6H   | 23.30            | 24.04 | 23.76 | 24.48 | 24.94 | 23.30          | 24.04 | 23.76 | 24.48 | 24.94 |
|                 | 8H   | 23.25            | 23.93 | 23.72 | 24.38 | 24.85 | 23.25          | 23.93 | 23.72 | 24.38 | 24.85 |
|                 | 12H  | 23.21            | 23.82 | 23.69 | 24.30 | 24.77 | 23.21          | 23.82 | 23.69 | 24.30 | 24.77 |
| 8H              | 4H   | 23.28            | 23.97 | 23.75 | 24.41 | 24.88 | 23.28          | 23.97 | 23.75 | 24.41 | 24.88 |
|                 | 6H   | 23.19            | 23.75 | 23.69 | 24.24 | 24.72 | 23.19          | 23.75 | 23.69 | 24.24 | 24.72 |
|                 | 8H   | 23.13            | 23.63 | 23.65 | 24.15 | 24.64 | 23.13          | 23.63 | 23.65 | 24.15 | 24.64 |
|                 | 12H  | 23.09            | 23.53 | 23.60 | 24.03 | 24.60 | 23.09          | 23.53 | 23.60 | 24.03 | 24.60 |
| 12H             | 4H   | 23.24            | 23.85 | 23.72 | 24.33 | 24.80 | 23.24          | 23.85 | 23.72 | 24.33 | 24.80 |
|                 | 6H   | 23.13            | 23.63 | 23.65 | 24.15 | 24.64 | 23.13          | 23.63 | 23.65 | 24.15 | 24.64 |
|                 | 8H   | 23.09            | 23.53 | 23.60 | 24.03 | 24.60 | 23.09          | 23.53 | 23.60 | 24.03 | 24.60 |

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

Report Prepared for

Cooper Lighting Solutions

Halo Recessed

Report Number: SP2-2504-410-3

Test Date: 05/22/2025

Luminaire Tested: LTT5607FSMBSS-3500K

Data in this report applies to families of products including LTT5607FSMBSS-3500K

The results of this test have not been influenced by sources from within Eaton or from external interests.

Report Generated By FNC07603 / LDUCLS01DT447  
Version: v7.04

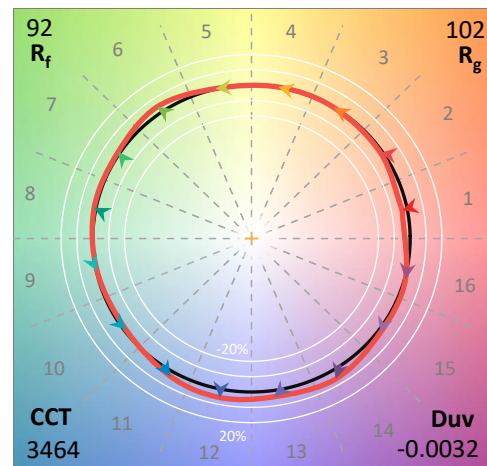
### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2504-410-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP2 - 165CM SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 05/22/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Halo Recessed  
 Catalog Number: **LTT5607FSMBSS-3500K**  
 Description: HALO LT BLACK LED TRIM 6 INCH SMOOTH

### Spectral Parameters

CCT (K): 3464  
 CIE  $u'$ : 0.2381  
 CIE  $v'$ : 0.5078  
 Duv: -0.0032  
 CIE x: 0.4040  
 CIE y: 0.3830  
 CIE z: 0.2130  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 582  
 Purity: 36.19283  
 R<sub>f</sub>: 92  
 R<sub>g</sub>: 102.2

CRI (Ra): 96.5  
 R1: 99.2  
 R2: 98.1  
 R3: 93.7  
 R4: 96.3  
 R5: 98.8  
 R6: 95.5  
 R7: 95.8  
 R8: 94.2  
 R9: 83.7  
 R10: 92.7  
 R11: 94.6  
 R12: 81.0  
 R13: 99.4  
 R14: 95.0  
 R15: 98.9



### Test Conditions

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 24.7

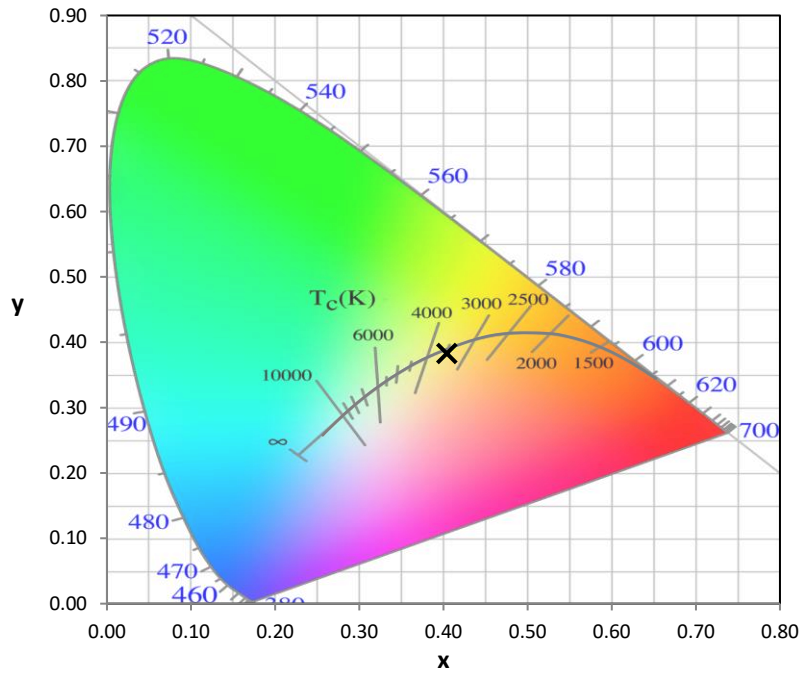
REPORT NUMBER: SP2-2504-410-3

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN2187                | 1/6/2025         | 7/6/2025             |
| Power Meter                    | INXT2011002           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0458                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0212                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN4036B               | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

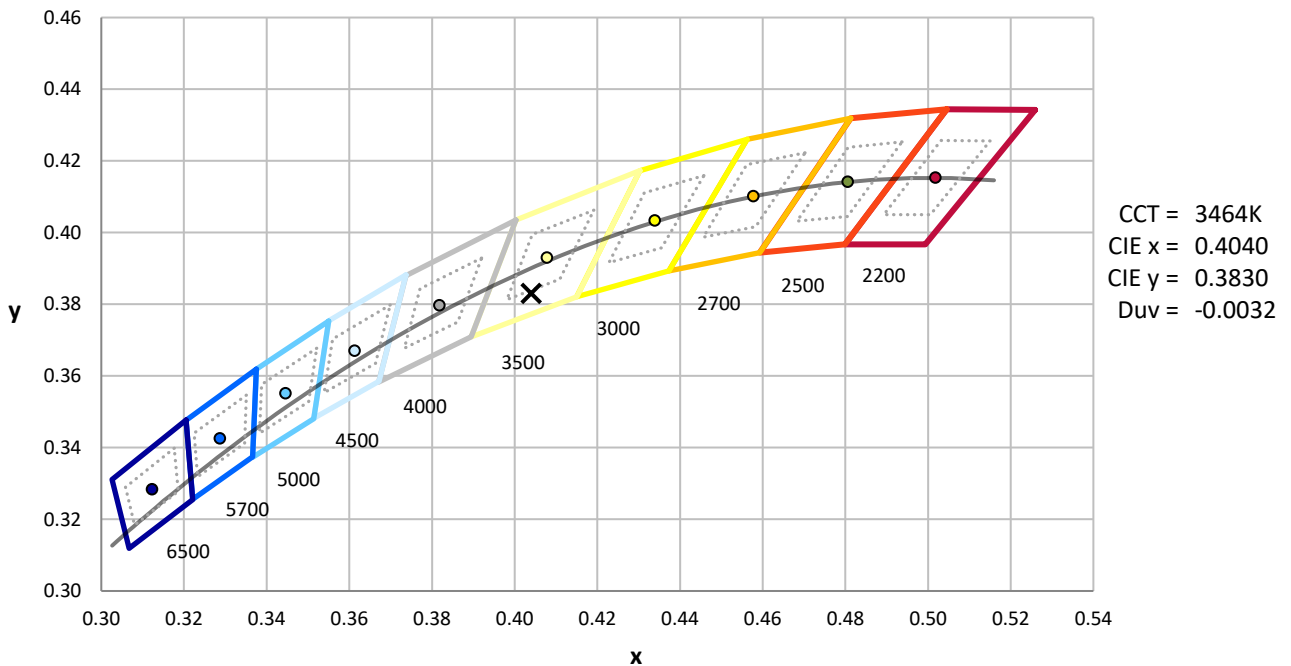
| Sample Number  | Condition | Description                          |
|----------------|-----------|--------------------------------------|
| P2504-410-LM.1 | Good      | HALO LT BLACK LED TRIM 6 INCH SMOOTH |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |
|                |           |                                      |

REPORT NUMBER: SP2-2504-410-3

**CIE 1931 Chromaticity Diagram**



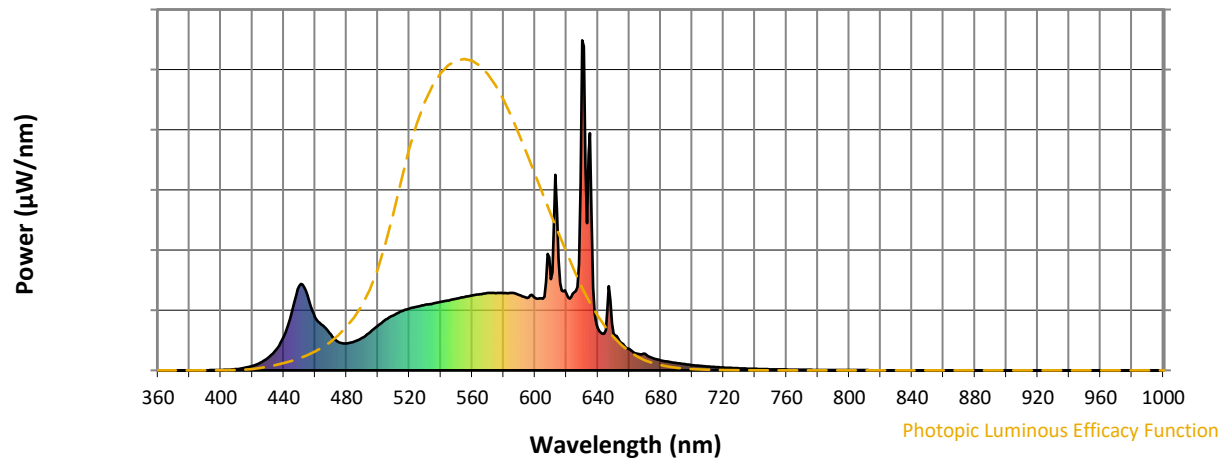
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 7-step quadrangle

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### Photopic Flux vs. Wavelength

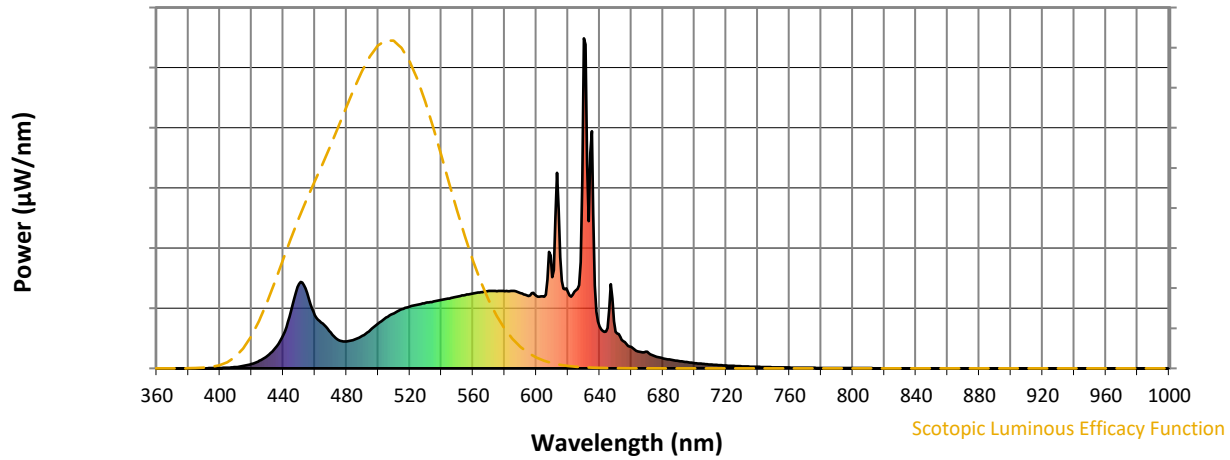


### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 99                          | NR               | 620       | 231                         | NR               | 750       | 3                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 115                         | NR               | 625       | 237                         | NR               | 755       | 3                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 136                         | NR               | 630       | 1000                        | NR               | 760       | 2                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 154                         | NR               | 635       | 719                         | NR               | 765       | 2                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 167                         | NR               | 640       | 127                         | NR               | 770       | 2                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 179                         | NR               | 645       | 122                         | NR               | 775       | 2                           | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 187                         | NR               | 650       | 111                         | NR               | 780       | 1                           | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 193                         | NR               | 655       | 82                          | NR               | 785       | 1                           | NR               | 915       | 0                           | NR               |
| 400       | 1                           | NR               | 530       | 198                         | NR               | 660       | 65                          | NR               | 790       | 1                           | NR               | 920       | 0                           | NR               |
| 405       | 2                           | NR               | 535       | 203                         | NR               | 665       | 50                          | NR               | 795       | 1                           | NR               | 925       | 0                           | NR               |
| 410       | 4                           | NR               | 540       | 207                         | NR               | 670       | 50                          | NR               | 800       | 1                           | NR               | 930       | 0                           | NR               |
| 415       | 7                           | NR               | 545       | 212                         | NR               | 675       | 37                          | NR               | 805       | 1                           | NR               | 935       | 0                           | NR               |
| 420       | 13                          | NR               | 550       | 217                         | NR               | 680       | 30                          | NR               | 810       | 1                           | NR               | 940       | 0                           | NR               |
| 425       | 23                          | NR               | 555       | 222                         | NR               | 685       | 26                          | NR               | 815       | 0                           | NR               | 945       | 0                           | NR               |
| 430       | 38                          | NR               | 560       | 227                         | NR               | 690       | 22                          | NR               | 820       | 0                           | NR               | 950       | 0                           | NR               |
| 435       | 62                          | NR               | 565       | 231                         | NR               | 695       | 19                          | NR               | 825       | 0                           | NR               | 955       | 0                           | NR               |
| 440       | 102                         | NR               | 570       | 234                         | NR               | 700       | 16                          | NR               | 830       | 0                           | NR               | 960       | 0                           | NR               |
| 445       | 175                         | NR               | 575       | 234                         | NR               | 705       | 14                          | NR               | 835       | 0                           | NR               | 965       | 0                           | NR               |
| 450       | 256                         | NR               | 580       | 234                         | NR               | 710       | 12                          | NR               | 840       | 0                           | NR               | 970       | 0                           | NR               |
| 455       | 229                         | NR               | 585       | 234                         | NR               | 715       | 10                          | NR               | 845       | 0                           | NR               | 975       | 0                           | NR               |
| 460       | 161                         | NR               | 590       | 228                         | NR               | 720       | 9                           | NR               | 850       | 0                           | NR               | 980       | 0                           | NR               |
| 465       | 135                         | NR               | 595       | 220                         | NR               | 725       | 7                           | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 108                         | NR               | 600       | 219                         | NR               | 730       | 6                           | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 86                          | NR               | 605       | 217                         | NR               | 735       | 5                           | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 82                          | NR               | 610       | 276                         | NR               | 740       | 5                           | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 88                          | NR               | 615       | 337                         | NR               | 745       | 4                           | NR               | 875       | 0                           | NR               |           |                             |                  |

REPORT NUMBER: SP2-2504-410-3

### Scotopic Flux vs. Wavelength



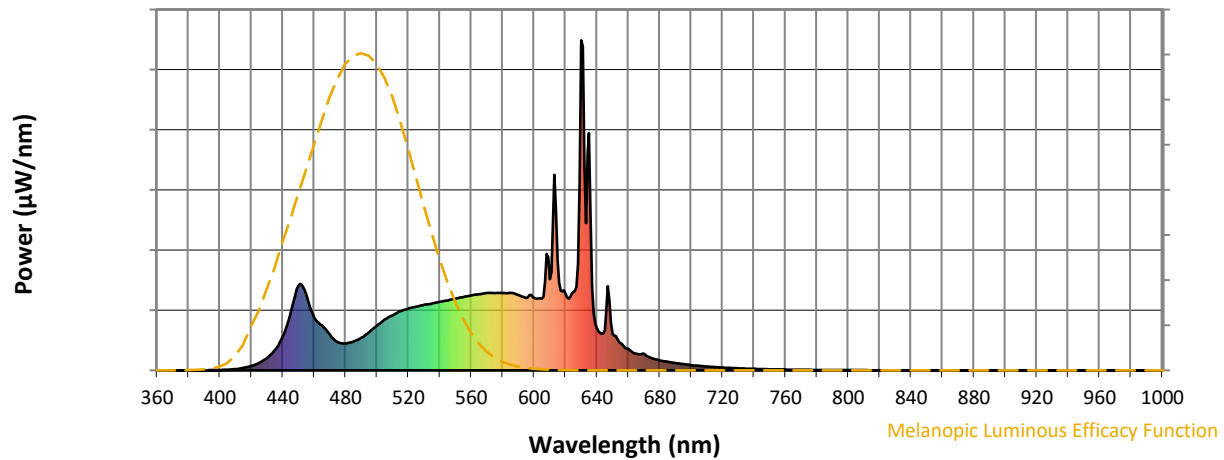
Scotopic Lumens: NR

S/P: 1.63

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 99                       | NR            | 620    | 231                      | NR            | 750    | 3                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 115                      | NR            | 625    | 237                      | NR            | 755    | 3                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 136                      | NR            | 630    | 1000                     | NR            | 760    | 2                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 154                      | NR            | 635    | 719                      | NR            | 765    | 2                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 167                      | NR            | 640    | 127                      | NR            | 770    | 2                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 179                      | NR            | 645    | 122                      | NR            | 775    | 2                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 187                      | NR            | 650    | 111                      | NR            | 780    | 1                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 193                      | NR            | 655    | 82                       | NR            | 785    | 1                        | NR            | 915    | 0                        | NR            |
| 400    | 1                        | NR            | 530    | 198                      | NR            | 660    | 65                       | NR            | 790    | 1                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 203                      | NR            | 665    | 50                       | NR            | 795    | 1                        | NR            | 925    | 0                        | NR            |
| 410    | 4                        | NR            | 540    | 207                      | NR            | 670    | 50                       | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 7                        | NR            | 545    | 212                      | NR            | 675    | 37                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 13                       | NR            | 550    | 217                      | NR            | 680    | 30                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 23                       | NR            | 555    | 222                      | NR            | 685    | 26                       | NR            | 815    | 0                        | NR            | 945    | 0                        | NR            |
| 430    | 38                       | NR            | 560    | 227                      | NR            | 690    | 22                       | NR            | 820    | 0                        | NR            | 950    | 0                        | NR            |
| 435    | 62                       | NR            | 565    | 231                      | NR            | 695    | 19                       | NR            | 825    | 0                        | NR            | 955    | 0                        | NR            |
| 440    | 102                      | NR            | 570    | 234                      | NR            | 700    | 16                       | NR            | 830    | 0                        | NR            | 960    | 0                        | NR            |
| 445    | 175                      | NR            | 575    | 234                      | NR            | 705    | 14                       | NR            | 835    | 0                        | NR            | 965    | 0                        | NR            |
| 450    | 256                      | NR            | 580    | 234                      | NR            | 710    | 12                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 229                      | NR            | 585    | 234                      | NR            | 715    | 10                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 161                      | NR            | 590    | 228                      | NR            | 720    | 9                        | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 135                      | NR            | 595    | 220                      | NR            | 725    | 7                        | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 108                      | NR            | 600    | 219                      | NR            | 730    | 6                        | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 86                       | NR            | 605    | 217                      | NR            | 735    | 5                        | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 82                       | NR            | 610    | 276                      | NR            | 740    | 5                        | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 88                       | NR            | 615    | 337                      | NR            | 745    | 4                        | NR            | 875    | 0                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.31

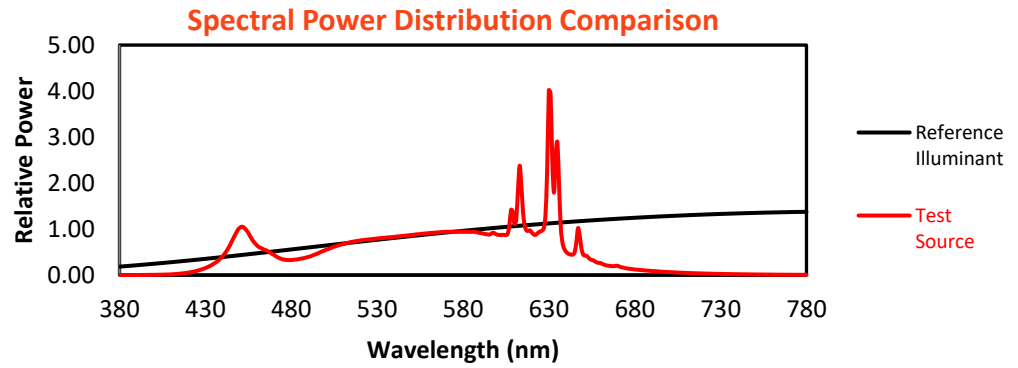
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 99                          | NR               | 620       | 231                         | NR               | 750       | 3                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 115                         | NR               | 625       | 237                         | NR               | 755       | 3                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 136                         | NR               | 630       | 1000                        | NR               | 760       | 2                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 154                         | NR               | 635       | 719                         | NR               | 765       | 2                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 167                         | NR               | 640       | 127                         | NR               | 770       | 2                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 179                         | NR               | 645       | 122                         | NR               | 775       | 2                           | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 187                         | NR               | 650       | 111                         | NR               | 780       | 1                           | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 193                         | NR               | 655       | 82                          | NR               | 785       | 1                           | NR               | 915       | 0                           | NR               |
| 400       | 1                           | NR               | 530       | 198                         | NR               | 660       | 65                          | NR               | 790       | 1                           | NR               | 920       | 0                           | NR               |
| 405       | 2                           | NR               | 535       | 203                         | NR               | 665       | 50                          | NR               | 795       | 1                           | NR               | 925       | 0                           | NR               |
| 410       | 4                           | NR               | 540       | 207                         | NR               | 670       | 50                          | NR               | 800       | 1                           | NR               | 930       | 0                           | NR               |
| 415       | 7                           | NR               | 545       | 212                         | NR               | 675       | 37                          | NR               | 805       | 1                           | NR               | 935       | 0                           | NR               |
| 420       | 13                          | NR               | 550       | 217                         | NR               | 680       | 30                          | NR               | 810       | 1                           | NR               | 940       | 0                           | NR               |
| 425       | 23                          | NR               | 555       | 222                         | NR               | 685       | 26                          | NR               | 815       | 0                           | NR               | 945       | 0                           | NR               |
| 430       | 38                          | NR               | 560       | 227                         | NR               | 690       | 22                          | NR               | 820       | 0                           | NR               | 950       | 0                           | NR               |
| 435       | 62                          | NR               | 565       | 231                         | NR               | 695       | 19                          | NR               | 825       | 0                           | NR               | 955       | 0                           | NR               |
| 440       | 102                         | NR               | 570       | 234                         | NR               | 700       | 16                          | NR               | 830       | 0                           | NR               | 960       | 0                           | NR               |
| 445       | 175                         | NR               | 575       | 234                         | NR               | 705       | 14                          | NR               | 835       | 0                           | NR               | 965       | 0                           | NR               |
| 450       | 256                         | NR               | 580       | 234                         | NR               | 710       | 12                          | NR               | 840       | 0                           | NR               | 970       | 0                           | NR               |
| 455       | 229                         | NR               | 585       | 234                         | NR               | 715       | 10                          | NR               | 845       | 0                           | NR               | 975       | 0                           | NR               |
| 460       | 161                         | NR               | 590       | 228                         | NR               | 720       | 9                           | NR               | 850       | 0                           | NR               | 980       | 0                           | NR               |
| 465       | 135                         | NR               | 595       | 220                         | NR               | 725       | 7                           | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 108                         | NR               | 600       | 219                         | NR               | 730       | 6                           | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 86                          | NR               | 605       | 217                         | NR               | 735       | 5                           | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 82                          | NR               | 610       | 276                         | NR               | 740       | 5                           | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 88                          | NR               | 615       | 337                         | NR               | 745       | 4                           | NR               | 875       | 0                           | NR               |           |                             |                  |

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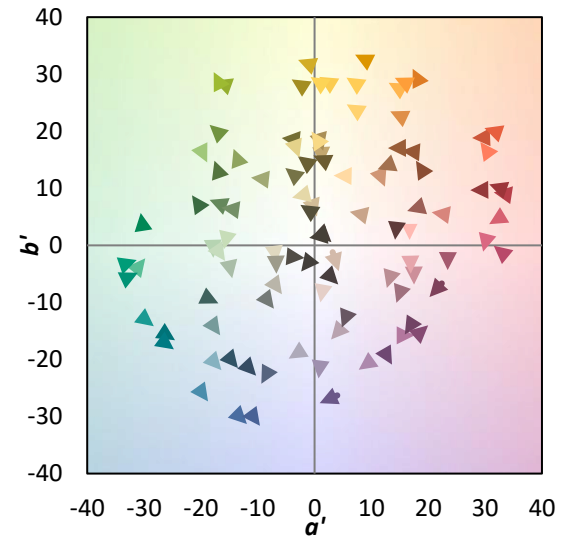
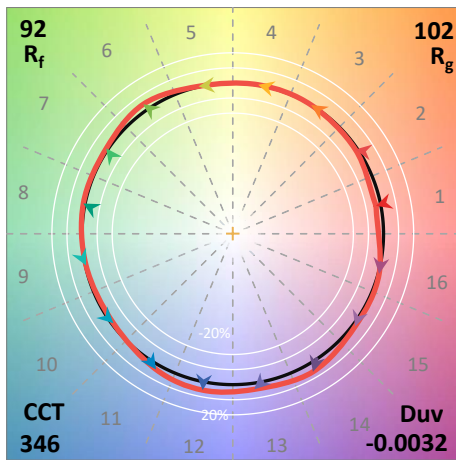
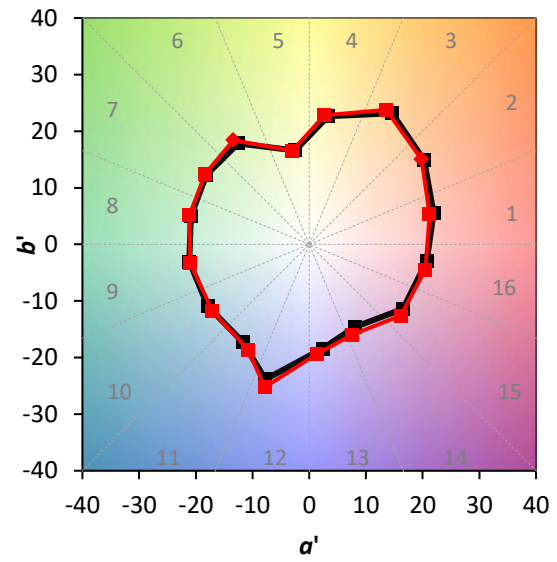
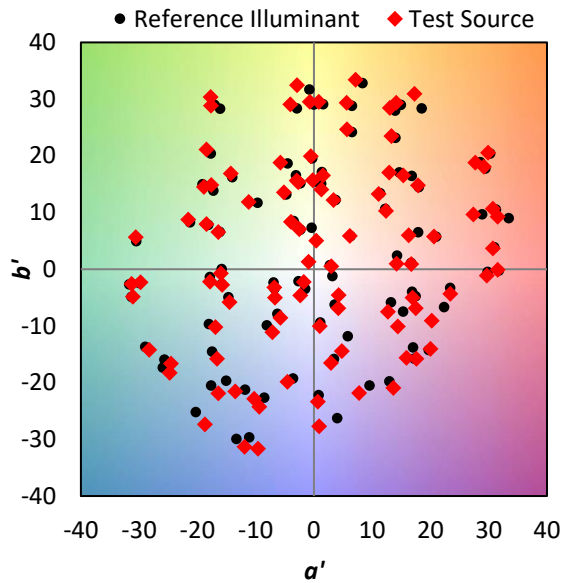
TM-30-18

### Summary

$R_f = 92$   
 $R_g = 102.2$   
 $CIE R_a = 96.5$   
 $R_g = 83.7$

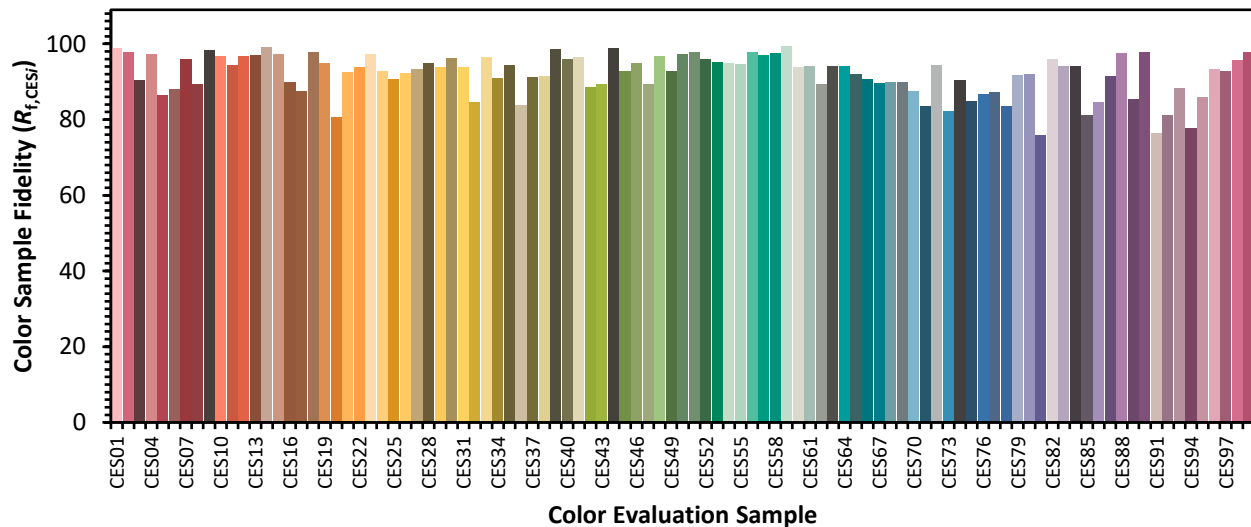


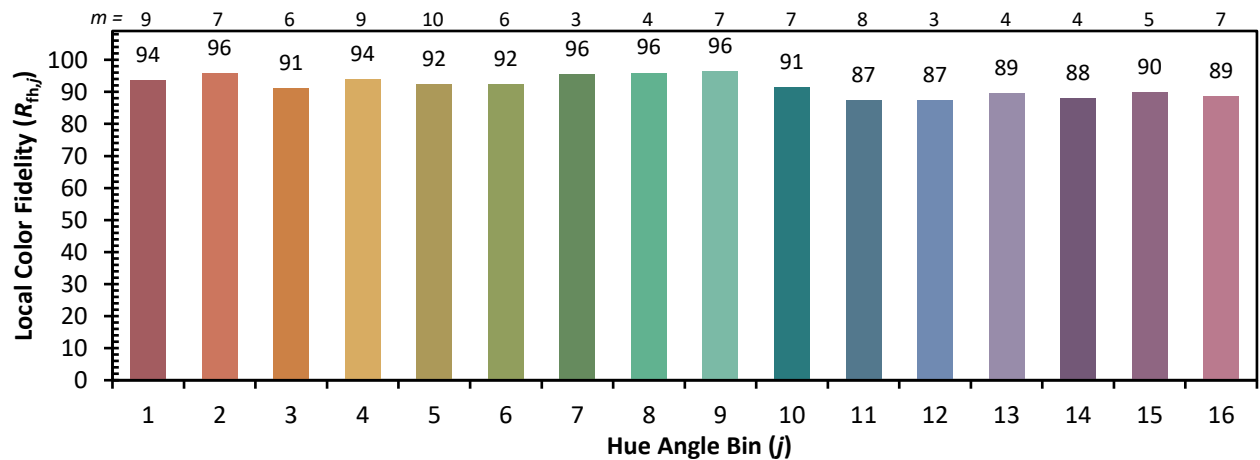
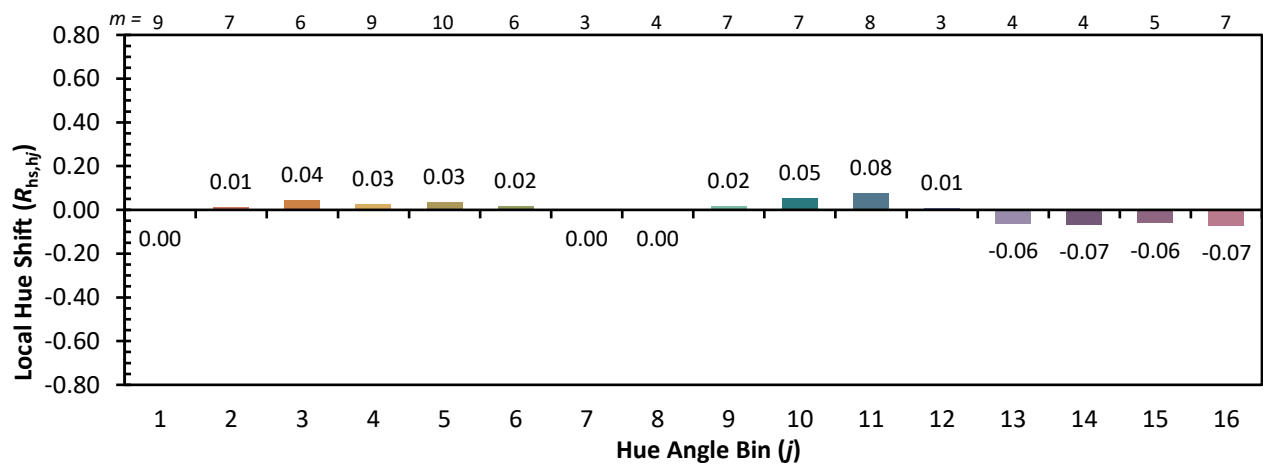
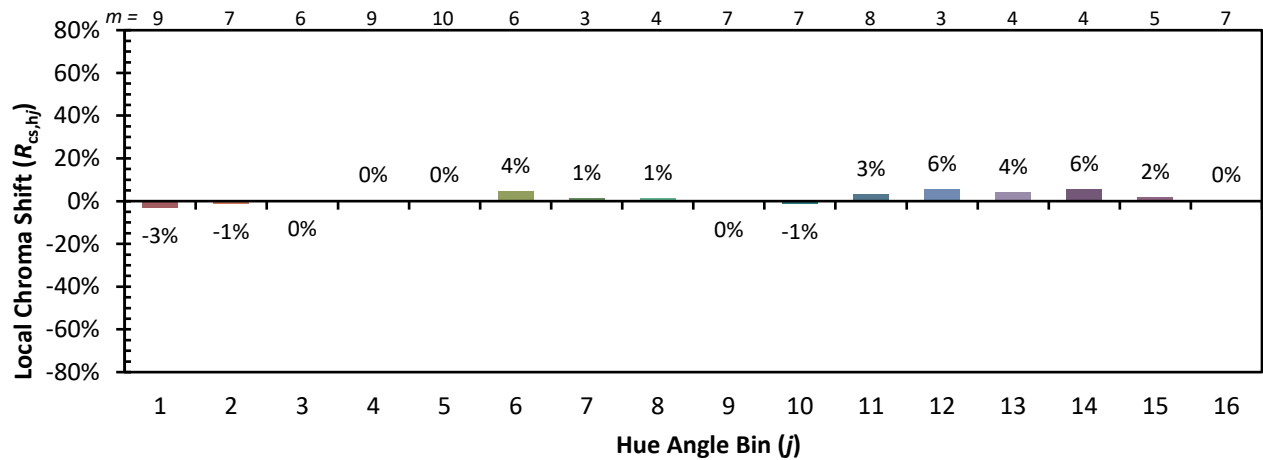
### Color Vector Graphics



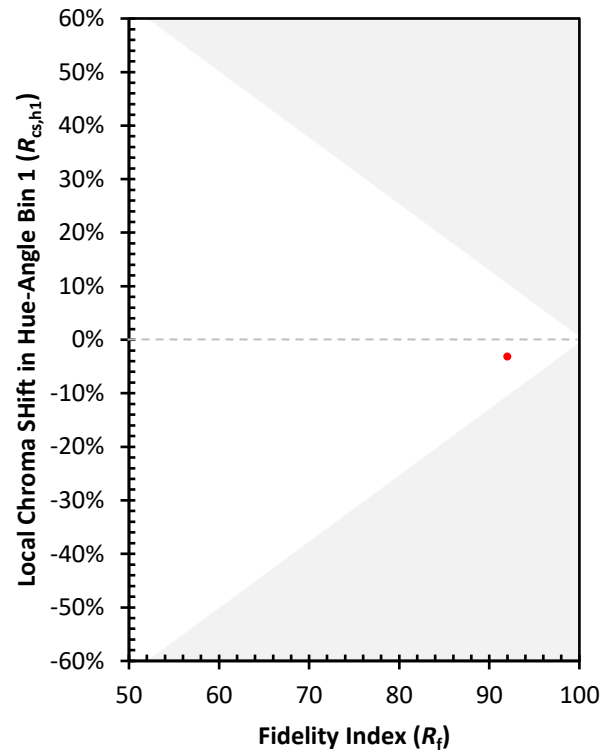
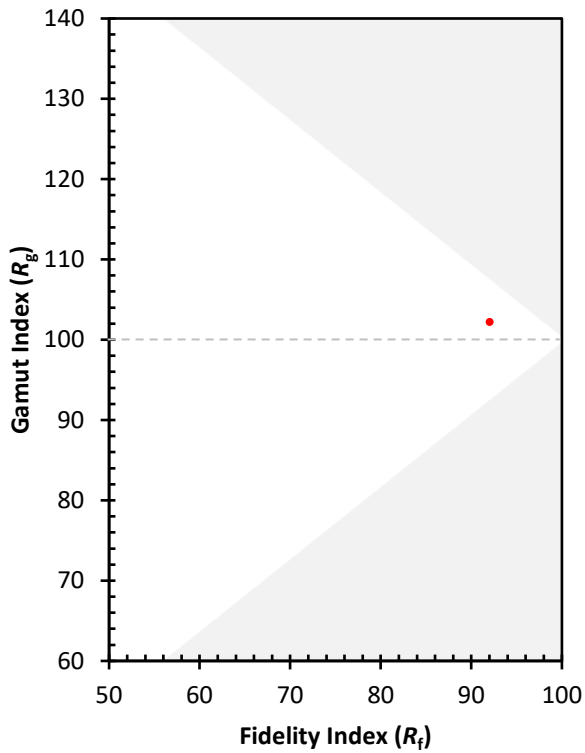
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 92 | CES51 = 98 | CES76 = 87 |
| CES02 = 62 | CES27 = 93 | CES52 = 96 | CES77 = 87 |
| CES03 = 32 | CES28 = 95 | CES53 = 95 | CES78 = 83 |
| CES04 = 70 | CES29 = 94 | CES54 = 95 | CES79 = 92 |
| CES05 = 50 | CES30 = 96 | CES55 = 95 | CES80 = 92 |
| CES06 = 51 | CES31 = 94 | CES56 = 98 | CES81 = 76 |
| CES07 = 43 | CES32 = 85 | CES57 = 97 | CES82 = 96 |
| CES08 = 42 | CES33 = 97 | CES58 = 98 | CES83 = 94 |
| CES09 = 29 | CES34 = 91 | CES59 = 99 | CES84 = 94 |
| CES10 = 75 | CES35 = 94 | CES60 = 94 | CES85 = 81 |
| CES11 = 58 | CES36 = 84 | CES61 = 94 | CES86 = 85 |
| CES12 = 64 | CES37 = 91 | CES62 = 89 | CES87 = 92 |
| CES13 = 44 | CES38 = 92 | CES63 = 94 | CES88 = 97 |
| CES14 = 74 | CES39 = 99 | CES64 = 94 | CES89 = 85 |
| CES15 = 72 | CES40 = 96 | CES65 = 92 | CES90 = 98 |
| CES16 = 48 | CES41 = 97 | CES66 = 91 | CES91 = 76 |
| CES17 = 49 | CES42 = 88 | CES67 = 90 | CES92 = 81 |
| CES18 = 56 | CES43 = 89 | CES68 = 90 | CES93 = 88 |
| CES19 = 71 | CES44 = 99 | CES69 = 90 | CES94 = 78 |
| CES20 = 67 | CES45 = 93 | CES70 = 87 | CES95 = 86 |
| CES21 = 86 | CES46 = 95 | CES71 = 84 | CES96 = 93 |
| CES22 = 78 | CES47 = 89 | CES72 = 94 | CES97 = 93 |
| CES23 = 91 | CES48 = 97 | CES73 = 82 | CES98 = 96 |
| CES24 = 90 | CES49 = 93 | CES74 = 90 | CES99 = 98 |
| CES25 = 71 | CES50 = 97 | CES75 = 85 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)