

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: P995457

Luminaire Tested: **LTT406FSMB-940**

Issue Date: 06/09/2025



**Test Information**

Test Method: LM-79-08  
Report Number: P995457  
Test Lab: INNOVATION CENTER (G1)  
Issue Date: 06/09/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: LTT406FSMB-940  
Description: HALO LT BLACK TRIM DRIVER ON BOARD 4 inch 90 CRI COLOR SELECTABLE  
FIXTURE  
Light Source: 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

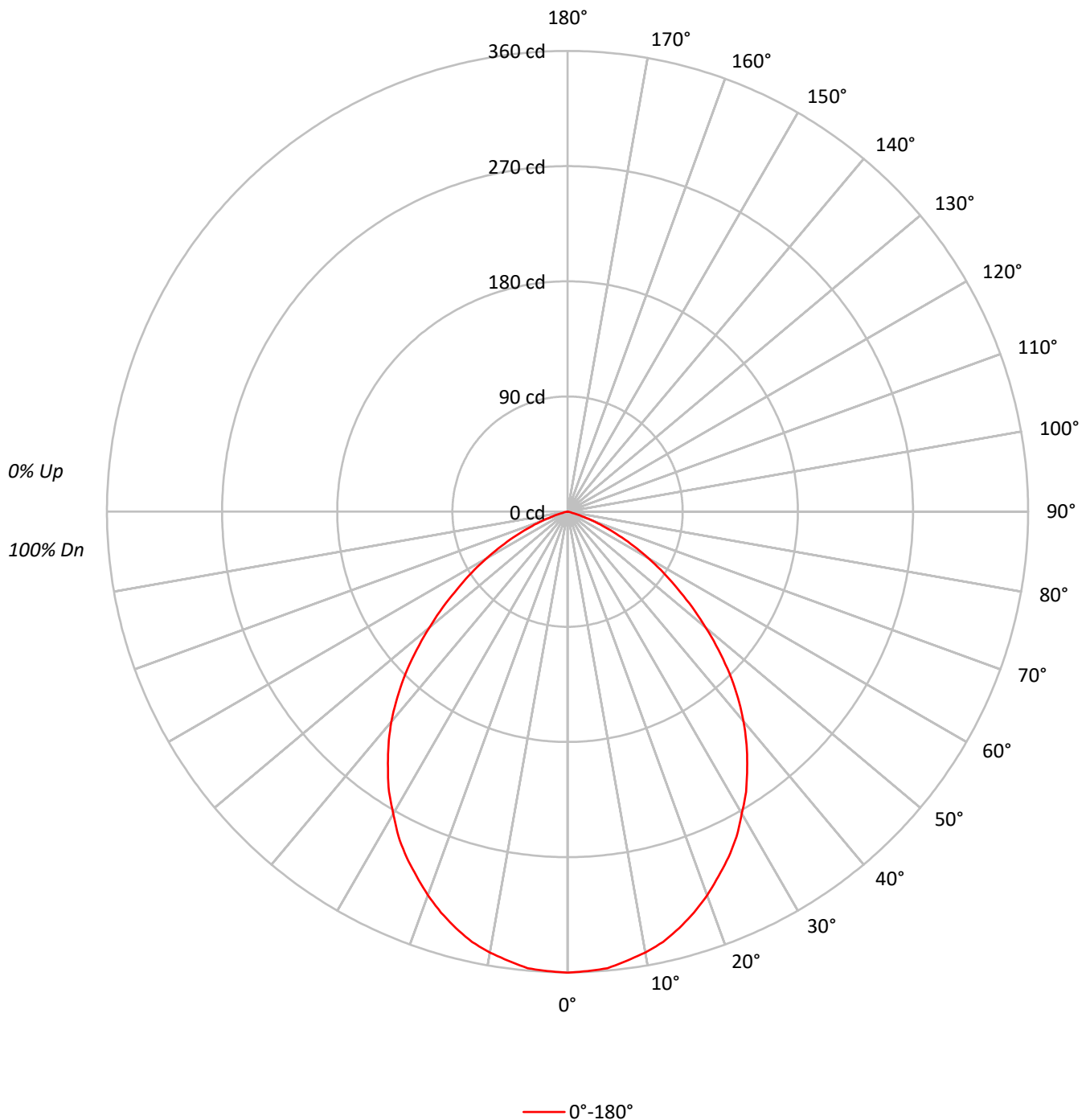
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 702.6 lumens  
Efficiency: N/A  
Efficacy: 92.4 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): 7.6  
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: P995457  
CATALOG NUMBER: LTT406FSMB-940

### Luminous Intensity Polar Plot





TEST NUMBER: P995457

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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°  | 54866 |
| 5°  | 54754 |
| 10° | 54089 |
| 15° | 53128 |
| 20° | 51694 |
| 25° | 50036 |
| 30° | 47898 |
| 35° | 45508 |
| 40° | 42560 |
| 45° | 38570 |
| 50° | 33403 |
| 55° | 27850 |
| 60° | 22263 |
| 65° | 16034 |
| 70° | 9439  |
| 75° | 3118  |
| 80° | 0     |
| 85° | 0     |



TEST NUMBER: P995457  
 CATALOG NUMBER: LTT406FSMB-940

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 33.9   | 4.8       |
| 10°-20°   | 94.8   | 13.5      |
| 20°-30°   | 136.9  | 19.5      |
| 30°-40°   | 152.8  | 21.8      |
| 40°-50°   | 137.4  | 19.6      |
| 50°-60°   | 94.5   | 13.4      |
| 60°-70°   | 44.8   | 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°    | 265.6  | 37.8      |
| 0°-40°    | 418.4  | 59.6      |
| 0°-60°    | 650.3  | 92.6      |
| 0°-90°    | 702.6  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 702.6  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | Flux |
|-----|-----|------|
| 0°  | 360 |      |
| 5°  | 358 | 34   |
| 15° | 337 | 95   |
| 25° | 298 | 137  |
| 35° | 245 | 153  |
| 45° | 179 | 137  |
| 55° | 105 | 94   |
| 65° | 44  | 45   |
| 75° | 5   | 8    |
| 85° | 0   | 0    |
| 90° | 0   |      |



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**CANDELA DISTRIBUTION (FULL):**

| 0°    |       |
|-------|-------|
| 0°    | 360.3 |
| 2.5°  | 359.3 |
| 5°    | 358.2 |
| 7.5°  | 354.0 |
| 10°   | 349.8 |
| 12.5° | 344.5 |
| 15°   | 337.0 |
| 17.5° | 328.6 |
| 20°   | 319.0 |
| 22.5° | 308.4 |
| 25°   | 297.8 |
| 27.5° | 286.2 |
| 30°   | 272.4 |
| 32.5° | 259.7 |
| 35°   | 244.8 |
| 37.5° | 230.0 |
| 40°   | 214.1 |
| 42.5° | 197.1 |
| 45°   | 179.1 |
| 47.5° | 160.0 |
| 50°   | 141.0 |
| 52.5° | 122.9 |
| 55°   | 104.9 |
| 57.5° | 89.0  |
| 60°   | 73.1  |
| 62.5° | 58.3  |
| 65°   | 44.5  |
| 67.5° | 31.8  |
| 70°   | 21.2  |
| 72.5° | 11.7  |
| 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 | 22.68            | 24.11 | 23.05 | 24.42 | 24.74 | 22.68          | 24.11 | 23.05 | 24.42 | 24.74 |
|                 | 3H   | 23.14            | 24.41 | 23.52 | 24.73 | 25.10 | 23.14          | 24.41 | 23.52 | 24.73 | 25.10 |
|                 | 4H   | 23.12            | 24.30 | 23.52 | 24.65 | 25.03 | 23.12          | 24.30 | 23.52 | 24.65 | 25.03 |
|                 | 6H   | 23.05            | 24.13 | 23.46 | 24.50 | 24.89 | 23.05          | 24.13 | 23.46 | 24.50 | 24.89 |
|                 | 8H   | 23.01            | 24.03 | 23.43 | 24.42 | 24.83 | 23.01          | 24.03 | 23.43 | 24.42 | 24.83 |
|                 | 12H  | 22.97            | 23.95 | 23.40 | 24.33 | 24.76 | 22.97          | 23.95 | 23.40 | 24.33 | 24.76 |
| 4H              | 2H   | 22.90            | 24.08 | 23.30 | 24.43 | 24.81 | 22.90          | 24.08 | 23.30 | 24.43 | 24.81 |
|                 | 3H   | 23.42            | 24.38 | 23.83 | 24.78 | 25.18 | 23.42          | 24.38 | 23.83 | 24.78 | 25.18 |
|                 | 4H   | 23.39            | 24.25 | 23.83 | 24.66 | 25.11 | 23.39          | 24.25 | 23.83 | 24.66 | 25.11 |
|                 | 6H   | 23.32            | 24.06 | 23.78 | 24.50 | 24.97 | 23.32          | 24.06 | 23.78 | 24.50 | 24.97 |
|                 | 8H   | 23.27            | 23.96 | 23.74 | 24.40 | 24.87 | 23.27          | 23.96 | 23.74 | 24.40 | 24.87 |
|                 | 12H  | 23.23            | 23.84 | 23.72 | 24.32 | 24.79 | 23.23          | 23.84 | 23.72 | 24.32 | 24.79 |
| 8H              | 4H   | 23.30            | 23.99 | 23.77 | 24.44 | 24.90 | 23.30          | 23.99 | 23.77 | 24.44 | 24.90 |
|                 | 6H   | 23.21            | 23.77 | 23.71 | 24.27 | 24.75 | 23.21          | 23.77 | 23.71 | 24.27 | 24.75 |
|                 | 8H   | 23.15            | 23.66 | 23.67 | 24.17 | 24.66 | 23.15          | 23.66 | 23.67 | 24.17 | 24.66 |
|                 | 12H  | 23.11            | 23.56 | 23.63 | 24.05 | 24.62 | 23.11          | 23.56 | 23.63 | 24.05 | 24.62 |
| 12H             | 4H   | 23.26            | 23.87 | 23.75 | 24.35 | 24.82 | 23.26          | 23.87 | 23.75 | 24.35 | 24.82 |
|                 | 6H   | 23.15            | 23.66 | 23.67 | 24.17 | 24.66 | 23.15          | 23.66 | 23.67 | 24.17 | 24.66 |
|                 | 8H   | 23.11            | 23.56 | 23.63 | 24.05 | 24.62 | 23.11          | 23.56 | 23.63 | 24.05 | 24.62 |

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

Report Prepared for

Cooper Lighting Solutions

Halo Recessed

Report Number: SP2-2504-410-4

Test Date: 05/22/2025

Luminaire Tested: LTT5607FSMBSS-4000K

Data in this report applies to families of products including LTT5607FSMBSS-4000K

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

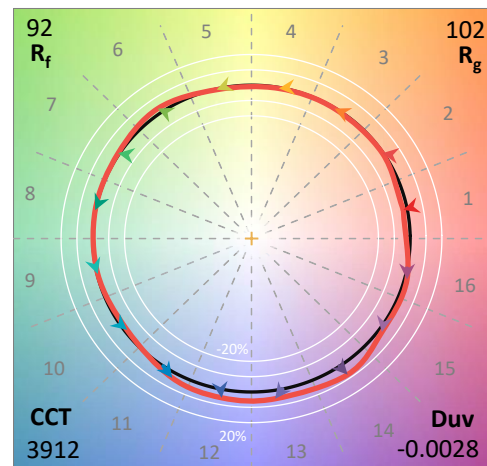
### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2504-410-4  
 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-4000K**  
 Description: HALO LT BLACK LED TRIM 6 INCH SMOOTH

### Spectral Parameters

CCT (K): 3912  
 CIE  $u'$ : 0.2283  
 CIE  $v'$ : 0.4998  
 Duv: -0.0028  
 CIE x: 0.3824  
 CIE y: 0.3720  
 CIE z: 0.2456  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 581  
 Purity: 26.37733  
 R<sub>f</sub>: 92  
 R<sub>g</sub>: 102.2

CRI (Ra): 96.7  
 R1: 98.8  
 R2: 97.8  
 R3: 92.4  
 R4: 96.5  
 R5: 98.7  
 R6: 94.9  
 R7: 97.2  
 R8: 97.1  
 R9: 89.6  
 R10: 91.8  
 R11: 94.4  
 R12: 77.0  
 R13: 99.7  
 R14: 94.4  
 R15: 98.9



### Test Conditions

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

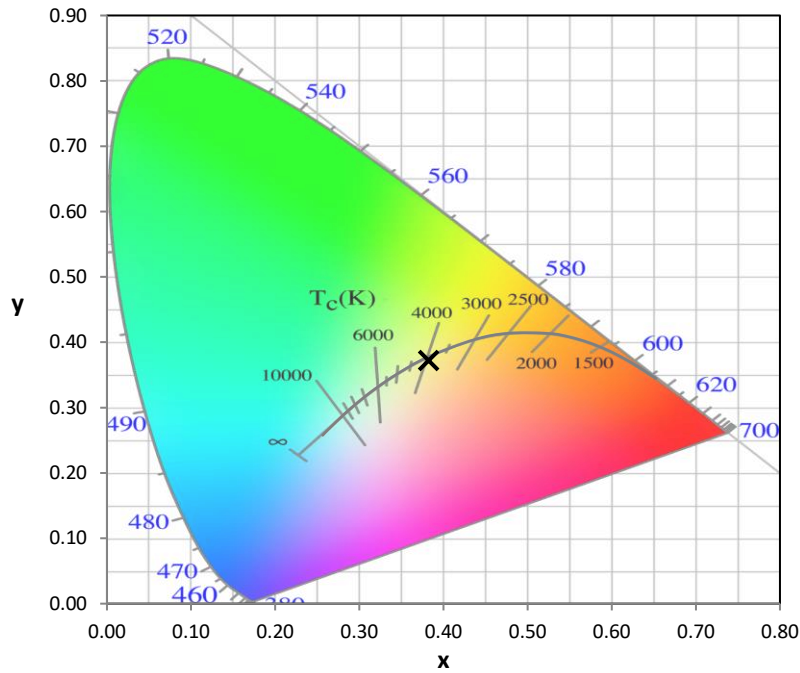
REPORT NUMBER: SP2-2504-410-4

| 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           |

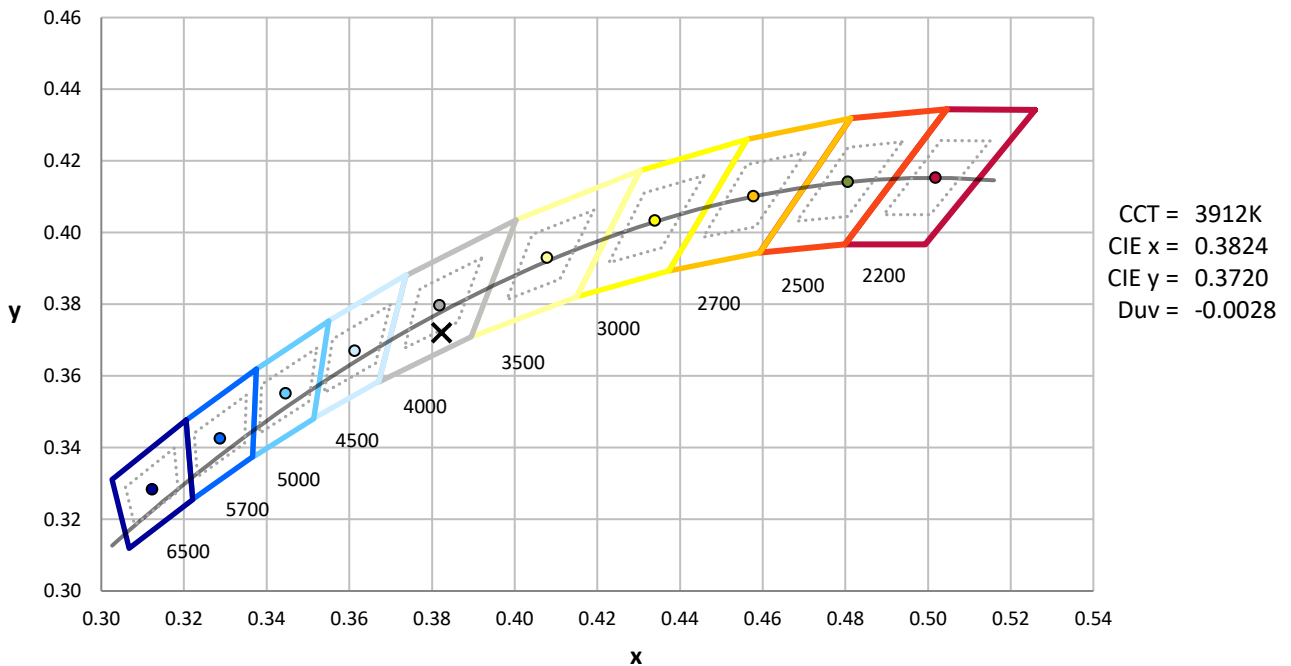
| Sample Number  | Condition | Description                          |
|----------------|-----------|--------------------------------------|
| P2504-410-LM.1 | Good      | HALO LT BLACK LED TRIM 6 INCH SMOOTH |
|                |           |                                      |
|                |  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

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**CIE 1931 Chromaticity Diagram**



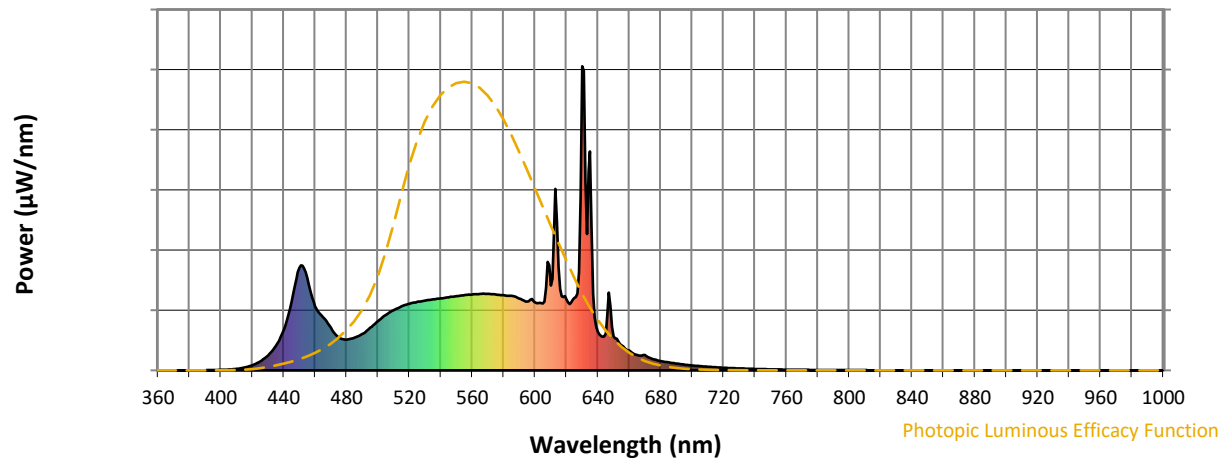
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 7-step quadrangle

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### Photopic Flux vs. Wavelength

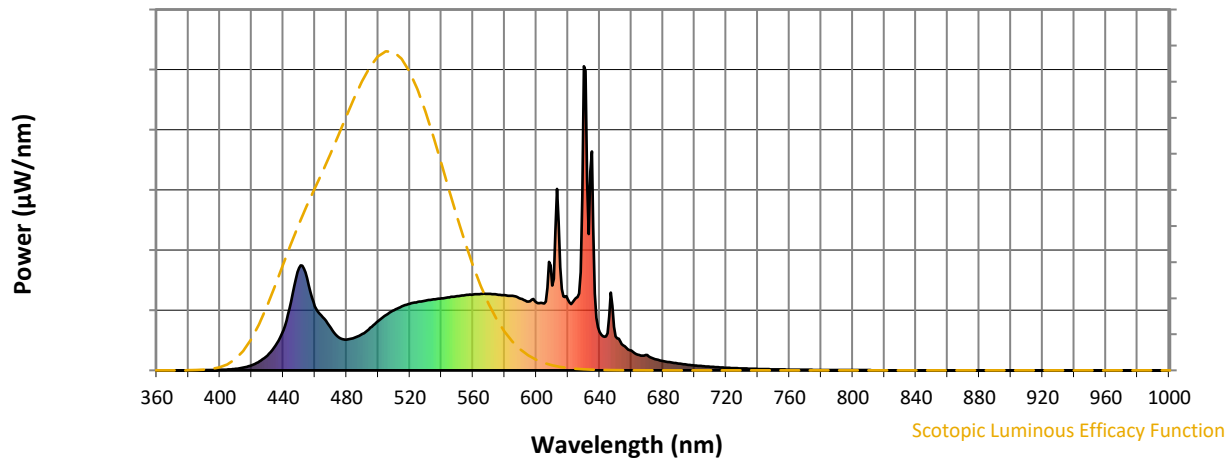


### Photopic Lumens: NR

| 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       | 120                         | NR               | 620       | 233                         | NR               | 750       | 3                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 140                         | NR               | 625       | 238                         | NR               | 755       | 3                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 162                         | NR               | 630       | 1000                        | NR               | 760       | 3                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 182                         | NR               | 635       | 720                         | NR               | 765       | 2                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 198                         | NR               | 640       | 126                         | NR               | 770       | 2                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 211                         | NR               | 645       | 122                         | NR               | 775       | 2                           | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 219                         | NR               | 650       | 111                         | NR               | 780       | 1                           | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 225                         | NR               | 655       | 82                          | NR               | 785       | 1                           | NR               | 915       | 0                           | NR               |
| 400       | 2                           | NR               | 530       | 230                         | NR               | 660       | 65                          | NR               | 790       | 1                           | NR               | 920       | 0                           | NR               |
| 405       | 3                           | NR               | 535       | 233                         | NR               | 665       | 50                          | NR               | 795       | 1                           | NR               | 925       | 0                           | NR               |
| 410       | 5                           | NR               | 540       | 237                         | NR               | 670       | 50                          | NR               | 800       | 1                           | NR               | 930       | 0                           | NR               |
| 415       | 9                           | NR               | 545       | 240                         | NR               | 675       | 37                          | NR               | 805       | 1                           | NR               | 935       | 0                           | NR               |
| 420       | 17                          | NR               | 550       | 244                         | NR               | 680       | 31                          | NR               | 810       | 1                           | NR               | 940       | 0                           | NR               |
| 425       | 29                          | NR               | 555       | 247                         | NR               | 685       | 26                          | NR               | 815       | 0                           | NR               | 945       | 0                           | NR               |
| 430       | 49                          | NR               | 560       | 249                         | NR               | 690       | 22                          | NR               | 820       | 0                           | NR               | 950       | 0                           | NR               |
| 435       | 81                          | NR               | 565       | 251                         | NR               | 695       | 19                          | NR               | 825       | 0                           | NR               | 955       | 0                           | NR               |
| 440       | 132                         | NR               | 570       | 251                         | NR               | 700       | 16                          | NR               | 830       | 0                           | NR               | 960       | 0                           | NR               |
| 445       | 226                         | NR               | 575       | 250                         | NR               | 705       | 14                          | NR               | 835       | 0                           | NR               | 965       | 0                           | NR               |
| 450       | 337                         | NR               | 580       | 247                         | NR               | 710       | 12                          | NR               | 840       | 0                           | NR               | 970       | 0                           | NR               |
| 455       | 303                         | NR               | 585       | 245                         | NR               | 715       | 10                          | NR               | 845       | 0                           | NR               | 975       | 0                           | NR               |
| 460       | 211                         | NR               | 590       | 236                         | NR               | 720       | 9                           | NR               | 850       | 0                           | NR               | 980       | 0                           | NR               |
| 465       | 175                         | NR               | 595       | 226                         | NR               | 725       | 7                           | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 140                         | NR               | 600       | 223                         | NR               | 730       | 6                           | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 108                         | NR               | 605       | 220                         | NR               | 735       | 5                           | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 101                         | NR               | 610       | 279                         | NR               | 740       | 5                           | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 108                         | NR               | 615       | 339                         | NR               | 745       | 4                           | NR               | 875       | 0                           | NR               |           |                             |                  |

REPORT NUMBER: SP2-2504-410-4

### Scotopic Flux vs. Wavelength



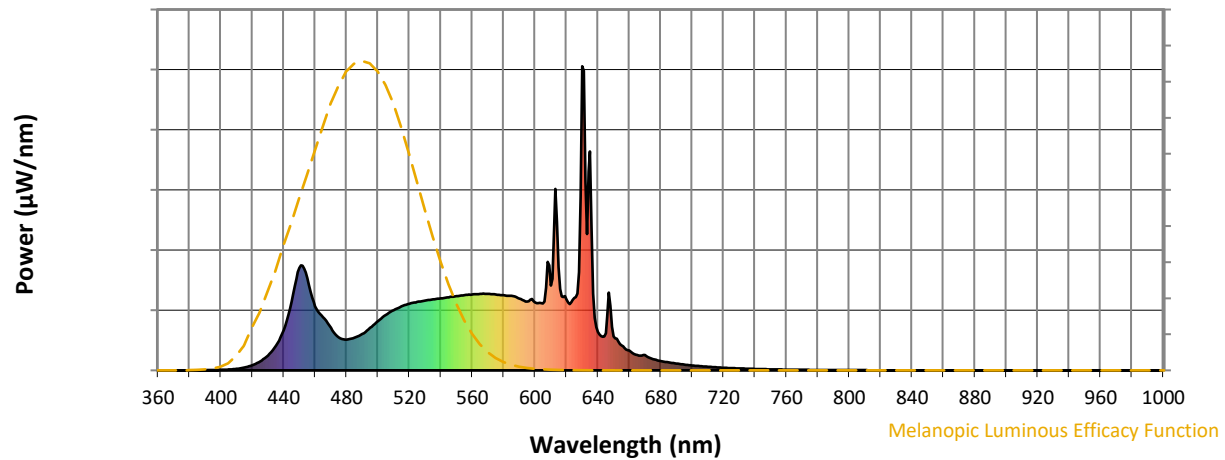
Scotopic Lumens: NR

S/P: 1.78

| 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       | 120                         | NR               | 620       | 233                         | NR               | 750       | 3                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 140                         | NR               | 625       | 238                         | NR               | 755       | 3                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 162                         | NR               | 630       | 1000                        | NR               | 760       | 3                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 182                         | NR               | 635       | 720                         | NR               | 765       | 2                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 198                         | NR               | 640       | 126                         | NR               | 770       | 2                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 211                         | NR               | 645       | 122                         | NR               | 775       | 2                           | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 219                         | NR               | 650       | 111                         | NR               | 780       | 1                           | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 225                         | NR               | 655       | 82                          | NR               | 785       | 1                           | NR               | 915       | 0                           | NR               |
| 400       | 2                           | NR               | 530       | 230                         | NR               | 660       | 65                          | NR               | 790       | 1                           | NR               | 920       | 0                           | NR               |
| 405       | 3                           | NR               | 535       | 233                         | NR               | 665       | 50                          | NR               | 795       | 1                           | NR               | 925       | 0                           | NR               |
| 410       | 5                           | NR               | 540       | 237                         | NR               | 670       | 50                          | NR               | 800       | 1                           | NR               | 930       | 0                           | NR               |
| 415       | 9                           | NR               | 545       | 240                         | NR               | 675       | 37                          | NR               | 805       | 1                           | NR               | 935       | 0                           | NR               |
| 420       | 17                          | NR               | 550       | 244                         | NR               | 680       | 31                          | NR               | 810       | 1                           | NR               | 940       | 0                           | NR               |
| 425       | 29                          | NR               | 555       | 247                         | NR               | 685       | 26                          | NR               | 815       | 0                           | NR               | 945       | 0                           | NR               |
| 430       | 49                          | NR               | 560       | 249                         | NR               | 690       | 22                          | NR               | 820       | 0                           | NR               | 950       | 0                           | NR               |
| 435       | 81                          | NR               | 565       | 251                         | NR               | 695       | 19                          | NR               | 825       | 0                           | NR               | 955       | 0                           | NR               |
| 440       | 132                         | NR               | 570       | 251                         | NR               | 700       | 16                          | NR               | 830       | 0                           | NR               | 960       | 0                           | NR               |
| 445       | 226                         | NR               | 575       | 250                         | NR               | 705       | 14                          | NR               | 835       | 0                           | NR               | 965       | 0                           | NR               |
| 450       | 337                         | NR               | 580       | 247                         | NR               | 710       | 12                          | NR               | 840       | 0                           | NR               | 970       | 0                           | NR               |
| 455       | 303                         | NR               | 585       | 245                         | NR               | 715       | 10                          | NR               | 845       | 0                           | NR               | 975       | 0                           | NR               |
| 460       | 211                         | NR               | 590       | 236                         | NR               | 720       | 9                           | NR               | 850       | 0                           | NR               | 980       | 0                           | NR               |
| 465       | 175                         | NR               | 595       | 226                         | NR               | 725       | 7                           | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 140                         | NR               | 600       | 223                         | NR               | 730       | 6                           | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 108                         | NR               | 605       | 220                         | NR               | 735       | 5                           | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 101                         | NR               | 610       | 279                         | NR               | 740       | 5                           | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 108                         | NR               | 615       | 339                         | NR               | 745       | 4                           | NR               | 875       | 0                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.7

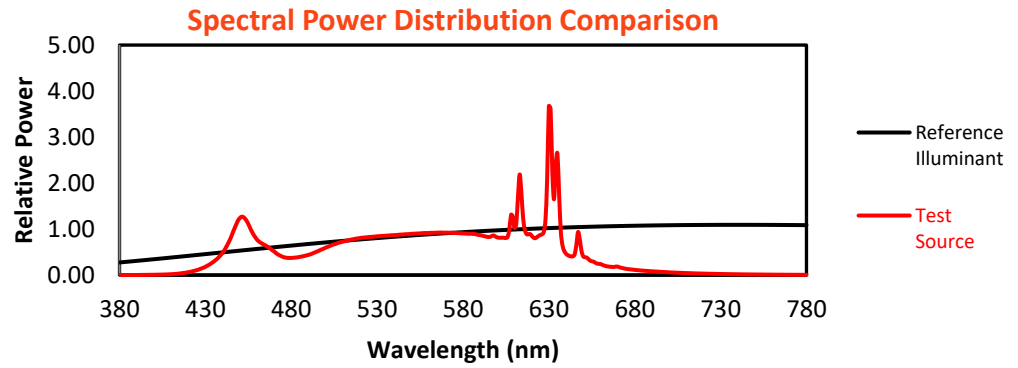
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 120                         | NR               | 620       | 233                         | NR               | 750       | 3                           | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 140                         | NR               | 625       | 238                         | NR               | 755       | 3                           | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 162                         | NR               | 630       | 1000                        | NR               | 760       | 3                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 182                         | NR               | 635       | 720                         | NR               | 765       | 2                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 198                         | NR               | 640       | 126                         | NR               | 770       | 2                           | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 211                         | NR               | 645       | 122                         | NR               | 775       | 2                           | NR               | 905       | 0                           | NR               |
| 390       | 1                           | NR               | 520       | 219                         | NR               | 650       | 111                         | NR               | 780       | 1                           | NR               | 910       | 0                           | NR               |
| 395       | 1                           | NR               | 525       | 225                         | NR               | 655       | 82                          | NR               | 785       | 1                           | NR               | 915       | 0                           | NR               |
| 400       | 2                           | NR               | 530       | 230                         | NR               | 660       | 65                          | NR               | 790       | 1                           | NR               | 920       | 0                           | NR               |
| 405       | 3                           | NR               | 535       | 233                         | NR               | 665       | 50                          | NR               | 795       | 1                           | NR               | 925       | 0                           | NR               |
| 410       | 5                           | NR               | 540       | 237                         | NR               | 670       | 50                          | NR               | 800       | 1                           | NR               | 930       | 0                           | NR               |
| 415       | 9                           | NR               | 545       | 240                         | NR               | 675       | 37                          | NR               | 805       | 1                           | NR               | 935       | 0                           | NR               |
| 420       | 17                          | NR               | 550       | 244                         | NR               | 680       | 31                          | NR               | 810       | 1                           | NR               | 940       | 0                           | NR               |
| 425       | 29                          | NR               | 555       | 247                         | NR               | 685       | 26                          | NR               | 815       | 0                           | NR               | 945       | 0                           | NR               |
| 430       | 49                          | NR               | 560       | 249                         | NR               | 690       | 22                          | NR               | 820       | 0                           | NR               | 950       | 0                           | NR               |
| 435       | 81                          | NR               | 565       | 251                         | NR               | 695       | 19                          | NR               | 825       | 0                           | NR               | 955       | 0                           | NR               |
| 440       | 132                         | NR               | 570       | 251                         | NR               | 700       | 16                          | NR               | 830       | 0                           | NR               | 960       | 0                           | NR               |
| 445       | 226                         | NR               | 575       | 250                         | NR               | 705       | 14                          | NR               | 835       | 0                           | NR               | 965       | 0                           | NR               |
| 450       | 337                         | NR               | 580       | 247                         | NR               | 710       | 12                          | NR               | 840       | 0                           | NR               | 970       | 0                           | NR               |
| 455       | 303                         | NR               | 585       | 245                         | NR               | 715       | 10                          | NR               | 845       | 0                           | NR               | 975       | 0                           | NR               |
| 460       | 211                         | NR               | 590       | 236                         | NR               | 720       | 9                           | NR               | 850       | 0                           | NR               | 980       | 0                           | NR               |
| 465       | 175                         | NR               | 595       | 226                         | NR               | 725       | 7                           | NR               | 855       | 0                           | NR               | 985       | 0                           | NR               |
| 470       | 140                         | NR               | 600       | 223                         | NR               | 730       | 6                           | NR               | 860       | 0                           | NR               | 990       | 0                           | NR               |
| 475       | 108                         | NR               | 605       | 220                         | NR               | 735       | 5                           | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 101                         | NR               | 610       | 279                         | NR               | 740       | 5                           | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 108                         | NR               | 615       | 339                         | NR               | 745       | 4                           | NR               | 875       | 0                           | NR               |           |                             |                  |

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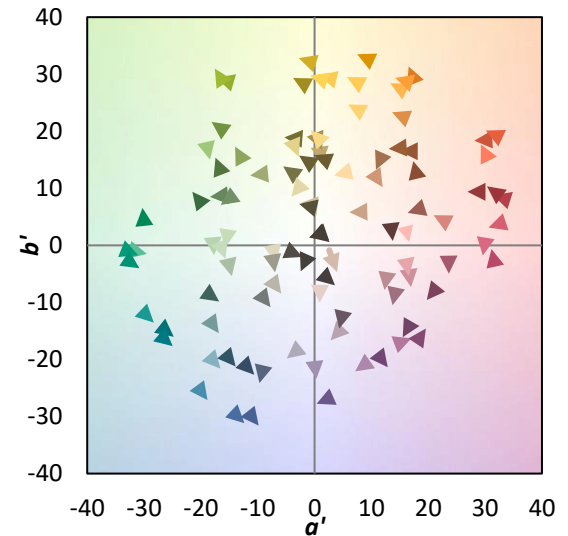
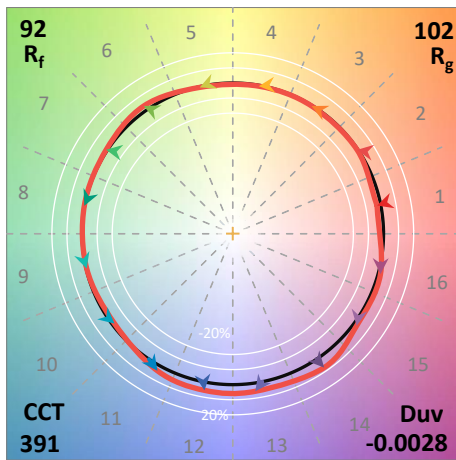
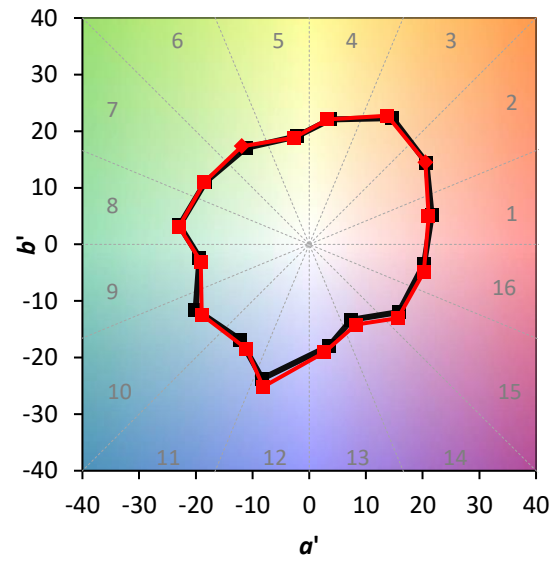
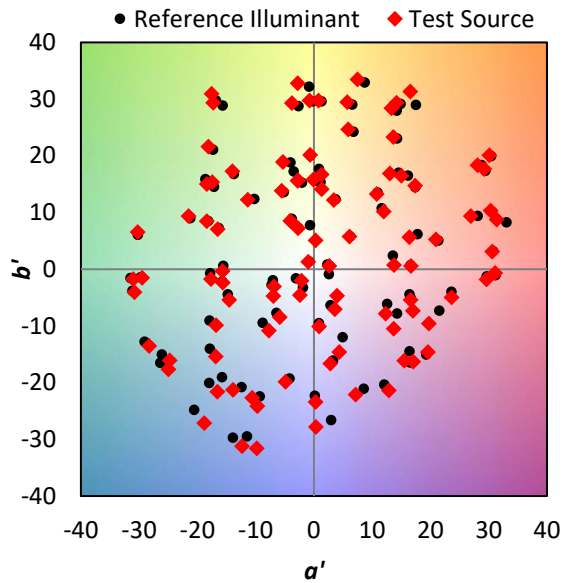
TM-30-18

### Summary

$R_f = 92$   
 $R_g = 102.2$   
 $CIE R_a = 96.7$   
 $R_g = 89.6$

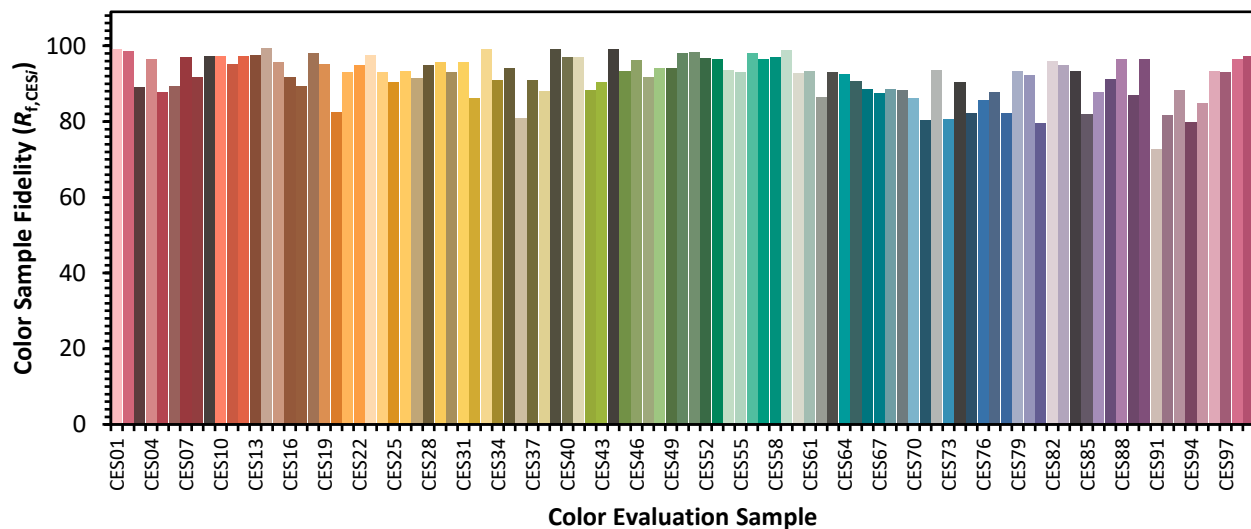


### Color Vector Graphics

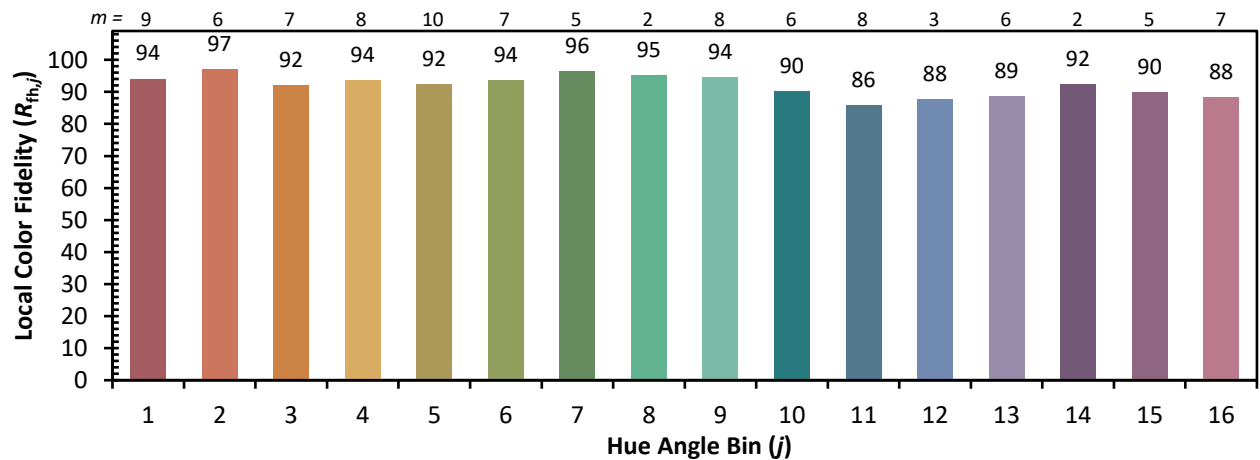
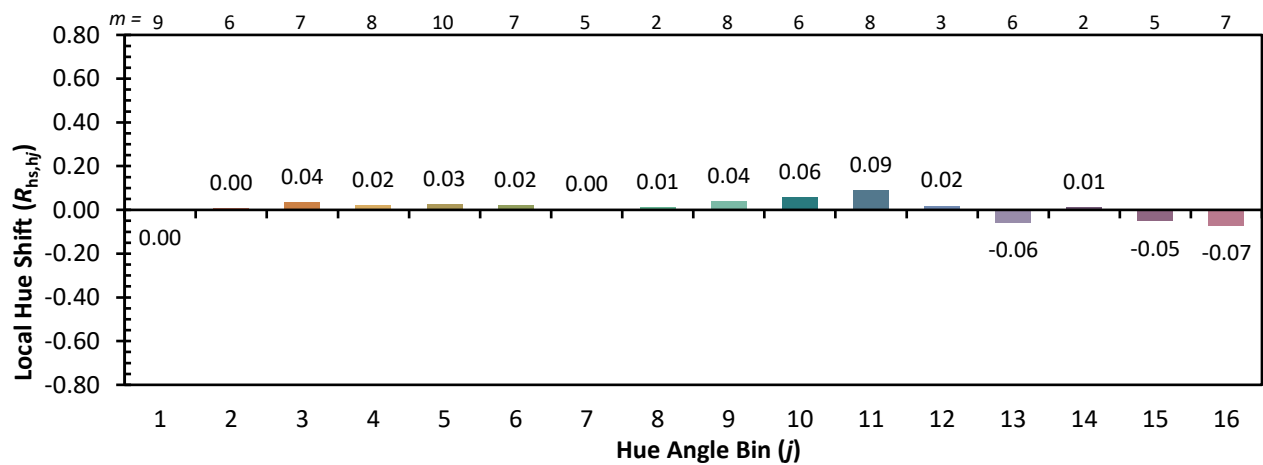
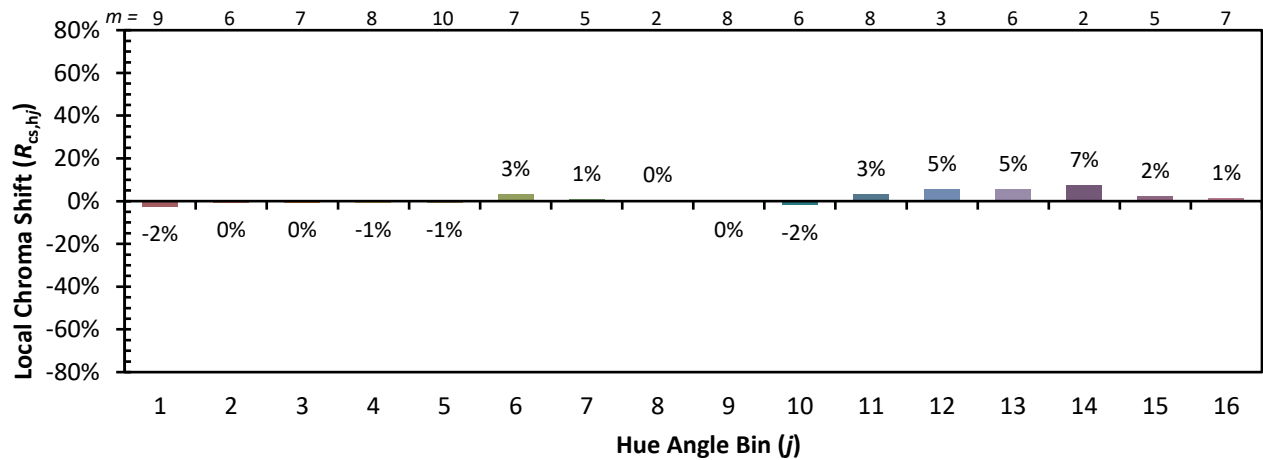


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

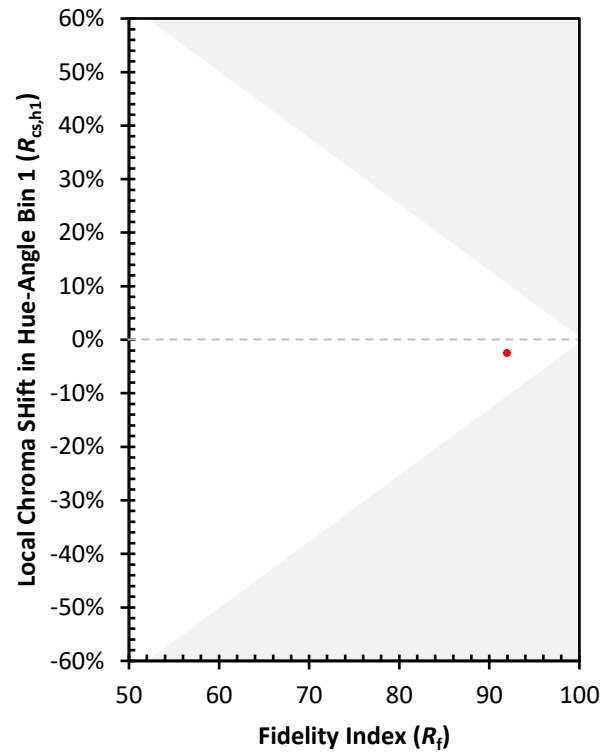
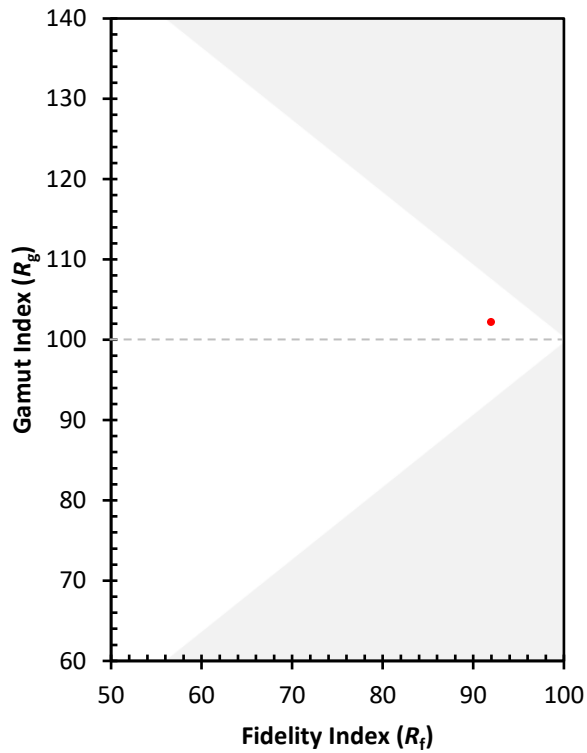
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 98 | CES76 = 86 |
| CES02 = 62 | CES27 = 92 | CES52 = 97 | CES77 = 88 |
| CES03 = 31 | CES28 = 95 | CES53 = 97 | CES78 = 82 |
| CES04 = 69 | CES29 = 96 | CES54 = 94 | CES79 = 93 |
| CES05 = 49 | CES30 = 93 | CES55 = 93 | CES80 = 92 |
| CES06 = 50 | CES31 = 96 | CES56 = 98 | CES81 = 80 |
| CES07 = 43 | CES32 = 86 | CES57 = 97 | CES82 = 96 |
| CES08 = 41 | CES33 = 99 | CES58 = 97 | CES83 = 95 |
| CES09 = 29 | CES34 = 91 | CES59 = 99 | CES84 = 93 |
| CES10 = 74 | CES35 = 94 | CES60 = 93 | CES85 = 82 |
| CES11 = 57 | CES36 = 81 | CES61 = 93 | CES86 = 88 |
| CES12 = 63 | CES37 = 91 | CES62 = 86 | CES87 = 91 |
| CES13 = 43 | CES38 = 88 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 87 |
| CES15 = 71 | CES40 = 97 | CES65 = 91 | CES90 = 96 |
| CES16 = 47 | CES41 = 97 | CES66 = 89 | CES91 = 73 |
| CES17 = 49 | CES42 = 88 | CES67 = 87 | CES92 = 82 |
| CES18 = 56 | CES43 = 90 | CES68 = 89 | CES93 = 88 |
| CES19 = 71 | CES44 = 99 | CES69 = 88 | CES94 = 80 |
| CES20 = 66 | CES45 = 93 | CES70 = 86 | CES95 = 85 |
| CES21 = 85 | CES46 = 96 | CES71 = 80 | CES96 = 93 |
| CES22 = 78 | CES47 = 92 | CES72 = 94 | CES97 = 93 |
| CES23 = 91 | CES48 = 94 | CES73 = 81 | CES98 = 96 |
| CES24 = 90 | CES49 = 94 | CES74 = 91 | CES99 = 97 |
| CES25 = 71 | CES50 = 98 | CES75 = 82 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)