

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: METALUX

Report Number: P830908

Luminaire Tested: **OHBL-9HE-MFL-UNV-L735-CD**

Issue Date: 5/3/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P830908  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2106-285-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/3/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: OHBL-9HE-MFL-UNV-L735-CD  
Description: 9000 LUMEN OHBL HE LED LUMINAIRE WITH 70CRI, 3500K LEDS AND MEDIUM FROSTED LENS  
Light Source: -  
Ballast/Driver: -

**Summary**

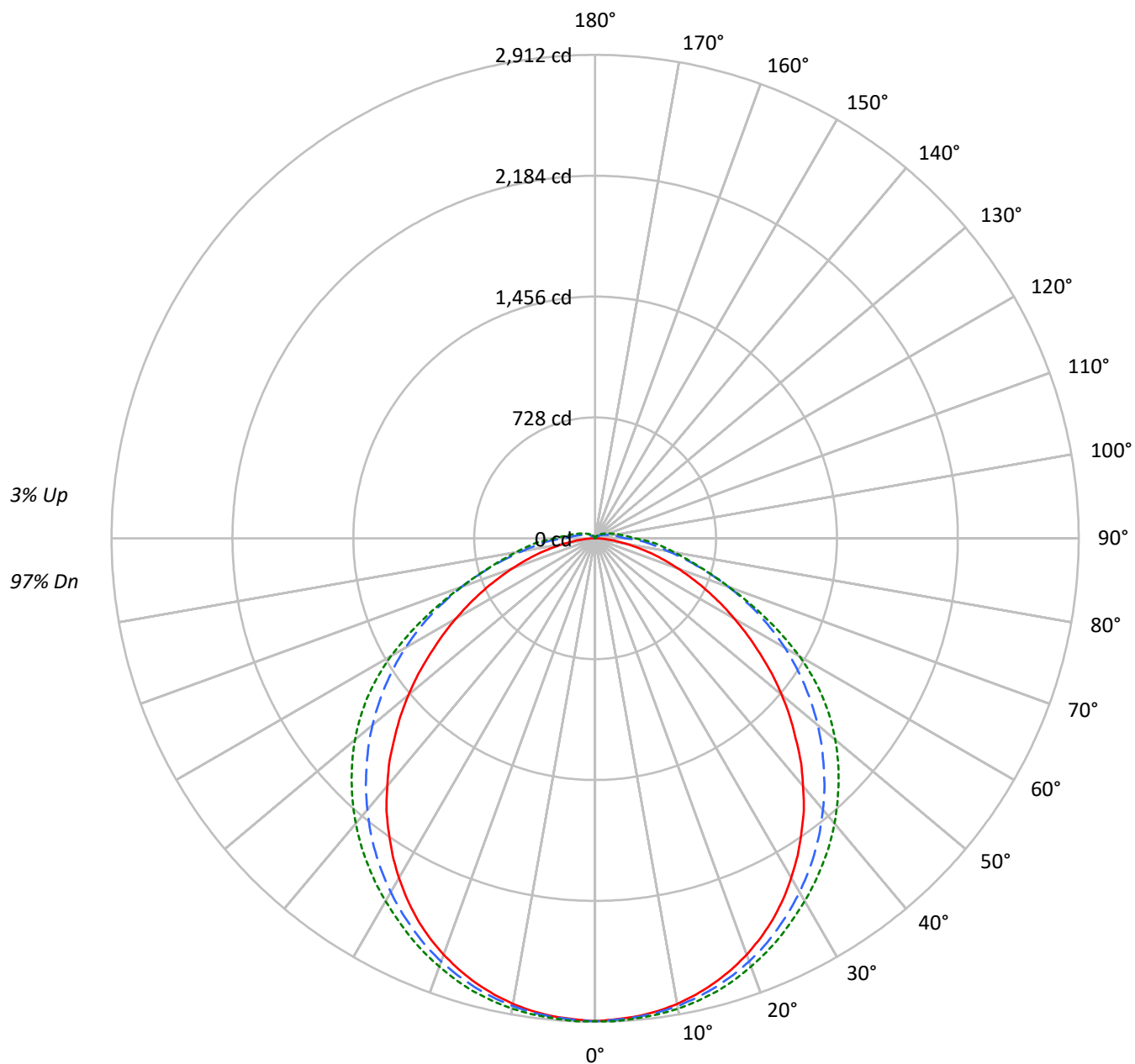
Lumens per Lamp: N/A  
Luminaire Lumens: 8706.0 lumens  
Efficiency: N/A  
Efficacy: 167.4 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.29 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 1.67' x L: 3.78' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 52  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

TEST NUMBER: P830908

CATALOG NUMBER: OHBL-9HE-MFL-UNV-L735-CD

### Luminous Intensity Polar Plot





TEST NUMBER: P830908

CATALOG NUMBER: OHBL-9HE-MFL-UNV-L735-CD

**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 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |
| 0   | 118 | 118 | 118 | 118 | 115 | 115 | 115 | 115 | 109 | 109 | 109 | 104 | 104 | 104 | 99 | 99 | 99 |
| 1   | 107 | 102 | 98  | 94  | 104 | 100 | 96  | 92  | 95  | 91  | 88  | 90  | 88  | 85  | 86 | 84 | 82 |
| 2   | 98  | 89  | 82  | 76  | 95  | 87  | 80  | 75  | 83  | 77  | 73  | 79  | 74  | 71  | 75 | 72 | 68 |
| 3   | 89  | 78  | 70  | 63  | 86  | 76  | 69  | 62  | 73  | 66  | 61  | 70  | 64  | 59  | 67 | 62 | 58 |
| 4   | 81  | 69  | 60  | 53  | 79  | 68  | 59  | 53  | 65  | 57  | 52  | 62  | 56  | 51  | 59 | 54 | 50 |
| 5   | 75  | 62  | 53  | 46  | 72  | 60  | 52  | 46  | 58  | 50  | 45  | 56  | 49  | 44  | 53 | 48 | 43 |
| 6   | 69  | 56  | 47  | 40  | 67  | 54  | 46  | 40  | 52  | 45  | 39  | 50  | 44  | 39  | 48 | 43 | 38 |
| 7   | 64  | 50  | 42  | 35  | 62  | 49  | 41  | 35  | 48  | 40  | 35  | 46  | 39  | 34  | 44 | 38 | 34 |
| 8   | 60  | 46  | 37  | 31  | 58  | 45  | 37  | 31  | 43  | 36  | 31  | 42  | 35  | 31  | 41 | 35 | 30 |
| 9   | 56  | 42  | 34  | 28  | 54  | 41  | 34  | 28  | 40  | 33  | 28  | 39  | 32  | 28  | 37 | 32 | 27 |
| 10  | 52  | 39  | 31  | 26  | 51  | 38  | 31  | 26  | 37  | 30  | 25  | 36  | 29  | 25  | 35 | 29 | 25 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4969 | 4969 | 4969 |
| 5°  | 4937 | 4919 | 4933 |
| 10° | 4902 | 4874 | 4904 |
| 15° | 4847 | 4819 | 4867 |
| 20° | 4775 | 4754 | 4814 |
| 25° | 4678 | 4672 | 4761 |
| 30° | 4543 | 4584 | 4707 |
| 35° | 4380 | 4491 | 4660 |
| 40° | 4185 | 4383 | 4613 |
| 45° | 3954 | 4265 | 4554 |
| 50° | 3702 | 4146 | 4482 |
| 55° | 3393 | 4001 | 4365 |
| 60° | 3075 | 3830 | 4135 |
| 65° | 2729 | 3613 | 3762 |
| 70° | 2353 | 3336 | 3358 |
| 75° | 1973 | 3016 | 3079 |
| 80° | 1496 | 2778 | 3034 |
| 85° | 946  | 2862 | 3346 |



TEST NUMBER: P830908

CATALOG NUMBER: OHBL-9HE-MFL-UNV-L735-CD

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 275.6  | 3.2       |
| 10°-20°   | 790.8  | 9.1       |
| 20°-30°   | 1195.9 | 13.7      |
| 30°-40°   | 1435.7 | 16.5      |
| 40°-50°   | 1482.8 | 17.0      |
| 50°-60°   | 1334.1 | 15.3      |
| 60°-70°   | 1004.9 | 11.5      |
| 70°-80°   | 606.8  | 7.0       |
| 80°-90°   | 296.8  | 3.4       |
| 90°-100°  | 124.9  | 1.4       |
| 100°-110° | 71.3   | 0.8       |
| 110°-120° | 41.9   | 0.5       |
| 120°-130° | 23.7   | 0.3       |
| 130°-140° | 12.5   | 0.1       |
| 140°-150° | 6.1    | 0.1       |
| 150°-160° | 2.2    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| <hr/>     |        |           |
| 0°-30°    | 2262.3 | 26.0      |
| 0°-40°    | 3698.0 | 42.5      |
| 0°-60°    | 6514.9 | 74.8      |
| 0°-90°    | 8423.4 | 96.8      |
| 90°-120°  | 238.1  | 2.7       |
| 90°-150°  | 280.3  | 3.2       |
| 90°-180°  | 283.0  | 3.3       |
| 0°-180°   | 8706.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2909 | 2909  | 2909 | 2909  | 2909 |      |
| 5°   | 2890 | 2898  | 2895 | 2906  | 2902 | 275  |
| 15°  | 2774 | 2787  | 2800 | 2824  | 2826 | 782  |
| 25°  | 2533 | 2561  | 2597 | 2638  | 2644 | 1165 |
| 35°  | 2166 | 2216  | 2307 | 2377  | 2391 | 1354 |
| 45°  | 1709 | 1796  | 1946 | 2052  | 2074 | 1320 |
| 55°  | 1211 | 1336  | 1539 | 1655  | 1675 | 1086 |
| 65°  | 739  | 890   | 1089 | 1143  | 1130 | 734  |
| 75°  | 348  | 500   | 631  | 647   | 641  | 371  |
| 85°  | 73   | 192   | 316  | 360   | 366  | 84   |
| 90°  | 0    | 75    | 181  | 228   | 237  | 5    |
| 95°  | 4    | 50    | 135  | 172   | 179  | 3    |
| 105° | 5    | 29    | 78   | 102   | 107  | 5    |
| 115° | 6    | 16    | 48   | 65    | 68   | 6    |
| 125° | 6    | 8     | 29   | 42    | 44   | 5    |
| 135° | 5    | 6     | 15   | 26    | 28   | 4    |
| 145° | 7    | 6     | 7    | 13    | 15   | 4    |
| 155° | 7    | 8     | 7    | 6     | 7    | 2    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    |      |



TEST NUMBER: P830908

CATALOG NUMBER: OHBL-9HE-MFL-UNV-L735-CD

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2909.0 | 2909.0 | 2909.0 | 2909.0 | 2909.0 |
| 2.5°   | 2900.4 | 2907.5 | 2903.3 | 2912.5 | 2911.8 |
| 5°     | 2890.4 | 2898.3 | 2894.7 | 2906.1 | 2902.5 |
| 7.5°   | 2873.4 | 2881.9 | 2881.2 | 2894.0 | 2892.6 |
| 10°    | 2848.4 | 2857.7 | 2860.5 | 2877.6 | 2877.6 |
| 12.5°  | 2814.3 | 2826.4 | 2833.5 | 2854.1 | 2854.8 |
| 15°    | 2773.7 | 2787.2 | 2800.0 | 2823.5 | 2826.4 |
| 17.5°  | 2724.6 | 2741.6 | 2759.4 | 2786.5 | 2790.1 |
| 20°    | 2669.0 | 2688.3 | 2712.5 | 2740.9 | 2745.2 |
| 22.5°  | 2605.0 | 2627.7 | 2659.1 | 2692.5 | 2697.5 |
| 25°    | 2533.1 | 2560.8 | 2597.1 | 2637.7 | 2644.1 |
| 27.5°  | 2451.2 | 2483.2 | 2532.3 | 2577.9 | 2583.6 |
| 30°    | 2362.2 | 2399.9 | 2461.1 | 2515.3 | 2524.5 |
| 32.5°  | 2268.2 | 2311.6 | 2387.1 | 2447.6 | 2460.4 |
| 35°    | 2165.7 | 2216.2 | 2307.4 | 2377.1 | 2391.4 |
| 37.5°  | 2064.6 | 2120.1 | 2223.4 | 2303.1 | 2320.2 |
| 40°    | 1946.4 | 2015.5 | 2133.7 | 2221.9 | 2242.6 |
| 42.5°  | 1835.4 | 1910.1 | 2044.0 | 2140.1 | 2160.0 |
| 45°    | 1709.3 | 1795.5 | 1945.7 | 2051.8 | 2073.9 |
| 47.5°  | 1591.2 | 1684.4 | 1851.0 | 1960.7 | 1983.4 |
| 50°    | 1466.6 | 1569.1 | 1749.9 | 1864.5 | 1888.0 |
| 52.5°  | 1342.0 | 1452.3 | 1645.3 | 1764.2 | 1786.2 |
| 55°    | 1211.0 | 1336.3 | 1539.2 | 1655.2 | 1675.2 |
| 57.5°  | 1089.3 | 1221.7 | 1430.3 | 1540.6 | 1552.7 |
| 60°    | 968.9  | 1106.3 | 1319.2 | 1416.0 | 1420.3 |
| 62.5°  | 851.5  | 996.0  | 1205.3 | 1282.2 | 1276.5 |
| 65°    | 739.0  | 889.9  | 1089.3 | 1143.4 | 1130.5 |
| 67.5°  | 630.8  | 786.7  | 970.4  | 1005.2 | 988.2  |
| 70°    | 528.3  | 686.3  | 855.0  | 872.8  | 857.2  |
| 72.5°  | 437.8  | 590.9  | 738.3  | 753.2  | 741.8  |
| 75°    | 348.1  | 499.8  | 630.8  | 647.1  | 640.7  |
| 77.5°  | 264.1  | 411.5  | 531.8  | 553.2  | 554.6  |
| 80°    | 190.1  | 331.0  | 445.7  | 479.1  | 483.4  |
| 82.5°  | 125.3  | 257.0  | 373.8  | 416.5  | 422.9  |
| 85°    | 72.6   | 191.5  | 316.1  | 359.5  | 365.9  |
| 87.5°  | 31.3   | 138.1  | 254.2  | 293.3  | 301.1  |
| 90°    | 0.0    | 74.8   | 180.8  | 227.8  | 237.1  |
| 92.5°  | 2.1    | 61.9   | 155.2  | 197.9  | 205.7  |
| 95°    | 3.6    | 50.5   | 135.3  | 172.3  | 178.7  |
| 97.5°  | 4.3    | 42.7   | 117.5  | 150.2  | 156.6  |
| 100°   | 4.3    | 37.0   | 101.8  | 131.7  | 137.4  |
| 102.5° | 4.3    | 32.7   | 89.0   | 115.3  | 120.3  |
| 105°   | 5.0    | 29.2   | 78.3   | 102.5  | 106.8  |



TEST NUMBER: P830908

CATALOG NUMBER: OHBL-9HE-MFL-UNV-L735-CD

**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45°  | 67.5° | 90°  |
|--------|-----|-------|------|-------|------|
| 112.5° | 5.7 | 19.2  | 54.1 | 72.6  | 75.5 |
| 115°   | 5.7 | 16.4  | 48.4 | 64.8  | 67.6 |
| 117.5° | 6.4 | 14.2  | 42.7 | 58.4  | 60.5 |
| 120°   | 6.4 | 12.1  | 37.7 | 52.0  | 54.8 |
| 122.5° | 6.4 | 10.0  | 33.5 | 47.0  | 49.1 |
| 125°   | 5.7 | 7.8   | 29.2 | 42.0  | 44.1 |
| 127.5° | 5.0 | 6.4   | 24.9 | 37.7  | 39.9 |
| 130°   | 5.0 | 5.7   | 21.4 | 33.5  | 35.6 |
| 132.5° | 5.0 | 6.4   | 17.8 | 29.2  | 32.0 |
| 135°   | 5.0 | 6.4   | 15.0 | 25.6  | 28.5 |
| 137.5° | 5.0 | 6.4   | 12.1 | 22.1  | 24.9 |
| 140°   | 5.7 | 6.4   | 10.0 | 18.5  | 21.4 |
| 142.5° | 6.4 | 6.4   | 7.8  | 15.7  | 17.8 |
| 145°   | 7.1 | 6.4   | 7.1  | 12.8  | 15.0 |
| 147.5° | 7.1 | 7.1   | 7.1  | 10.0  | 12.1 |
| 150°   | 7.1 | 7.8   | 7.1  | 7.8   | 10.0 |
| 152.5° | 7.1 | 7.8   | 7.1  | 6.4   | 7.8  |
| 155°   | 7.1 | 7.8   | 7.1  | 6.4   | 7.1  |
| 157.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 160°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 162.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 165°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 167.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 170°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 172.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 175°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 177.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 180°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |



Report Generated By 670246072 / DESKTOP-50001EG





— 0°-180°    - - 45°-225°    - - - 90°-270°







|        |     |      |      |      |      |
|--------|-----|------|------|------|------|
| 107.5° | 5.0 | 25.6 | 69.1 | 91.1 | 94.7 |
| 110°   | 5.0 | 22.8 | 61.2 | 81.2 | 84.7 |



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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2307-100-2

Test Date: 08/03/2023

Luminaire Tested: OHB-15SE-N-UNV-L735-CD

Data in this report applies to families of products including OHB-15SE-N-UNV-L735-CD.

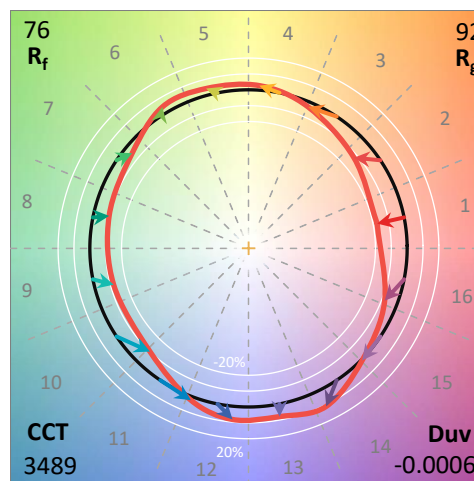
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2307-100-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/04/2023  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: METALUX  
 Catalog Number: **OHB-15SE-N-UNV-L735-CD**  
 Description: 15000 LUMEN OHB SE LED LUMINAIRE WITH 70CRI, 3500K LEDS AND NARROW LENS

LENS

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3489    | CRI (Ra): | 73.0 |      |       |
| CIE u':                   | 0.2362  | R1:       | 69.4 | R9:  | -30.0 |
| CIE v':                   | 0.5107  | R2:       | 82.9 | R10: | 59.3  |
| Duv:                      | -0.0006 | R3:       | 92.6 | R11: | 62.7  |
| CIE x:                    | 0.4052  | R4:       | 68.4 | R12: | 47.6  |
| CIE y:                    | 0.3895  | R5:       | 68.8 | R13: | 72.2  |
| CIE z:                    | 0.2053  | R6:       | 75.3 | R14: | 95.9  |
| Peak Wavelength (nm):     | 588     | R7:       | 79.3 |      |       |
| Dominant Wavelength (nm): | 581     | R8:       | 47.6 |      |       |
| Purity:                   | 38.7    |           |      |      |       |
| Rf:                       | 75.9    |           |      |      |       |
| Rg:                       | 92.2    |           |      |      |       |



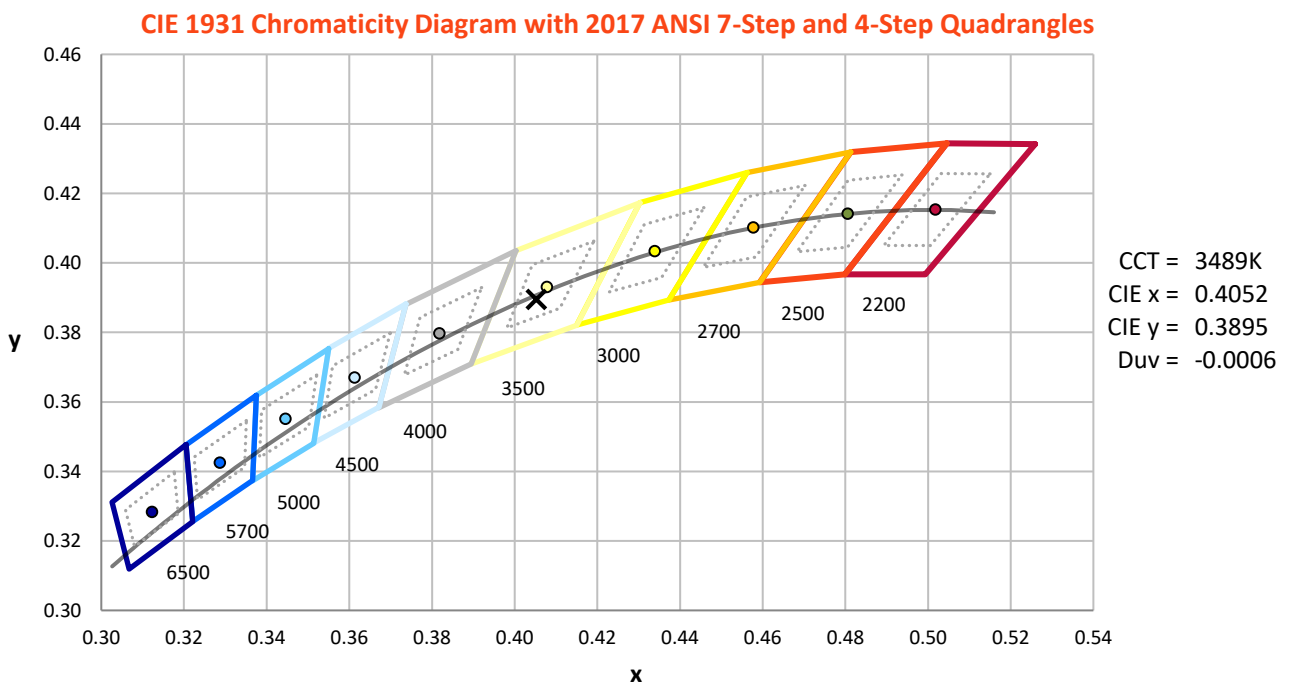
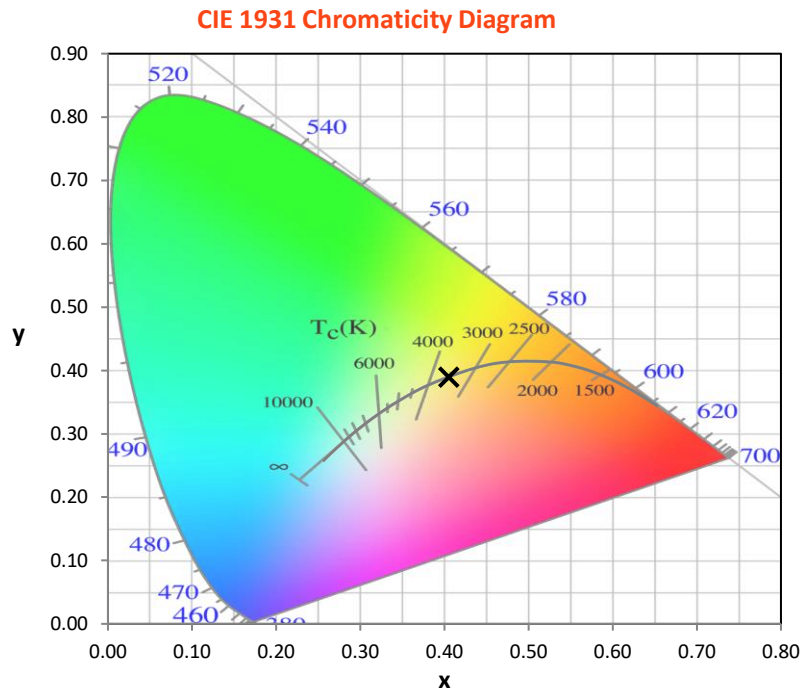
### Test Conditions

Stabilization Time: 28M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.7/58%  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2307-100-2

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 2/9/2023         | 8/9/2023             |
| Power Meter                    | XITRON 2801 IN0071    | 11/29/2022       | 11/29/2023           |
| AC Power Source                | CHROMA 61603 IN0063   | 11/28/2022       | 11/28/2023           |
| DC Power Source                | AGILENT E3634A IN0208 | 11/28/2022       | 11/28/2023           |
| Sphere Thermometer             | ONSET IN0085          | 11/28/2022       | 11/28/2023           |
| Room Thermometer               | ONSET IN0046          | 11/28/2022       | 11/28/2023           |

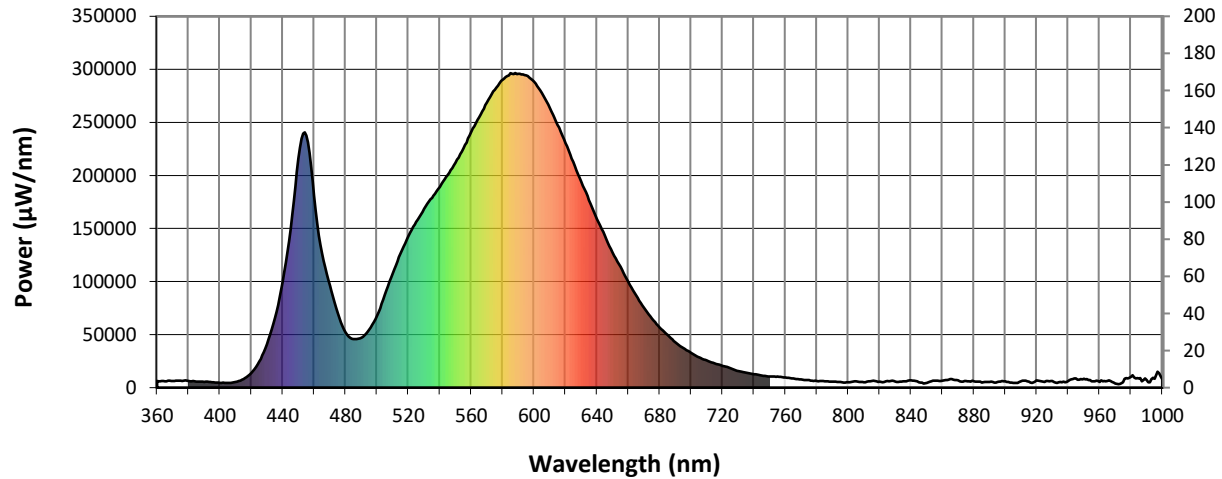
REPORT NUMBER: SP1-2307-100-2



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2307-100-2

**Photopic Flux vs. Wavelength**

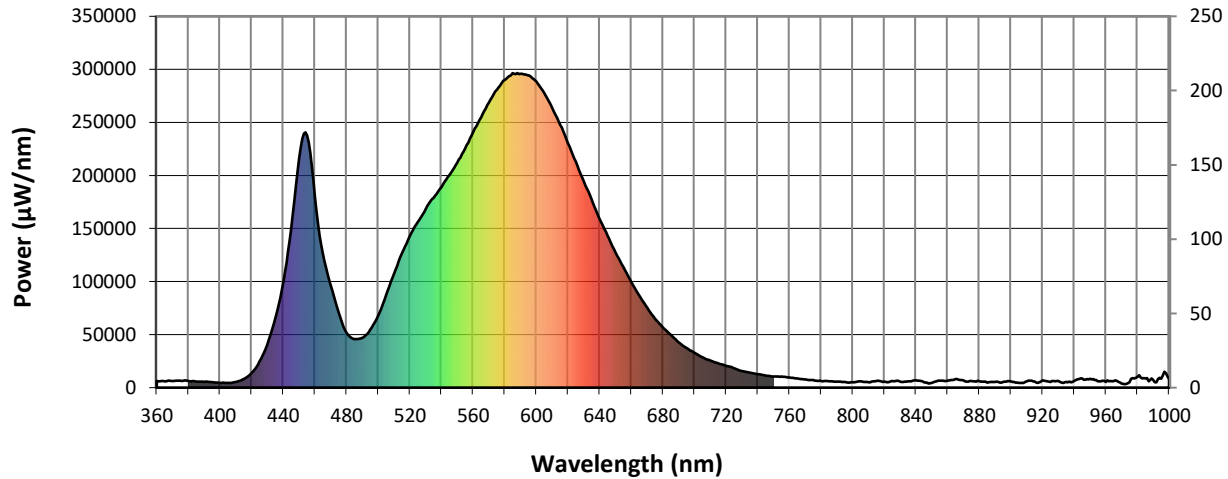


#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 6366             | NR               | 490       | 47130            | NR               | 620       | 230435           | NR               | 750       | 10555            | NR               | 880       | 5822             | NR               |
| 365       | 5925             | NR               | 495       | 54424            | NR               | 625       | 212935           | NR               | 755       | 10386            | NR               | 885       | 4770             | NR               |
| 370       | 6268             | NR               | 500       | 67766            | NR               | 630       | 194319           | NR               | 760       | 9571             | NR               | 890       | 5279             | NR               |
| 375       | 6497             | NR               | 505       | 87548            | NR               | 635       | 176714           | NR               | 765       | 8796             | NR               | 895       | 5445             | NR               |
| 380       | 6318             | NR               | 510       | 107612           | NR               | 640       | 159022           | NR               | 770       | 7688             | NR               | 900       | 5934             | NR               |
| 385       | 5716             | NR               | 515       | 126336           | NR               | 645       | 143212           | NR               | 775       | 7039             | NR               | 905       | 4594             | NR               |
| 390       | 5462             | NR               | 520       | 142943           | NR               | 650       | 127214           | NR               | 780       | 6282             | NR               | 910       | 5910             | NR               |
| 395       | 5187             | NR               | 525       | 156046           | NR               | 655       | 113910           | NR               | 785       | 5849             | NR               | 915       | 5732             | NR               |
| 400       | 4568             | NR               | 530       | 168399           | NR               | 660       | 99647            | NR               | 790       | 5698             | NR               | 920       | 6817             | NR               |
| 405       | 4481             | NR               | 535       | 178779           | NR               | 665       | 86667            | NR               | 795       | 5315             | NR               | 925       | 5494             | NR               |
| 410       | 5393             | NR               | 540       | 189196           | NR               | 670       | 75195            | NR               | 800       | 5004             | NR               | 930       | 6404             | NR               |
| 415       | 8052             | NR               | 545       | 200610           | NR               | 675       | 65133            | NR               | 805       | 5848             | NR               | 935       | 5273             | NR               |
| 420       | 13696            | NR               | 550       | 212065           | NR               | 680       | 56714            | NR               | 810       | 5027             | NR               | 940       | 6245             | NR               |
| 425       | 24563            | NR               | 555       | 225598           | NR               | 685       | 49746            | NR               | 815       | 6212             | NR               | 945       | 8810             | NR               |
| 430       | 41084            | NR               | 560       | 241077           | NR               | 690       | 42689            | NR               | 820       | 5650             | NR               | 950       | 8264             | NR               |
| 435       | 65723            | NR               | 565       | 254881           | NR               | 695       | 37295            | NR               | 825       | 6411             | NR               | 955       | 5892             | NR               |
| 440       | 99807            | NR               | 570       | 268758           | NR               | 700       | 32779            | NR               | 830       | 5679             | NR               | 960       | 5507             | NR               |
| 445       | 149359           | NR               | 575       | 280646           | NR               | 705       | 28556            | NR               | 835       | 5857             | NR               | 965       | 6242             | NR               |
| 450       | 215870           | NR               | 580       | 290065           | NR               | 710       | 25496            | NR               | 840       | 6910             | NR               | 970       | 3723             | NR               |
| 455       | 237735           | NR               | 585       | 296284           | NR               | 715       | 22794            | NR               | 845       | 5135             | NR               | 975       | 4991             | NR               |
| 460       | 180903           | NR               | 590       | 295851           | NR               | 720       | 20477            | NR               | 850       | 4417             | NR               | 980       | 10241            | NR               |
| 465       | 126687           | NR               | 595       | 294360           | NR               | 725       | 18231            | NR               | 855       | 6494             | NR               | 985       | 8801             | NR               |
| 470       | 96291            | NR               | 600       | 288175           | NR               | 730       | 15637            | NR               | 860       | 6521             | NR               | 990       | 7127             | NR               |
| 475       | 70550            | NR               | 605       | 277740           | NR               | 735       | 14130            | NR               | 865       | 8026             | NR               | 995       | 8514             | NR               |
| 480       | 51790            | NR               | 610       | 263525           | NR               | 740       | 12715            | NR               | 870       | 6772             | NR               | 1000      | 7777             | NR               |
| 485       | 45800            | NR               | 615       | 247580           | NR               | 745       | 11403            | NR               | 875       | 6383             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-2

Scotopic Flux vs. Wavelength



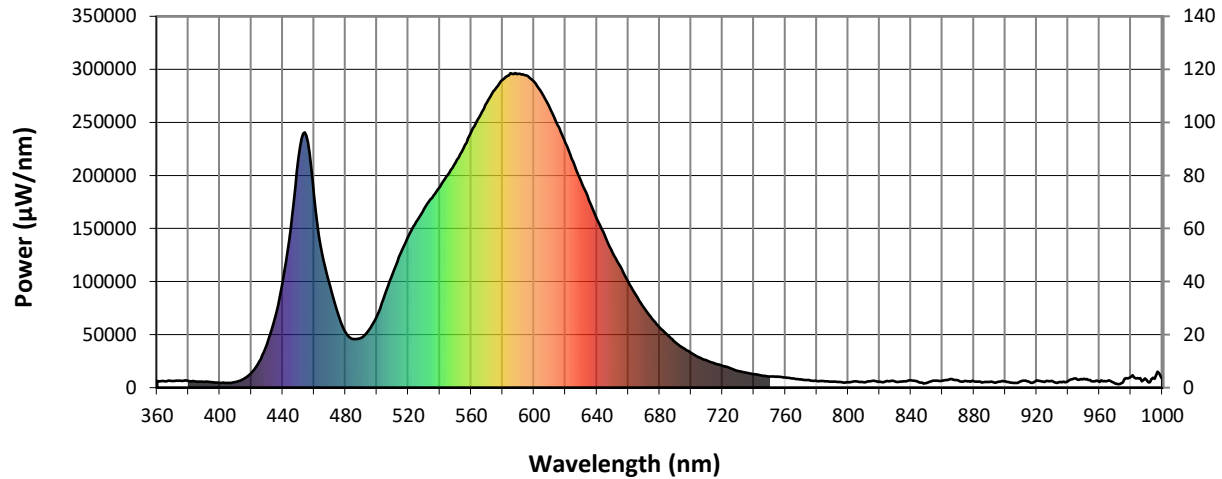
Scotopic Lumens: 21575.7

S/P: 1.41

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 6366             | NR               | 490       | 47130            | NR               | 620       | 230435           | NR               | 750       | 10555            | NR               | 880       | 5822             | NR               |
| 365       | 5925             | NR               | 495       | 54424            | NR               | 625       | 212935           | NR               | 755       | 10386            | NR               | 885       | 4770             | NR               |
| 370       | 6268             | NR               | 500       | 67766            | NR               | 630       | 194319           | NR               | 760       | 9571             | NR               | 890       | 5279             | NR               |
| 375       | 6497             | NR               | 505       | 87548            | NR               | 635       | 176714           | NR               | 765       | 8796             | NR               | 895       | 5445             | NR               |
| 380       | 6318             | NR               | 510       | 107612           | NR               | 640       | 159022           | NR               | 770       | 7688             | NR               | 900       | 5934             | NR               |
| 385       | 5716             | NR               | 515       | 126336           | NR               | 645       | 143212           | NR               | 775       | 7039             | NR               | 905       | 4594             | NR               |
| 390       | 5462             | NR               | 520       | 142943           | NR               | 650       | 127214           | NR               | 780       | 6282             | NR               | 910       | 5910             | NR               |
| 395       | 5187             | NR               | 525       | 156046           | NR               | 655       | 113910           | NR               | 785       | 5849             | NR               | 915       | 5732             | NR               |
| 400       | 4568             | NR               | 530       | 168399           | NR               | 660       | 99647            | NR               | 790       | 5698             | NR               | 920       | 6817             | NR               |
| 405       | 4481             | NR               | 535       | 178779           | NR               | 665       | 86667            | NR               | 795       | 5315             | NR               | 925       | 5494             | NR               |
| 410       | 5393             | NR               | 540       | 189196           | NR               | 670       | 75195            | NR               | 800       | 5004             | NR               | 930       | 6404             | NR               |
| 415       | 8052             | NR               | 545       | 200610           | NR               | 675       | 65133            | NR               | 805       | 5848             | NR               | 935       | 5273             | NR               |
| 420       | 13696            | NR               | 550       | 212065           | NR               | 680       | 56714            | NR               | 810       | 5027             | NR               | 940       | 6245             | NR               |
| 425       | 24563            | NR               | 555       | 225598           | NR               | 685       | 49746            | NR               | 815       | 6212             | NR               | 945       | 8810             | NR               |
| 430       | 41084            | NR               | 560       | 241077           | NR               | 690       | 42689            | NR               | 820       | 5650             | NR               | 950       | 8264             | NR               |
| 435       | 65723            | NR               | 565       | 254881           | NR               | 695       | 37295            | NR               | 825       | 6411             | NR               | 955       | 5892             | NR               |
| 440       | 99807            | NR               | 570       | 268758           | NR               | 700       | 32779            | NR               | 830       | 5679             | NR               | 960       | 5507             | NR               |
| 445       | 149359           | NR               | 575       | 280646           | NR               | 705       | 28556            | NR               | 835       | 5857             | NR               | 965       | 6242             | NR               |
| 450       | 215870           | NR               | 580       | 290065           | NR               | 710       | 25496            | NR               | 840       | 6910             | NR               | 970       | 3723             | NR               |
| 455       | 237735           | NR               | 585       | 296284           | NR               | 715       | 22794            | NR               | 845       | 5135             | NR               | 975       | 4991             | NR               |
| 460       | 180903           | NR               | 590       | 295851           | NR               | 720       | 20477            | NR               | 850       | 4417             | NR               | 980       | 10241            | NR               |
| 465       | 126687           | NR               | 595       | 294360           | NR               | 725       | 18231            | NR               | 855       | 6494             | NR               | 985       | 8801             | NR               |
| 470       | 96291            | NR               | 600       | 288175           | NR               | 730       | 15637            | NR               | 860       | 6521             | NR               | 990       | 7127             | NR               |
| 475       | 70550            | NR               | 605       | 277740           | NR               | 735       | 14130            | NR               | 865       | 8026             | NR               | 995       | 8514             | NR               |
| 480       | 51790            | NR               | 610       | 263525           | NR               | 740       | 12715            | NR               | 870       | 6772             | NR               | 1000      | 7777             | NR               |
| 485       | 45800            | NR               | 615       | 247580           | NR               | 745       | 11403            | NR               | 875       | 6383             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-2

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 8294.3 M/P: 0.54**

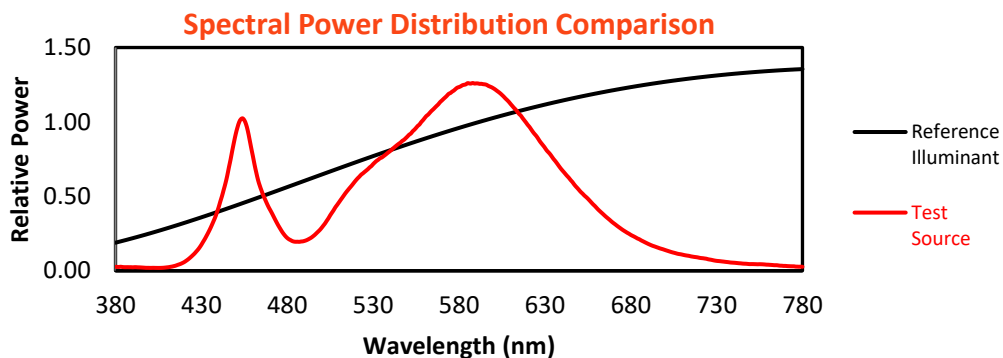
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 6366             | NR               | 490       | 47130            | NR               | 620       | 230435           | NR               | 750       | 10555            | NR               | 880       | 5822             | NR               |
| 365       | 5925             | NR               | 495       | 54424            | NR               | 625       | 212935           | NR               | 755       | 10386            | NR               | 885       | 4770             | NR               |
| 370       | 6268             | NR               | 500       | 67766            | NR               | 630       | 194319           | NR               | 760       | 9571             | NR               | 890       | 5279             | NR               |
| 375       | 6497             | NR               | 505       | 87548            | NR               | 635       | 176714           | NR               | 765       | 8796             | NR               | 895       | 5445             | NR               |
| 380       | 6318             | NR               | 510       | 107612           | NR               | 640       | 159022           | NR               | 770       | 7688             | NR               | 900       | 5934             | NR               |
| 385       | 5716             | NR               | 515       | 126336           | NR               | 645       | 143212           | NR               | 775       | 7039             | NR               | 905       | 4594             | NR               |
| 390       | 5462             | NR               | 520       | 142943           | NR               | 650       | 127214           | NR               | 780       | 6282             | NR               | 910       | 5910             | NR               |
| 395       | 5187             | NR               | 525       | 156046           | NR               | 655       | 113910           | NR               | 785       | 5849             | NR               | 915       | 5732             | NR               |
| 400       | 4568             | NR               | 530       | 168399           | NR               | 660       | 99647            | NR               | 790       | 5698             | NR               | 920       | 6817             | NR               |
| 405       | 4481             | NR               | 535       | 178779           | NR               | 665       | 86667            | NR               | 795       | 5315             | NR               | 925       | 5494             | NR               |
| 410       | 5393             | NR               | 540       | 189196           | NR               | 670       | 75195            | NR               | 800       | 5004             | NR               | 930       | 6404             | NR               |
| 415       | 8052             | NR               | 545       | 200610           | NR               | 675       | 65133            | NR               | 805       | 5848             | NR               | 935       | 5273             | NR               |
| 420       | 13696            | NR               | 550       | 212065           | NR               | 680       | 56714            | NR               | 810       | 5027             | NR               | 940       | 6245             | NR               |
| 425       | 24563            | NR               | 555       | 225598           | NR               | 685       | 49746            | NR               | 815       | 6212             | NR               | 945       | 8810             | NR               |
| 430       | 41084            | NR               | 560       | 241077           | NR               | 690       | 42689            | NR               | 820       | 5650             | NR               | 950       | 8264             | NR               |
| 435       | 65723            | NR               | 565       | 254881           | NR               | 695       | 37295            | NR               | 825       | 6411             | NR               | 955       | 5892             | NR               |
| 440       | 99807            | NR               | 570       | 268758           | NR               | 700       | 32779            | NR               | 830       | 5679             | NR               | 960       | 5507             | NR               |
| 445       | 149359           | NR               | 575       | 280646           | NR               | 705       | 28556            | NR               | 835       | 5857             | NR               | 965       | 6242             | NR               |
| 450       | 215870           | NR               | 580       | 290065           | NR               | 710       | 25496            | NR               | 840       | 6910             | NR               | 970       | 3723             | NR               |
| 455       | 237735           | NR               | 585       | 296284           | NR               | 715       | 22794            | NR               | 845       | 5135             | NR               | 975       | 4991             | NR               |
| 460       | 180903           | NR               | 590       | 295851           | NR               | 720       | 20477            | NR               | 850       | 4417             | NR               | 980       | 10241            | NR               |
| 465       | 126687           | NR               | 595       | 294360           | NR               | 725       | 18231            | NR               | 855       | 6494             | NR               | 985       | 8801             | NR               |
| 470       | 96291            | NR               | 600       | 288175           | NR               | 730       | 15637            | NR               | 860       | 6521             | NR               | 990       | 7127             | NR               |
| 475       | 70550            | NR               | 605       | 277740           | NR               | 735       | 14130            | NR               | 865       | 8026             | NR               | 995       | 8514             | NR               |
| 480       | 51790            | NR               | 610       | 263525           | NR               | 740       | 12715            | NR               | 870       | 6772             | NR               | 1000      | 7777             | NR               |
| 485       | 45800            | NR               | 615       | 247580           | NR               | 745       | 11403            | NR               | 875       | 6383             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-2

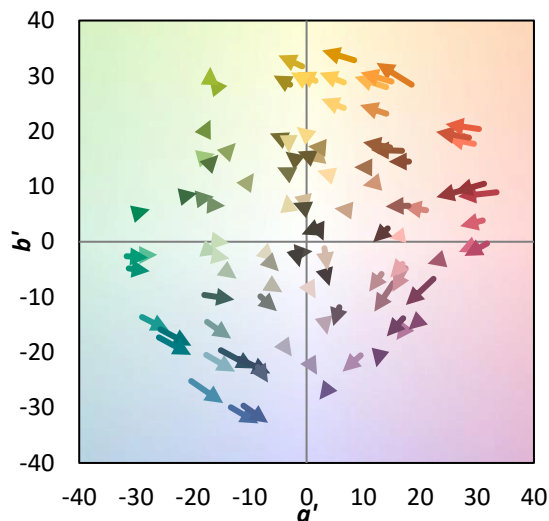
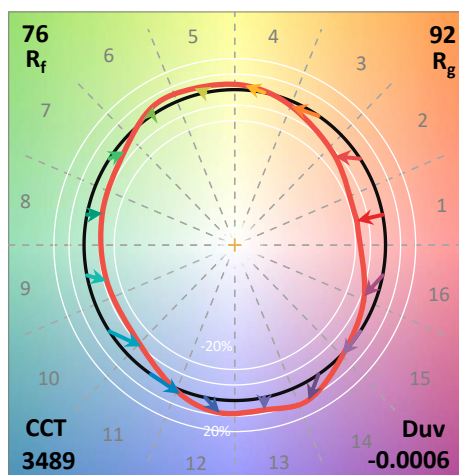
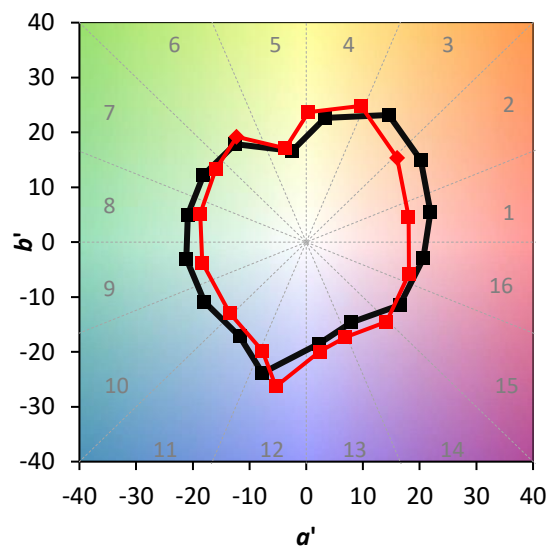
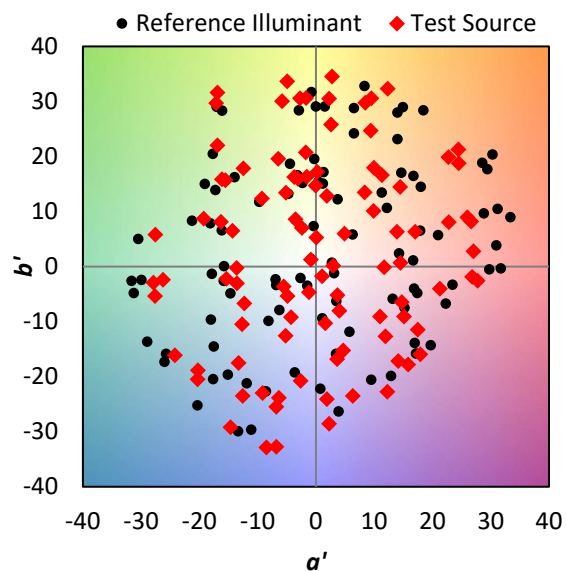
**TM-30-18**

### Summary

$R_f = 75.9$   
 $R_g = 92.2$   
 $CIE R_a = 73.0$   
 $R_g = -30.0$



### Color Vector Graphics

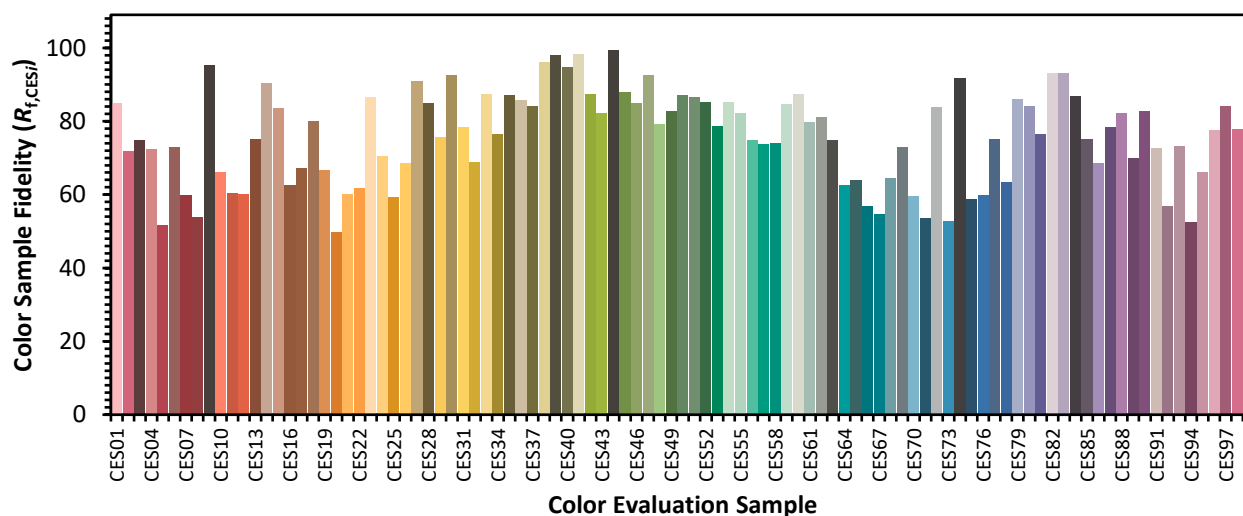


REPORT NUMBER: SP1-2307-100-2

TM-30-18

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

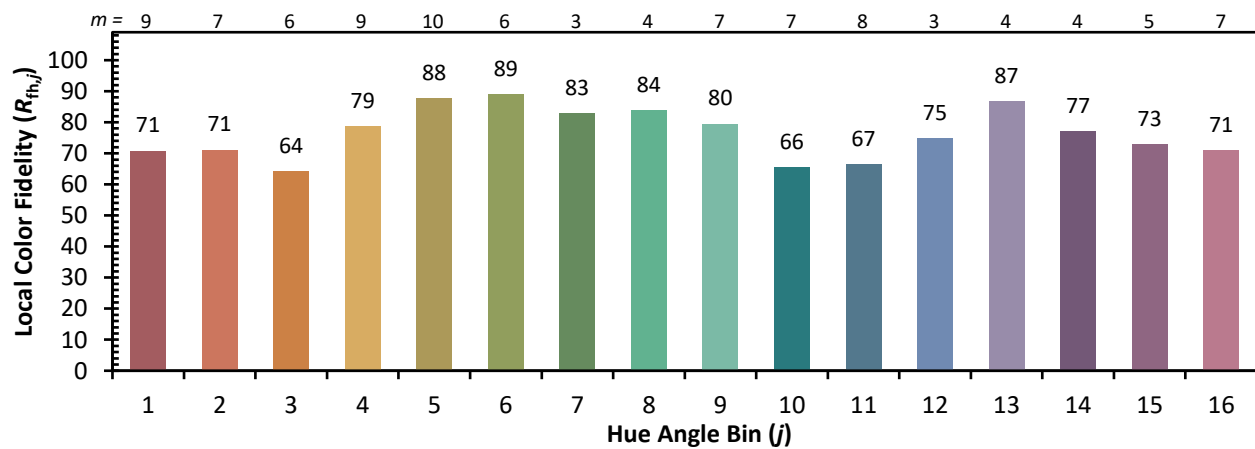
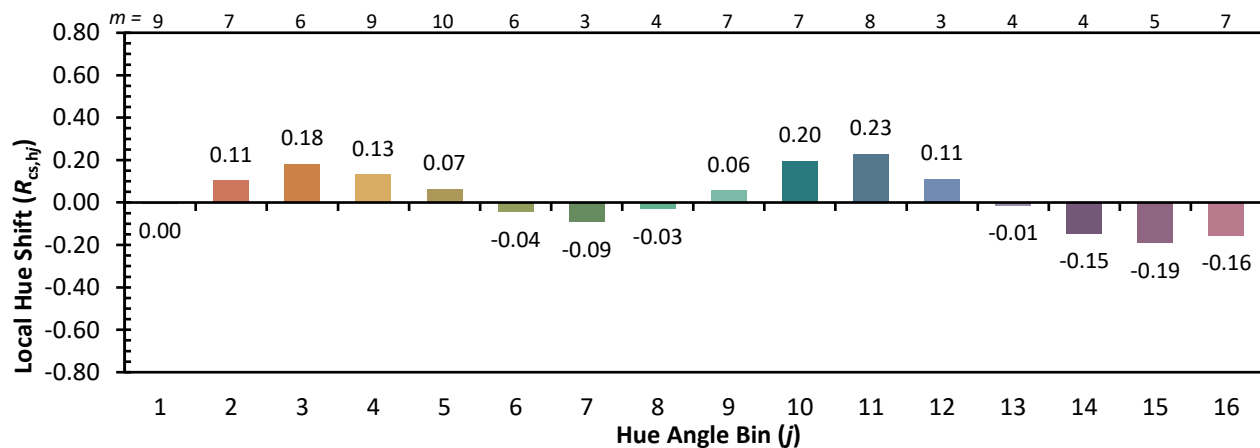
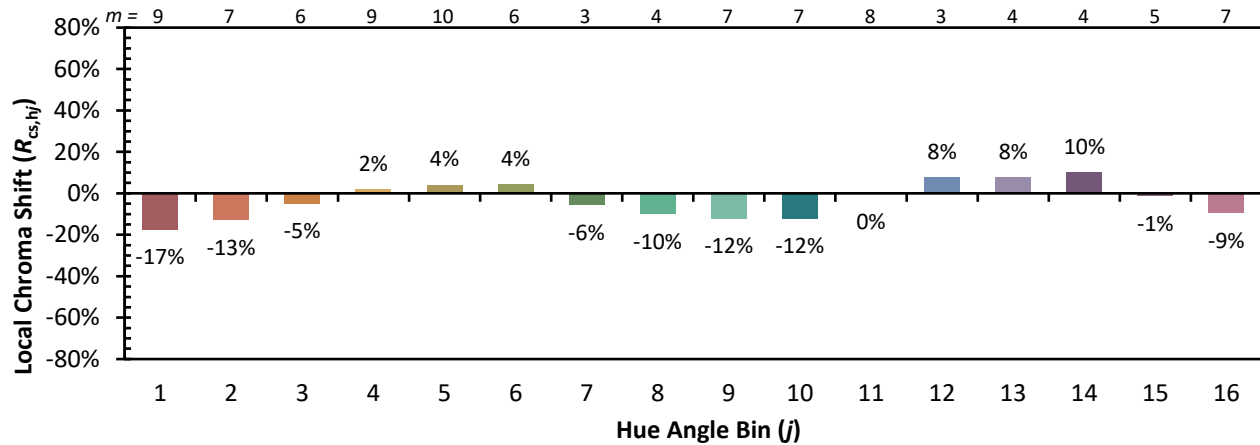
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 69 | CES51 = 87 | CES76 = 60 |
| CES02 = 62 | CES27 = 91 | CES52 = 85 | CES77 = 75 |
| CES03 = 31 | CES28 = 85 | CES53 = 79 | CES78 = 63 |
| CES04 = 70 | CES29 = 76 | CES54 = 85 | CES79 = 86 |
| CES05 = 48 | CES30 = 93 | CES55 = 82 | CES80 = 84 |
| CES06 = 51 | CES31 = 78 | CES56 = 75 | CES81 = 77 |
| CES07 = 40 | CES32 = 69 | CES57 = 74 | CES82 = 93 |
| CES08 = 39 | CES33 = 87 | CES58 = 74 | CES83 = 93 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 87 |
| CES10 = 75 | CES35 = 87 | CES60 = 87 | CES85 = 75 |
| CES11 = 58 | CES36 = 86 | CES61 = 80 | CES86 = 68 |
| CES12 = 64 | CES37 = 84 | CES62 = 81 | CES87 = 78 |
| CES13 = 42 | CES38 = 96 | CES63 = 75 | CES88 = 82 |
| CES14 = 74 | CES39 = 98 | CES64 = 63 | CES89 = 70 |
| CES15 = 71 | CES40 = 95 | CES65 = 64 | CES90 = 83 |
| CES16 = 47 | CES41 = 98 | CES66 = 57 | CES91 = 73 |
| CES17 = 50 | CES42 = 87 | CES67 = 55 | CES92 = 57 |
| CES18 = 56 | CES43 = 82 | CES68 = 64 | CES93 = 73 |
| CES19 = 72 | CES44 = 99 | CES69 = 73 | CES94 = 52 |
| CES20 = 65 | CES45 = 88 | CES70 = 60 | CES95 = 66 |
| CES21 = 87 | CES46 = 85 | CES71 = 54 | CES96 = 78 |
| CES22 = 79 | CES47 = 92 | CES72 = 84 | CES97 = 84 |
| CES23 = 92 | CES48 = 79 | CES73 = 53 | CES98 = 78 |
| CES24 = 91 | CES49 = 83 | CES74 = 92 | CES99 = 66 |
| CES25 = 72 | CES50 = 87 | CES75 = 59 |            |



REPORT NUMBER: SP1-2307-100-2

**TM-30-18**

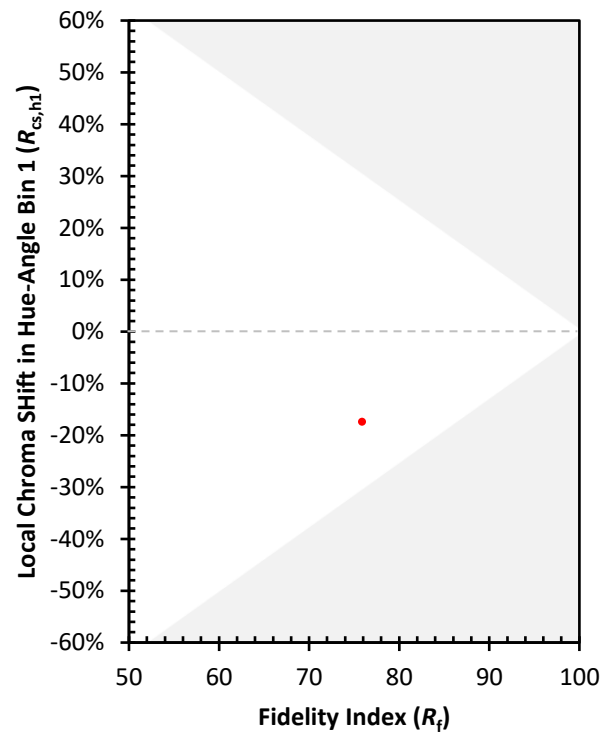
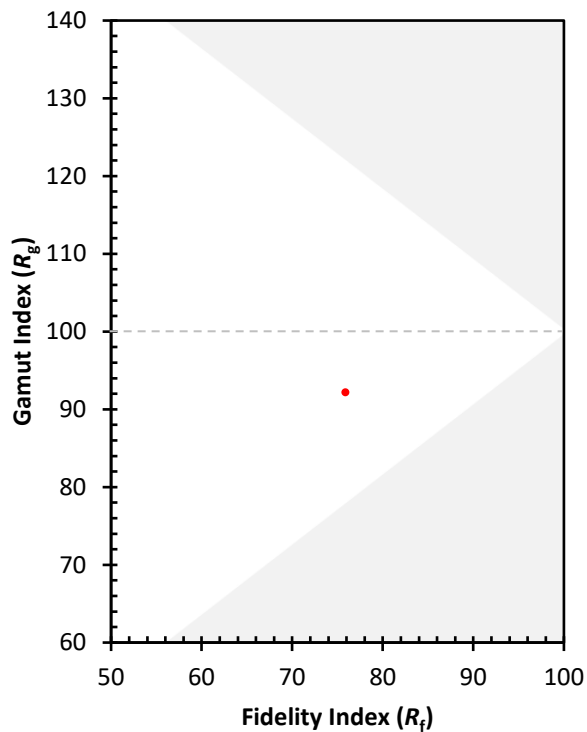
Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-2307-100-2

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)