

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: P829899

Luminaire Tested: **OHBL-18HE-MFL-UNV-L730-CD**

Issue Date: 5/3/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P829899  
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-18HE-MFL-UNV-L730-CD  
Description: 18000 LUMEN OHBL HE LED LUMINAIRE WITH 70CRI, 3000K LEDS AND MEDIUM FROSTED LENS  
Light Source: -  
Ballast/Driver: -

**Summary**

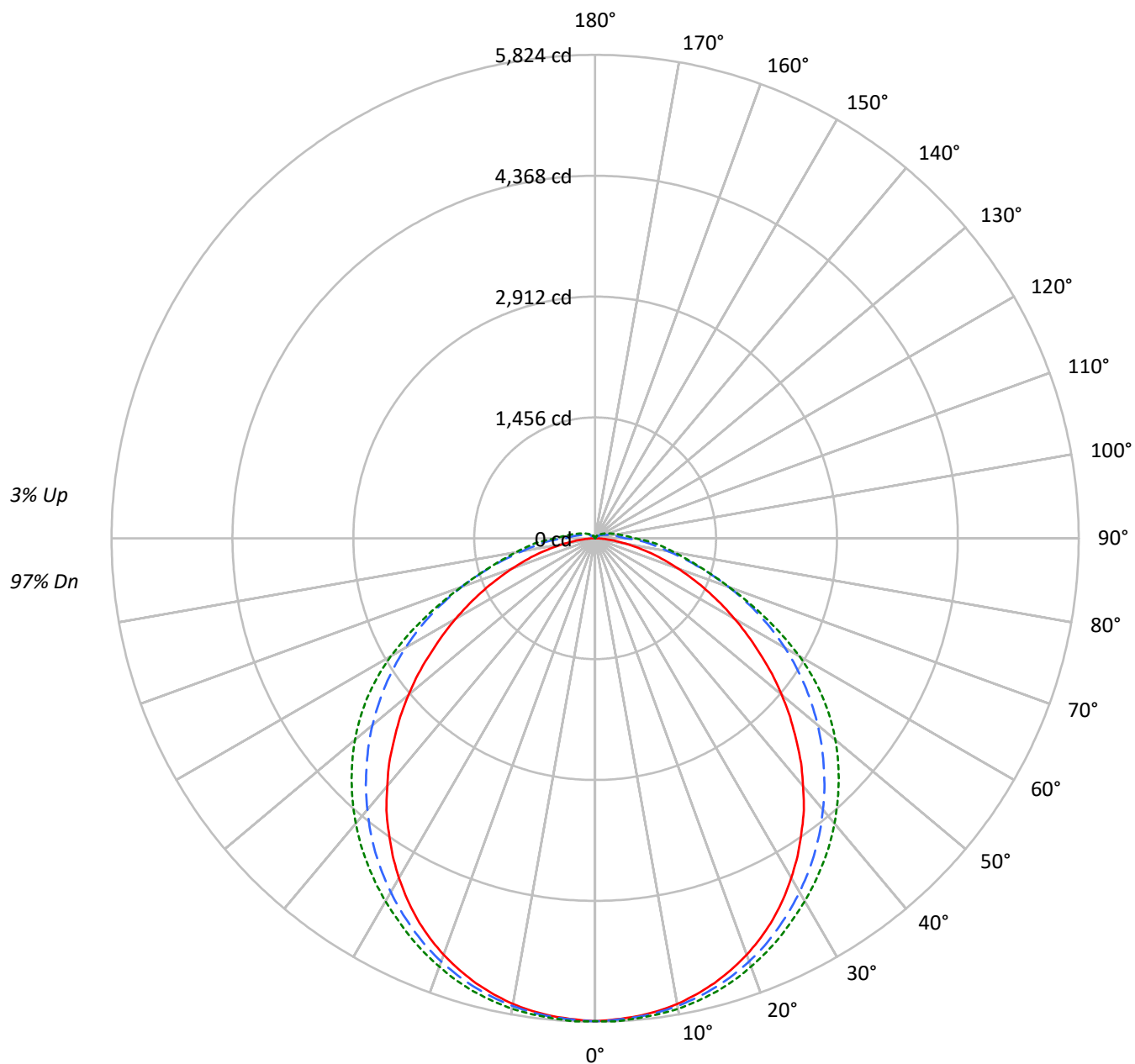
Lumens per Lamp: N/A  
Luminaire Lumens: 17414.0 lumens  
Efficiency: N/A  
Efficacy: 169.1 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.29 / 1.38  
Luminous Opening: Rectangular w/ Sides (W: 1.67' x L: 3.78' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 103  
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: P829899

CATALOG NUMBER: OHBL-18HE-MFL-UNV-L730-CD

### Luminous Intensity Polar Plot





TEST NUMBER: P829899

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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 | 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°  | 9938 | 9938 | 9938 |
| 5°  | 9874 | 9839 | 9868 |
| 10° | 9805 | 9748 | 9810 |
| 15° | 9696 | 9640 | 9736 |
| 20° | 9550 | 9509 | 9630 |
| 25° | 9356 | 9346 | 9523 |
| 30° | 9087 | 9170 | 9415 |
| 35° | 8762 | 8982 | 9321 |
| 40° | 8371 | 8766 | 9227 |
| 45° | 7910 | 8531 | 9109 |
| 50° | 7406 | 8294 | 8966 |
| 55° | 6786 | 8003 | 8731 |
| 60° | 6151 | 7662 | 8272 |
| 65° | 5458 | 7226 | 7525 |
| 70° | 4706 | 6673 | 6716 |
| 75° | 3946 | 6032 | 6159 |
| 80° | 2992 | 5557 | 6068 |
| 85° | 1893 | 5724 | 6692 |



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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 551.3   | 3.2       |
| 10°-20°   | 1581.7  | 9.1       |
| 20°-30°   | 2392.1  | 13.7      |
| 30°-40°   | 2871.7  | 16.5      |
| 40°-50°   | 2966.0  | 17.0      |
| 50°-60°   | 2668.5  | 15.3      |
| 60°-70°   | 2010.1  | 11.5      |
| 70°-80°   | 1213.8  | 7.0       |
| 80°-90°   | 593.6   | 3.4       |
| 90°-100°  | 249.9   | 1.4       |
| 100°-110° | 142.6   | 0.8       |
| 110°-120° | 83.7    | 0.5       |
| 120°-130° | 47.4    | 0.3       |
| 130°-140° | 24.9    | 0.1       |
| 140°-150° | 12.1    | 0.1       |
| 150°-160° | 4.5     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| <hr/>     |         |           |
| 0°-30°    | 4525.1  | 26.0      |
| 0°-40°    | 7396.8  | 42.5      |
| 0°-60°    | 13031.3 | 74.8      |
| 0°-90°    | 16848.8 | 96.8      |
| 90°-120°  | 476.2   | 2.7       |
| 90°-150°  | 560.6   | 3.2       |
| 90°-180°  | 565.0   | 3.2       |
| 0°-180°   | 17414.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 5819 | 5819  | 5819 | 5819  | 5819 |      |
| 5°   | 5782 | 5797  | 5790 | 5813  | 5806 | 549  |
| 15°  | 5548 | 5575  | 5601 | 5648  | 5653 | 1564 |
| 25°  | 5067 | 5122  | 5195 | 5276  | 5289 | 2331 |
| 35°  | 4332 | 4433  | 4615 | 4755  | 4783 | 2708 |
| 45°  | 3419 | 3591  | 3892 | 4104  | 4148 | 2640 |
| 55°  | 2422 | 2673  | 3079 | 3311  | 3351 | 2172 |
| 65°  | 1478 | 1780  | 2179 | 2287  | 2261 | 1469 |
| 75°  | 696  | 1000  | 1262 | 1294  | 1282 | 743  |
| 85°  | 145  | 383   | 632  | 719   | 732  | 168  |
| 90°  | 0    | 150   | 362  | 456   | 474  | 9    |
| 95°  | 7    | 101   | 271  | 345   | 357  | 6    |
| 105° | 10   | 58    | 157  | 205   | 214  | 10   |
| 115° | 11   | 33    | 97   | 130   | 135  | 12   |
| 125° | 11   | 16    | 58   | 84    | 88   | 10   |
| 135° | 10   | 13    | 30   | 51    | 57   | 8    |
| 145° | 14   | 13    | 14   | 26    | 30   | 8    |
| 155° | 14   | 16    | 14   | 13    | 14   | 4    |
| 165° | 0    | 0     | 0    | 0     | 0    | 0    |
| 175° | 0    | 0     | 0    | 0     | 0    | 0    |
| 180° | 0    | 0     | 0    | 0     | 0    |      |



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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 5818.6 | 5818.6 | 5818.6 | 5818.6 | 5818.6 |
| 2.5°   | 5801.5 | 5815.7 | 5807.2 | 5825.7 | 5824.3 |
| 5°     | 5781.5 | 5797.2 | 5790.1 | 5812.9 | 5805.8 |
| 7.5°   | 5747.4 | 5764.5 | 5763.0 | 5788.7 | 5785.8 |
| 10°    | 5697.5 | 5716.0 | 5721.7 | 5755.9 | 5755.9 |
| 12.5°  | 5629.2 | 5653.4 | 5667.6 | 5708.9 | 5710.3 |
| 15°    | 5548.0 | 5575.1 | 5600.7 | 5647.7 | 5653.4 |
| 17.5°  | 5449.7 | 5483.9 | 5519.5 | 5573.6 | 5580.8 |
| 20°    | 5338.7 | 5377.1 | 5425.5 | 5482.5 | 5491.0 |
| 22.5°  | 5210.5 | 5256.1 | 5318.7 | 5385.7 | 5395.6 |
| 25°    | 5066.7 | 5122.2 | 5194.8 | 5276.0 | 5288.8 |
| 27.5°  | 4902.9 | 4967.0 | 5065.3 | 5156.4 | 5167.8 |
| 30°    | 4724.9 | 4800.4 | 4922.9 | 5031.1 | 5049.6 |
| 32.5°  | 4536.9 | 4623.8 | 4774.8 | 4895.8 | 4921.4 |
| 35°    | 4331.9 | 4433.0 | 4615.3 | 4754.8 | 4783.3 |
| 37.5°  | 4129.7 | 4240.8 | 4447.2 | 4606.7 | 4640.9 |
| 40°    | 3893.3 | 4031.4 | 4267.8 | 4444.4 | 4485.7 |
| 42.5°  | 3671.1 | 3820.7 | 4088.4 | 4280.6 | 4320.5 |
| 45°    | 3419.1 | 3591.4 | 3891.9 | 4104.0 | 4148.2 |
| 47.5°  | 3182.7 | 3369.2 | 3702.5 | 3921.8 | 3967.3 |
| 50°    | 2933.5 | 3138.6 | 3500.3 | 3729.5 | 3776.5 |
| 52.5°  | 2684.3 | 2905.0 | 3290.9 | 3528.7 | 3572.9 |
| 55°    | 2422.3 | 2672.9 | 3078.7 | 3310.9 | 3350.7 |
| 57.5°  | 2178.8 | 2443.6 | 2860.9 | 3081.6 | 3105.8 |
| 60°    | 1938.1 | 2212.9 | 2638.7 | 2832.4 | 2840.9 |
| 62.5°  | 1703.1 | 1992.2 | 2410.9 | 2564.7 | 2553.3 |
| 65°    | 1478.1 | 1780.0 | 2178.8 | 2287.0 | 2261.4 |
| 67.5°  | 1261.7 | 1573.5 | 1940.9 | 2010.7 | 1976.5 |
| 70°    | 1056.6 | 1372.8 | 1710.3 | 1745.9 | 1714.5 |
| 72.5°  | 875.8  | 1181.9 | 1476.7 | 1506.6 | 1483.8 |
| 75°    | 696.3  | 999.7  | 1261.7 | 1294.4 | 1281.6 |
| 77.5°  | 528.3  | 823.1  | 1063.7 | 1106.5 | 1109.3 |
| 80°    | 380.2  | 662.2  | 891.4  | 958.4  | 966.9  |
| 82.5°  | 250.6  | 514.1  | 747.6  | 833.1  | 845.9  |
| 85°    | 145.3  | 383.1  | 632.3  | 719.1  | 731.9  |
| 87.5°  | 62.7   | 276.3  | 508.4  | 586.7  | 602.4  |
| 90°    | 0.0    | 149.5  | 361.7  | 455.7  | 474.2  |
| 92.5°  | 4.3    | 123.9  | 310.4  | 395.9  | 411.5  |
| 95°    | 7.1    | 101.1  | 270.6  | 344.6  | 357.4  |
| 97.5°  | 8.5    | 85.4   | 235.0  | 300.5  | 313.3  |
| 100°   | 8.5    | 74.0   | 203.6  | 263.4  | 274.8  |
| 102.5° | 8.5    | 65.5   | 178.0  | 230.7  | 240.7  |
| 105°   | 10.0   | 58.4   | 156.6  | 205.1  | 213.6  |



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CATALOG NUMBER: OHBL-18HE-MFL-UNV-L730-CD

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°   | 67.5° | 90°   |
|--------|------|-------|-------|-------|-------|
| 112.5° | 11.4 | 38.4  | 108.2 | 145.3 | 150.9 |
| 115°   | 11.4 | 32.8  | 96.8  | 129.6 | 135.3 |
| 117.5° | 12.8 | 28.5  | 85.4  | 116.8 | 121.0 |
| 120°   | 12.8 | 24.2  | 75.5  | 104.0 | 109.7 |
| 122.5° | 12.8 | 19.9  | 66.9  | 94.0  | 98.3  |
| 125°   | 11.4 | 15.7  | 58.4  | 84.0  | 88.3  |
| 127.5° | 10.0 | 12.8  | 49.8  | 75.5  | 79.7  |
| 130°   | 10.0 | 11.4  | 42.7  | 66.9  | 71.2  |
| 132.5° | 10.0 | 12.8  | 35.6  | 58.4  | 64.1  |
| 135°   | 10.0 | 12.8  | 29.9  | 51.3  | 57.0  |
| 137.5° | 10.0 | 12.8  | 24.2  | 44.1  | 49.8  |
| 140°   | 11.4 | 12.8  | 19.9  | 37.0  | 42.7  |
| 142.5° | 12.8 | 12.8  | 15.7  | 31.3  | 35.6  |
| 145°   | 14.2 | 12.8  | 14.2  | 25.6  | 29.9  |
| 147.5° | 14.2 | 14.2  | 14.2  | 19.9  | 24.2  |
| 150°   | 14.2 | 15.7  | 14.2  | 15.7  | 19.9  |
| 152.5° | 14.2 | 15.7  | 14.2  | 12.8  | 15.7  |
| 155°   | 14.2 | 15.7  | 14.2  | 12.8  | 14.2  |
| 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° | 10.0 | 51.3 | 138.1 | 182.3 | 189.4 |
| 110°   | 10.0 | 45.6 | 122.5 | 162.3 | 169.5 |



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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2307-100-1

Test Date: 07/27/2023

Luminaire Tested: OHB-15SE-N-UNV-L730-CD

Data in this report applies to families of products including OHB-15SE-N-UNV-L730-CD.

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2307-100-1  
 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-L730-CD**  
 Description: 15000 LUMEN OHB SE LED LUMINAIRE WITH 70CRI, 3000K LEDS AND NARROW LENS

LENS

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3069    | CRI (Ra): | 71.3 |      |       |
| CIE u':                   | 0.2485  | R1:       | 67.4 | R9:  | -35.7 |
| CIE v':                   | 0.5185  | R2:       | 83.0 | R10: | 60.6  |
| Duv:                      | -0.0010 | R3:       | 94.0 | R11: | 58.9  |
| CIE x:                    | 0.4306  | R4:       | 65.2 | R12: | 49.5  |
| CIE y:                    | 0.3993  | R5:       | 66.6 | R13: | 70.5  |
| CIE z:                    | 0.1702  | R6:       | 76.0 | R14: | 97.0  |
| Peak Wavelength (nm):     | 596     | R7:       | 76.4 |      |       |
| Dominant Wavelength (nm): | 582     | R8:       | 41.9 |      |       |
| Purity:                   | 49.5    |           |      |      |       |
| Rf:                       | 74.9    |           |      |      |       |
| Rg:                       | 92.7    |           |      |      |       |



### Test Conditions

Stabilization Time: 23M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.7/57%  
 Sphere Temperature (°C): 25.2

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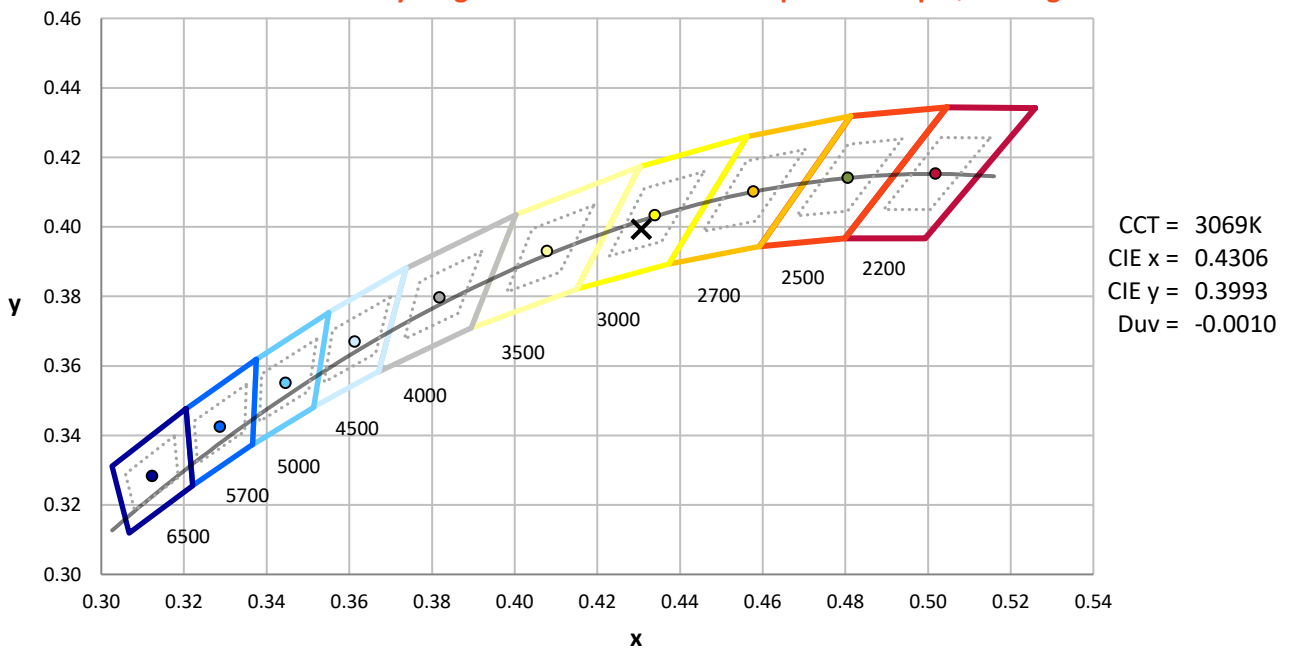
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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           |

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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 3000K 4-step quadrangle

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**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       | 6099             | NR               | 490       | 40168            | NR               | 620       | 253019           | NR               | 750       | 11053            | NR               | 880       | 4764             | NR               |
| 365       | 5425             | NR               | 495       | 46535            | NR               | 625       | 234501           | NR               | 755       | 10436            | NR               | 885       | 4069             | NR               |
| 370       | 5467             | NR               | 500       | 57902            | NR               | 630       | 214134           | NR               | 760       | 9340             | NR               | 890       | 5470             | NR               |
| 375       | 5866             | NR               | 505       | 75040            | NR               | 635       | 194074           | NR               | 765       | 9223             | NR               | 895       | 5625             | NR               |
| 380       | 5693             | NR               | 510       | 92426            | NR               | 640       | 175837           | NR               | 770       | 7875             | NR               | 900       | 5662             | NR               |
| 385       | 5528             | NR               | 515       | 109218           | NR               | 645       | 158182           | NR               | 775       | 6995             | NR               | 905       | 4976             | NR               |
| 390       | 5323             | NR               | 520       | 124301           | NR               | 650       | 139770           | NR               | 780       | 6291             | NR               | 910       | 3243             | NR               |
| 395       | 4691             | NR               | 525       | 136616           | NR               | 655       | 124825           | NR               | 785       | 5894             | NR               | 915       | 4005             | NR               |
| 400       | 4292             | NR               | 530       | 148525           | NR               | 660       | 109765           | NR               | 790       | 5176             | NR               | 920       | 4854             | NR               |
| 405       | 4106             | NR               | 535       | 158686           | NR               | 665       | 95251            | NR               | 795       | 5191             | NR               | 925       | 3999             | NR               |
| 410       | 4555             | NR               | 540       | 170513           | NR               | 670       | 82640            | NR               | 800       | 4961             | NR               | 930       | 4856             | NR               |
| 415       | 6579             | NR               | 545       | 182793           | NR               | 675       | 71832            | NR               | 805       | 5762             | NR               | 935       | 5652             | NR               |
| 420       | 11281            | NR               | 550       | 196628           | NR               | 680       | 62184            | NR               | 810       | 5247             | NR               | 940       | 7244             | NR               |
| 425       | 19782            | NR               | 555       | 213600           | NR               | 685       | 53604            | NR               | 815       | 5570             | NR               | 945       | 6266             | NR               |
| 430       | 32934            | NR               | 560       | 232241           | NR               | 690       | 46370            | NR               | 820       | 5470             | NR               | 950       | 6258             | NR               |
| 435       | 52004            | NR               | 565       | 250545           | NR               | 695       | 40048            | NR               | 825       | 5780             | NR               | 955       | 6166             | NR               |
| 440       | 77987            | NR               | 570       | 269608           | NR               | 700       | 35148            | NR               | 830       | 4151             | NR               | 960       | 4813             | NR               |
| 445       | 117241           | NR               | 575       | 286007           | NR               | 705       | 30717            | NR               | 835       | 5899             | NR               | 965       | 6539             | NR               |
| 450       | 171397           | NR               | 580       | 300402           | NR               | 710       | 27137            | NR               | 840       | 5774             | NR               | 970       | 2930             | NR               |
| 455       | 188676           | NR               | 585       | 310093           | NR               | 715       | 24655            | NR               | 845       | 4055             | NR               | 975       | 3170             | NR               |
| 460       | 142860           | NR               | 590       | 313605           | NR               | 720       | 21845            | NR               | 850       | 4767             | NR               | 980       | 3959             | NR               |
| 465       | 100906           | NR               | 595       | 314960           | NR               | 725       | 19116            | NR               | 855       | 4780             | NR               | 985       | 6920             | NR               |
| 470       | 78130            | NR               | 600       | 311387           | NR               | 730       | 16889            | NR               | 860       | 5148             | NR               | 990       | 2710             | NR               |
| 475       | 57660            | NR               | 605       | 301618           | NR               | 735       | 14825            | NR               | 865       | 6865             | NR               | 995       | 5566             | NR               |
| 480       | 43089            | NR               | 610       | 288042           | NR               | 740       | 13154            | NR               | 870       | 5392             | NR               | 1000      | 0                | NR               |
| 485       | 38569            | NR               | 615       | 270953           | NR               | 745       | 11725            | NR               | 875       | 6166             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 18956.8

S/P: 1.25

| 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       | 6099             | NR               | 490       | 40168            | NR               | 620       | 253019           | NR               | 750       | 11053            | NR               | 880       | 4764             | NR               |
| 365       | 5425             | NR               | 495       | 46535            | NR               | 625       | 234501           | NR               | 755       | 10436            | NR               | 885       | 4069             | NR               |
| 370       | 5467             | NR               | 500       | 57902            | NR               | 630       | 214134           | NR               | 760       | 9340             | NR               | 890       | 5470             | NR               |
| 375       | 5866             | NR               | 505       | 75040            | NR               | 635       | 194074           | NR               | 765       | 9223             | NR               | 895       | 5625             | NR               |
| 380       | 5693             | NR               | 510       | 92426            | NR               | 640       | 175837           | NR               | 770       | 7875             | NR               | 900       | 5662             | NR               |
| 385       | 5528             | NR               | 515       | 109218           | NR               | 645       | 158182           | NR               | 775       | 6995             | NR               | 905       | 4976             | NR               |
| 390       | 5323             | NR               | 520       | 124301           | NR               | 650       | 139770           | NR               | 780       | 6291             | NR               | 910       | 3243             | NR               |
| 395       | 4691             | NR               | 525       | 136616           | NR               | 655       | 124825           | NR               | 785       | 5894             | NR               | 915       | 4005             | NR               |
| 400       | 4292             | NR               | 530       | 148525           | NR               | 660       | 109765           | NR               | 790       | 5176             | NR               | 920       | 4854             | NR               |
| 405       | 4106             | NR               | 535       | 158686           | NR               | 665       | 95251            | NR               | 795       | 5191             | NR               | 925       | 3999             | NR               |
| 410       | 4555             | NR               | 540       | 170513           | NR               | 670       | 82640            | NR               | 800       | 4961             | NR               | 930       | 4856             | NR               |
| 415       | 6579             | NR               | 545       | 182793           | NR               | 675       | 71832            | NR               | 805       | 5762             | NR               | 935       | 5652             | NR               |
| 420       | 11281            | NR               | 550       | 196628           | NR               | 680       | 62184            | NR               | 810       | 5247             | NR               | 940       | 7244             | NR               |
| 425       | 19782            | NR               | 555       | 213600           | NR               | 685       | 53604            | NR               | 815       | 5570             | NR               | 945       | 6266             | NR               |
| 430       | 32934            | NR               | 560       | 232241           | NR               | 690       | 46370            | NR               | 820       | 5470             | NR               | 950       | 6258             | NR               |
| 435       | 52004            | NR               | 565       | 250545           | NR               | 695       | 40048            | NR               | 825       | 5780             | NR               | 955       | 6166             | NR               |
| 440       | 77987            | NR               | 570       | 269608           | NR               | 700       | 35148            | NR               | 830       | 4151             | NR               | 960       | 4813             | NR               |
| 445       | 117241           | NR               | 575       | 286007           | NR               | 705       | 30717            | NR               | 835       | 5899             | NR               | 965       | 6539             | NR               |
| 450       | 171397           | NR               | 580       | 300402           | NR               | 710       | 27137            | NR               | 840       | 5774             | NR               | 970       | 2930             | NR               |
| 455       | 188676           | NR               | 585       | 310093           | NR               | 715       | 24655            | NR               | 845       | 4055             | NR               | 975       | 3170             | NR               |
| 460       | 142860           | NR               | 590       | 313605           | NR               | 720       | 21845            | NR               | 850       | 4767             | NR               | 980       | 3959             | NR               |
| 465       | 100906           | NR               | 595       | 314960           | NR               | 725       | 19116            | NR               | 855       | 4780             | NR               | 985       | 6920             | NR               |
| 470       | 78130            | NR               | 600       | 311387           | NR               | 730       | 16889            | NR               | 860       | 5148             | NR               | 990       | 2710             | NR               |
| 475       | 57660            | NR               | 605       | 301618           | NR               | 735       | 14825            | NR               | 865       | 6865             | NR               | 995       | 5566             | NR               |
| 480       | 43089            | NR               | 610       | 288042           | NR               | 740       | 13154            | NR               | 870       | 5392             | NR               | 1000      | 0                | NR               |
| 485       | 38569            | NR               | 615       | 270953           | NR               | 745       | 11725            | NR               | 875       | 6166             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-1

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 7042.8**

**M/P: 0.47**

| 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       | 6099             | NR               | 490       | 40168            | NR               | 620       | 253019           | NR               | 750       | 11053            | NR               | 880       | 4764             | NR               |
| 365       | 5425             | NR               | 495       | 46535            | NR               | 625       | 234501           | NR               | 755       | 10436            | NR               | 885       | 4069             | NR               |
| 370       | 5467             | NR               | 500       | 57902            | NR               | 630       | 214134           | NR               | 760       | 9340             | NR               | 890       | 5470             | NR               |
| 375       | 5866             | NR               | 505       | 75040            | NR               | 635       | 194074           | NR               | 765       | 9223             | NR               | 895       | 5625             | NR               |
| 380       | 5693             | NR               | 510       | 92426            | NR               | 640       | 175837           | NR               | 770       | 7875             | NR               | 900       | 5662             | NR               |
| 385       | 5528             | NR               | 515       | 109218           | NR               | 645       | 158182           | NR               | 775       | 6995             | NR               | 905       | 4976             | NR               |
| 390       | 5323             | NR               | 520       | 124301           | NR               | 650       | 139770           | NR               | 780       | 6291             | NR               | 910       | 3243             | NR               |
| 395       | 4691             | NR               | 525       | 136616           | NR               | 655       | 124825           | NR               | 785       | 5894             | NR               | 915       | 4005             | NR               |
| 400       | 4292             | NR               | 530       | 148525           | NR               | 660       | 109765           | NR               | 790       | 5176             | NR               | 920       | 4854             | NR               |
| 405       | 4106             | NR               | 535       | 158686           | NR               | 665       | 95251            | NR               | 795       | 5191             | NR               | 925       | 3999             | NR               |
| 410       | 4555             | NR               | 540       | 170513           | NR               | 670       | 82640            | NR               | 800       | 4961             | NR               | 930       | 4856             | NR               |
| 415       | 6579             | NR               | 545       | 182793           | NR               | 675       | 71832            | NR               | 805       | 5762             | NR               | 935       | 5652             | NR               |
| 420       | 11281            | NR               | 550       | 196628           | NR               | 680       | 62184            | NR               | 810       | 5247             | NR               | 940       | 7244             | NR               |
| 425       | 19782            | NR               | 555       | 213600           | NR               | 685       | 53604            | NR               | 815       | 5570             | NR               | 945       | 6266             | NR               |
| 430       | 32934            | NR               | 560       | 232241           | NR               | 690       | 46370            | NR               | 820       | 5470             | NR               | 950       | 6258             | NR               |
| 435       | 52004            | NR               | 565       | 250545           | NR               | 695       | 40048            | NR               | 825       | 5780             | NR               | 955       | 6166             | NR               |
| 440       | 77987            | NR               | 570       | 269608           | NR               | 700       | 35148            | NR               | 830       | 4151             | NR               | 960       | 4813             | NR               |
| 445       | 117241           | NR               | 575       | 286007           | NR               | 705       | 30717            | NR               | 835       | 5899             | NR               | 965       | 6539             | NR               |
| 450       | 171397           | NR               | 580       | 300402           | NR               | 710       | 27137            | NR               | 840       | 5774             | NR               | 970       | 2930             | NR               |
| 455       | 188676           | NR               | 585       | 310093           | NR               | 715       | 24655            | NR               | 845       | 4055             | NR               | 975       | 3170             | NR               |
| 460       | 142860           | NR               | 590       | 313605           | NR               | 720       | 21845            | NR               | 850       | 4767             | NR               | 980       | 3959             | NR               |
| 465       | 100906           | NR               | 595       | 314960           | NR               | 725       | 19116            | NR               | 855       | 4780             | NR               | 985       | 6920             | NR               |
| 470       | 78130            | NR               | 600       | 311387           | NR               | 730       | 16889            | NR               | 860       | 5148             | NR               | 990       | 2710             | NR               |
| 475       | 57660            | NR               | 605       | 301618           | NR               | 735       | 14825            | NR               | 865       | 6865             | NR               | 995       | 5566             | NR               |
| 480       | 43089            | NR               | 610       | 288042           | NR               | 740       | 13154            | NR               | 870       | 5392             | NR               | 1000      | 0                | NR               |
| 485       | 38569            | NR               | 615       | 270953           | NR               | 745       | 11725            | NR               | 875       | 6166             | NR               |           |                  |                  |

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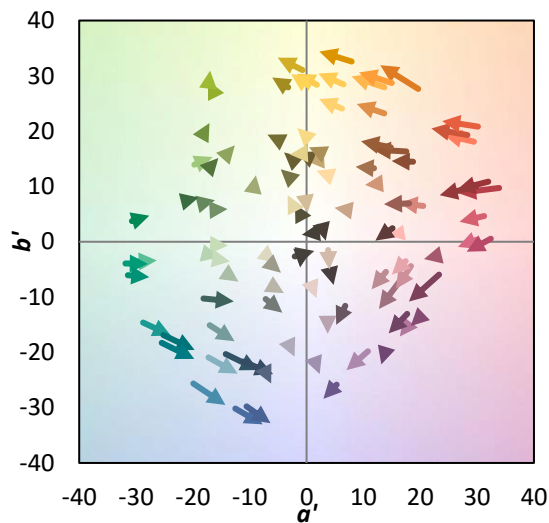
**TM-30-18**

**Summary**

$R_f = 74.9$   
 $R_g = 92.7$   
 $CIE R_a = 71.3$   
 $R_g = -35.7$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 85 | CES76 = 60 |
| CES02 = 62 | CES27 = 90 | CES52 = 83 | CES77 = 76 |
| CES03 = 31 | CES28 = 85 | CES53 = 77 | CES78 = 64 |
| CES04 = 71 | CES29 = 73 | CES54 = 85 | CES79 = 86 |
| CES05 = 49 | CES30 = 90 | CES55 = 82 | CES80 = 85 |
| CES06 = 51 | CES31 = 76 | CES56 = 74 | CES81 = 72 |
| CES07 = 41 | CES32 = 67 | CES57 = 73 | CES82 = 93 |
| CES08 = 40 | CES33 = 84 | CES58 = 73 | CES83 = 92 |
| CES09 = 29 | CES34 = 77 | CES59 = 83 | CES84 = 87 |
| CES10 = 76 | CES35 = 88 | CES60 = 88 | CES85 = 74 |
| CES11 = 59 | CES36 = 89 | CES61 = 79 | CES86 = 64 |
| CES12 = 65 | CES37 = 85 | CES62 = 85 | CES87 = 77 |
| CES13 = 43 | CES38 = 98 | CES63 = 76 | CES88 = 80 |
| CES14 = 74 | CES39 = 98 | CES64 = 62 | CES89 = 67 |
| CES15 = 71 | CES40 = 94 | CES65 = 64 | CES90 = 81 |
| CES16 = 47 | CES41 = 97 | CES66 = 57 | CES91 = 76 |
| CES17 = 50 | CES42 = 88 | CES67 = 55 | CES92 = 55 |
| CES18 = 56 | CES43 = 80 | CES68 = 64 | CES93 = 72 |
| CES19 = 73 | CES44 = 99 | CES69 = 73 | CES94 = 49 |
| CES20 = 66 | CES45 = 86 | CES70 = 60 | CES95 = 66 |
| CES21 = 87 | CES46 = 83 | CES71 = 56 | CES96 = 76 |
| CES22 = 79 | CES47 = 91 | CES72 = 84 | CES97 = 81 |
| CES23 = 92 | CES48 = 76 | CES73 = 53 | CES98 = 76 |
| CES24 = 91 | CES49 = 80 | CES74 = 93 | CES99 = 64 |
| CES25 = 73 | CES50 = 85 | CES75 = 61 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)