

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: P830642

Luminaire Tested: **OHBL-60HE-N-UNV-L950-CD**

Issue Date: 5/3/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P830642  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2106-285-5)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/3/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: OHBL-60HE-N-UNV-L950-CD  
Description: 60000 LUMEN OHBL HE LED LUMINAIRE WITH 90CRI, 5000K LEDS AND NARROW LENS  
Light Source: -  
Ballast/Driver: -

**Summary**

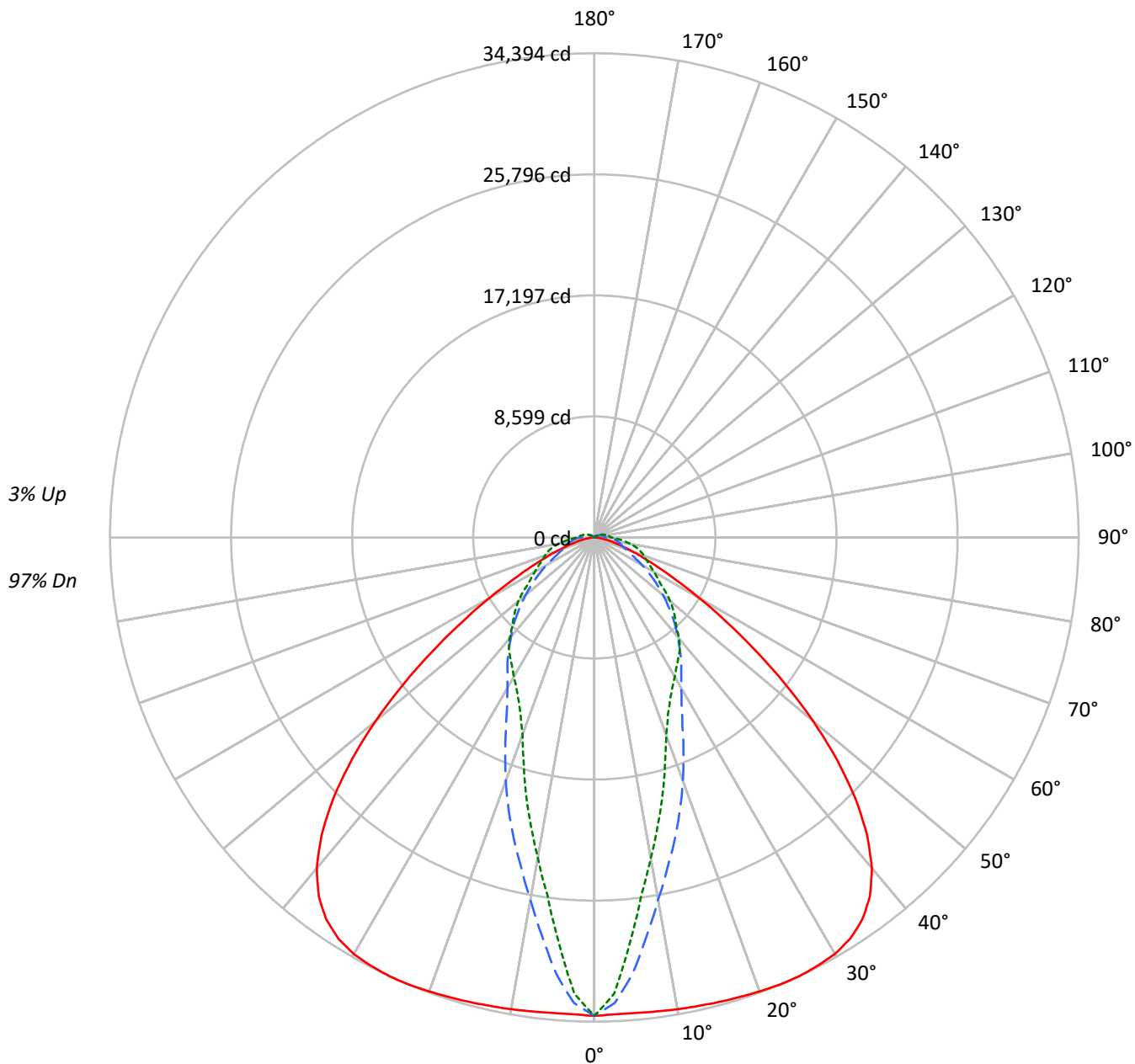
Lumens per Lamp: N/A  
Luminaire Lumens: 50146.0 lumens  
Efficiency: N/A  
Efficacy: 148.4 lumens/watt  
Spacing Criteria (0/90/45): 1.47 / 0.53 / 0.78  
Luminous Opening: Rectangular w/ Sides (W: 1.8' x L: 3.78' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 338  
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: P830642

CATALOG NUMBER: OHBL-60HE-N-UNV-L950-CD

### Luminous Intensity Polar Plot





TEST NUMBER: P830642

CATALOG NUMBER: OHBL-60HE-N-UNV-L950-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   | 109 | 104 | 100 | 97  | 106 | 102 | 98  | 95  | 97  | 94  | 91  | 92  | 90  | 88  | 88 | 86 | 85 |
| 2   | 100 | 93  | 86  | 81  | 97  | 90  | 85  | 80  | 86  | 82  | 78  | 83  | 79  | 75  | 79 | 76 | 73 |
| 3   | 92  | 83  | 75  | 69  | 90  | 81  | 74  | 69  | 78  | 72  | 67  | 74  | 70  | 65  | 72 | 67 | 64 |
| 4   | 85  | 74  | 66  | 60  | 83  | 73  | 66  | 60  | 70  | 64  | 59  | 67  | 62  | 57  | 65 | 60 | 56 |
| 5   | 79  | 67  | 59  | 53  | 77  | 66  | 59  | 53  | 64  | 57  | 52  | 62  | 56  | 51  | 59 | 54 | 50 |
| 6   | 74  | 62  | 53  | 47  | 72  | 60  | 53  | 47  | 58  | 52  | 46  | 56  | 50  | 46  | 55 | 49 | 45 |
| 7   | 69  | 56  | 48  | 43  | 67  | 55  | 48  | 42  | 54  | 47  | 42  | 52  | 46  | 41  | 50 | 45 | 41 |
| 8   | 65  | 52  | 44  | 39  | 63  | 51  | 44  | 39  | 50  | 43  | 38  | 48  | 42  | 38  | 47 | 41 | 37 |
| 9   | 61  | 48  | 41  | 35  | 59  | 47  | 40  | 35  | 46  | 40  | 35  | 45  | 39  | 35  | 44 | 38 | 34 |
| 10  | 57  | 45  | 37  | 33  | 56  | 44  | 37  | 32  | 43  | 37  | 32  | 42  | 36  | 32  | 41 | 35 | 32 |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 53733 | 53733 | 53733 |
| 5°  | 53624 | 48956 | 45525 |
| 10° | 54229 | 41256 | 36528 |
| 15° | 55288 | 35300 | 30000 |
| 20° | 56841 | 29861 | 24281 |
| 25° | 58807 | 24729 | 21290 |
| 30° | 60840 | 21315 | 19793 |
| 35° | 62106 | 19437 | 18873 |
| 40° | 61043 | 17568 | 17921 |
| 45° | 56157 | 15887 | 16608 |
| 50° | 47379 | 14047 | 15606 |
| 55° | 36001 | 12316 | 13906 |
| 60° | 25229 | 10575 | 13336 |
| 65° | 16970 | 9121  | 13084 |
| 70° | 11590 | 8578  | 13767 |
| 75° | 8043  | 8872  | 14772 |
| 80° | 5536  | 9873  | 15312 |
| 85° | 3238  | 12461 | 16275 |



TEST NUMBER: P830642

CATALOG NUMBER: OHBL-60HE-N-UNV-L950-CD

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 2860.1  | 5.7       |
| 10°-20°   | 6728.3  | 13.4      |
| 20°-30°   | 8433.8  | 16.8      |
| 30°-40°   | 8949.2  | 17.8      |
| 40°-50°   | 8091.5  | 16.1      |
| 50°-60°   | 5866.9  | 11.7      |
| 60°-70°   | 3681.7  | 7.3       |
| 70°-80°   | 2436.5  | 4.9       |
| 80°-90°   | 1403.7  | 2.8       |
| 90°-100°  | 680.0   | 1.4       |
| 100°-110° | 469.4   | 0.9       |
| 110°-120° | 289.6   | 0.6       |
| 120°-130° | 140.3   | 0.3       |
| 130°-140° | 64.5    | 0.1       |
| 140°-150° | 35.2    | 0.1       |
| 150°-160° | 15.3    | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| <hr/>     |         |           |
| 0°-30°    | 18022.2 | 35.9      |
| 0°-40°    | 26971.4 | 53.8      |
| 0°-60°    | 40929.8 | 81.6      |
| 0°-90°    | 48451.6 | 96.6      |
| 90°-120°  | 1439.0  | 2.9       |
| 90°-150°  | 1679.0  | 3.3       |
| 90°-180°  | 1694.0  | 3.4       |
| 0°-180°   | 50146.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°    | 22.5° | 45°   | 67.5° | 90°   | Flux  |
|------|-------|-------|-------|-------|-------|-------|
| 0°   | 33977 | 33977 | 33977 | 33977 | 33977 |       |
| 5°   | 33909 | 33039 | 31099 | 29656 | 28909 | ###   |
| 15°  | 34167 | 27849 | 22119 | 19671 | 18778 | 9690  |
| 25°  | 34394 | 21533 | 14810 | 13145 | 12728 | 15889 |
| 35°  | 33162 | 14316 | 10749 | 10412 | 10409 | 20615 |
| 45°  | 26216 | 9067  | 7790  | 7978  | 8113  | 19971 |
| 55°  | 13879 | 5620  | 5083  | 5514  | 5711  | 12540 |
| 65°  | 4964  | 3260  | 2943  | 3770  | 4191  | 5165  |
| 75°  | 1533  | 1756  | 1976  | 3069  | 3253  | 1709  |
| 85°  | 268   | 728   | 1446  | 2011  | 1846  | 322   |
| 90°  | 0     | 304   | 838   | 1180  | 1190  | 17    |
| 95°  | 13    | 213   | 737   | 1002  | 1048  | 11    |
| 105° | 26    | 142   | 537   | 711   | 731   | 26    |
| 115° | 36    | 100   | 362   | 453   | 462   | 35    |
| 125° | 39    | 52    | 184   | 233   | 230   | 34    |
| 135° | 32    | 39    | 81    | 126   | 126   | 25    |
| 145° | 39    | 42    | 48    | 74    | 71    | 23    |
| 155° | 39    | 48    | 52    | 55    | 48    | 12    |
| 165° | 0     | 0     | 0     | 0     | 0     | 0     |
| 175° | 0     | 0     | 0     | 0     | 0     | 0     |
| 180° | 0     | 0     | 0     | 0     | 0     |       |



TEST NUMBER: P830642

CATALOG NUMBER: OHBL-60HE-N-UNV-L950-CD

**CANDELA DISTRIBUTION (FULL):**

|        | 0°      | 22.5°   | 45°     | 67.5°   | 90°     |
|--------|---------|---------|---------|---------|---------|
| 0°     | 33976.6 | 33976.6 | 33976.6 | 33976.6 | 33976.6 |
| 2.5°   | 33905.4 | 33711.4 | 33106.7 | 32738.1 | 32427.6 |
| 5°     | 33908.7 | 33038.8 | 31098.6 | 29656.4 | 28909.4 |
| 7.5°   | 33957.2 | 32023.4 | 28527.8 | 26422.6 | 25601.3 |
| 10°    | 34031.6 | 30765.5 | 26128.4 | 23884.2 | 23117.8 |
| 12.5°  | 34086.5 | 29349.2 | 24016.8 | 21711.1 | 20870.4 |
| 15°    | 34167.4 | 27848.7 | 22118.6 | 19670.7 | 18778.2 |
| 17.5°  | 34241.8 | 26435.6 | 20243.0 | 17685.2 | 16692.4 |
| 20°    | 34316.1 | 24912.5 | 18367.5 | 15732.0 | 14913.9 |
| 22.5°  | 34387.3 | 23305.3 | 16537.2 | 14215.4 | 13656.0 |
| 25°    | 34393.7 | 21533.3 | 14810.4 | 13145.0 | 12727.9 |
| 27.5°  | 34309.7 | 19696.5 | 13410.2 | 12249.3 | 11990.6 |
| 30°    | 34164.1 | 17914.8 | 12323.7 | 11602.6 | 11418.2 |
| 32.5°  | 33802.0 | 16097.4 | 11482.9 | 10978.4 | 10871.7 |
| 35°    | 33161.7 | 14315.6 | 10748.9 | 10412.5 | 10409.3 |
| 37.5°  | 32152.8 | 12734.3 | 9953.4  | 9895.2  | 9966.3  |
| 40°    | 30662.0 | 11350.3 | 9199.9  | 9355.1  | 9355.1  |
| 42.5°  | 28673.3 | 10147.4 | 8517.6  | 8676.0  | 8634.0  |
| 45°    | 26215.7 | 9067.3  | 7790.0  | 7977.6  | 8113.4  |
| 47.5°  | 23366.8 | 8116.6  | 7046.3  | 7408.4  | 7596.0  |
| 50°    | 20268.9 | 7211.2  | 6367.2  | 6829.6  | 7043.0  |
| 52.5°  | 17022.2 | 6373.6  | 5704.3  | 6234.6  | 6406.0  |
| 55°    | 13879.1 | 5620.2  | 5083.4  | 5513.5  | 5710.7  |
| 57.5°  | 11033.4 | 4902.3  | 4475.5  | 4882.9  | 5290.3  |
| 60°    | 8585.5  | 4284.7  | 3903.1  | 4485.2  | 4892.6  |
| 62.5°  | 6558.0  | 3734.9  | 3366.3  | 4113.3  | 4520.7  |
| 65°    | 4963.7  | 3259.6  | 2942.7  | 3770.5  | 4190.9  |
| 67.5°  | 3741.4  | 2848.9  | 2612.8  | 3521.5  | 3932.2  |
| 70°    | 2810.1  | 2451.2  | 2347.7  | 3366.3  | 3734.9  |
| 72.5°  | 2076.0  | 2085.7  | 2137.5  | 3230.5  | 3511.8  |
| 75°    | 1532.8  | 1755.9  | 1975.8  | 3068.8  | 3253.1  |
| 77.5°  | 1096.2  | 1455.2  | 1830.3  | 2874.8  | 2939.4  |
| 80°    | 759.9   | 1186.8  | 1678.3  | 2619.3  | 2564.3  |
| 82.5°  | 475.4   | 950.7   | 1542.5  | 2338.0  | 2186.0  |
| 85°    | 268.4   | 727.6   | 1445.5  | 2011.4  | 1846.4  |
| 87.5°  | 119.6   | 543.3   | 1264.4  | 1568.3  | 1464.9  |
| 90°    | 0.0     | 304.0   | 837.5   | 1180.3  | 1190.0  |
| 92.5°  | 6.5     | 252.2   | 772.9   | 1080.1  | 1112.4  |
| 95°    | 12.9    | 213.4   | 737.3   | 1002.5  | 1047.7  |
| 97.5°  | 16.2    | 187.6   | 692.0   | 931.3   | 970.1   |
| 100°   | 19.4    | 168.2   | 637.0   | 856.9   | 889.3   |
| 102.5° | 22.6    | 155.2   | 585.3   | 779.3   | 805.2   |
| 105°   | 25.9    | 142.3   | 536.8   | 711.4   | 730.8   |



TEST NUMBER: P830642

CATALOG NUMBER: OHBL-60HE-N-UNV-L950-CD

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°   | 67.5° | 90°   |
|--------|------|-------|-------|-------|-------|
| 112.5° | 32.3 | 109.9 | 404.2 | 510.9 | 527.1 |
| 115°   | 35.6 | 100.2 | 362.2 | 452.7 | 462.4 |
| 117.5° | 38.8 | 87.3  | 316.9 | 397.7 | 401.0 |
| 120°   | 38.8 | 77.6  | 271.6 | 339.5 | 339.5 |
| 122.5° | 38.8 | 64.7  | 226.4 | 281.3 | 278.1 |
| 125°   | 38.8 | 51.7  | 184.3 | 232.8 | 229.6 |
| 127.5° | 35.6 | 42.0  | 148.8 | 194.0 | 190.8 |
| 130°   | 35.6 | 42.0  | 119.6 | 164.9 | 164.9 |
| 132.5° | 32.3 | 38.8  | 97.0  | 142.3 | 142.3 |
| 135°   | 32.3 | 38.8  | 80.8  | 126.1 | 126.1 |
| 137.5° | 32.3 | 42.0  | 67.9  | 109.9 | 109.9 |
| 140°   | 32.3 | 38.8  | 58.2  | 97.0  | 97.0  |
| 142.5° | 35.6 | 38.8  | 51.7  | 84.1  | 84.1  |
| 145°   | 38.8 | 42.0  | 48.5  | 74.4  | 71.1  |
| 147.5° | 38.8 | 45.3  | 48.5  | 64.7  | 61.4  |
| 150°   | 38.8 | 48.5  | 48.5  | 58.2  | 55.0  |
| 152.5° | 38.8 | 48.5  | 48.5  | 55.0  | 51.7  |
| 155°   | 38.8 | 48.5  | 51.7  | 55.0  | 48.5  |
| 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° | 25.9 | 132.6 | 491.5 | 637.0 | 659.7 |
| 110°   | 29.1 | 119.6 | 449.5 | 569.1 | 591.8 |



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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2307-100-9

Test Date: 08/01/2023

Luminaire Tested: OHB-15SE-N-UNV-L950-CD

Data in this report applies to families of products including OHB-15SE-N-UNV-L950-CD.

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2307-100-9  
 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-L950-CD**  
 Description: 15000 LUMEN OHB SE LED LUMINAIRE WITH 90CRI, 5000K LEDS AND NARROW LENS

LENS

### Spectral Parameters

|                           |        |           |      |      |      |
|---------------------------|--------|-----------|------|------|------|
| CCT (K):                  | 5013   | CRI (Ra): | 92.0 |      |      |
| CIE u':                   | 0.2111 | R1:       | 92.6 | R9:  | 62.7 |
| CIE v':                   | 0.4847 | R2:       | 96.7 | R10: | 90.0 |
| Duv:                      | 0.0002 | R3:       | 96.5 | R11: | 89.8 |
| CIE x:                    | 0.3447 | R4:       | 90.1 | R12: | 69.9 |
| CIE y:                    | 0.3517 | R5:       | 91.1 | R13: | 94.5 |
| CIE z:                    | 0.3036 | R6:       | 92.0 | R14: | 98.3 |
| Peak Wavelength (nm):     | 455    | R7:       | 92.4 |      |      |
| Dominant Wavelength (nm): | 572    | R8:       | 84.9 |      |      |
| Purity:                   | 9.1    |           |      |      |      |
| Rf:                       | 88.9   |           |      |      |      |
| Rg:                       | 97.2   |           |      |      |      |



### Test Conditions

Stabilization Time: 26M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.7/57%  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2307-100-9

| 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: SP1-2307-100-9

**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       | 6694             | NR               | 490       | 112019           | NR               | 620       | 173132           | NR               | 750       | 14981            | NR               | 880       | 5536             | NR               |
| 365       | 5354             | NR               | 495       | 119136           | NR               | 625       | 169860           | NR               | 755       | 13480            | NR               | 885       | 6938             | NR               |
| 370       | 5722             | NR               | 500       | 127627           | NR               | 630       | 163982           | NR               | 760       | 11900            | NR               | 890       | 5411             | NR               |
| 375       | 6251             | NR               | 505       | 139687           | NR               | 635       | 158304           | NR               | 765       | 10671            | NR               | 895       | 4784             | NR               |
| 380       | 6177             | NR               | 510       | 148127           | NR               | 640       | 151433           | NR               | 770       | 9643             | NR               | 900       | 5872             | NR               |
| 385       | 5889             | NR               | 515       | 155327           | NR               | 645       | 144044           | NR               | 775       | 8310             | NR               | 905       | 5214             | NR               |
| 390       | 5252             | NR               | 520       | 161724           | NR               | 650       | 134971           | NR               | 780       | 7378             | NR               | 910       | 5425             | NR               |
| 395       | 5012             | NR               | 525       | 166350           | NR               | 655       | 126523           | NR               | 785       | 7348             | NR               | 915       | 5372             | NR               |
| 400       | 4505             | NR               | 530       | 170827           | NR               | 660       | 117624           | NR               | 790       | 6731             | NR               | 920       | 5263             | NR               |
| 405       | 4163             | NR               | 535       | 174287           | NR               | 665       | 107737           | NR               | 795       | 6603             | NR               | 925       | 5581             | NR               |
| 410       | 4931             | NR               | 540       | 177402           | NR               | 670       | 97796            | NR               | 800       | 6333             | NR               | 930       | 7934             | NR               |
| 415       | 6887             | NR               | 545       | 179468           | NR               | 675       | 88146            | NR               | 805       | 5919             | NR               | 935       | 6835             | NR               |
| 420       | 10750            | NR               | 550       | 180621           | NR               | 680       | 80008            | NR               | 810       | 5757             | NR               | 940       | 4871             | NR               |
| 425       | 18574            | NR               | 555       | 182239           | NR               | 685       | 71588            | NR               | 815       | 6226             | NR               | 945       | 6554             | NR               |
| 430       | 31943            | NR               | 560       | 184077           | NR               | 690       | 63388            | NR               | 820       | 5694             | NR               | 950       | 6239             | NR               |
| 435       | 54504            | NR               | 565       | 184113           | NR               | 695       | 56106            | NR               | 825       | 5621             | NR               | 955       | 4562             | NR               |
| 440       | 91570            | NR               | 570       | 183843           | NR               | 700       | 49976            | NR               | 830       | 5832             | NR               | 960       | 3863             | NR               |
| 445       | 155007           | NR               | 575       | 183242           | NR               | 705       | 44326            | NR               | 835       | 5478             | NR               | 965       | 4898             | NR               |
| 450       | 253466           | NR               | 580       | 182759           | NR               | 710       | 39116            | NR               | 840       | 5675             | NR               | 970       | 7576             | NR               |
| 455       | 316705           | NR               | 585       | 182781           | NR               | 715       | 34755            | NR               | 845       | 4960             | NR               | 975       | 6056             | NR               |
| 460       | 273954           | NR               | 590       | 181075           | NR               | 720       | 30900            | NR               | 850       | 5274             | NR               | 980       | 3439             | NR               |
| 465       | 214019           | NR               | 595       | 181315           | NR               | 725       | 27349            | NR               | 855       | 5470             | NR               | 985       | 3623             | NR               |
| 470       | 175153           | NR               | 600       | 181289           | NR               | 730       | 23954            | NR               | 860       | 6539             | NR               | 990       | 4301             | NR               |
| 475       | 140894           | NR               | 605       | 180053           | NR               | 735       | 21526            | NR               | 865       | 6378             | NR               | 995       | 7368             | NR               |
| 480       | 115223           | NR               | 610       | 177907           | NR               | 740       | 18965            | NR               | 870       | 5702             | NR               | 1000      | 10668            | NR               |
| 485       | 108577           | NR               | 615       | 175575           | NR               | 745       | 17153            | NR               | 875       | 4933             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: 26039.5

S/P: 2.08

| 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       | 6694             | NR               | 490       | 112019           | NR               | 620       | 173132           | NR               | 750       | 14981            | NR               | 880       | 5536             | NR               |
| 365       | 5354             | NR               | 495       | 119136           | NR               | 625       | 169860           | NR               | 755       | 13480            | NR               | 885       | 6938             | NR               |
| 370       | 5722             | NR               | 500       | 127627           | NR               | 630       | 163982           | NR               | 760       | 11900            | NR               | 890       | 5411             | NR               |
| 375       | 6251             | NR               | 505       | 139687           | NR               | 635       | 158304           | NR               | 765       | 10671            | NR               | 895       | 4784             | NR               |
| 380       | 6177             | NR               | 510       | 148127           | NR               | 640       | 151433           | NR               | 770       | 9643             | NR               | 900       | 5872             | NR               |
| 385       | 5889             | NR               | 515       | 155327           | NR               | 645       | 144044           | NR               | 775       | 8310             | NR               | 905       | 5214             | NR               |
| 390       | 5252             | NR               | 520       | 161724           | NR               | 650       | 134971           | NR               | 780       | 7378             | NR               | 910       | 5425             | NR               |
| 395       | 5012             | NR               | 525       | 166350           | NR               | 655       | 126523           | NR               | 785       | 7348             | NR               | 915       | 5372             | NR               |
| 400       | 4505             | NR               | 530       | 170827           | NR               | 660       | 117624           | NR               | 790       | 6731             | NR               | 920       | 5263             | NR               |
| 405       | 4163             | NR               | 535       | 174287           | NR               | 665       | 107737           | NR               | 795       | 6603             | NR               | 925       | 5581             | NR               |
| 410       | 4931             | NR               | 540       | 177402           | NR               | 670       | 97796            | NR               | 800       | 6333             | NR               | 930       | 7934             | NR               |
| 415       | 6887             | NR               | 545       | 179468           | NR               | 675       | 88146            | NR               | 805       | 5919             | NR               | 935       | 6835             | NR               |
| 420       | 10750            | NR               | 550       | 180621           | NR               | 680       | 80008            | NR               | 810       | 5757             | NR               | 940       | 4871             | NR               |
| 425       | 18574            | NR               | 555       | 182239           | NR               | 685       | 71588            | NR               | 815       | 6226             | NR               | 945       | 6554             | NR               |
| 430       | 31943            | NR               | 560       | 184077           | NR               | 690       | 63388            | NR               | 820       | 5694             | NR               | 950       | 6239             | NR               |
| 435       | 54504            | NR               | 565       | 184113           | NR               | 695       | 56106            | NR               | 825       | 5621             | NR               | 955       | 4562             | NR               |
| 440       | 91570            | NR               | 570       | 183843           | NR               | 700       | 49976            | NR               | 830       | 5832             | NR               | 960       | 3863             | NR               |
| 445       | 155007           | NR               | 575       | 183242           | NR               | 705       | 44326            | NR               | 835       | 5478             | NR               | 965       | 4898             | NR               |
| 450       | 253466           | NR               | 580       | 182759           | NR               | 710       | 39116            | NR               | 840       | 5675             | NR               | 970       | 7576             | NR               |
| 455       | 316705           | NR               | 585       | 182781           | NR               | 715       | 34755            | NR               | 845       | 4960             | NR               | 975       | 6056             | NR               |
| 460       | 273954           | NR               | 590       | 181075           | NR               | 720       | 30900            | NR               | 850       | 5274             | NR               | 980       | 3439             | NR               |
| 465       | 214019           | NR               | 595       | 181315           | NR               | 725       | 27349            | NR               | 855       | 5470             | NR               | 985       | 3623             | NR               |
| 470       | 175153           | NR               | 600       | 181289           | NR               | 730       | 23954            | NR               | 860       | 6539             | NR               | 990       | 4301             | NR               |
| 475       | 140894           | NR               | 605       | 180053           | NR               | 735       | 21526            | NR               | 865       | 6378             | NR               | 995       | 7368             | NR               |
| 480       | 115223           | NR               | 610       | 177907           | NR               | 740       | 18965            | NR               | 870       | 5702             | NR               | 1000      | 10668            | NR               |
| 485       | 108577           | NR               | 615       | 175575           | NR               | 745       | 17153            | NR               | 875       | 4933             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-9

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 11248.3 M/P: 0.9**

| 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       | 6694             | NR               | 490       | 112019           | NR               | 620       | 173132           | NR               | 750       | 14981            | NR               | 880       | 5536             | NR               |
| 365       | 5354             | NR               | 495       | 119136           | NR               | 625       | 169860           | NR               | 755       | 13480            | NR               | 885       | 6938             | NR               |
| 370       | 5722             | NR               | 500       | 127627           | NR               | 630       | 163982           | NR               | 760       | 11900            | NR               | 890       | 5411             | NR               |
| 375       | 6251             | NR               | 505       | 139687           | NR               | 635       | 158304           | NR               | 765       | 10671            | NR               | 895       | 4784             | NR               |
| 380       | 6177             | NR               | 510       | 148127           | NR               | 640       | 151433           | NR               | 770       | 9643             | NR               | 900       | 5872             | NR               |
| 385       | 5889             | NR               | 515       | 155327           | NR               | 645       | 144044           | NR               | 775       | 8310             | NR               | 905       | 5214             | NR               |
| 390       | 5252             | NR               | 520       | 161724           | NR               | 650       | 134971           | NR               | 780       | 7378             | NR               | 910       | 5425             | NR               |
| 395       | 5012             | NR               | 525       | 166350           | NR               | 655       | 126523           | NR               | 785       | 7348             | NR               | 915       | 5372             | NR               |
| 400       | 4505             | NR               | 530       | 170827           | NR               | 660       | 117624           | NR               | 790       | 6731             | NR               | 920       | 5263             | NR               |
| 405       | 4163             | NR               | 535       | 174287           | NR               | 665       | 107737           | NR               | 795       | 6603             | NR               | 925       | 5581             | NR               |
| 410       | 4931             | NR               | 540       | 177402           | NR               | 670       | 97796            | NR               | 800       | 6333             | NR               | 930       | 7934             | NR               |
| 415       | 6887             | NR               | 545       | 179468           | NR               | 675       | 88146            | NR               | 805       | 5919             | NR               | 935       | 6835             | NR               |
| 420       | 10750            | NR               | 550       | 180621           | NR               | 680       | 80008            | NR               | 810       | 5757             | NR               | 940       | 4871             | NR               |
| 425       | 18574            | NR               | 555       | 182239           | NR               | 685       | 71588            | NR               | 815       | 6226             | NR               | 945       | 6554             | NR               |
| 430       | 31943            | NR               | 560       | 184077           | NR               | 690       | 63388            | NR               | 820       | 5694             | NR               | 950       | 6239             | NR               |
| 435       | 54504            | NR               | 565       | 184113           | NR               | 695       | 56106            | NR               | 825       | 5621             | NR               | 955       | 4562             | NR               |
| 440       | 91570            | NR               | 570       | 183843           | NR               | 700       | 49976            | NR               | 830       | 5832             | NR               | 960       | 3863             | NR               |
| 445       | 155007           | NR               | 575       | 183242           | NR               | 705       | 44326            | NR               | 835       | 5478             | NR               | 965       | 4898             | NR               |
| 450       | 253466           | NR               | 580       | 182759           | NR               | 710       | 39116            | NR               | 840       | 5675             | NR               | 970       | 7576             | NR               |
| 455       | 316705           | NR               | 585       | 182781           | NR               | 715       | 34755            | NR               | 845       | 4960             | NR               | 975       | 6056             | NR               |
| 460       | 273954           | NR               | 590       | 181075           | NR               | 720       | 30900            | NR               | 850       | 5274             | NR               | 980       | 3439             | NR               |
| 465       | 214019           | NR               | 595       | 181315           | NR               | 725       | 27349            | NR               | 855       | 5470             | NR               | 985       | 3623             | NR               |
| 470       | 175153           | NR               | 600       | 181289           | NR               | 730       | 23954            | NR               | 860       | 6539             | NR               | 990       | 4301             | NR               |
| 475       | 140894           | NR               | 605       | 180053           | NR               | 735       | 21526            | NR               | 865       | 6378             | NR               | 995       | 7368             | NR               |
| 480       | 115223           | NR               | 610       | 177907           | NR               | 740       | 18965            | NR               | 870       | 5702             | NR               | 1000      | 10668            | NR               |
| 485       | 108577           | NR               | 615       | 175575           | NR               | 745       | 17153            | NR               | 875       | 4933             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-9

**TM-30-18**

**Summary**

$R_f = 88.9$   
 $R_g = 97.2$   
 $CIE R_a = 92.0$   
 $R_9 = 62.7$



**Color Vector Graphics**



REPORT NUMBER: SP1-2307-100-9

**TM-30-18**

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 93 | CES51 = 92 | CES76 = 85 |
| CES02 = 61 | CES27 = 89 | CES52 = 95 | CES77 = 86 |
| CES03 = 31 | CES28 = 95 | CES53 = 92 | CES78 = 84 |
| CES04 = 69 | CES29 = 94 | CES54 = 89 | CES79 = 95 |
| CES05 = 48 | CES30 = 83 | CES55 = 86 | CES80 = 93 |
| CES06 = 50 | CES31 = 96 | CES56 = 88 | CES81 = 89 |
| CES07 = 41 | CES32 = 93 | CES57 = 85 | CES82 = 97 |
| CES08 = 40 | CES33 = 92 | CES58 = 85 | CES83 = 97 |
| CES09 = 29 | CES34 = 93 | CES59 = 94 | CES84 = 92 |
| CES10 = 73 | CES35 = 96 | CES60 = 89 | CES85 = 83 |
| CES11 = 56 | CES36 = 76 | CES61 = 88 | CES86 = 88 |
| CES12 = 62 | CES37 = 95 | CES62 = 78 | CES87 = 91 |
| CES13 = 42 | CES38 = 78 | CES63 = 87 | CES88 = 95 |
| CES14 = 74 | CES39 = 97 | CES64 = 81 | CES89 = 88 |
| CES15 = 71 | CES40 = 97 | CES65 = 84 | CES90 = 93 |
| CES16 = 46 | CES41 = 92 | CES66 = 78 | CES91 = 70 |
| CES17 = 49 | CES42 = 96 | CES67 = 77 | CES92 = 78 |
| CES18 = 56 | CES43 = 95 | CES68 = 82 | CES93 = 86 |
| CES19 = 70 | CES44 = 99 | CES69 = 84 | CES94 = 81 |
| CES20 = 65 | CES45 = 97 | CES70 = 81 | CES95 = 81 |
| CES21 = 85 | CES46 = 95 | CES71 = 73 | CES96 = 92 |
| CES22 = 77 | CES47 = 91 | CES72 = 91 | CES97 = 94 |
| CES23 = 91 | CES48 = 85 | CES73 = 77 | CES98 = 92 |
| CES24 = 90 | CES49 = 95 | CES74 = 89 | CES99 = 90 |
| CES25 = 70 | CES50 = 93 | CES75 = 77 |            |



REPORT NUMBER: SP1-2307-100-9

**TM-30-18**

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-2307-100-9

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)