

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: FAIL-SAFE

Report Number: P1356753

Luminaire Tested: 1ASL4-30VHE-3-R63-UNV

Issue Date: 2/17/2026

Test Information

Test Method: LM-79-2019
Report Number: P1356753
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2511-597-12)
Test Lab: INNOVATION CENTER
Issue Date: 2/17/2026
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: FAIL-SAFE
Catalog Number: 1ASL4-30VHE-3-R63-UNV
Description: 1FT 3000 LUMEN PER FOOT 4ASL LED LUMINAIRE WITH OPL LENS AND R63 LEDS 3 ROW
Light Source: -
Ballast/Driver: -

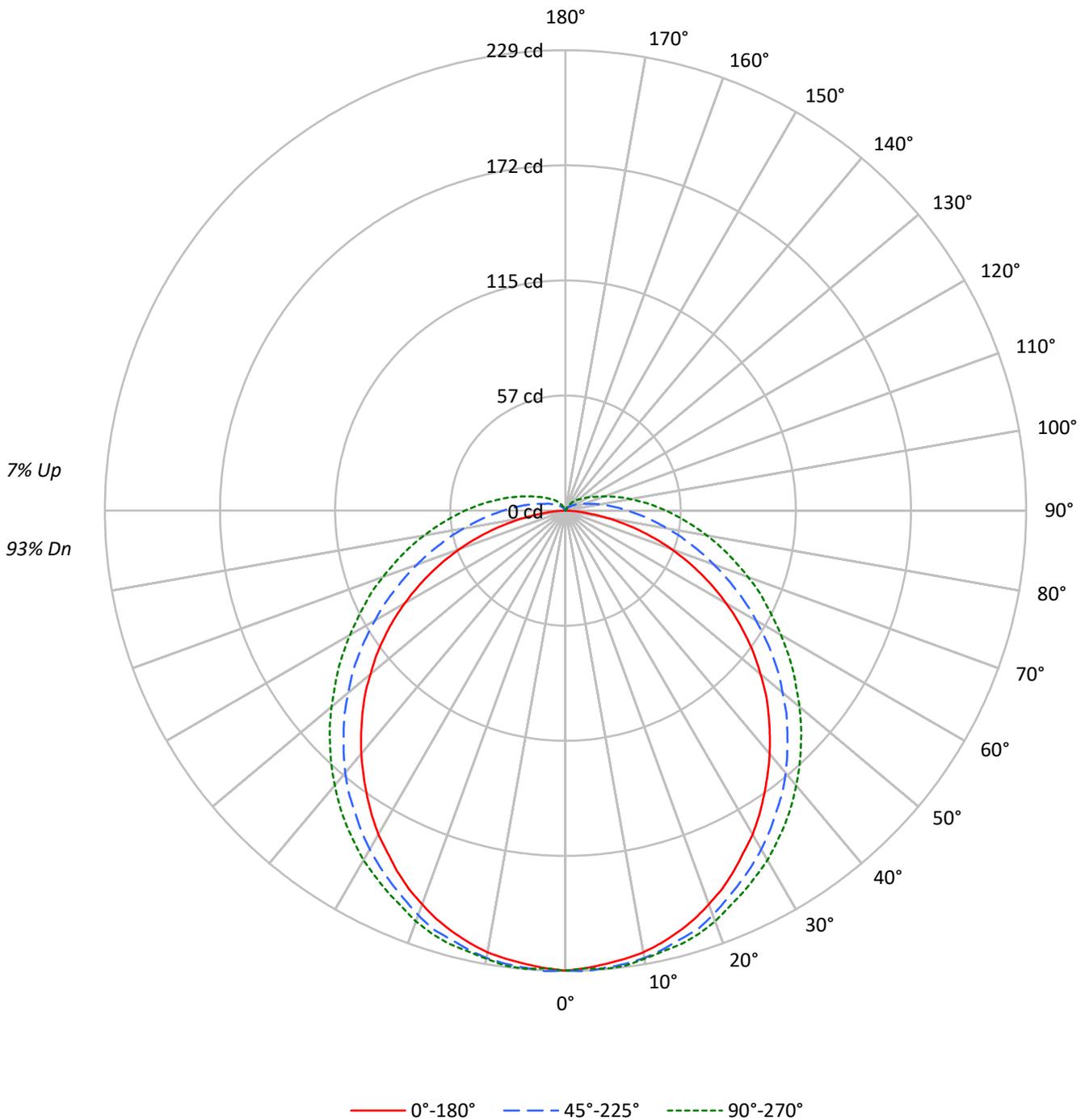
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 778.0 lumens
Efficiency: N/A
Efficacy: 39.9 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.3 / 1.39
Luminous Opening: Rectangular w/ Sides (W: 0.33' x L: 0.98' x H: 0.1')
CIE Type: Direct

Input Watts (W): 19.5
Input Voltage (V): NR
Input Current (A_{in}): 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: 24 FT

TEST NUMBER: P1356753
CATALOG NUMBER: 1ASL4-30VHE-3-R63-UNV

Luminous Intensity Polar Plot





TEST NUMBER: P1356753
 CATALOG NUMBER: 1ASL4-30VHE-3-R63-UNV

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------------|--------------|--------------|
| 0°-10° | 21.7 | 2.8 |
| 10°-20° | 62.3 | 8.0 |
| 20°-30° | 94.2 | 12.1 |
| 30°-40° | 114.1 | 14.7 |
| 40°-50° | 119.8 | 15.4 |
| 50°-60° | 111.8 | 14.4 |
| 60°-70° | 92.4 | 11.9 |
| 70°-80° | 66.5 | 8.5 |
| 80°-90° | 41.3 | 5.3 |
| 90°-100° | 24.2 | 3.1 |
| 100°-110° | 13.9 | 1.8 |
| 110°-120° | 7.8 | 1.0 |
| 120°-130° | 4.5 | 0.6 |
| 130°-140° | 2.4 | 0.3 |
| 140°-150° | 1.0 | 0.1 |
| 150°-160° | 0.2 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-30° | 178.2 | 22.9 |
| 0°-40° | 292.2 | 37.6 |
| 0°-60° | 523.8 | 67.3 |
| 0°-90° | 724.0 | 93.1 |
| 90°-120° | 45.9 | 5.9 |
| 90°-150° | 53.8 | 6.9 |
| 90°-180° | 54.0 | 6.9 |
| 0°-180° | 778.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0° | 229 | 229 | 229 | 229 | 229 | |
| 5° | 226 | 228 | 228 | 228 | 229 | 22 |
| 15° | 217 | 220 | 221 | 222 | 223 | 61 |
| 25° | 198 | 201 | 205 | 207 | 209 | 91 |
| 35° | 172 | 177 | 183 | 188 | 190 | 108 |
| 45° | 143 | 148 | 156 | 163 | 166 | 110 |
| 55° | 110 | 116 | 126 | 135 | 138 | 98 |
| 65° | 74 | 81 | 94 | 106 | 110 | 73 |
| 75° | 38 | 48 | 64 | 78 | 84 | 40 |
| 85° | 7 | 21 | 40 | 55 | 60 | 9 |
| 90° | 0 | 13 | 31 | 44 | 50 | 0 |
| 95° | 0 | 8 | 23 | 36 | 41 | 0 |
| 105° | 0 | 3 | 13 | 22 | 26 | 0 |
| 115° | 0 | 1 | 8 | 14 | 16 | 0 |
| 125° | 0 | 1 | 5 | 9 | 10 | 0 |
| 135° | 0 | 0 | 3 | 6 | 7 | 0 |
| 145° | 0 | 0 | 1 | 3 | 4 | 0 |
| 155° | 0 | 0 | 0 | 1 | 1 | 0 |
| 165° | 0 | 0 | 0 | 0 | 0 | 0 |
| 175° | 0 | 0 | 0 | 0 | 0 | 0 |
| 180° | 0 | 0 | 0 | 0 | 0 | 0 |



TEST NUMBER: P1356753

CATALOG NUMBER: 1ASL4-30VHE-3-R63-UNV

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-------|-------|-------|-------|-------|
| 0° | 228.8 | 228.8 | 228.8 | 228.8 | 228.8 |
| 2.5° | 227.9 | 229.3 | 229.3 | 227.9 | 227.9 |
| 5° | 226.4 | 228.3 | 228.3 | 228.3 | 228.8 |
| 7.5° | 225.0 | 227.4 | 227.4 | 227.4 | 228.3 |
| 10° | 223.1 | 225.5 | 226.0 | 226.0 | 226.4 |
| 12.5° | 220.3 | 223.1 | 223.6 | 224.1 | 224.5 |
| 15° | 216.9 | 219.8 | 220.7 | 222.2 | 223.1 |
| 17.5° | 213.1 | 216.5 | 218.4 | 219.8 | 220.7 |
| 20° | 208.4 | 211.7 | 214.1 | 216.0 | 217.4 |
| 22.5° | 203.6 | 206.5 | 209.3 | 211.7 | 213.1 |
| 25° | 197.9 | 201.2 | 204.6 | 207.4 | 209.3 |
| 27.5° | 191.7 | 195.5 | 199.8 | 203.1 | 205.0 |
| 30° | 186.0 | 189.8 | 194.6 | 198.9 | 200.8 |
| 32.5° | 179.3 | 183.6 | 188.9 | 193.1 | 195.5 |
| 35° | 172.2 | 177.0 | 182.7 | 187.9 | 190.3 |
| 37.5° | 165.1 | 169.8 | 177.0 | 182.2 | 184.6 |
| 40° | 157.9 | 162.7 | 170.3 | 176.0 | 178.4 |
| 42.5° | 150.3 | 155.1 | 163.2 | 169.4 | 172.2 |
| 45° | 142.7 | 147.9 | 156.0 | 162.7 | 165.5 |
| 47.5° | 135.1 | 140.3 | 148.9 | 156.0 | 158.9 |
| 50° | 126.5 | 132.2 | 140.8 | 148.9 | 151.8 |
| 52.5° | 118.5 | 124.2 | 133.7 | 141.8 | 144.6 |
| 55° | 109.9 | 116.1 | 125.6 | 134.6 | 138.0 |
| 57.5° | 101.3 | 107.5 | 117.5 | 127.0 | 130.8 |
| 60° | 92.3 | 98.9 | 109.4 | 119.4 | 123.7 |
| 62.5° | 83.3 | 90.4 | 101.8 | 112.3 | 116.6 |
| 65° | 74.2 | 81.3 | 93.7 | 105.6 | 109.9 |
| 67.5° | 65.2 | 72.8 | 86.1 | 98.5 | 103.7 |
| 70° | 56.1 | 64.2 | 78.5 | 91.3 | 96.6 |
| 72.5° | 47.1 | 55.7 | 71.4 | 84.7 | 89.9 |
| 75° | 38.1 | 47.6 | 64.2 | 78.0 | 83.7 |
| 77.5° | 29.0 | 40.0 | 58.0 | 71.8 | 77.5 |
| 80° | 20.9 | 33.3 | 51.4 | 65.6 | 71.4 |
| 82.5° | 13.3 | 26.6 | 45.7 | 59.9 | 65.6 |
| 85° | 7.1 | 21.4 | 40.4 | 54.7 | 59.9 |
| 87.5° | 2.4 | 16.7 | 35.2 | 49.5 | 54.7 |
| 90° | 0.0 | 12.8 | 30.9 | 44.2 | 50.0 |
| 92.5° | 0.0 | 10.0 | 27.1 | 40.0 | 45.2 |
| 95° | 0.0 | 8.1 | 23.3 | 35.7 | 40.9 |
| 97.5° | 0.0 | 6.7 | 20.5 | 31.9 | 36.6 |
| 100° | 0.0 | 5.2 | 17.6 | 28.5 | 32.8 |
| 102.5° | 0.0 | 4.3 | 15.2 | 25.2 | 29.5 |
| 105° | 0.0 | 2.9 | 12.8 | 22.4 | 26.2 |
| 107.5° | 0.0 | 2.4 | 10.9 | 20.0 | 23.3 |
| 110° | 0.0 | 1.9 | 10.0 | 17.1 | 20.5 |



TEST NUMBER: P1356753
 CATALOG NUMBER: 1ASL4-30VHE-3-R63-UNV

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|-----|-------|-----|-------|------|
| 112.5° | 0.0 | 1.4 | 9.0 | 15.2 | 18.6 |
| 115° | 0.0 | 1.4 | 7.6 | 13.8 | 16.2 |
| 117.5° | 0.0 | 1.4 | 6.7 | 12.4 | 14.7 |
| 120° | 0.0 | 1.0 | 6.2 | 10.9 | 13.3 |
| 122.5° | 0.0 | 1.0 | 5.2 | 10.0 | 11.9 |
| 125° | 0.0 | 1.0 | 4.8 | 9.0 | 10.5 |
| 127.5° | 0.0 | 0.5 | 4.3 | 8.1 | 9.5 |
| 130° | 0.0 | 0.5 | 3.8 | 7.1 | 8.6 |
| 132.5° | 0.0 | 0.5 | 3.3 | 6.7 | 8.1 |
| 135° | 0.0 | 0.0 | 2.9 | 5.7 | 7.1 |
| 137.5° | 0.0 | 0.0 | 2.4 | 5.2 | 6.2 |
| 140° | 0.0 | 0.0 | 1.9 | 4.3 | 5.7 |
| 142.5° | 0.0 | 0.0 | 1.4 | 3.8 | 4.8 |
| 145° | 0.0 | 0.0 | 1.4 | 3.3 | 3.8 |
| 147.5° | 0.0 | 0.0 | 1.0 | 2.4 | 3.3 |
| 150° | 0.0 | 0.0 | 0.5 | 1.9 | 2.4 |
| 152.5° | 0.0 | 0.0 | 0.0 | 1.4 | 1.9 |
| 155° | 0.0 | 0.0 | 0.0 | 1.0 | 1.4 |
| 157.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 |
| 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 |



TEST NUMBER: P1356753
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CIE UGR TABLE:

| Reflectances: | | | | | | | | | | | |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling | | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| Wall | | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| Reference plane | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Room dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| X=2H | Y=2H | 16.26 | 17.80 | 16.73 | 18.26 | 18.74 | 18.05 | 19.59 | 18.52 | 20.04 | 20.53 |
| | 3H | 17.76 | 19.17 | 18.25 | 19.63 | 20.16 | 20.41 | 21.81 | 20.89 | 22.28 | 22.80 |
| | 4H | 18.25 | 19.58 | 18.75 | 20.06 | 20.60 | 21.53 | 22.86 | 22.03 | 23.34 | 23.88 |
| | 6H | 18.53 | 19.77 | 19.04 | 20.26 | 20.82 | 22.65 | 23.89 | 23.17 | 24.39 | 24.94 |
| | 8H | 18.58 | 19.77 | 19.11 | 20.29 | 20.85 | 23.20 | 24.39 | 23.73 | 24.91 | 25.47 |
| | 12H | 18.59 | 19.73 | 19.13 | 20.25 | 20.84 | 23.77 | 24.91 | 24.31 | 25.43 | 26.02 |
| 4H | 2H | 17.09 | 18.42 | 17.59 | 18.90 | 19.44 | 18.49 | 19.82 | 19.00 | 20.31 | 20.84 |
| | 3H | 18.83 | 19.96 | 19.35 | 20.49 | 21.05 | 21.08 | 22.22 | 21.60 | 22.74 | 23.30 |
| | 4H | 19.44 | 20.48 | 19.97 | 21.01 | 21.60 | 22.37 | 23.41 | 22.91 | 23.95 | 24.54 |
| | 6H | 19.84 | 20.76 | 20.39 | 21.32 | 21.92 | 23.69 | 24.61 | 24.24 | 25.17 | 25.77 |
| | 8H | 19.93 | 20.80 | 20.49 | 21.36 | 21.98 | 24.34 | 25.21 | 24.91 | 25.77 | 26.39 |
| | 12H | 19.98 | 20.76 | 20.56 | 21.35 | 21.98 | 25.03 | 25.82 | 25.62 | 26.41 | 27.03 |
| 8H | 4H | 20.07 | 20.93 | 20.63 | 21.49 | 22.11 | 22.60 | 23.46 | 23.16 | 24.02 | 24.64 |
| | 6H | 20.64 | 21.38 | 21.24 | 21.98 | 22.60 | 24.09 | 24.82 | 24.68 | 25.42 | 26.05 |
| | 8H | 20.82 | 21.49 | 21.43 | 22.10 | 22.74 | 24.88 | 25.54 | 25.49 | 26.16 | 26.80 |
| | 12H | 20.94 | 21.53 | 21.55 | 22.13 | 22.84 | 25.76 | 26.35 | 26.36 | 26.95 | 27.65 |
| 12H | 4H | 20.23 | 21.02 | 20.82 | 21.61 | 22.23 | 22.61 | 23.39 | 23.19 | 23.98 | 24.61 |
| | 6H | 20.90 | 21.57 | 21.51 | 22.18 | 22.82 | 24.13 | 24.79 | 24.73 | 25.40 | 26.04 |
| | 8H | 21.18 | 21.77 | 21.79 | 22.37 | 23.08 | 25.00 | 25.59 | 25.60 | 26.19 | 26.89 |

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

Report Prepared for

Cooper Lighting Solutions

Fail-Safe

Report Number: SP1-2511-597-7

Test Date: 01/21/2026

Luminaire Tested: 4ASL-2-R630-UNV-OPL-1_600mA

Data in this report applies to families of products including 4ASL

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2511-597-7
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 01/29/2026
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Fail-Safe
 Catalog Number: **4ASL-2-R630-UNV-OPL-1_600mA**
 Description: 2foot 4ASL LED LUMINAIRE WITH OPL LENS AND RED 630NM LEDs with 1 rows at 600mA

Spectral Parameters

CCT (K): 0
 CIE u': 0.5395
 CIE v': 0.5190
 Duv: 0.0000
 CIE x: 0.7004
 CIE y: 0.2995
 CIE z: 0.0001
 Peak Wavelength (nm): 638
 Dominant Wavelength (nm): 624
 Purity: 99.9862
 Rf: NR
 Rg: NR

CRI (Ra): 0.0
 R1: 0.0
 R2: 0.0
 R3: 0.0
 R4: 0.0
 R5: 0.0
 R6: 0.0
 R7: 0.0
 R8: 0.0
 R9: 0.0
 R10: 0.0
 R11: 0.0
 R12: 0.0
 R13: 0.0
 R14: 0.0
 R15: 0.0



Test Conditions

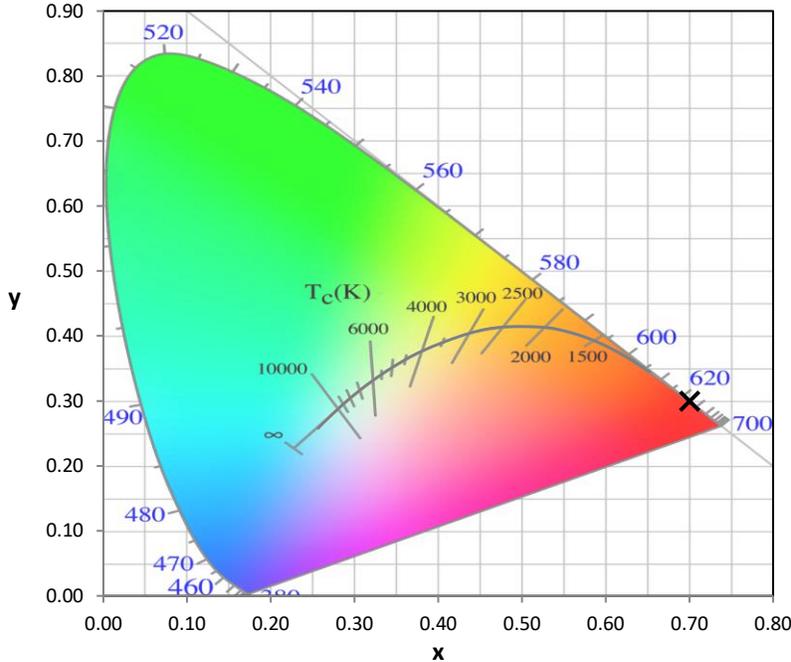
Stabilization Time: 69M
 Operation Time: 2H 9M
 Sphere Temperature (°C): 25.1

REPORT NUMBER: SP1-2511-597-7

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 12/16/2025 | 6/16/2026 |
| Power Meter | XITRON INXT2011004 | 10/21/2025 | 10/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 10/21/2025 | 10/21/2026 |
| DC Power Source | AGILENT E3634A IN0208 | 10/21/2025 | 10/21/2026 |
| Sphere Thermometer | ONSET IN0085 | 10/21/2025 | 10/21/2026 |
| Room Thermometer | ONSET IN0046 | 10/21/2025 | 10/21/2026 |

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CIE 1931 Chromaticity Diagram



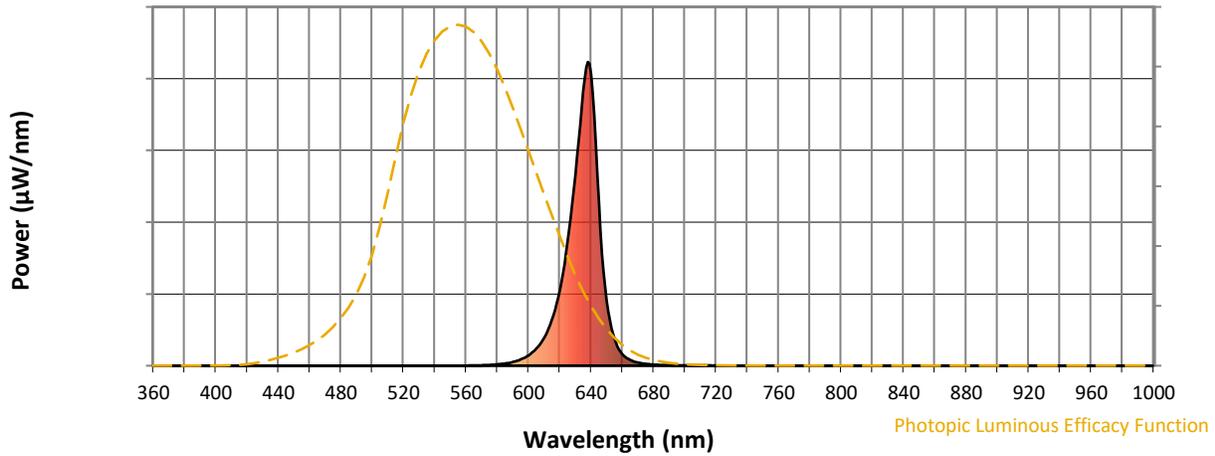
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies outside the range

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Photopic Flux vs. Wavelength

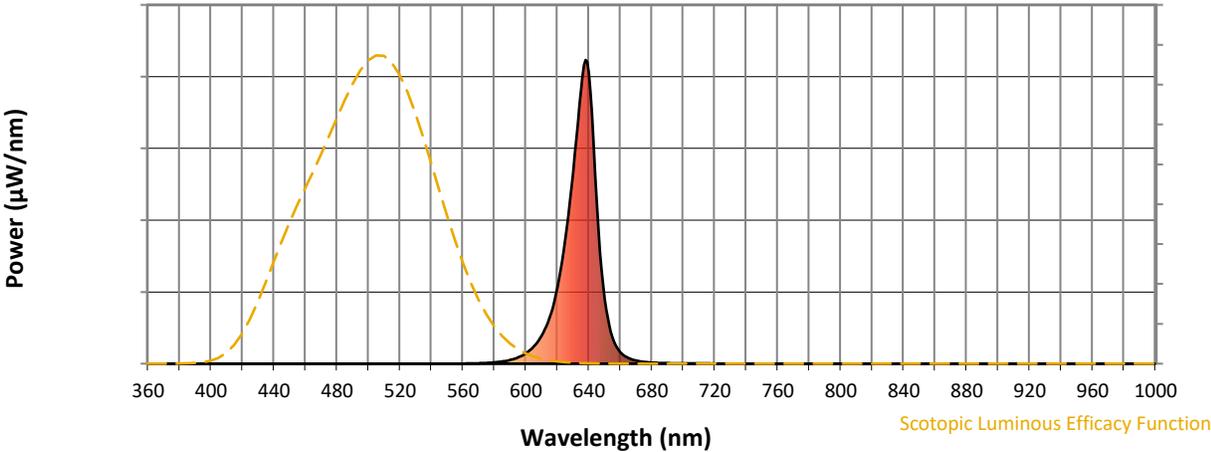


Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360 | 0 | NR | 490 | 0 | NR | 620 | 248 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 409 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 630 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 903 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 960 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 535 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 212 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 88 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 38 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 0 | NR | 665 | 19 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 0 | NR | 670 | 10 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 0 | NR | 675 | 6 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 0 | NR | 680 | 4 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 0 | NR | 685 | 2 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 0 | NR | 690 | 2 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 1 | NR | 695 | 1 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 2 | NR | 700 | 1 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 3 | NR | 705 | 1 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 4 | NR | 710 | 1 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 7 | NR | 715 | 1 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 12 | NR | 720 | 1 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 20 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 34 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 56 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 92 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 152 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2511-597-7

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 0.05

| λ (nm) | Power $\text{W}^{\wedge}/\text{nm}$ | Lumens (ϕ/nm) |
|-------------------|----------------------------------------|------------------------------|-------------------|----------------------------------------|------------------------------|-------------------|----------------------------------------|------------------------------|-------------------|----------------------------------------|------------------------------|-------------------|----------------------------------------|------------------------------|
| 360 | 0 | NR | 490 | 0 | NR | 620 | 248 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 409 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 630 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 903 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 960 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 535 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 212 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 88 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 38 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 0 | NR | 665 | 19 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 0 | NR | 670 | 10 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 0 | NR | 675 | 6 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 0 | NR | 680 | 4 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 0 | NR | 685 | 2 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 0 | NR | 690 | 2 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 1 | NR | 695 | 1 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 2 | NR | 700 | 1 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 3 | NR | 705 | 1 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 4 | NR | 710 | 1 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 7 | NR | 715 | 1 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 12 | NR | 720 | 1 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 20 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 34 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 56 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 92 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 152 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2511-597-7

Melanopic Flux vs. Wavelength



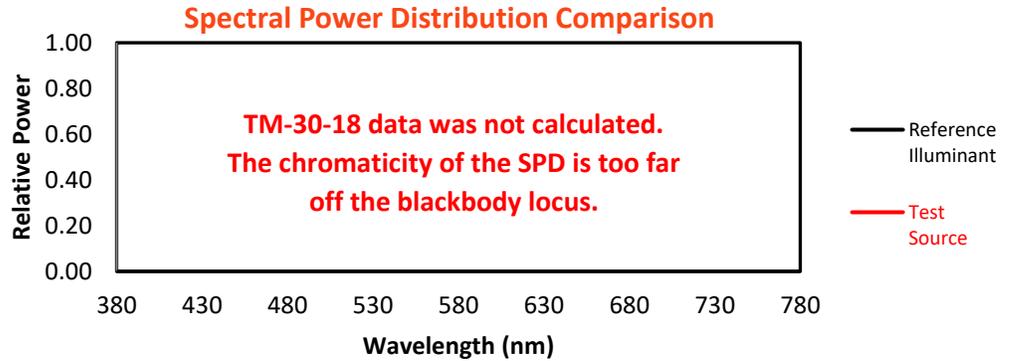
Melanopic Lumens: NR

M/P: 0.02

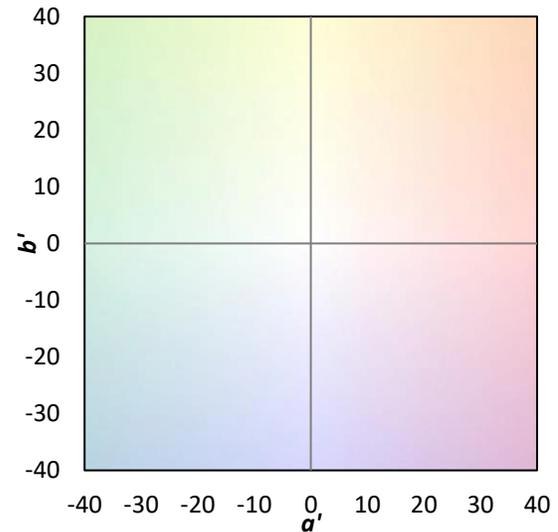
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 0 | NR | 620 | 248 | NR | 750 | 0 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 0 | NR | 625 | 409 | NR | 755 | 0 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 0 | NR | 630 | 630 | NR | 760 | 0 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 0 | NR | 635 | 903 | NR | 765 | 0 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 0 | NR | 640 | 960 | NR | 770 | 0 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 0 | NR | 645 | 535 | NR | 775 | 0 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 0 | NR | 650 | 212 | NR | 780 | 0 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 0 | NR | 655 | 88 | NR | 785 | 0 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 0 | NR | 660 | 38 | NR | 790 | 0 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 0 | NR | 665 | 19 | NR | 795 | 0 | NR | 925 | 0 | NR |
| 410 | 0 | NR | 540 | 0 | NR | 670 | 10 | NR | 800 | 0 | NR | 930 | 0 | NR |
| 415 | 0 | NR | 545 | 0 | NR | 675 | 6 | NR | 805 | 0 | NR | 935 | 0 | NR |
| 420 | 0 | NR | 550 | 0 | NR | 680 | 4 | NR | 810 | 0 | NR | 940 | 0 | NR |
| 425 | 0 | NR | 555 | 0 | NR | 685 | 2 | NR | 815 | 0 | NR | 945 | 0 | NR |
| 430 | 0 | NR | 560 | 0 | NR | 690 | 2 | NR | 820 | 0 | NR | 950 | 0 | NR |
| 435 | 0 | NR | 565 | 1 | NR | 695 | 1 | NR | 825 | 0 | NR | 955 | 0 | NR |
| 440 | 0 | NR | 570 | 2 | NR | 700 | 1 | NR | 830 | 0 | NR | 960 | 0 | NR |
| 445 | 0 | NR | 575 | 3 | NR | 705 | 1 | NR | 835 | 0 | NR | 965 | 0 | NR |
| 450 | 0 | NR | 580 | 4 | NR | 710 | 1 | NR | 840 | 0 | NR | 970 | 0 | NR |
| 455 | 0 | NR | 585 | 7 | NR | 715 | 1 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 0 | NR | 590 | 12 | NR | 720 | 1 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 0 | NR | 595 | 20 | NR | 725 | 0 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 0 | NR | 600 | 34 | NR | 730 | 0 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 0 | NR | 605 | 56 | NR | 735 | 0 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 0 | NR | 610 | 92 | NR | 740 | 0 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 0 | NR | 615 | 152 | NR | 745 | 0 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 0$
 $R_g = 0$
 CIE $R_a = 0.0$
 $R_9 = 0.0$



Color Vector Graphics



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

| | | | |
|-----------|-----------|-----------|-----------|
| CES01 = 0 | CES26 = 0 | CES51 = 0 | CES76 = 0 |
| CES02 = 0 | CES27 = 0 | CES52 = 0 | CES77 = 0 |
| CES03 = 0 | CES28 = 0 | CES53 = 0 | CES78 = 0 |
| CES04 = 0 | CES29 = 0 | CES54 = 0 | CES79 = 0 |
| CES05 = 0 | CES30 = 0 | CES55 = 0 | CES80 = 0 |
| CES06 = 0 | CES31 = 0 | CES56 = 0 | CES81 = 0 |
| CES07 = 0 | CES32 = 0 | CES57 = 0 | CES82 = 0 |
| CES08 = 0 | CES33 = 0 | CES58 = 0 | CES83 = 0 |
| CES09 = 0 | CES34 = 0 | CES59 = 0 | CES84 = 0 |
| CES10 = 0 | CES35 = 0 | CES60 = 0 | CES85 = 0 |
| CES11 = 0 | CES36 = 0 | CES61 = 0 | CES86 = 0 |
| CES12 = 0 | CES37 = 0 | CES62 = 0 | CES87 = 0 |
| CES13 = 0 | CES38 = 0 | CES63 = 0 | CES88 = 0 |
| CES14 = 0 | CES39 = 0 | CES64 = 0 | CES89 = 0 |
| CES15 = 0 | CES40 = 0 | CES65 = 0 | CES90 = 0 |
| CES16 = 0 | CES41 = 0 | CES66 = 0 | CES91 = 0 |
| CES17 = 0 | CES42 = 0 | CES67 = 0 | CES92 = 0 |
| CES18 = 0 | CES43 = 0 | CES68 = 0 | CES93 = 0 |
| CES19 = 0 | CES44 = 0 | CES69 = 0 | CES94 = 0 |
| CES20 = 0 | CES45 = 0 | CES70 = 0 | CES95 = 0 |
| CES21 = 0 | CES46 = 0 | CES71 = 0 | CES96 = 0 |
| CES22 = 0 | CES47 = 0 | CES72 = 0 | CES97 = 0 |
| CES23 = 0 | CES48 = 0 | CES73 = 0 | CES98 = 0 |
| CES24 = 0 | CES49 = 0 | CES74 = 0 | CES99 = 0 |
| CES25 = 0 | CES50 = 0 | CES75 = 0 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)