

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: METALUX

Report Number: P975253

Luminaire Tested: 14ENA-LD2-38-UNV-L930-CD1

Issue Date: 03/13/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P975253  
Test Lab: INNOVATION CENTER(P3)  
Issue Date: 03/13/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: METALUX  
Catalog Number: 14ENA-LD2-38-UNV-L930-CD1  
Description: METALUX ENCOUNTER 1x4 3800LM PACKAGE 90CRI 3000K AIR-VENTED TROFFER  
Light Source: 3000K CCT, 90 CRI LEDS  
Ballast/Driver: -

**Summary**

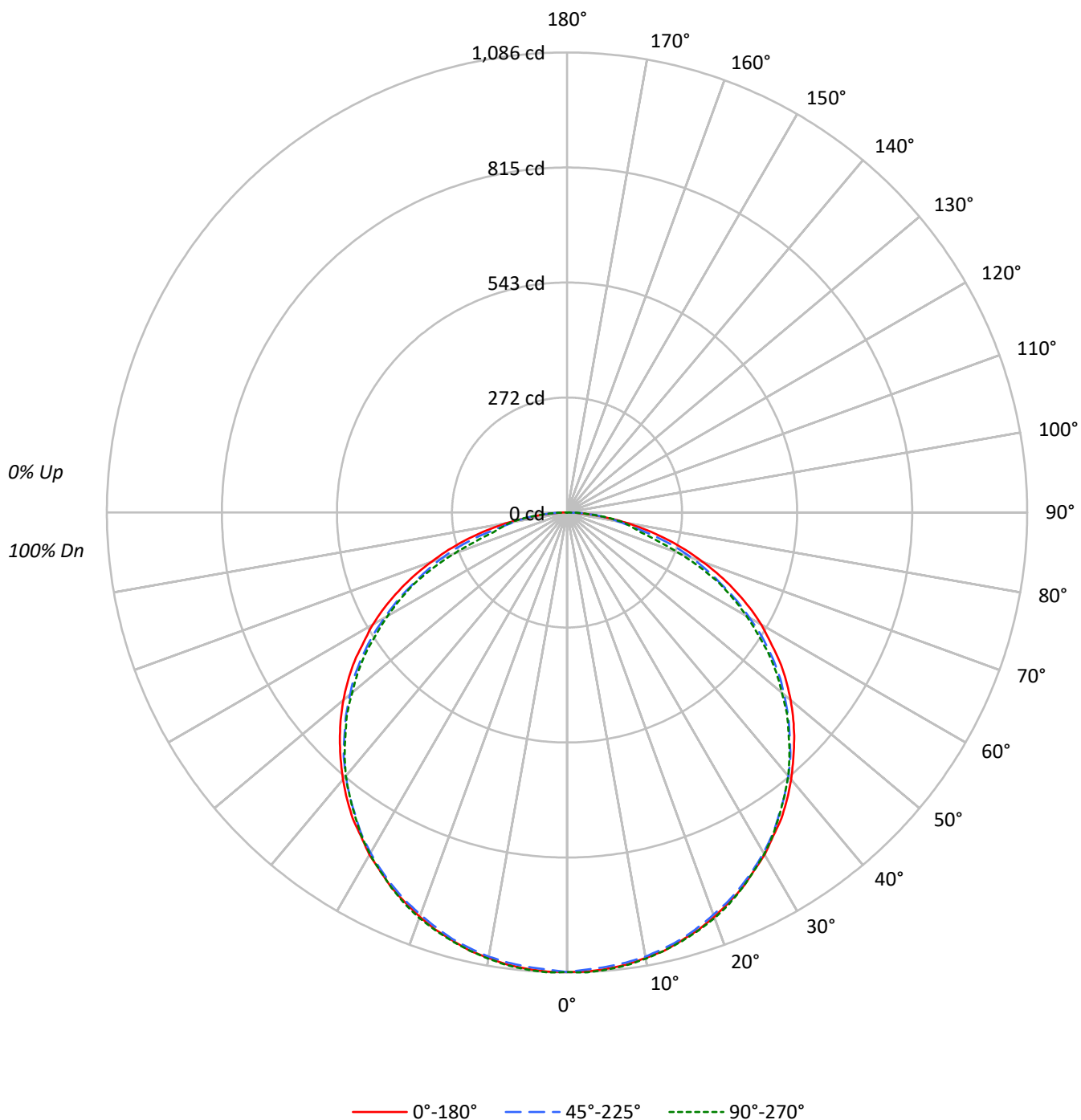
Lumens per Lamp: N/A  
Luminaire Lumens: 3201.0 lumens  
Efficiency: N/A  
Efficacy: 97.6 lumens/watt  
Spacing Criteria (0/90/45): 1.28 / 1.27 / 1.39  
Luminous Opening: Rectangular (W 0.67' x L: 3.83' x H: 0')  
CIE Type: Direct

Input Watts (W): 32.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

TEST NUMBER: P975253

CATALOG NUMBER: 14ENA-LD2-38-UNV-L930-CD1

### Luminous Intensity Polar Plot



TEST NUMBER: P975253

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 10  |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 50  |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 102 |
| 1   | 109 | 104 | 99  | 95  | 106 | 101 | 97  | 94  | 97  | 94  | 91  |  | 93  | 90  | 88  |  | 90  |
| 2   | 99  | 90  | 83  | 77  | 96  | 88  | 82  | 76  | 85  | 79  | 75  |  | 81  | 77  | 73  |  | 78  |
| 3   | 90  | 79  | 71  | 64  | 87  | 77  | 70  | 63  | 74  | 68  | 62  |  | 72  | 66  | 61  |  | 69  |
| 4   | 82  | 70  | 61  | 54  | 80  | 68  | 60  | 54  | 66  | 59  | 53  |  | 64  | 57  | 52  |  | 61  |
| 5   | 75  | 62  | 53  | 46  | 73  | 61  | 53  | 46  | 59  | 51  | 46  |  | 57  | 50  | 45  |  | 55  |
| 6   | 69  | 56  | 47  | 40  | 68  | 55  | 46  | 40  | 53  | 46  | 40  |  | 51  | 45  | 39  |  | 50  |
| 7   | 64  | 51  | 42  | 36  | 63  | 50  | 41  | 35  | 48  | 41  | 35  |  | 47  | 40  | 35  |  | 45  |
| 8   | 60  | 46  | 38  | 32  | 58  | 45  | 37  | 32  | 44  | 37  | 31  |  | 43  | 36  | 31  |  | 42  |
| 9   | 56  | 42  | 34  | 28  | 54  | 42  | 34  | 28  | 41  | 33  | 28  |  | 40  | 33  | 28  |  | 38  |
| 10  | 52  | 39  | 31  | 26  | 51  | 39  | 31  | 26  | 38  | 30  | 26  |  | 37  | 30  | 25  |  | 36  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4569 | 4569 | 4569 |
| 5°  | 4572 | 4551 | 4579 |
| 10° | 4567 | 4553 | 4574 |
| 15° | 4560 | 4546 | 4568 |
| 20° | 4552 | 4528 | 4566 |
| 25° | 4546 | 4522 | 4546 |
| 30° | 4535 | 4510 | 4527 |
| 35° | 4534 | 4482 | 4490 |
| 40° | 4522 | 4466 | 4466 |
| 45° | 4516 | 4426 | 4405 |
| 50° | 4513 | 4380 | 4336 |
| 55° | 4498 | 4325 | 4263 |
| 60° | 4461 | 4192 | 4120 |
| 65° | 4369 | 4013 | 3963 |
| 70° | 4188 | 3854 | 3481 |
| 75° | 3938 | 3469 | 2919 |
| 80° | 3488 | 2995 | 3284 |
| 85° | 2701 | 3107 | 2943 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4516 cd/sqm

TEST NUMBER: P975253

CATALOG NUMBER: 14ENA-LD2-38-UNV-L930-CD1

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 102.7  | 3.2       |
| 10°-20°   | 295.0  | 9.2       |
| 20°-30°   | 449.7  | 14.0      |
| 30°-40°   | 547.6  | 17.1      |
| 40°-50°   | 575.8  | 18.0      |
| 50°-60°   | 528.6  | 16.5      |
| 60°-70°   | 406.1  | 12.7      |
| 70°-80°   | 226.7  | 7.1       |
| 80°-90°   | 68.8   | 2.1       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 847.5  | 26.5      |
| 0°-40°    | 1395.1 | 43.6      |
| 0°-60°    | 2499.5 | 78.1      |
| 0°-90°    | 3201.0 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 3201.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|-----|------|-------|------|-------|------|------|
| 0°  | 1085 | 1085  | 1085 | 1085  | 1085 |      |
| 5°  | 1081 | 1081  | 1076 | 1081  | 1083 | 103  |
| 15° | 1046 | 1046  | 1043 | 1046  | 1048 | 295  |
| 25° | 978  | 975   | 973  | 976   | 978  | 451  |
| 35° | 882  | 878   | 872  | 873   | 873  | 551  |
| 45° | 758  | 753   | 743  | 740   | 740  | 585  |
| 55° | 613  | 608   | 589  | 579   | 580  | 546  |
| 65° | 438  | 426   | 403  | 398   | 398  | 433  |
| 75° | 242  | 230   | 213  | 184   | 179  | 256  |
| 85° | 56   | 58    | 64   | 63    | 61   | 67   |
| 90° | 0    | 0     | 0    | 0     | 0    |      |

TEST NUMBER: P975253

CATALOG NUMBER: 14ENA-LD2-38-UNV-L930-CD1

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|-------|--------|--------|--------|--------|--------|
| 0°    | 1084.8 | 1084.8 | 1084.8 | 1084.8 | 1084.8 |
| 2.5°  | 1084.8 | 1084.8 | 1079.8 | 1084.8 | 1086.5 |
| 5°    | 1081.4 | 1081.4 | 1076.4 | 1081.4 | 1083.1 |
| 7.5°  | 1076.4 | 1076.4 | 1071.4 | 1074.6 | 1078.1 |
| 10°   | 1067.9 | 1067.9 | 1064.5 | 1067.9 | 1069.6 |
| 12.5° | 1059.5 | 1057.7 | 1054.3 | 1057.7 | 1059.5 |
| 15°   | 1045.8 | 1045.8 | 1042.6 | 1045.8 | 1047.6 |
| 17.5° | 1032.4 | 1030.7 | 1027.2 | 1032.4 | 1034.1 |
| 20°   | 1015.5 | 1013.8 | 1010.3 | 1015.5 | 1018.8 |
| 22.5° | 996.9  | 995.1  | 993.4  | 998.6  | 1000.1 |
| 25°   | 978.2  | 974.8  | 973.1  | 976.5  | 978.2  |
| 27.5° | 954.4  | 952.9  | 951.2  | 952.9  | 954.4  |
| 30°   | 932.5  | 929.1  | 927.4  | 927.4  | 930.8  |
| 32.5° | 905.5  | 903.7  | 902.0  | 903.7  | 903.7  |
| 35°   | 881.8  | 878.4  | 871.7  | 873.2  | 873.2  |
| 37.5° | 853.0  | 847.9  | 842.8  | 842.8  | 842.8  |
| 40°   | 822.5  | 819.0  | 812.3  | 810.6  | 812.3  |
| 42.5° | 790.4  | 787.0  | 780.2  | 775.1  | 776.8  |
| 45°   | 758.2  | 753.2  | 743.0  | 739.5  | 739.5  |
| 47.5° | 724.4  | 719.2  | 707.5  | 702.3  | 704.0  |
| 50°   | 688.8  | 682.1  | 668.5  | 661.8  | 661.8  |
| 52.5° | 651.6  | 644.9  | 631.2  | 622.8  | 622.8  |
| 55°   | 612.6  | 607.6  | 589.0  | 578.8  | 580.5  |
| 57.5° | 568.6  | 563.6  | 545.0  | 533.1  | 533.1  |
| 60°   | 529.6  | 519.6  | 497.6  | 489.1  | 489.1  |
| 62.5° | 485.7  | 473.9  | 451.9  | 441.7  | 443.4  |
| 65°   | 438.4  | 426.5  | 402.7  | 397.7  | 397.7  |
| 67.5° | 391.0  | 380.8  | 358.7  | 350.3  | 341.8  |
| 70°   | 340.1  | 330.1  | 313.0  | 292.9  | 282.7  |
| 72.5° | 292.9  | 280.9  | 265.8  | 235.2  | 225.1  |
| 75°   | 242.0  | 230.2  | 213.2  | 184.5  | 179.4  |
| 77.5° | 193.0  | 182.8  | 159.0  | 152.3  | 155.7  |
| 80°   | 143.8  | 140.4  | 123.5  | 130.4  | 135.4  |
| 82.5° | 96.4   | 94.9   | 98.1   | 101.6  | 101.6  |
| 85°   | 55.9   | 57.6   | 64.3   | 62.6   | 60.9   |
| 87.5° | 23.6   | 28.8   | 27.1   | 27.1   | 27.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-457-1

Test Date: 07/15/2025

Luminaire Tested: 14EN-LD2-51-UNV-L930-CD1-U

Data in this report applies to families of products including 14EN-LD2-51-UNV-L930-CD1-U

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-457-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 07/15/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Metalux  
 Catalog Number: **14EN-LD2-51-UNV-L930-CD1-U**  
 Description: 1x4 ENCOUNTER 5100LM WITH LIGHTNING BOARDS

### Spectral Parameters

CCT (K): 2952  
 CIE  $u'$ : 0.2521  
 CIE  $v'$ : 0.5233  
 Duv: 0.0007  
 CIE x: 0.4415  
 CIE y: 0.4074  
 CIE z: 0.1512  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 582  
 Purity: 54.78275  
 R<sub>f</sub>: 91.8  
 R<sub>g</sub>: 99.1

CRI (Ra): 93.2  
 R1: 93.9  
 R2: 96.6  
 R3: 98.6  
 R4: 94.8  
 R5: 93.9  
 R6: 96.9  
 R7: 91.0  
 R8: 79.7  
 R9: 53.0  
 R10: 91.2  
 R11: 96.9  
 R12: 85.5  
 R13: 94.5  
 R14: 98.2  
 R15: 88.3



### Test Conditions

Stabilization Time: 33M  
 Operation Time: 1H 33M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2506-457-1

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 6/16/2025        | 12/16/2025           |
| Power Meter                    | XITRON INXT2011004    | 1/21/2025        | 1/21/2026            |
| AC Power Source                | CHROMA 61603 IN0063   | 10/22/2024       | 10/22/2025           |
| DC Power Source                | AGILENT E3634A IN0208 | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | ONSET IN0085          | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | ONSET IN0046          | 10/22/2024       | 10/22/2025           |

REPORT NUMBER: SP1-2506-457-1

**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

REPORT NUMBER: SP1-2506-457-1

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 108                      | NR            | 620    | 327                      | NR            | 750    | 7                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 130                      | NR            | 625    | 330                      | NR            | 755    | 6                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 150                      | NR            | 630    | 1000                     | NR            | 760    | 5                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 166                      | NR            | 635    | 648                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 177                      | NR            | 640    | 220                      | NR            | 770    | 4                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 185                      | NR            | 645    | 212                      | NR            | 775    | 3                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 190                      | NR            | 650    | 184                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 196                      | NR            | 655    | 156                      | NR            | 785    | 2                        | NR            | 915    | 0                        | NR            |
| 400    | 1                        | NR            | 530    | 201                      | NR            | 660    | 133                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 208                      | NR            | 665    | 112                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 216                      | NR            | 670    | 103                      | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 5                        | NR            | 545    | 223                      | NR            | 675    | 84                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 10                       | NR            | 550    | 233                      | NR            | 680    | 72                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 17                       | NR            | 555    | 243                      | NR            | 685    | 62                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 29                       | NR            | 560    | 253                      | NR            | 690    | 53                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 47                       | NR            | 565    | 262                      | NR            | 695    | 45                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 77                       | NR            | 570    | 272                      | NR            | 700    | 38                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 136                      | NR            | 575    | 282                      | NR            | 705    | 32                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 193                      | NR            | 580    | 292                      | NR            | 710    | 27                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 153                      | NR            | 585    | 301                      | NR            | 715    | 23                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 105                      | NR            | 590    | 310                      | NR            | 720    | 19                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 94                       | NR            | 595    | 314                      | NR            | 725    | 16                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 320                      | NR            | 730    | 13                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 68                       | NR            | 605    | 323                      | NR            | 735    | 11                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 74                       | NR            | 610    | 351                      | NR            | 740    | 10                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 89                       | NR            | 615    | 372                      | NR            | 745    | 8                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-457-1

### Scotopic Flux vs. Wavelength



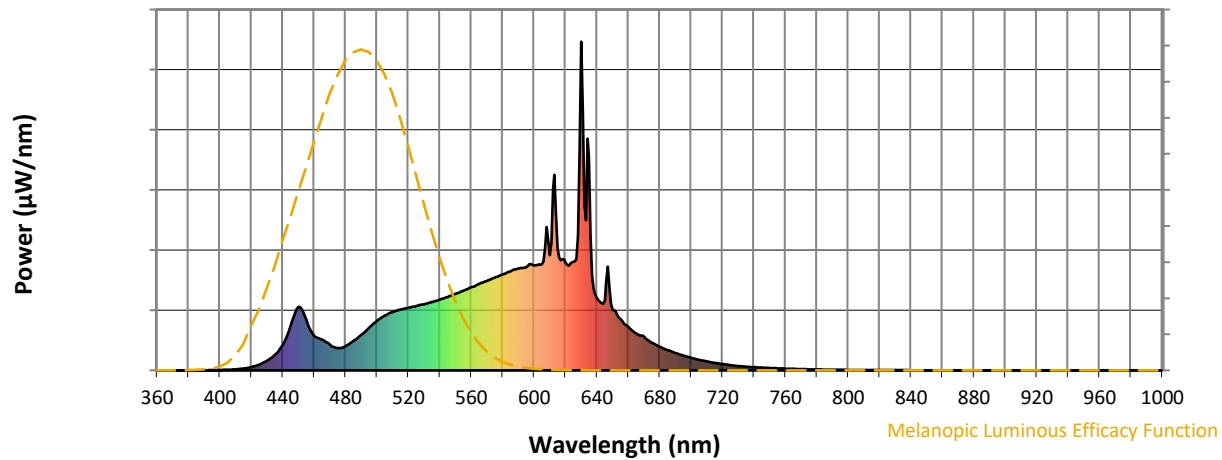
Scotopic Lumens: NR

S/P: 1.4

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 108                      | NR            | 620    | 327                      | NR            | 750    | 7                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 130                      | NR            | 625    | 330                      | NR            | 755    | 6                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 150                      | NR            | 630    | 1000                     | NR            | 760    | 5                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 166                      | NR            | 635    | 648                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 177                      | NR            | 640    | 220                      | NR            | 770    | 4                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 185                      | NR            | 645    | 212                      | NR            | 775    | 3                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 190                      | NR            | 650    | 184                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 196                      | NR            | 655    | 156                      | NR            | 785    | 2                        | NR            | 915    | 0                        | NR            |
| 400    | 1                        | NR            | 530    | 201                      | NR            | 660    | 133                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 208                      | NR            | 665    | 112                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 216                      | NR            | 670    | 103                      | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 5                        | NR            | 545    | 223                      | NR            | 675    | 84                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 10                       | NR            | 550    | 233                      | NR            | 680    | 72                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 17                       | NR            | 555    | 243                      | NR            | 685    | 62                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 29                       | NR            | 560    | 253                      | NR            | 690    | 53                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 47                       | NR            | 565    | 262                      | NR            | 695    | 45                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 77                       | NR            | 570    | 272                      | NR            | 700    | 38                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 136                      | NR            | 575    | 282                      | NR            | 705    | 32                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 193                      | NR            | 580    | 292                      | NR            | 710    | 27                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 153                      | NR            | 585    | 301                      | NR            | 715    | 23                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 105                      | NR            | 590    | 310                      | NR            | 720    | 19                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 94                       | NR            | 595    | 314                      | NR            | 725    | 16                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 320                      | NR            | 730    | 13                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 68                       | NR            | 605    | 323                      | NR            | 735    | 11                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 74                       | NR            | 610    | 351                      | NR            | 740    | 10                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 89                       | NR            | 615    | 372                      | NR            | 745    | 8                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-457-1

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.7

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 108                      | NR            | 620    | 327                      | NR            | 750    | 7                        | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 130                      | NR            | 625    | 330                      | NR            | 755    | 6                        | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 150                      | NR            | 630    | 1000                     | NR            | 760    | 5                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 166                      | NR            | 635    | 648                      | NR            | 765    | 5                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 177                      | NR            | 640    | 220                      | NR            | 770    | 4                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 185                      | NR            | 645    | 212                      | NR            | 775    | 3                        | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 190                      | NR            | 650    | 184                      | NR            | 780    | 3                        | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 196                      | NR            | 655    | 156                      | NR            | 785    | 2                        | NR            | 915    | 0                        | NR            |
| 400    | 1                        | NR            | 530    | 201                      | NR            | 660    | 133                      | NR            | 790    | 2                        | NR            | 920    | 0                        | NR            |
| 405    | 2                        | NR            | 535    | 208                      | NR            | 665    | 112                      | NR            | 795    | 2                        | NR            | 925    | 0                        | NR            |
| 410    | 3                        | NR            | 540    | 216                      | NR            | 670    | 103                      | NR            | 800    | 1                        | NR            | 930    | 0                        | NR            |
| 415    | 5                        | NR            | 545    | 223                      | NR            | 675    | 84                       | NR            | 805    | 1                        | NR            | 935    | 0                        | NR            |
| 420    | 10                       | NR            | 550    | 233                      | NR            | 680    | 72                       | NR            | 810    | 1                        | NR            | 940    | 0                        | NR            |
| 425    | 17                       | NR            | 555    | 243                      | NR            | 685    | 62                       | NR            | 815    | 1                        | NR            | 945    | 0                        | NR            |
| 430    | 29                       | NR            | 560    | 253                      | NR            | 690    | 53                       | NR            | 820    | 1                        | NR            | 950    | 0                        | NR            |
| 435    | 47                       | NR            | 565    | 262                      | NR            | 695    | 45                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 77                       | NR            | 570    | 272                      | NR            | 700    | 38                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 136                      | NR            | 575    | 282                      | NR            | 705    | 32                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 193                      | NR            | 580    | 292                      | NR            | 710    | 27                       | NR            | 840    | 0                        | NR            | 970    | 0                        | NR            |
| 455    | 153                      | NR            | 585    | 301                      | NR            | 715    | 23                       | NR            | 845    | 0                        | NR            | 975    | 0                        | NR            |
| 460    | 105                      | NR            | 590    | 310                      | NR            | 720    | 19                       | NR            | 850    | 0                        | NR            | 980    | 0                        | NR            |
| 465    | 94                       | NR            | 595    | 314                      | NR            | 725    | 16                       | NR            | 855    | 0                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 320                      | NR            | 730    | 13                       | NR            | 860    | 0                        | NR            | 990    | 0                        | NR            |
| 475    | 68                       | NR            | 605    | 323                      | NR            | 735    | 11                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 74                       | NR            | 610    | 351                      | NR            | 740    | 10                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 89                       | NR            | 615    | 372                      | NR            | 745    | 8                        | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2506-457-1

TM-30-18

### Summary

$R_f = 91.8$   
 $R_g = 99.1$   
 $CIE R_a = 93.2$   
 $R_9 = 53.0$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 97 | CES76 = 91 |
| CES02 = 63 | CES27 = 94 | CES52 = 98 | CES77 = 85 |
| CES03 = 32 | CES28 = 98 | CES53 = 97 | CES78 = 88 |
| CES04 = 70 | CES29 = 95 | CES54 = 96 | CES79 = 88 |
| CES05 = 50 | CES30 = 98 | CES55 = 96 | CES80 = 91 |
| CES06 = 51 | CES31 = 95 | CES56 = 96 | CES81 = 70 |
| CES07 = 43 | CES32 = 88 | CES57 = 96 | CES82 = 96 |
| CES08 = 42 | CES33 = 96 | CES58 = 97 | CES83 = 93 |
| CES09 = 29 | CES34 = 96 | CES59 = 98 | CES84 = 95 |
| CES10 = 76 | CES35 = 98 | CES60 = 95 | CES85 = 79 |
| CES11 = 59 | CES36 = 88 | CES61 = 95 | CES86 = 75 |
| CES12 = 65 | CES37 = 96 | CES62 = 93 | CES87 = 92 |
| CES13 = 44 | CES38 = 94 | CES63 = 95 | CES88 = 96 |
| CES14 = 74 | CES39 = 98 | CES64 = 95 | CES89 = 82 |
| CES15 = 72 | CES40 = 96 | CES65 = 90 | CES90 = 97 |
| CES16 = 48 | CES41 = 96 | CES66 = 94 | CES91 = 82 |
| CES17 = 50 | CES42 = 95 | CES67 = 93 | CES92 = 76 |
| CES18 = 57 | CES43 = 95 | CES68 = 92 | CES93 = 86 |
| CES19 = 72 | CES44 = 99 | CES69 = 93 | CES94 = 71 |
| CES20 = 67 | CES45 = 97 | CES70 = 91 | CES95 = 84 |
| CES21 = 86 | CES46 = 96 | CES71 = 89 | CES96 = 91 |
| CES22 = 79 | CES47 = 88 | CES72 = 96 | CES97 = 95 |
| CES23 = 92 | CES48 = 93 | CES73 = 86 | CES98 = 93 |
| CES24 = 91 | CES49 = 95 | CES74 = 89 | CES99 = 90 |
| CES25 = 72 | CES50 = 98 | CES75 = 90 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)