

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: CORELITE

Report Number: P1216748

Luminaire Tested: 14-ID2-25-CFR1-L940-U

Issue Date: 12/5/2025

**Test Information**

Test Method: LM-79-2019  
Report Number: P1216748  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2508-507-13)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/5/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: CORELITE  
Catalog Number: 14-ID2-25-CFR1-L940-U  
Description: 1X4 IN DEPTH TROFFER WITH 1INCH CUBE REGRESS LENS  
Light Source: 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

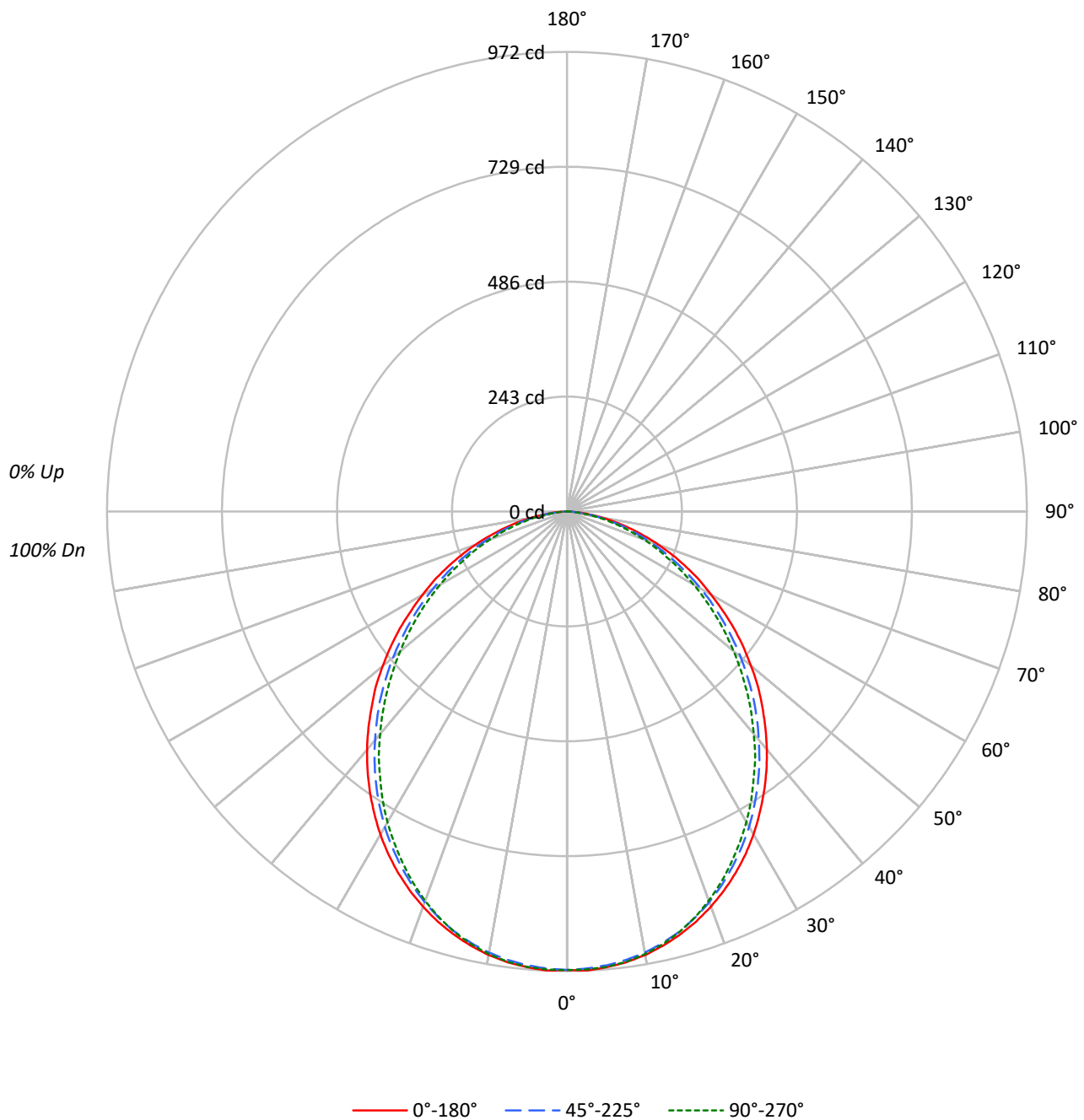
Lumens per Lamp: N/A  
Luminaire Lumens: 2383.1 lumens  
Efficiency: N/A  
Efficacy: 108.8 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.17 / 1.28  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 21.9  
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: 24 FT



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### Luminous Intensity Polar Plot



TEST NUMBER: P1216748

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

|     |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|
| RF  | 20  |     |     |     | 20  |     |     |     | 20  |     |     |  | 20  |     |     |  | 20  |
| RC  | 80  |     |     |     | 70  |     |     |     | 50  |     |     |  | 30  |     |     |  | 0   |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  |  | 50  | 30  | 10  |  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 100 |
| 1   | 109 | 105 | 101 | 97  | 107 | 103 | 99  | 96  | 99  | 96  | 93  |  | 95  | 92  | 90  |  | 85  |
| 2   | 100 | 92  | 86  | 80  | 97  | 90  | 84  | 79  | 87  | 82  | 77  |  | 84  | 79  | 76  |  | 72  |
| 3   | 92  | 81  | 74  | 67  | 89  | 80  | 73  | 67  | 77  | 71  | 66  |  | 74  | 69  | 65  |  | 61  |
| 4   | 84  | 73  | 64  | 58  | 82  | 71  | 63  | 57  | 69  | 62  | 56  |  | 66  | 61  | 56  |  | 53  |
| 5   | 78  | 65  | 56  | 50  | 75  | 64  | 56  | 50  | 62  | 55  | 49  |  | 60  | 54  | 49  |  | 46  |
| 6   | 72  | 59  | 50  | 44  | 70  | 58  | 50  | 44  | 56  | 49  | 43  |  | 54  | 48  | 43  |  | 41  |
| 7   | 67  | 53  | 45  | 39  | 65  | 53  | 45  | 39  | 51  | 44  | 39  |  | 50  | 43  | 38  |  | 36  |
| 8   | 62  | 49  | 41  | 35  | 61  | 48  | 40  | 35  | 47  | 40  | 35  |  | 46  | 39  | 34  |  | 32  |
| 9   | 58  | 45  | 37  | 32  | 57  | 44  | 37  | 31  | 43  | 36  | 31  |  | 42  | 36  | 31  |  | 29  |
| 10  | 55  | 42  | 34  | 29  | 53  | 41  | 34  | 29  | 40  | 33  | 29  |  | 39  | 33  | 28  |  | 27  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2610 | 2610 | 2610 |
| 5°  | 2613 | 2602 | 2611 |
| 10° | 2603 | 2588 | 2597 |
| 15° | 2580 | 2562 | 2564 |
| 20° | 2547 | 2518 | 2509 |
| 25° | 2504 | 2460 | 2437 |
| 30° | 2451 | 2393 | 2357 |
| 35° | 2384 | 2311 | 2260 |
| 40° | 2308 | 2217 | 2157 |
| 45° | 2221 | 2119 | 2046 |
| 50° | 2126 | 2007 | 1926 |
| 55° | 2020 | 1886 | 1799 |
| 60° | 1895 | 1759 | 1664 |
| 65° | 1773 | 1617 | 1512 |
| 70° | 1621 | 1463 | 1355 |
| 75° | 1435 | 1272 | 1163 |
| 80° | 1173 | 1029 | 924  |
| 85° | 834  | 682  | 559  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2221 cd/sqm

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 CATALOG NUMBER: 14-ID2-25-CFR1-L940-U

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 91.6   | 3.8       |
| 10°-20°   | 259.5  | 10.9      |
| 20°-30°   | 382.1  | 16.0      |
| 30°-40°   | 440.8  | 18.5      |
| 40°-50°   | 431.0  | 18.1      |
| 50°-60°   | 362.4  | 15.2      |
| 60°-70°   | 254.6  | 10.7      |
| 70°-80°   | 131.9  | 5.5       |
| 80°-90°   | 29.2   | 1.2       |
| 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°    | 733.2  | 30.8      |
| 0°-40°    | 1174.0 | 49.3      |
| 0°-60°    | 1967.4 | 82.6      |
| 0°-90°    | 2383.1 | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 2383.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 970 | 970   | 970 | 970   | 970 |      |
| 5°  | 967 | 966   | 963 | 964   | 967 | 92   |
| 15° | 926 | 924   | 920 | 918   | 920 | 261  |
| 25° | 844 | 840   | 829 | 820   | 821 | 388  |
| 35° | 726 | 720   | 703 | 690   | 688 | 454  |
| 45° | 584 | 576   | 557 | 542   | 538 | 450  |
| 55° | 431 | 422   | 402 | 389   | 384 | 385  |
| 65° | 278 | 271   | 254 | 243   | 237 | 276  |
| 75° | 138 | 133   | 122 | 114   | 112 | 146  |
| 85° | 27  | 28    | 22  | 19    | 18  | 34   |
| 90° | 0   | 0     | 0   | 0     | 0   |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|-------|-------|-------|-------|-------|-------|
| 0°    | 969.8 | 969.8 | 969.8 | 969.8 | 969.8 |
| 2.5°  | 971.8 | 969.8 | 967.4 | 968.2 | 969.4 |
| 5°    | 967.4 | 966.2 | 963.4 | 963.8 | 966.6 |
| 7.5°  | 961.4 | 959.8 | 956.5 | 957.3 | 960.6 |
| 10°   | 952.5 | 950.1 | 947.3 | 947.7 | 950.5 |
| 12.5° | 940.4 | 938.4 | 934.8 | 934.4 | 937.2 |
| 15°   | 926.0 | 923.9 | 919.5 | 917.9 | 920.3 |
| 17.5° | 909.1 | 906.6 | 901.0 | 898.2 | 899.8 |
| 20°   | 889.3 | 886.9 | 879.3 | 874.0 | 876.1 |
| 22.5° | 867.6 | 864.8 | 855.1 | 849.1 | 849.9 |
| 25°   | 843.5 | 839.8 | 828.6 | 820.1 | 820.9 |
| 27.5° | 817.3 | 812.5 | 800.0 | 790.7 | 790.3 |
| 30°   | 788.7 | 783.5 | 770.2 | 759.4 | 758.6 |
| 32.5° | 757.7 | 752.5 | 737.2 | 725.6 | 724.7 |
| 35°   | 725.6 | 719.5 | 703.4 | 690.5 | 688.1 |
| 37.5° | 692.2 | 685.3 | 668.0 | 655.5 | 653.5 |
| 40°   | 657.1 | 649.9 | 631.0 | 617.7 | 614.1 |
| 42.5° | 620.9 | 614.1 | 594.0 | 581.1 | 576.3 |
| 45°   | 583.5 | 576.3 | 556.9 | 541.7 | 537.6 |
| 47.5° | 547.7 | 538.0 | 517.5 | 504.6 | 498.6 |
| 50°   | 507.8 | 499.8 | 479.3 | 466.0 | 460.0 |
| 52.5° | 469.6 | 461.6 | 440.2 | 427.0 | 421.7 |
| 55°   | 430.6 | 422.5 | 402.0 | 388.7 | 383.5 |
| 57.5° | 390.3 | 383.9 | 364.2 | 351.7 | 346.1 |
| 60°   | 352.1 | 345.7 | 326.8 | 315.1 | 309.1 |
| 62.5° | 316.3 | 308.2 | 289.7 | 278.9 | 272.8 |
| 65°   | 278.5 | 271.2 | 253.9 | 242.7 | 237.4 |
| 67.5° | 241.9 | 235.0 | 218.9 | 209.3 | 205.2 |
| 70°   | 206.0 | 200.0 | 185.9 | 176.3 | 172.2 |
| 72.5° | 171.0 | 165.8 | 153.3 | 144.1 | 141.2 |
| 75°   | 138.0 | 133.2 | 122.3 | 114.3 | 111.9 |
| 77.5° | 105.8 | 103.0 | 93.0  | 86.1  | 84.1  |
| 80°   | 75.7  | 74.4  | 66.4  | 60.8  | 59.6  |
| 82.5° | 49.1  | 48.7  | 43.5  | 38.6  | 37.0  |
| 85°   | 27.0  | 27.8  | 22.1  | 18.9  | 18.1  |
| 87.5° | 9.7   | 9.7   | 6.8   | 6.0   | 5.6   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

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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 | 14.44            | 16.02 | 14.81 | 16.33 | 16.65 | 13.79          | 15.37 | 14.15 | 15.68 | 16.00 |
|                 | 3H   | 16.06            | 17.49 | 16.44 | 17.81 | 18.17 | 15.27          | 16.70 | 15.65 | 17.02 | 17.38 |
|                 | 4H   | 16.63            | 17.97 | 17.03 | 18.32 | 18.69 | 15.77          | 17.10 | 16.17 | 17.45 | 17.83 |
|                 | 6H   | 17.01            | 18.24 | 17.42 | 18.61 | 19.00 | 16.07          | 17.31 | 16.48 | 17.67 | 18.06 |
|                 | 8H   | 17.10            | 18.28 | 17.53 | 18.67 | 19.07 | 16.14          | 17.32 | 16.56 | 17.71 | 18.11 |
|                 | 12H  | 17.15            | 18.28 | 17.58 | 18.67 | 19.09 | 16.16          | 17.29 | 16.59 | 17.67 | 18.10 |
| 4H              | 2H   | 14.92            | 16.26 | 15.32 | 16.60 | 16.98 | 14.39          | 15.73 | 14.79 | 16.08 | 16.45 |
|                 | 3H   | 16.75            | 17.87 | 17.16 | 18.27 | 18.67 | 16.08          | 17.19 | 16.49 | 17.59 | 17.99 |
|                 | 4H   | 17.45            | 18.45 | 17.88 | 18.86 | 19.30 | 16.68          | 17.68 | 17.11 | 18.09 | 18.53 |
|                 | 6H   | 17.94            | 18.81 | 18.40 | 19.26 | 19.71 | 17.08          | 17.95 | 17.53 | 18.39 | 18.85 |
|                 | 8H   | 18.07            | 18.89 | 18.54 | 19.33 | 19.80 | 17.17          | 17.99 | 17.63 | 18.43 | 18.90 |
|                 | 12H  | 18.16            | 18.89 | 18.64 | 19.37 | 19.84 | 17.22          | 17.95 | 17.70 | 18.43 | 18.90 |
| 8H              | 4H   | 17.64            | 18.46 | 18.10 | 18.90 | 19.37 | 16.95          | 17.76 | 17.41 | 18.21 | 18.67 |
|                 | 6H   | 18.23            | 18.90 | 18.72 | 19.39 | 19.87 | 17.43          | 18.11 | 17.93 | 18.60 | 19.07 |
|                 | 8H   | 18.42            | 19.02 | 18.93 | 19.53 | 20.02 | 17.57          | 18.18 | 18.08 | 18.68 | 19.17 |
|                 | 12H  | 18.55            | 19.09 | 19.06 | 19.58 | 20.14 | 17.65          | 18.19 | 18.16 | 18.68 | 19.24 |
| 12H             | 4H   | 17.65            | 18.38 | 18.13 | 18.85 | 19.32 | 16.97          | 17.70 | 17.45 | 18.18 | 18.65 |
|                 | 6H   | 18.24            | 18.85 | 18.75 | 19.36 | 19.84 | 17.47          | 18.07 | 17.98 | 18.58 | 19.07 |
|                 | 8H   | 18.47            | 19.01 | 18.98 | 19.50 | 20.06 | 17.65          | 18.19 | 18.16 | 18.68 | 19.24 |

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

Report Prepared for

Cooper Lighting Solutions

Corelite

Report Number: SP1-2506-458-11

Test Date: 08/26/2025

Luminaire Tested: 22ID2-55-CFR1-L940-U

Data in this report applies to families of products including 22ID2-55-CFR1-L940-U

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2506-458-11  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/27/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Corelite  
 Catalog Number: **22ID2-55-CFR1-L940-U**  
 Description: 2X2 CGTX WITH INDEPTH FRAME AND CFR1 LENS - 5500 LUMEN 4000K 90CRI

### Spectral Parameters

CCT (K): 3910  
 CIE  $u'$ : 0.2263  
 CIE  $v'$ : 0.5043  
 Duv: 0.0008  
 CIE x: 0.3851  
 CIE y: 0.3813  
 CIE z: 0.2336  
 Peak Wavelength (nm): 451  
 Dominant Wavelength (nm): 578  
 Purity: 30.01895  
 R<sub>f</sub>: 90.8  
 R<sub>g</sub>: 98.8

CRI (Ra): 92.4  
 R1: 92.5  
 R2: 94.9  
 R3: 95.8  
 R4: 92.7  
 R5: 91.7  
 R6: 92.1  
 R7: 94.3  
 R8: 85.2  
 R9: 62.0  
 R10: 87.0  
 R11: 92.8  
 R12: 71.7  
 R13: 93.2  
 R14: 97.3  
 R15: 89.6



### Test Conditions

Stabilization Time: 31M  
 Operation Time: 1H 31M  
 Sphere Temperature (°C): 25.2.

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 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           |

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

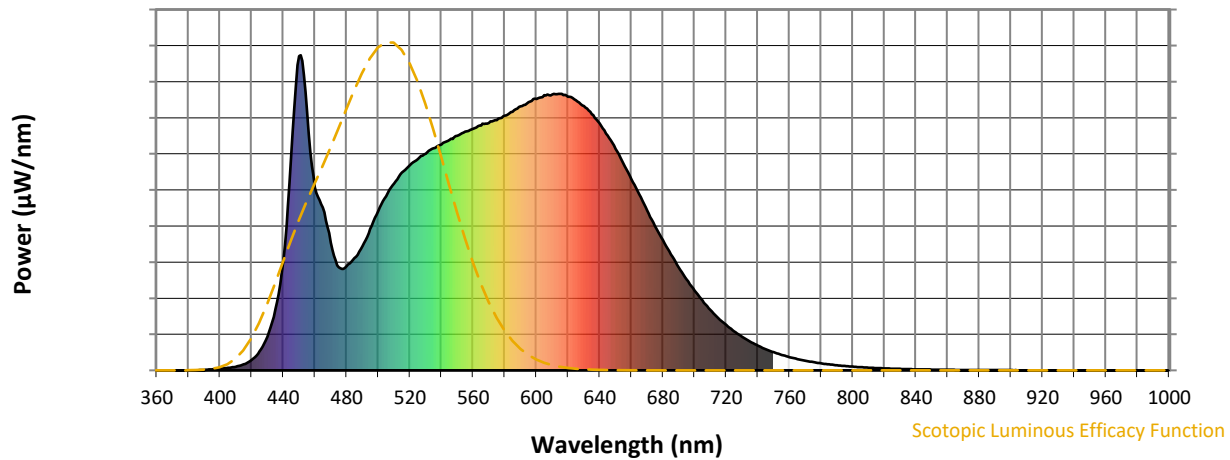


### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 394                         | NR               | 620       | 868                         | NR               | 750       | 58                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 449                         | NR               | 625       | 858                         | NR               | 755       | 49                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 505                         | NR               | 630       | 839                         | NR               | 760       | 42                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 553                         | NR               | 635       | 813                         | NR               | 765       | 36                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 593                         | NR               | 640       | 783                         | NR               | 770       | 31                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 628                         | NR               | 645       | 746                         | NR               | 775       | 26                          | NR               | 905       | 1                           | NR               |
| 390       | 1                           | NR               | 520       | 651                         | NR               | 650       | 702                         | NR               | 780       | 22                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 670                         | NR               | 655       | 657                         | NR               | 785       | 19                          | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 687                         | NR               | 660       | 607                         | NR               | 790       | 16                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 705                         | NR               | 665       | 559                         | NR               | 795       | 14                          | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 717                         | NR               | 670       | 507                         | NR               | 800       | 12                          | NR               | 930       | 0                           | NR               |
| 415       | 19                          | NR               | 545       | 731                         | NR               | 675       | 458                         | NR               | 805       | 10                          | NR               | 935       | 0                           | NR               |
| 420       | 34                          | NR               | 550       | 745                         | NR               | 680       | 413                         | NR               | 810       | 9                           | NR               | 940       | 0                           | NR               |
| 425       | 60                          | NR               | 555       | 757                         | NR               | 685       | 367                         | NR               | 815       | 7                           | NR               | 945       | 0                           | NR               |
| 430       | 107                         | NR               | 560       | 767                         | NR               | 690       | 328                         | NR               | 820       | 6                           | NR               | 950       | 0                           | NR               |
| 435       | 194                         | NR               | 565       | 777                         | NR               | 695       | 289                         | NR               | 825       | 5                           | NR               | 955       | 0                           | NR               |
| 440       | 349                         | NR               | 570       | 785                         | NR               | 700       | 253                         | NR               | 830       | 5                           | NR               | 960       | 0                           | NR               |
| 445       | 678                         | NR               | 575       | 794                         | NR               | 705       | 221                         | NR               | 835       | 4                           | NR               | 965       | 0                           | NR               |
| 450       | 997                         | NR               | 580       | 809                         | NR               | 710       | 192                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 819                         | NR               | 585       | 820                         | NR               | 715       | 165                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 581                         | NR               | 590       | 838                         | NR               | 720       | 144                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 517                         | NR               | 595       | 851                         | NR               | 725       | 124                         | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 406                         | NR               | 600       | 861                         | NR               | 730       | 107                         | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 327                         | NR               | 605       | 873                         | NR               | 735       | 91                          | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 330                         | NR               | 610       | 875                         | NR               | 740       | 78                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 356                         | NR               | 615       | 877                         | NR               | 745       | 67                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.75

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 394                                  | NR                             | 620               | 868                                  | NR                             | 750               | 58                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 449                                  | NR                             | 625               | 858                                  | NR                             | 755               | 49                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 505                                  | NR                             | 630               | 839                                  | NR                             | 760               | 42                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 553                                  | NR                             | 635               | 813                                  | NR                             | 765               | 36                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 593                                  | NR                             | 640               | 783                                  | NR                             | 770               | 31                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 628                                  | NR                             | 645               | 746                                  | NR                             | 775               | 26                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 651                                  | NR                             | 650               | 702                                  | NR                             | 780               | 22                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 4                                    | NR                             | 525               | 670                                  | NR                             | 655               | 657                                  | NR                             | 785               | 19                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 5                                    | NR                             | 530               | 687                                  | NR                             | 660               | 607                                  | NR                             | 790               | 16                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 705                                  | NR                             | 665               | 559                                  | NR                             | 795               | 14                                   | NR                             | 925               | 0                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 717                                  | NR                             | 670               | 507                                  | NR                             | 800               | 12                                   | NR                             | 930               | 0                                    | NR                             |
| 415               | 19                                   | NR                             | 545               | 731                                  | NR                             | 675               | 458                                  | NR                             | 805               | 10                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 34                                   | NR                             | 550               | 745                                  | NR                             | 680               | 413                                  | NR                             | 810               | 9                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 60                                   | NR                             | 555               | 757                                  | NR                             | 685               | 367                                  | NR                             | 815               | 7                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 107                                  | NR                             | 560               | 767                                  | NR                             | 690               | 328                                  | NR                             | 820               | 6                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 194                                  | NR                             | 565               | 777                                  | NR                             | 695               | 289                                  | NR                             | 825               | 5                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 349                                  | NR                             | 570               | 785                                  | NR                             | 700               | 253                                  | NR                             | 830               | 5                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 678                                  | NR                             | 575               | 794                                  | NR                             | 705               | 221                                  | NR                             | 835               | 4                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 997                                  | NR                             | 580               | 809                                  | NR                             | 710               | 192                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 819                                  | NR                             | 585               | 820                                  | NR                             | 715               | 165                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 581                                  | NR                             | 590               | 838                                  | NR                             | 720               | 144                                  | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 517                                  | NR                             | 595               | 851                                  | NR                             | 725               | 124                                  | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 406                                  | NR                             | 600               | 861                                  | NR                             | 730               | 107                                  | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 327                                  | NR                             | 605               | 873                                  | NR                             | 735               | 91                                   | NR                             | 865               | 2                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 330                                  | NR                             | 610               | 875                                  | NR                             | 740               | 78                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 356                                  | NR                             | 615               | 877                                  | NR                             | 745               | 67                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.61

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 394                         | NR               | 620       | 868                         | NR               | 750       | 58                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 449                         | NR               | 625       | 858                         | NR               | 755       | 49                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 505                         | NR               | 630       | 839                         | NR               | 760       | 42                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 553                         | NR               | 635       | 813                         | NR               | 765       | 36                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 593                         | NR               | 640       | 783                         | NR               | 770       | 31                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 628                         | NR               | 645       | 746                         | NR               | 775       | 26                          | NR               | 905       | 1                           | NR               |
| 390       | 1                           | NR               | 520       | 651                         | NR               | 650       | 702                         | NR               | 780       | 22                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 670                         | NR               | 655       | 657                         | NR               | 785       | 19                          | NR               | 915       | 0                           | NR               |
| 400       | 5                           | NR               | 530       | 687                         | NR               | 660       | 607                         | NR               | 790       | 16                          | NR               | 920       | 0                           | NR               |
| 405       | 8                           | NR               | 535       | 705                         | NR               | 665       | 559                         | NR               | 795       | 14                          | NR               | 925       | 0                           | NR               |
| 410       | 12                          | NR               | 540       | 717                         | NR               | 670       | 507                         | NR               | 800       | 12                          | NR               | 930       | 0                           | NR               |
| 415       | 19                          | NR               | 545       | 731                         | NR               | 675       | 458                         | NR               | 805       | 10                          | NR               | 935       | 0                           | NR               |
| 420       | 34                          | NR               | 550       | 745                         | NR               | 680       | 413                         | NR               | 810       | 9                           | NR               | 940       | 0                           | NR               |
| 425       | 60                          | NR               | 555       | 757                         | NR               | 685       | 367                         | NR               | 815       | 7                           | NR               | 945       | 0                           | NR               |
| 430       | 107                         | NR               | 560       | 767                         | NR               | 690       | 328                         | NR               | 820       | 6                           | NR               | 950       | 0                           | NR               |
| 435       | 194                         | NR               | 565       | 777                         | NR               | 695       | 289                         | NR               | 825       | 5                           | NR               | 955       | 0                           | NR               |
| 440       | 349                         | NR               | 570       | 785                         | NR               | 700       | 253                         | NR               | 830       | 5                           | NR               | 960       | 0                           | NR               |
| 445       | 678                         | NR               | 575       | 794                         | NR               | 705       | 221                         | NR               | 835       | 4                           | NR               | 965       | 0                           | NR               |
| 450       | 997                         | NR               | 580       | 809                         | NR               | 710       | 192                         | NR               | 840       | 3                           | NR               | 970       | 0                           | NR               |
| 455       | 819                         | NR               | 585       | 820                         | NR               | 715       | 165                         | NR               | 845       | 3                           | NR               | 975       | 0                           | NR               |
| 460       | 581                         | NR               | 590       | 838                         | NR               | 720       | 144                         | NR               | 850       | 2                           | NR               | 980       | 0                           | NR               |
| 465       | 517                         | NR               | 595       | 851                         | NR               | 725       | 124                         | NR               | 855       | 2                           | NR               | 985       | 0                           | NR               |
| 470       | 406                         | NR               | 600       | 861                         | NR               | 730       | 107                         | NR               | 860       | 2                           | NR               | 990       | 0                           | NR               |
| 475       | 327                         | NR               | 605       | 873                         | NR               | 735       | 91                          | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 330                         | NR               | 610       | 875                         | NR               | 740       | 78                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 356                         | NR               | 615       | 877                         | NR               | 745       | 67                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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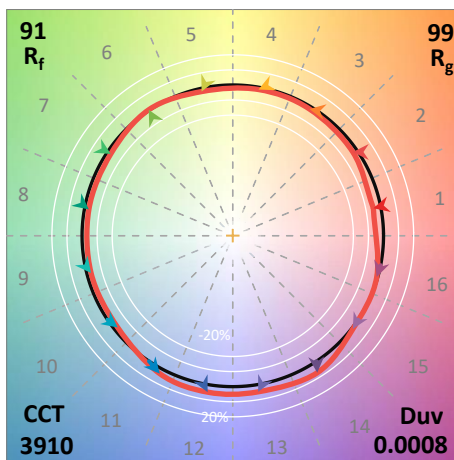
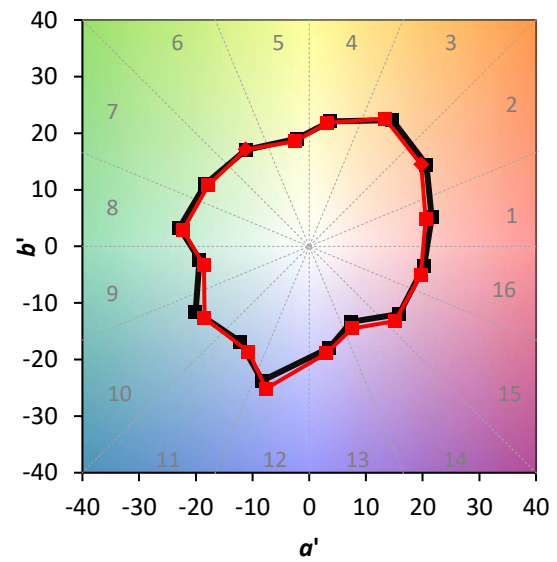
TM-30-18

### Summary

$R_f = 90.8$   
 $R_g = 98.8$   
 $CIE R_a = 92.4$   
 $R_9 = 62.0$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 96 | CES76 = 85 |
| CES02 = 62 | CES27 = 90 | CES52 = 98 | CES77 = 88 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 82 |
| CES04 = 69 | CES29 = 96 | CES54 = 92 | CES79 = 96 |
| CES05 = 49 | CES30 = 90 | CES55 = 90 | CES80 = 93 |
| CES06 = 50 | CES31 = 97 | CES56 = 93 | CES81 = 89 |
| CES07 = 42 | CES32 = 91 | CES57 = 91 | CES82 = 97 |
| CES08 = 41 | CES33 = 98 | CES58 = 92 | CES83 = 98 |
| CES09 = 29 | CES34 = 93 | CES59 = 96 | CES84 = 93 |
| CES10 = 74 | CES35 = 96 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 79 | CES61 = 91 | CES86 = 88 |
| CES12 = 63 | CES37 = 95 | CES62 = 84 | CES87 = 91 |
| CES13 = 43 | CES38 = 85 | CES63 = 91 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 87 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 87 | CES90 = 96 |
| CES16 = 47 | CES41 = 96 | CES66 = 84 | CES91 = 71 |
| CES17 = 49 | CES42 = 95 | CES67 = 83 | CES92 = 79 |
| CES18 = 56 | CES43 = 95 | CES68 = 86 | CES93 = 87 |
| CES19 = 71 | CES44 = 99 | CES69 = 87 | CES94 = 81 |
| CES20 = 66 | CES45 = 98 | CES70 = 84 | CES95 = 82 |
| CES21 = 85 | CES46 = 97 | CES71 = 77 | CES96 = 91 |
| CES22 = 78 | CES47 = 97 | CES72 = 93 | CES97 = 96 |
| CES23 = 91 | CES48 = 90 | CES73 = 78 | CES98 = 94 |
| CES24 = 90 | CES49 = 96 | CES74 = 91 | CES99 = 91 |
| CES25 = 71 | CES50 = 97 | CES75 = 80 |            |



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)