

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



Scaled data based on original data using
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P242452

Luminaire Tested: S123DRP-S560D940-X4F0-XX-UDD-F-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242452
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-11)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S123DRP-S560D940-X4F0-XX-UDD-F-W
Description: DEFINE 3 DIRECT RECESSED WITH SATIN FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

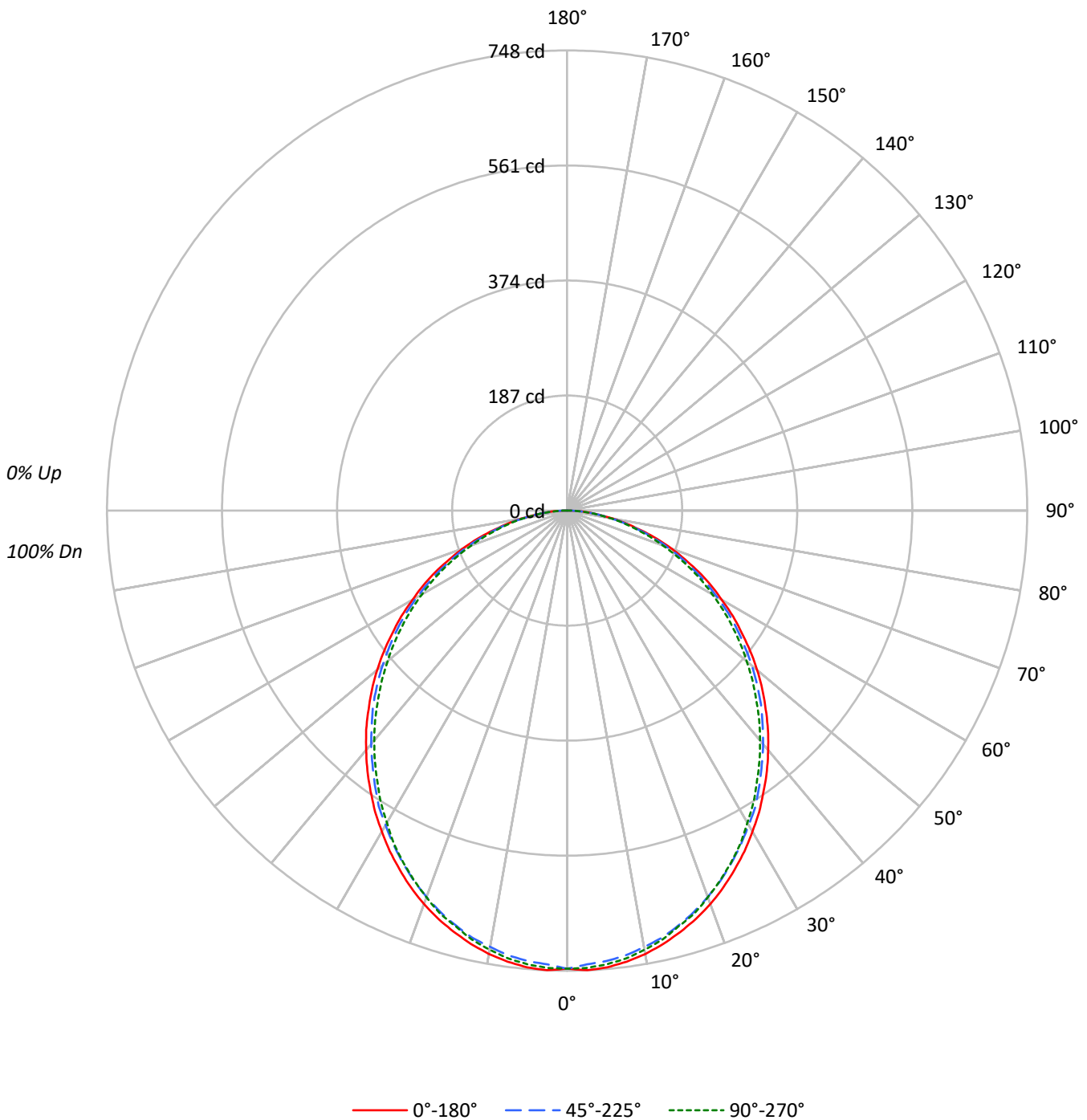
Lumens per Lamp: N/A
Luminaire Lumens: 1937.9 lumens
Efficiency: N/A
Efficacy: 103.1 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.18 / 1.3
Luminous Opening: Rectangular (W 0.23' x L: 3.88' x H: 0')
CIE Type: Direct

Input Watts (W): 18.8
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: 24 FT

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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | | 20 | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | 0 |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 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 | 102 | 102 | 102 | 100 |
| 1 | 109 | 104 | 100 | 96 | 106 | 102 | 98 | 95 | 98 | 94 | 92 | 94 | 91 | 89 | 90 | 88 | 86 | 84 |
| 2 | 99 | 91 | 84 | 79 | 97 | 89 | 83 | 78 | 86 | 80 | 76 | 82 | 78 | 74 | 79 | 76 | 72 | 70 |
| 3 | 91 | 80 | 72 | 66 | 88 | 79 | 71 | 65 | 76 | 69 | 64 | 73 | 67 | 63 | 70 | 66 | 62 | 59 |
| 4 | 83 | 71 | 62 | 56 | 81 | 70 | 62 | 55 | 67 | 60 | 55 | 65 | 59 | 54 | 63 | 58 | 53 | 51 |
| 5 | 76 | 64 | 55 | 48 | 74 | 63 | 54 | 48 | 60 | 53 | 47 | 58 | 52 | 47 | 57 | 51 | 46 | 44 |
| 6 | 71 | 57 | 49 | 42 | 69 | 56 | 48 | 42 | 55 | 47 | 42 | 53 | 46 | 41 | 51 | 46 | 41 | 39 |
| 7 | 66 | 52 | 43 | 37 | 64 | 51 | 43 | 37 | 50 | 42 | 37 | 48 | 42 | 37 | 47 | 41 | 36 | 34 |
| 8 | 61 | 48 | 39 | 33 | 60 | 47 | 39 | 33 | 46 | 38 | 33 | 44 | 38 | 33 | 43 | 37 | 33 | 31 |
| 9 | 57 | 44 | 36 | 30 | 56 | 43 | 35 | 30 | 42 | 35 | 30 | 41 | 34 | 30 | 40 | 34 | 30 | 28 |
| 10 | 54 | 40 | 33 | 27 | 52 | 40 | 32 | 27 | 39 | 32 | 27 | 38 | 32 | 27 | 37 | 31 | 27 | 25 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 9025 | 9025 | 9025 |
| 5° | 9068 | 8943 | 9006 |
| 10° | 9007 | 8866 | 8921 |
| 15° | 8902 | 8765 | 8782 |
| 20° | 8779 | 8622 | 8631 |
| 25° | 8614 | 8451 | 8435 |
| 30° | 8433 | 8262 | 8199 |
| 35° | 8242 | 8063 | 7958 |
| 40° | 8044 | 7842 | 7720 |
| 45° | 7825 | 7638 | 7452 |
| 50° | 7607 | 7388 | 7185 |
| 55° | 7320 | 7130 | 6915 |
| 60° | 7030 | 6829 | 6613 |
| 65° | 6777 | 6502 | 6298 |
| 70° | 6400 | 6128 | 5855 |
| 75° | 5849 | 5639 | 5395 |
| 80° | 5277 | 5054 | 5005 |
| 85° | 4631 | 4450 | 4270 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 7825 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 70.2 | 3.6 |
| 10°-20° | 198.2 | 10.2 |
| 20°-30° | 292.7 | 15.1 |
| 30°-40° | 341.9 | 17.6 |
| 40°-50° | 343.7 | 17.7 |
| 50°-60° | 301.9 | 15.6 |
| 60°-70° | 224.9 | 11.6 |
| 70°-80° | 128.0 | 6.6 |
| 80°-90° | 36.4 | 1.9 |
| 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° | 561.2 | 29.0 |
| 0°-40° | 903.1 | 46.6 |
| 0°-60° | 1548.7 | 79.9 |
| 0°-90° | 1937.9 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1937.9 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 745 | 745 | 745 | 745 | 745 | |
| 5° | 745 | 742 | 735 | 741 | 740 | 71 |
| 15° | 709 | 707 | 698 | 704 | 700 | 200 |
| 25° | 644 | 640 | 632 | 633 | 631 | 297 |
| 35° | 557 | 553 | 545 | 541 | 538 | 349 |
| 45° | 456 | 454 | 446 | 438 | 435 | 352 |
| 55° | 346 | 346 | 337 | 330 | 327 | 310 |
| 65° | 236 | 233 | 227 | 222 | 220 | 233 |
| 75° | 125 | 122 | 120 | 117 | 115 | 133 |
| 85° | 33 | 32 | 32 | 31 | 31 | 38 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|-------|-------|-------|-------|-------|
| 0° | 744.6 | 744.6 | 744.6 | 744.6 | 744.6 |
| 2.5° | 747.8 | 745.3 | 738.2 | 744.6 | 744.0 |
| 5° | 745.3 | 742.1 | 735.0 | 741.4 | 740.2 |
| 7.5° | 739.5 | 736.3 | 729.3 | 735.0 | 734.4 |
| 10° | 731.8 | 728.6 | 720.3 | 726.1 | 724.8 |
| 12.5° | 721.6 | 719.0 | 711.3 | 715.2 | 714.5 |
| 15° | 709.4 | 706.9 | 698.5 | 703.7 | 699.8 |
| 17.5° | 696.0 | 692.8 | 684.4 | 688.3 | 687.0 |
| 20° | 680.6 | 676.8 | 668.4 | 671.0 | 669.1 |
| 22.5° | 663.3 | 659.5 | 651.2 | 653.1 | 650.5 |
| 25° | 644.1 | 640.3 | 631.9 | 632.6 | 630.7 |
| 27.5° | 624.3 | 620.4 | 611.5 | 612.1 | 610.2 |
| 30° | 602.5 | 599.3 | 590.3 | 590.3 | 585.8 |
| 32.5° | 580.7 | 576.2 | 569.8 | 565.4 | 563.4 |
| 35° | 557.0 | 553.2 | 544.9 | 541.0 | 537.8 |
| 37.5° | 533.3 | 528.2 | 519.9 | 515.4 | 513.5 |
| 40° | 508.4 | 504.5 | 495.6 | 490.4 | 487.9 |
| 42.5° | 483.4 | 478.9 | 470.0 | 464.8 | 462.3 |
| 45° | 456.5 | 454.0 | 445.6 | 437.9 | 434.7 |
| 47.5° | 430.3 | 426.4 | 418.7 | 411.1 | 408.5 |
| 50° | 403.4 | 400.2 | 391.8 | 384.8 | 381.0 |
| 52.5° | 375.2 | 373.3 | 364.3 | 358.6 | 354.7 |
| 55° | 346.4 | 345.7 | 337.4 | 330.4 | 327.2 |
| 57.5° | 319.5 | 316.9 | 310.5 | 304.1 | 300.3 |
| 60° | 290.0 | 289.4 | 281.7 | 276.0 | 272.8 |
| 62.5° | 263.8 | 261.9 | 254.2 | 248.4 | 246.5 |
| 65° | 236.3 | 233.1 | 226.7 | 221.5 | 219.6 |
| 67.5° | 206.8 | 204.2 | 199.1 | 194.6 | 192.1 |
| 70° | 180.6 | 176.7 | 172.9 | 168.4 | 165.2 |
| 72.5° | 153.0 | 150.5 | 146.0 | 142.1 | 140.9 |
| 75° | 124.9 | 122.3 | 120.4 | 117.2 | 115.2 |
| 77.5° | 99.9 | 98.6 | 96.0 | 93.5 | 93.5 |
| 80° | 75.6 | 73.6 | 72.4 | 71.7 | 71.7 |
| 82.5° | 51.9 | 51.9 | 51.9 | 50.6 | 49.9 |
| 85° | 33.3 | 32.0 | 32.0 | 30.7 | 30.7 |
| 87.5° | 16.6 | 14.7 | 14.1 | 13.4 | 13.4 |
| 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 | 19.00 | 20.62 | 19.37 | 20.93 | 21.25 | 18.69 | 20.31 | 19.05 | 20.62 | 20.93 |
| | 3H | 20.77 | 22.23 | 21.15 | 22.56 | 22.92 | 20.40 | 21.86 | 20.78 | 22.19 | 22.55 |
| | 4H | 21.43 | 22.81 | 21.83 | 23.15 | 23.53 | 21.04 | 22.42 | 21.44 | 22.76 | 23.14 |
| | 6H | 21.92 | 23.19 | 22.33 | 23.56 | 23.95 | 21.53 | 22.80 | 21.94 | 23.17 | 23.56 |
| | 8H | 22.07 | 23.29 | 22.50 | 23.68 | 24.08 | 21.69 | 22.90 | 22.11 | 23.29 | 23.69 |
| | 12H | 22.18 | 23.35 | 22.61 | 23.73 | 24.16 | 21.79 | 22.96 | 22.22 | 23.34 | 23.77 |
| 4H | 2H | 19.58 | 20.96 | 19.98 | 21.31 | 21.68 | 19.33 | 20.71 | 19.73 | 21.06 | 21.43 |
| | 3H | 21.57 | 22.73 | 21.98 | 23.13 | 23.53 | 21.27 | 22.42 | 21.68 | 22.82 | 23.22 |
| | 4H | 22.36 | 23.40 | 22.79 | 23.82 | 24.25 | 22.03 | 23.07 | 22.46 | 23.49 | 23.92 |
| | 6H | 22.98 | 23.89 | 23.43 | 24.33 | 24.79 | 22.64 | 23.55 | 23.10 | 24.00 | 24.45 |
| | 8H | 23.18 | 24.03 | 23.64 | 24.47 | 24.94 | 22.85 | 23.70 | 23.31 | 24.14 | 24.61 |
| | 12H | 23.33 | 24.10 | 23.81 | 24.57 | 25.04 | 23.00 | 23.77 | 23.48 | 24.24 | 24.71 |
| 8H | 4H | 22.64 | 23.50 | 23.10 | 23.94 | 24.40 | 22.35 | 23.21 | 22.81 | 23.65 | 24.11 |
| | 6H | 23.38 | 24.09 | 23.87 | 24.58 | 25.05 | 23.09 | 23.80 | 23.58 | 24.28 | 24.76 |
| | 8H | 23.65 | 24.29 | 24.16 | 24.80 | 25.28 | 23.37 | 24.00 | 23.88 | 24.51 | 25.00 |
| | 12H | 23.88 | 24.45 | 24.39 | 24.94 | 25.50 | 23.59 | 24.15 | 24.10 | 24.64 | 25.21 |
| 12H | 4H | 22.67 | 23.44 | 23.15 | 23.91 | 24.38 | 22.39 | 23.16 | 22.87 | 23.63 | 24.10 |
| | 6H | 23.43 | 24.07 | 23.94 | 24.58 | 25.06 | 23.15 | 23.79 | 23.66 | 24.29 | 24.78 |
| | 8H | 23.76 | 24.33 | 24.27 | 24.82 | 25.38 | 23.49 | 24.05 | 23.99 | 24.54 | 25.10 |