

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: P242540

Luminaire Tested: S123RDRP-S560D840-X4F0-XX-UDD-F-W

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-2024
Report Number: P242540
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-25)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: S123RDRP-S560D840-X4F0-XX-UDD-F-W
Description: DEFINE 3 REGRESSED DIRECT RECESSED WITH SATIN FLUSH DIFFUSER
STANDARD LIGHT ENGINE
Light Source: (92) 4000K CCT, 80 CRI LEDS
Ballast/Driver: -

Summary

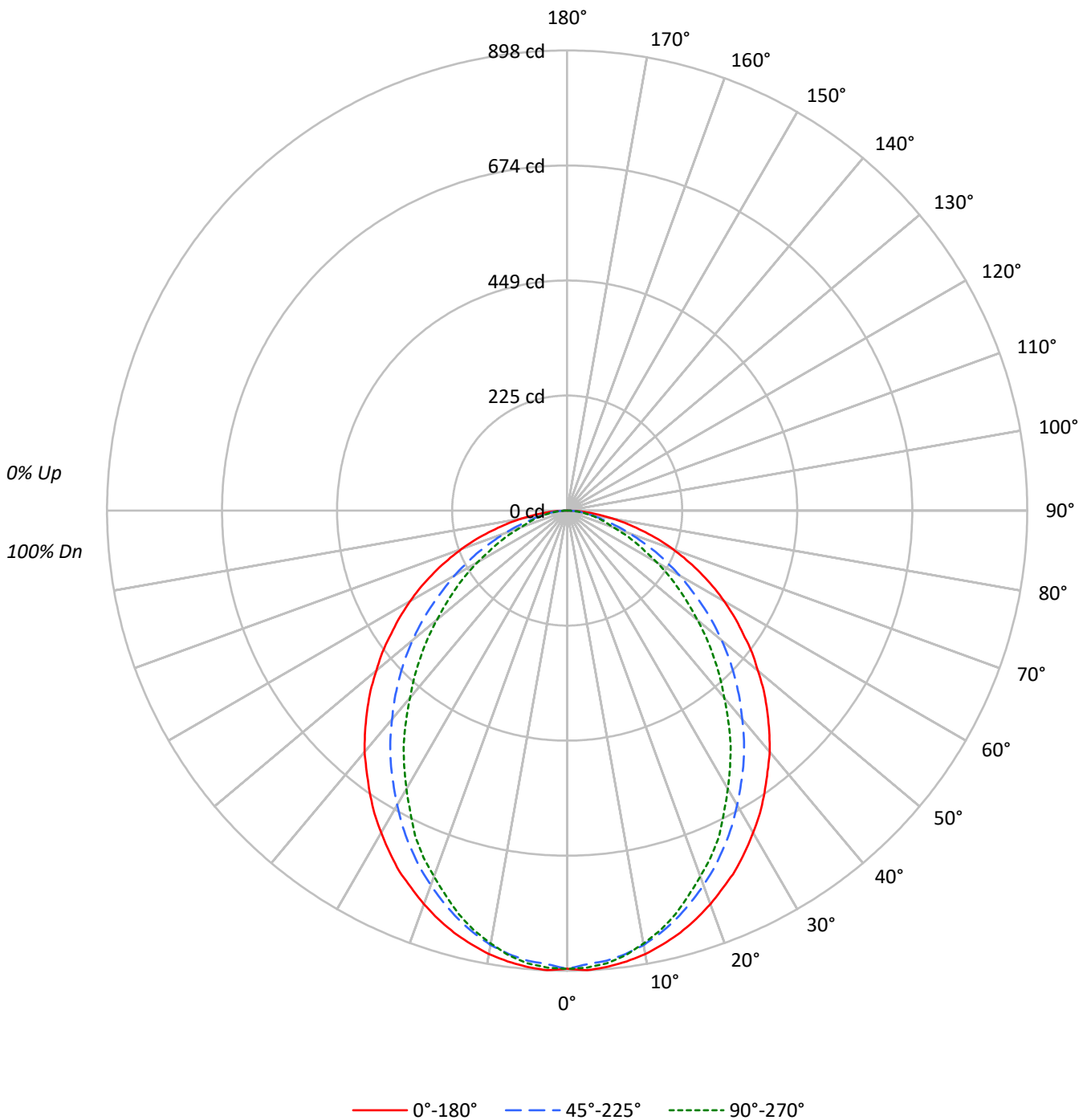
Lumens per Lamp: N/A
Luminaire Lumens: 2019.8 lumens
Efficiency: N/A
Efficacy: 107.4 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.07 / 1.22
Luminous Opening: Rectangular (W 0.23' x L: 3.88' x H: 0')
CIE Type: Direct

Input Watts (W): 18.8
Input Voltage (V): 120
Input Current (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

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Luminous Intensity Polar Plot





TEST NUMBER: P242540

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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|---|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|---|
| RF | 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 | 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 | 110 | 105 | 101 | 98 | 107 | 103 | 99 | 96 | 99 | 96 | 93 | 95 | 93 | 90 | 91 | 89 | 88 | 86 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 100 | 93 | 86 | 81 | 98 | 91 | 85 | 80 | 87 | 83 | 78 | 84 | 80 | 77 | 81 | 78 | 75 | 73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 92 | 82 | 75 | 68 | 90 | 81 | 74 | 68 | 78 | 72 | 67 | 75 | 70 | 66 | 73 | 68 | 64 | 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 85 | 73 | 65 | 59 | 83 | 72 | 64 | 58 | 70 | 63 | 58 | 67 | 62 | 57 | 65 | 60 | 56 | 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 78 | 66 | 57 | 51 | 76 | 65 | 57 | 51 | 63 | 56 | 50 | 61 | 55 | 50 | 59 | 54 | 49 | 47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 73 | 60 | 51 | 45 | 71 | 59 | 51 | 45 | 57 | 50 | 45 | 55 | 49 | 44 | 54 | 48 | 44 | 42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 67 | 54 | 46 | 40 | 66 | 54 | 46 | 40 | 52 | 45 | 40 | 51 | 44 | 39 | 49 | 44 | 39 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 63 | 50 | 42 | 36 | 61 | 49 | 41 | 36 | 48 | 41 | 36 | 47 | 40 | 36 | 46 | 40 | 35 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 59 | 46 | 38 | 33 | 58 | 45 | 38 | 33 | 44 | 37 | 32 | 43 | 37 | 32 | 42 | 36 | 32 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 55 | 43 | 35 | 30 | 54 | 42 | 35 | 30 | 41 | 34 | 30 | 40 | 34 | 29 | 39 | 34 | 29 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|-------|-------|-------|
| 0° | 10838 | 10838 | 10838 |
| 5° | 10879 | 10728 | 10790 |
| 10° | 10816 | 10594 | 10558 |
| 15° | 10700 | 10346 | 10236 |
| 20° | 10541 | 10036 | 9802 |
| 25° | 10377 | 9688 | 9378 |
| 30° | 10159 | 9287 | 8779 |
| 35° | 9936 | 8884 | 8230 |
| 40° | 9730 | 8410 | 7549 |
| 45° | 9459 | 7942 | 6936 |
| 50° | 9161 | 7411 | 6249 |
| 55° | 8857 | 6803 | 5609 |
| 60° | 8579 | 6153 | 4904 |
| 65° | 8214 | 5449 | 4202 |
| 70° | 7761 | 4575 | 3392 |
| 75° | 7095 | 3601 | 3194 |
| 80° | 6324 | 3190 | 2939 |
| 85° | 5340 | 2823 | 2629 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 9459 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 84.0 | 4.2 |
| 10°-20° | 233.8 | 11.6 |
| 20°-30° | 336.6 | 16.7 |
| 30°-40° | 379.1 | 18.8 |
| 40°-50° | 362.6 | 18.0 |
| 50°-60° | 296.8 | 14.7 |
| 60°-70° | 200.1 | 9.9 |
| 70°-80° | 100.4 | 5.0 |
| 80°-90° | 26.3 | 1.3 |
| 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° | 654.5 | 32.4 |
| 0°-40° | 1033.6 | 51.2 |
| 0°-60° | 1693.1 | 83.8 |
| 0°-90° | 2019.8 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 2019.8 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0° | 894 | 894 | 894 | 894 | 894 | |
| 5° | 894 | 890 | 882 | 888 | 887 | 85 |
| 15° | 853 | 845 | 824 | 821 | 816 | 240 |
| 25° | 776 | 758 | 724 | 709 | 701 | 357 |
| 35° | 672 | 645 | 600 | 569 | 556 | 420 |
| 45° | 552 | 519 | 463 | 422 | 405 | 426 |
| 55° | 419 | 384 | 322 | 280 | 265 | 376 |
| 65° | 286 | 246 | 190 | 154 | 146 | 283 |
| 75° | 152 | 117 | 77 | 70 | 68 | 161 |
| 85° | 38 | 22 | 20 | 19 | 19 | 44 |
| 90° | 0 | 0 | 0 | 0 | 0 | |



TEST NUMBER: P242540

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CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|-------|-------|-------|-------|-------|-------|
| 0° | 894.1 | 894.1 | 894.1 | 894.1 | 894.1 |
| 2.5° | 897.7 | 894.8 | 886.1 | 894.1 | 892.6 |
| 5° | 894.1 | 890.4 | 881.7 | 888.3 | 886.8 |
| 7.5° | 887.5 | 883.9 | 873.0 | 877.4 | 875.2 |
| 10° | 878.8 | 873.8 | 860.7 | 861.4 | 857.8 |
| 12.5° | 866.5 | 860.7 | 844.0 | 843.3 | 839.0 |
| 15° | 852.7 | 844.8 | 824.5 | 820.8 | 815.7 |
| 17.5° | 836.1 | 827.4 | 802.0 | 794.7 | 787.5 |
| 20° | 817.2 | 805.6 | 778.0 | 768.6 | 759.9 |
| 22.5° | 796.2 | 782.4 | 752.7 | 740.3 | 732.4 |
| 25° | 775.9 | 757.7 | 724.4 | 709.2 | 701.2 |
| 27.5° | 751.2 | 731.6 | 695.4 | 675.1 | 662.8 |
| 30° | 725.8 | 704.1 | 663.5 | 638.8 | 627.2 |
| 32.5° | 700.5 | 675.1 | 631.6 | 604.0 | 591.7 |
| 35° | 671.5 | 645.3 | 600.4 | 569.2 | 556.2 |
| 37.5° | 642.4 | 614.2 | 567.0 | 532.2 | 516.3 |
| 40° | 614.9 | 583.0 | 531.5 | 493.8 | 477.1 |
| 42.5° | 583.7 | 551.8 | 498.2 | 456.1 | 441.6 |
| 45° | 551.8 | 519.2 | 463.3 | 422.0 | 404.6 |
| 47.5° | 520.6 | 484.4 | 429.3 | 384.3 | 369.1 |
| 50° | 485.8 | 451.7 | 393.0 | 348.1 | 331.4 |
| 52.5° | 454.6 | 416.9 | 358.9 | 311.8 | 297.3 |
| 55° | 419.1 | 383.6 | 321.9 | 279.9 | 265.4 |
| 57.5° | 387.2 | 348.8 | 286.4 | 246.5 | 234.2 |
| 60° | 353.9 | 314.0 | 253.8 | 214.6 | 202.3 |
| 62.5° | 320.5 | 280.6 | 220.4 | 184.2 | 171.1 |
| 65° | 286.4 | 246.5 | 190.0 | 154.4 | 146.5 |
| 67.5° | 252.3 | 211.7 | 156.6 | 129.8 | 121.1 |
| 70° | 219.0 | 179.8 | 129.1 | 103.7 | 95.7 |
| 72.5° | 185.6 | 147.2 | 102.2 | 82.7 | 80.5 |
| 75° | 151.5 | 116.7 | 76.9 | 69.6 | 68.2 |
| 77.5° | 120.4 | 88.5 | 60.2 | 55.8 | 54.4 |
| 80° | 90.6 | 60.9 | 45.7 | 43.5 | 42.1 |
| 82.5° | 62.4 | 37.7 | 32.6 | 30.5 | 30.5 |
| 85° | 38.4 | 22.5 | 20.3 | 18.9 | 18.9 |
| 87.5° | 17.4 | 9.4 | 9.4 | 8.7 | 8.0 |
| 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 | 19.73 | 21.28 | 20.09 | 21.60 | 21.91 | 17.10 | 18.65 | 17.46 | 18.97 | 19.28 |
| | 3H | 21.50 | 22.90 | 21.88 | 23.23 | 23.59 | 18.21 | 19.61 | 18.59 | 19.93 | 20.30 |
| | 4H | 22.16 | 23.48 | 22.56 | 23.82 | 24.20 | 18.60 | 19.92 | 19.00 | 20.27 | 20.64 |
| | 6H | 22.65 | 23.86 | 23.06 | 24.22 | 24.62 | 18.92 | 20.14 | 19.34 | 20.50 | 20.89 |
| | 8H | 22.80 | 23.95 | 23.22 | 24.34 | 24.74 | 19.03 | 20.19 | 19.46 | 20.58 | 20.98 |
| | 12H | 22.90 | 24.01 | 23.33 | 24.39 | 24.82 | 19.11 | 20.22 | 19.54 | 20.60 | 21.03 |
| 4H | 2H | 19.99 | 21.30 | 20.39 | 21.65 | 22.03 | 17.81 | 19.12 | 18.21 | 19.47 | 19.85 |
| | 3H | 21.95 | 23.04 | 22.36 | 23.44 | 23.84 | 19.09 | 20.18 | 19.50 | 20.58 | 20.98 |
| | 4H | 22.72 | 23.70 | 23.15 | 24.12 | 24.56 | 19.57 | 20.55 | 20.00 | 20.97 | 21.40 |
| | 6H | 23.32 | 24.17 | 23.77 | 24.61 | 25.07 | 19.99 | 20.84 | 20.44 | 21.29 | 21.74 |
| | 8H | 23.51 | 24.31 | 23.97 | 24.75 | 25.22 | 20.13 | 20.93 | 20.60 | 21.38 | 21.84 |
| | 12H | 23.65 | 24.37 | 24.14 | 24.85 | 25.32 | 20.24 | 20.96 | 20.73 | 21.44 | 21.91 |
| 8H | 4H | 22.78 | 23.58 | 23.24 | 24.02 | 24.49 | 19.89 | 20.69 | 20.35 | 21.13 | 21.60 |
| | 6H | 23.44 | 24.10 | 23.93 | 24.59 | 25.06 | 20.40 | 21.07 | 20.90 | 21.56 | 22.03 |
| | 8H | 23.67 | 24.26 | 24.18 | 24.77 | 25.26 | 20.61 | 21.20 | 21.12 | 21.71 | 22.20 |
| | 12H | 23.87 | 24.40 | 24.38 | 24.89 | 25.45 | 20.78 | 21.30 | 21.29 | 21.80 | 22.36 |
| 12H | 4H | 22.76 | 23.48 | 23.25 | 23.96 | 24.43 | 19.93 | 20.65 | 20.42 | 21.13 | 21.60 |
| | 6H | 23.42 | 24.02 | 23.94 | 24.53 | 25.01 | 20.46 | 21.06 | 20.98 | 21.57 | 22.05 |
| | 8H | 23.69 | 24.22 | 24.20 | 24.71 | 25.27 | 20.72 | 21.25 | 21.23 | 21.74 | 22.30 |