

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P242521

Luminaire Tested: **S123DR-S560D940-X4F0-XX-UDD-D-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242521  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S123DR-S560D940-X4F0-XX-UDD-D-W  
Description: DEFINE 3 DIRECT RECESSED WITH SATIN DROP DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1975.4 lumens  
Efficiency: N/A  
Efficacy: 105.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.25 / 1.37  
Luminous Opening: Rectangular w/ Sides (W: 0.23' x L: 3.88' x H: 0.08')  
CIE Type: Direct

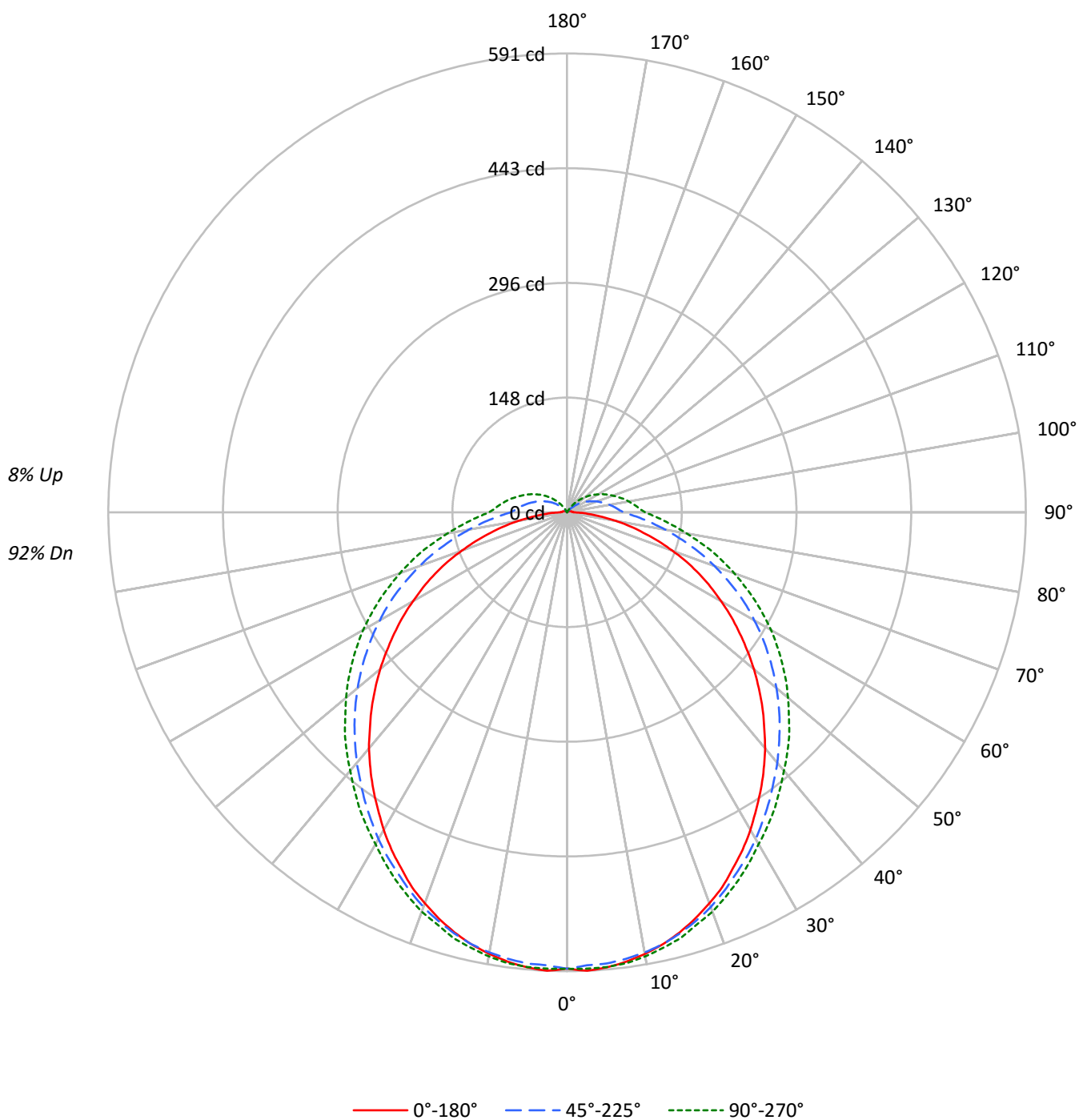
Input Watts (W): 18.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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 |
| RW  | 70  | 50  | 30  | 10  | 70  | 50  | 30  | 10  | 50  | 30  | 10  | 50  | 30  | 10  | 50 | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |
| 0   | 117 | 117 | 117 | 117 | 113 | 113 | 113 | 113 | 106 | 106 | 106 | 100 | 100 | 100 | 94 | 94 | 94 |
| 1   | 105 | 100 | 95  | 90  | 102 | 97  | 92  | 88  | 91  | 87  | 84  | 85  | 82  | 80  | 80 | 78 | 76 |
| 2   | 95  | 86  | 79  | 72  | 92  | 83  | 77  | 71  | 79  | 73  | 68  | 74  | 69  | 65  | 70 | 66 | 63 |
| 3   | 86  | 75  | 67  | 60  | 83  | 73  | 65  | 59  | 69  | 62  | 56  | 65  | 59  | 54  | 61 | 56 | 52 |
| 4   | 79  | 66  | 57  | 50  | 76  | 64  | 56  | 49  | 61  | 54  | 48  | 57  | 51  | 46  | 54 | 49 | 45 |
| 5   | 72  | 59  | 50  | 43  | 70  | 58  | 49  | 42  | 54  | 47  | 41  | 52  | 45  | 40  | 49 | 43 | 39 |
| 6   | 67  | 53  | 44  | 37  | 64  | 52  | 43  | 37  | 49  | 42  | 36  | 47  | 40  | 35  | 44 | 38 | 34 |
| 7   | 62  | 48  | 39  | 33  | 60  | 47  | 38  | 32  | 45  | 37  | 32  | 42  | 36  | 31  | 40 | 35 | 30 |
| 8   | 58  | 44  | 35  | 29  | 56  | 43  | 35  | 29  | 41  | 33  | 28  | 39  | 32  | 28  | 37 | 31 | 27 |
| 9   | 54  | 40  | 32  | 26  | 52  | 39  | 31  | 26  | 37  | 30  | 25  | 36  | 29  | 25  | 34 | 28 | 24 |
| 10  | 50  | 37  | 29  | 24  | 49  | 36  | 29  | 24  | 35  | 28  | 23  | 33  | 27  | 23  | 32 | 26 | 22 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 7125 | 7125 | 7125 |
| 5°  | 7146 | 6932 | 6932 |
| 10° | 7081 | 6760 | 6717 |
| 15° | 6990 | 6567 | 6487 |
| 20° | 6859 | 6349 | 6236 |
| 25° | 6698 | 6101 | 5975 |
| 30° | 6532 | 5878 | 5710 |
| 35° | 6347 | 5642 | 5497 |
| 40° | 6170 | 5426 | 5270 |
| 45° | 5974 | 5219 | 5087 |
| 50° | 5781 | 5013 | 4886 |
| 55° | 5567 | 4803 | 4703 |
| 60° | 5357 | 4588 | 4514 |
| 65° | 5143 | 4358 | 4293 |
| 70° | 4822 | 4101 | 4063 |
| 75° | 4413 | 3807 | 3829 |
| 80° | 3944 | 3514 | 3561 |
| 85° | 3505 | 3290 | 3385 |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 55.8   | 2.8       |
| 10°-20°   | 158.9  | 8.0       |
| 20°-30°   | 237.7  | 12.0      |
| 30°-40°   | 283.8  | 14.4      |
| 40°-50°   | 296.9  | 15.0      |
| 50°-60°   | 278.7  | 14.1      |
| 60°-70°   | 232.7  | 11.8      |
| 70°-80°   | 166.4  | 8.4       |
| 80°-90°   | 99.0   | 5.0       |
| 90°-100°  | 62.2   | 3.2       |
| 100°-110° | 45.7   | 2.3       |
| 110°-120° | 30.5   | 1.5       |
| 120°-130° | 17.4   | 0.9       |
| 130°-140° | 7.8    | 0.4       |
| 140°-150° | 1.6    | 0.1       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-30°    | 452.4  | 22.9      |
| 0°-40°    | 736.2  | 37.3      |
| 0°-60°    | 1311.8 | 66.4      |
| 0°-90°    | 1810.0 | 91.6      |
| 90°-120°  | 138.5  | 7.0       |
| 90°-150°  | 165.4  | 8.4       |
| 90°-180°  | 165.0  | 8.4       |
| 0°-180°   | 1975.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0°   | 588 | 588   | 588 | 588   | 588 |      |
| 5°   | 588 | 587   | 583 | 588   | 588 | 56   |
| 15°  | 560 | 562   | 562 | 568   | 567 | 158  |
| 25°  | 506 | 512   | 514 | 522   | 522 | 233  |
| 35°  | 435 | 446   | 454 | 464   | 466 | 272  |
| 45°  | 356 | 371   | 387 | 400   | 405 | 275  |
| 55°  | 272 | 293   | 316 | 333   | 338 | 243  |
| 65°  | 188 | 213   | 241 | 260   | 266 | 185  |
| 75°  | 102 | 132   | 164 | 185   | 193 | 109  |
| 85°  | 31  | 63    | 97  | 119   | 126 | 32   |
| 90°  | 8   | 40    | 72  | 94    | 100 | 6    |
| 95°  | 7   | 32    | 63  | 83    | 90  | 5    |
| 105° | 5   | 20    | 48  | 66    | 72  | 5    |
| 115° | 3   | 11    | 34  | 49    | 54  | 3    |
| 125° | 2   | 2     | 20  | 34    | 38  | 2    |
| 135° | 1   | 1     | 8   | 19    | 22  | 1    |
| 145° | 1   | 0     | 0   | 5     | 8   | 0    |
| 155° | 0   | 0     | 0   | 0     | 0   | 0    |
| 165° | 0   | 0     | 0   | 0     | 0   | 0    |
| 175° | 0   | 0     | 0   | 0     | 0   | 0    |
| 180° | 0   | 0     | 0   | 0     | 0   | 0    |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 587.8 | 587.8 | 587.8 | 587.8 | 587.8 |
| 2.5°   | 591.0 | 589.1 | 583.9 | 589.1 | 588.4 |
| 5°     | 588.4 | 587.1 | 583.3 | 588.4 | 587.8 |
| 7.5°   | 583.9 | 583.9 | 580.1 | 586.5 | 585.8 |
| 10°    | 577.5 | 578.8 | 575.6 | 582.0 | 580.7 |
| 12.5°  | 569.8 | 571.8 | 569.8 | 575.6 | 574.3 |
| 15°    | 560.2 | 562.2 | 561.5 | 567.9 | 567.3 |
| 17.5°  | 548.7 | 552.6 | 551.9 | 557.7 | 556.4 |
| 20°    | 535.9 | 539.7 | 541.0 | 546.8 | 547.4 |
| 22.5°  | 522.5 | 526.3 | 528.2 | 535.9 | 535.3 |
| 25°    | 505.8 | 512.2 | 514.1 | 522.5 | 522.5 |
| 27.5°  | 489.8 | 496.9 | 500.7 | 507.7 | 508.4 |
| 30°    | 472.5 | 480.8 | 486.0 | 493.6 | 493.6 |
| 32.5°  | 453.3 | 462.9 | 470.0 | 478.3 | 480.2 |
| 35°    | 435.4 | 445.6 | 454.0 | 463.6 | 466.1 |
| 37.5°  | 416.2 | 427.7 | 437.3 | 448.2 | 450.1 |
| 40°    | 397.0 | 408.5 | 421.3 | 432.2 | 434.7 |
| 42.5°  | 375.8 | 390.6 | 404.0 | 416.2 | 420.0 |
| 45°    | 356.0 | 371.4 | 387.4 | 399.5 | 404.7 |
| 47.5°  | 334.9 | 352.1 | 370.1 | 383.5 | 387.4 |
| 50°    | 314.4 | 332.3 | 352.1 | 366.9 | 371.4 |
| 52.5°  | 292.6 | 311.8 | 334.2 | 349.6 | 355.4 |
| 55°    | 271.5 | 292.6 | 315.7 | 332.9 | 338.1 |
| 57.5°  | 251.0 | 272.8 | 297.7 | 315.0 | 320.8 |
| 60°    | 229.2 | 252.3 | 278.5 | 296.4 | 303.5 |
| 62.5°  | 208.7 | 232.4 | 260.6 | 278.5 | 284.9 |
| 65°    | 187.6 | 212.6 | 240.7 | 260.0 | 266.4 |
| 67.5°  | 166.5 | 192.7 | 220.9 | 242.0 | 247.1 |
| 70°    | 144.1 | 171.6 | 202.3 | 222.8 | 229.2 |
| 72.5°  | 123.6 | 151.1 | 183.1 | 204.2 | 210.6 |
| 75°    | 101.8 | 131.9 | 163.9 | 185.0 | 192.7 |
| 77.5°  | 83.2  | 113.3 | 145.3 | 167.8 | 173.5 |
| 80°    | 63.4  | 94.8  | 128.1 | 149.8 | 156.2 |
| 82.5°  | 46.1  | 78.1  | 112.0 | 133.8 | 140.2 |
| 85°    | 31.4  | 63.4  | 97.3  | 119.1 | 125.5 |
| 87.5°  | 19.2  | 51.2  | 83.9  | 105.6 | 112.0 |
| 90°    | 8.3   | 39.7  | 72.4  | 94.1  | 100.5 |
| 92.5°  | 7.7   | 35.2  | 67.2  | 88.4  | 94.1  |
| 95°    | 7.0   | 32.0  | 63.4  | 83.2  | 89.6  |
| 97.5°  | 6.4   | 29.5  | 59.5  | 78.8  | 85.2  |
| 100°   | 5.8   | 26.3  | 55.7  | 74.3  | 80.7  |
| 102.5° | 5.1   | 23.0  | 51.9  | 69.8  | 76.2  |
| 105°   | 5.1   | 20.5  | 48.0  | 65.9  | 71.7  |
| 107.5° | 4.5   | 17.9  | 44.2  | 61.5  | 67.2  |
| 110°   | 3.8   | 15.4  | 41.0  | 57.6  | 62.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°  | 22.5° | 45°  | 67.5° | 90°  |
|--------|-----|-------|------|-------|------|
| 112.5° | 3.8 | 12.8  | 37.1 | 53.1  | 58.9 |
| 115°   | 3.2 | 10.9  | 33.9 | 49.3  | 54.4 |
| 117.5° | 3.2 | 8.3   | 30.1 | 45.5  | 50.6 |
| 120°   | 2.6 | 5.8   | 26.9 | 41.6  | 46.1 |
| 122.5° | 2.6 | 3.8   | 23.7 | 37.8  | 42.3 |
| 125°   | 1.9 | 1.9   | 20.5 | 33.9  | 38.4 |
| 127.5° | 1.9 | 1.3   | 17.3 | 30.1  | 34.6 |
| 130°   | 1.9 | 1.3   | 14.1 | 26.3  | 30.1 |
| 132.5° | 1.3 | 1.3   | 10.9 | 22.4  | 26.9 |
| 135°   | 1.3 | 0.6   | 7.7  | 19.2  | 22.4 |
| 137.5° | 1.3 | 0.6   | 5.1  | 15.4  | 18.6 |
| 140°   | 0.6 | 0.6   | 2.6  | 12.2  | 15.4 |
| 142.5° | 0.6 | 0.0   | 0.0  | 8.3   | 11.5 |
| 145°   | 0.6 | 0.0   | 0.0  | 5.1   | 7.7  |
| 147.5° | 0.0 | 0.0   | 0.0  | 1.9   | 4.5  |
| 150°   | 0.0 | 0.0   | 0.0  | 0.0   | 1.3  |
| 152.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 155°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 157.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 160°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 162.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 165°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 167.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 170°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 172.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 175°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 177.5° | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |
| 180°   | 0.0 | 0.0   | 0.0  | 0.0   | 0.0  |

(END OF REPORT)