## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

**Luminaire**

IF03SMx IC DWDD1015 DLWFGPMW

Nom 3" Infinium Square Downlight, 15L dim to warm 27HK emitter

**Test Number**

SP-00948_M-15L

**Test Date**

11/6/2019

The results contained in this report pertain only to this IES file.

## Summary of Results

### Power

| | |
|---|---|
| **Input Watts** | 15.2 W |

### Lumen Output

| | |
|---|---|
| **Output Lumens** | 805 |
| **Efficacy** | 52.97 lm/W |

### Luminous Dimensions

| | |
|---|---|
| **0° - 180° Size** | 0.16 |
| **90° - 270° Size** | 0.16 |
| **Height** | 0 |

### Spacing Criterion

| | |
|---|---|
| **Two luminaires, plane 0°** | 0.91 |
| **Two luminaires, plane 90°** | 0.9 |
| **Four luminaires** | 0.89 |

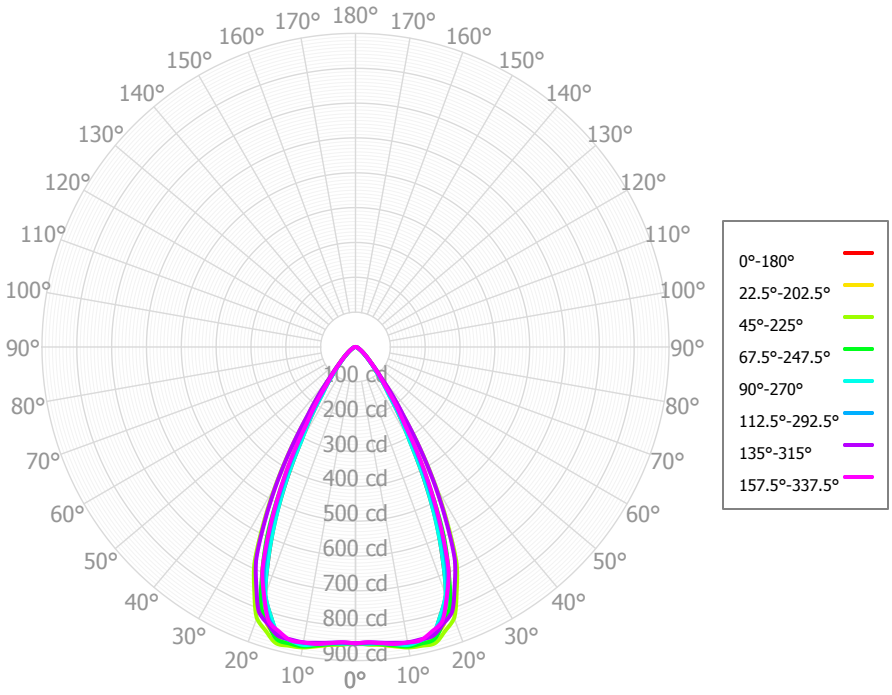
### Full Beam Angle

| | |
|---|---|
| **0° - 180°** | 54° |
| **90° - 270°** | 54° |

## IES File Header Contents

| Keyword | Value |
|---|---|
| TEST | SP-00948_M-15L |
| TESTLAB | Spectrum Lighting Photometric Lab, VLS-245-981 |
| MANUFAC | Spectrum Lighting |
| TESTDATE | 11/6/2019 |
| ISSUEDATE | 11/15/2019 |
| LUMCAT | IF03SMx IC DWDD1015 DLWFGPMW |
| LUMINAIRE | Nom 3" Infinium Square Downlight, 15L dim to warm 27HK emitter |
| OTHER | Beam angle: 53.6 degrees |
| OTHER | Shallow IC |
| LAMPCAT | N/A |
| LAMP | N/A |
| OTHER | CCT Output Multipliers: N/A dim to warm |
| OTHER | Total luminaire wattage is approximate |
| OTHER | This report prepared by Spectrum Lighting |
| _CRI | 95 |
| _CCTMULT | N/A, dim to warm emitter |
| _LAMPMULT | 7L x 0.38, 10L x 0.49 |

## Candela Polar Plot




## Zonal Lumen Summary

| Zone | Lumens | % Fixture | Zone | Lumens | % Fixture |
|---|---|---|---|---|---|
| 0.00° - 10.00° | 83.39 | 10.36% | 90.00° - 100.00° | 0.08 | 0.01% |
| 10.00° - 20.00° | 238.11 | 29.57% | 100.00° - 110.00° | 0.00 | 0.00% |
| 20.00° - 30.00° | 266.34 | 33.08% | 100.00° - 120.00° | 0.00 | 0.00% |
| 30.00° - 40.00° | 129.96 | 16.14% | 120.00° - 130.00° | 0.00 | 0.00% |
| 40.00° - 50.00° | 48.64 | 6.04% | 130.00° - 140.00° | 0.00 | 0.00% |
| 50.00° - 60.00° | 21.63 | 2.69% | 140.00° - 150.00° | 0.00 | 0.00% |
| 60.00° - 70.00° | 10.29 | 1.28% | 150.00° - 160.00° | 0.00 | 0.00% |
| 70.00° - 80.00° | 5.06 | 0.63% | 160.00° - 170.00° | 0.00 | 0.00% |
| 80.00° - 90.00° | 1.62 | 0.20% | 170.00° - 180.00° | 0.00 | 0.00% |
| 0.00° - 90.00° | 805.05 | 99.99% | 0.00° - 180.00° | 805.13 | 100.00% |

## Candela Distribution

| | 0.00° | 22.50° | 45.00° | 67.50° | 90.00° | 112.50° | 135.00° | 157.50° | 180.00° | 202.50° | 225.00° | 247.50° | 270.00° | 292.50° | 315.00° | 337.50° | 360.00° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0.00°** | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 | 850.48 |
| **2.50°** | 853.92 | 853.36 | 855.23 | 852.30 | 852.46 | 850.78 | 848.63 | 848.95 | 853.92 | 853.36 | 855.23 | 852.30 | 852.46 | 850.78 | 848.63 | 848.95 | 853.92 |
| **5.00°** | 856.60 | 858.45 | 857.95 | 856.81 | 853.94 | 852.68 | 852.27 | 853.54 | 856.60 | 858.45 | 857.95 | 856.81 | 853.94 | 852.68 | 852.27 | 853.54 | 856.60 |
| **7.50°** | 863.01 | 866.62 | 866.42 | 864.36 | 860.25 | 858.40 | 856.58 | 859.67 | 863.01 | 866.62 | 866.42 | 864.36 | 860.25 | 858.40 | 856.58 | 859.67 | 863.01 |
| **10.00°** | 869.73 | 872.33 | 875.85 | 872.74 | 868.47 | 862.16 | 860.99 | 861.50 | 869.73 | 872.33 | 875.85 | 872.74 | 868.47 | 862.16 | 860.99 | 861.50 | 869.73 |
| **12.50°** | 863.85 | 876.85 | 878.49 | 872.05 | 863.30 | 862.82 | 859.97 | 862.21 | 863.85 | 876.85 | 878.49 | 872.05 | 863.30 | 862.82 | 859.97 | 862.21 | 863.85 |
| **15.00°** | 856.68 | 861.43 | 880.46 | 869.56 | 854.09 | 850.86 | 858.43 | 846.02 | 856.68 | 861.43 | 880.46 | 869.56 | 854.09 | 850.86 | 858.43 | 846.02 | 856.68 |
| **17.50°** | 809.84 | 838.59 | 855.02 | 833.89 | 809.16 | 822.73 | 834.76 | 826.78 | 809.84 | 838.59 | 855.02 | 833.89 | 809.16 | 822.73 | 834.76 | 826.78 | 809.84 |
| **20.00°** | 758.50 | 775.60 | 828.16 | 794.00 | 756.10 | 768.33 | 809.82 | 765.23 | 758.50 | 775.60 | 828.16 | 794.00 | 756.10 | 768.33 | 809.82 | 765.23 | 758.50 |
| **22.50°** | 651.53 | 700.90 | 759.06 | 699.07 | 651.57 | 685.91 | 743.91 | 698.97 | 651.53 | 700.90 | 759.06 | 699.07 | 651.57 | 685.91 | 743.91 | 698.97 | 651.53 |
| **25.00°** | 543.12 | 589.69 | 687.19 | 600.61 | 539.16 | 583.41 | 675.07 | 588.85 | 543.12 | 589.69 | 687.19 | 600.61 | 539.16 | 583.41 | 675.07 | 588.85 | 543.12 |
| **27.50°** | 424.29 | 470.84 | 572.72 | 477.23 | 423.79 | 463.56 | 563.81 | 476.20 | 424.29 | 470.84 | 572.72 | 477.23 | 423.79 | 463.56 | 563.81 | 476.20 | 424.29 |
| **30.00°** | 312.98 | 363.44 | 458.25 | 354.77 | 308.17 | 356.15 | 452.69 | 368.27 | 312.98 | 363.44 | 458.25 | 354.77 | 308.17 | 356.15 | 452.69 | 368.27 | 312.98 |
| **32.50°** | 237.64 | 257.62 | 343.73 | 264.93 | 235.17 | 257.42 | 342.63 | 262.55 | 237.64 | 257.62 | 343.73 | 264.93 | 235.17 | 257.42 | 342.63 | 262.55 | 237.64 |
| **35.00°** | 170.70 | 194.14 | 236.79 | 179.32 | 164.35 | 187.99 | 239.75 | 197.85 | 170.70 | 194.14 | 236.79 | 179.32 | 164.35 | 187.99 | 239.75 | 197.85 | 170.70 |
| **37.50°** | 132.59 | 134.09 | 169.85 | 136.11 | 129.01 | 135.42 | 173.71 | 136.52 | 132.59 | 134.09 | 169.85 | 136.11 | 129.01 | 135.42 | 173.71 | 136.52 | 132.59 |
| **40.00°** | 99.10 | 105.14 | 111.39 | 96.04 | 94.80 | 101.41 | 115.51 | 105.67 | 99.10 | 105.14 | 111.39 | 96.04 | 94.80 | 101.41 | 115.51 | 105.67 | 99.10 |
| **42.50°** | 78.01 | 77.31 | 84.49 | 75.79 | 75.45 | 75.83 | 85.80 | 77.06 | 78.01 | 77.31 | 84.49 | 75.79 | 75.45 | 75.83 | 85.80 | 77.06 | 78.01 |
| **45.00°** | 59.85 | 62.53 | 61.25 | 57.10 | 57.06 | 59.12 | 60.60 | 61.31 | 59.85 | 62.53 | 61.25 | 57.10 | 57.06 | 59.12 | 60.60 | 61.31 | 59.85 |
| **47.50°** | 47.79 | 48.20 | 48.13 | 45.11 | 45.52 | 45.52 | 47.71 | 46.91 | 47.79 | 48.20 | 48.13 | 45.11 | 45.52 | 45.52 | 47.71 | 46.91 | 47.79 |
| **50.00°** | 37.48 | 39.40 | 36.98 | 34.42 | 34.88 | 36.44 | 36.57 | 37.83 | 37.48 | 39.40 | 36.98 | 34.42 | 34.88 | 36.44 | 36.57 | 37.83 | 37.48 |
| **52.50°** | 30.03 | 31.00 | 30.19 | 27.83 | 28.63 | 28.60 | 29.27 | 29.60 | 30.03 | 31.00 | 30.19 | 27.83 | 28.63 | 28.60 | 29.27 | 29.60 | 30.03 |
| **55.00°** | 23.79 | 25.23 | 24.00 | 21.93 | 22.80 | 23.07 | 23.07 | 23.81 | 23.79 | 25.23 | 24.00 | 21.93 | 22.80 | 23.07 | 23.07 | 23.81 | 23.79 |
| **57.50°** | 19.19 | 19.86 | 18.87 | 17.76 | 18.46 | 17.98 | 18.77 | 18.74 | 19.19 | 19.86 | 18.87 | 17.76 | 18.46 | 17.98 | 18.77 | 18.74 | 19.19 |
| **60.00°** | 15.43 | 16.32 | 14.74 | 14.14 | 14.58 | 14.65 | 15.03 | 15.33 | 15.43 | 16.32 | 14.74 | 14.14 | 14.58 | 14.65 | 15.03 | 15.33 | 15.43 |
| **62.50°** | 12.61 | 13.12 | 12.04 | 11.57 | 11.94 | 11.53 | 12.08 | 12.43 | 12.61 | 13.12 | 12.04 | 11.57 | 11.94 | 11.53 | 12.08 | 12.43 | 12.61 |
| **65.00°** | 10.49 | 11.05 | 9.73 | 9.46 | 9.64 | 9.88 | 9.87 | 10.47 | 10.49 | 11.05 | 9.73 | 9.46 | 9.64 | 9.88 | 9.87 | 10.47 | 10.49 |
| **67.50°** | 9.00 | 9.06 | 7.85 | 8.00 | 8.04 | 8.35 | 8.45 | 8.84 | 9.00 | 9.06 | 7.85 | 8.00 | 8.04 | 8.35 | 8.45 | 8.84 | 9.00 |
| **70.00°** | 7.41 | 7.24 | 6.70 | 6.80 | 6.59 | 7.05 | 6.95 | 7.60 | 7.41 | 7.24 | 6.70 | 6.80 | 6.59 | 7.05 | 6.95 | 7.60 | 7.41 |
| **72.50°** | 5.77 | 6.08 | 5.95 | 5.79 | 5.28 | 5.80 | 5.43 | 6.27 | 5.77 | 6.08 | 5.95 | 5.79 | 5.28 | 5.80 | 5.43 | 6.27 | 5.77 |
| **75.00°** | 4.68 | 5.27 | 5.01 | 4.39 | 4.17 | 4.65 | 5.09 | 4.93 | 4.68 | 5.27 | 5.01 | 4.39 | 4.17 | 4.65 | 5.09 | 4.93 | 4.68 |
| **77.50°** | 3.71 | 3.72 | 4.07 | 3.28 | 3.18 | 3.83 | 4.31 | 3.68 | 3.71 | 3.72 | 4.07 | 3.28 | 3.18 | 3.83 | 4.31 | 3.68 | 3.71 |
| **80.00°** | 2.86 | 2.82 | 3.08 | 2.68 | 2.34 | 2.90 | 3.07 | 2.84 | 2.86 | 2.82 | 3.08 | 2.68 | 2.34 | 2.90 | 3.07 | 2.84 | 2.86 |
| **82.50°** | 2.03 | 1.94 | 1.94 | 1.85 | 1.87 | 1.92 | 1.77 | 1.96 | 2.03 | 1.94 | 1.94 | 1.85 | 1.87 | 1.92 | 1.77 | 1.96 | 2.03 |
| **85.00°** | 1.26 | 1.36 | 1.27 | 1.43 | 0.98 | 1.36 | 1.33 | 1.17 | 1.26 | 1.36 | 1.27 | 1.43 | 0.98 | 1.36 | 1.33 | 1.17 | 1.26 |
| **87.50°** | 1.12 | 1.11 | 1.03 | 1.03 | 0.99 | 1.15 | 1.22 | 1.10 | 1.12 | 1.11 | 1.03 | 1.03 | 0.99 | 1.15 | 1.22 | 1.10 | 1.12 |
| **90.00°** | 0.51 | 0.65 | 0.54 | 0.52 | 0.76 | 0.53 | 0.44 | 0.57 | 0.51 | 0.65 | 0.54 | 0.52 | 0.76 | 0.53 | 0.44 | 0.57 | 0.51 |
| **92.50°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **95.00°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **97.50°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **100.00°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **102.50°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **105.00°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **107.50°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **110.00°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **112.50°** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

| | ρfc | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 0% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ρcc | 80% | 80% | 80% | 80% | 70% | 70% | 70% | 70% | 50% | 50% | 50% | 30% | 30% | 30% | 10% | 10% | 10% | 0% |
| | ρw | 70% | 50% | 30% | 10% | 70% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 30% |
| | 0 | 958 | 958 | 958 | 958 | 936 | 936 | 936 | 936 | 895 | 895 | 895 | 856 | 856 | 856 | 821 | 821 | 821 | 805 |
| | 1 | 912 | 889 | 868 | 849 | 892 | 871 | 853 | 836 | 839 | 824 | 810 | 809 | 797 | 786 | 781 | 772 | 763 | 756 |
| | 2 | 865 | 825 | 791 | 763 | 847 | 811 | 781 | 755 | 785 | 760 | 738 | 761 | 740 | 722 | 738 | 722 | 707 | 708 |
| | 3 | 821 | 768 | 727 | 694 | 805 | 757 | 719 | 689 | 735 | 704 | 677 | 716 | 689 | 667 | 697 | 675 | 656 | 662 |
| | 4 | 779 | 717 | 672 | 637 | 764 | 708 | 666 | 633 | 690 | 654 | 626 | 674 | 643 | 618 | 659 | 633 | 611 | 621 |
| RCR | 5 | 740 | 671 | 624 | 588 | 726 | 664 | 619 | 586 | 649 | 610 | 580 | 636 | 602 | 575 | 623 | 594 | 570 | 583 |
| | 6 | 703 | 630 | 581 | 547 | 691 | 624 | 578 | 545 | 612 | 571 | 541 | 600 | 564 | 537 | 590 | 558 | 534 | 548 |
| | 7 | 668 | 593 | 544 | 510 | 658 | 588 | 541 | 509 | 577 | 536 | 506 | 568 | 531 | 503 | 559 | 526 | 500 | 517 |
| | 8 | 636 | 559 | 511 | 478 | 627 | 555 | 509 | 476 | 546 | 504 | 474 | 538 | 500 | 472 | 530 | 496 | 470 | 488 |
| | 9 | 607 | 529 | 481 | 449 | 598 | 525 | 479 | 448 | 517 | 475 | 446 | 510 | 472 | 445 | 503 | 469 | 443 | 461 |
| | 10 | 579 | 501 | 454 | 423 | 571 | 497 | 452 | 422 | 491 | 449 | 421 | 484 | 447 | 420 | 479 | 444 | 419 | 437 |

## Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|---|---|---|
| 5.5 ft | 28.1 fc | 5.6 ft |
| 6.5 ft | 20.1 fc | 6.7 ft |
| 7.5 ft | 15.1 fc | 7.7 ft |
| 8.0 ft | 13.3 fc | 8.2 ft |
| 10.0 ft | 8.5 fc | 10.3 ft |
| 12.0 ft | 5.9 fc | 12.3 ft |
| 14.0 ft | 4.3 fc | 14.4 ft |
| 16.0 ft | 3.3 fc | 16.4 ft |
| 20.0 ft | 2.1 fc | 20.5 ft |
| 24.0 ft | 1.5 fc | 24.6 ft |
| 28.0 ft | 1.1 fc | 28.7 ft |

## Average Luminaire Luminance [cd/m²]

| | 0.00° | 45.00° | 90.00° |
|---|---|---|---|
| 0.00° | 357,596 | 357,596 | 357,596 |
| 45.00° | 35,586 | 36,418 | 33,928 |
| 55.00° | 17,436 | 17,597 | 16,717 |
| 65.00° | 10,436 | 9,679 | 9,590 |
| 75.00° | 7,598 | 8,137 | 6,780 |
| 85.00° | 6,079 | 6,135 | 4,751 |

## UGR CIE 190:2010

| Ceiling reflectance | | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wall reflectance | | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| Plane reflectance | | 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 | | | | |
| 2H | 2H | 15.6 | 16.6 | 16.0 | 16.9 | 17.3 | 15.1 | 16.1 | 15.5 | 16.5 | 16.8 |
| | 3H | 16.5 | 17.4 | 16.9 | 17.7 | 18.1 | 15.9 | 16.9 | 16.3 | 17.2 | 17.6 |
| | 4H | 16.8 | 17.6 | 17.2 | 18.0 | 18.4 | 16.2 | 17.1 | 16.6 | 17.4 | 17.8 |
| | 6H | 17.0 | 17.8 | 17.4 | 18.1 | 18.5 | 16.4 | 17.2 | 16.8 | 17.5 | 17.9 |
| | 8H | 17.1 | 17.8 | 17.5 | 18.2 | 18.6 | 16.5 | 17.2 | 16.9 | 17.6 | 18.0 |
| | 12H | 17.1 | 17.8 | 17.5 | 18.2 | 18.6 | 16.5 | 17.2 | 16.9 | 17.6 | 18.0 |
| 4H | 2H | 15.7 | 16.6 | 16.1 | 16.9 | 17.3 | 15.3 | 16.1 | 15.7 | 16.5 | 16.9 |
| | 3H | 16.8 | 17.5 | 17.2 | 17.9 | 18.3 | 16.4 | 17.0 | 16.8 | 17.4 | 17.9 |
| | 4H | 17.3 | 17.9 | 17.7 | 18.3 | 18.7 | 16.7 | 17.4 | 17.2 | 17.8 | 18.2 |
| | 6H | 17.6 | 18.1 | 18.0 | 18.5 | 19.0 | 17.0 | 17.6 | 17.5 | 18.0 | 18.5 |
| | 8H | 17.7 | 18.1 | 18.1 | 18.6 | 19.1 | 17.1 | 17.6 | 17.6 | 18.1 | 18.5 |
| | 12H | 17.7 | 18.1 | 18.2 | 18.6 | 19.1 | 17.2 | 17.6 | 17.7 | 18.1 | 18.6 |
| 8H | 4H | 17.4 | 17.8 | 17.8 | 18.3 | 18.8 | 16.9 | 17.4 | 17.4 | 17.8 | 18.3 |
| | 6H | 17.8 | 18.1 | 18.3 | 18.7 | 19.1 | 17.3 | 17.7 | 17.8 | 18.2 | 18.7 |
| | 8H | 17.9 | 18.3 | 18.4 | 18.8 | 19.3 | 17.4 | 17.8 | 18.0 | 18.3 | 18.8 |
| | 12H | 18.0 | 18.3 | 18.6 | 18.8 | 19.4 | 17.6 | 17.9 | 18.1 | 18.4 | 18.9 |
| 12H | 4H | 17.3 | 17.7 | 17.8 | 18.2 | 18.7 | 16.9 | 17.3 | 17.4 | 17.8 | 18.3 |
| | 6H | 17.8 | 18.1 | 18.3 | 18.6 | 19.1 | 17.3 | 17.6 | 17.8 | 18.1 | 18.7 |
| | 8H | 17.9 | 18.2 | 18.5 | 18.7 | 19.3 | 17.5 | 17.8 | 18.0 | 18.3 | 18.9 |

Corrected UGR values based on total output lumens

SHR = 1.0