## Indoor Distribution Test Report

# Spectrum Lighting Inc.

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## Spectrum Lighting Photometric Lab

**Luminaire**

SGECS4SQFX 40L 35K XX CA4FX SO MW

Nom 4" square Chicago Plenum downlight, Solite lens, Matte white finish

**Test Number**

SP-01174

**Test Date**

6/16/2020

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

## Summary of Results

### Power

| | |
|---|---|
| **Input Watts** | 30.3 W |

### Lumen Output

| | |
|---|---|
| **Output Lumens** | 3165 |
| **Efficacy** | 104.46 lm/W |

### Luminous Dimensions

| | |
|---|---|
| **0° - 180° Size** | 0.3 |
| **90° - 270° Size** | 0.3 |
| **Height** | 0 |

### Spacing Criterion

| | |
|---|---|
| **Two luminaires, plane 0°** | 1.1 |
| **Two luminaires, plane 90°** | 1.1 |
| **Four luminaires** | 1.07 |

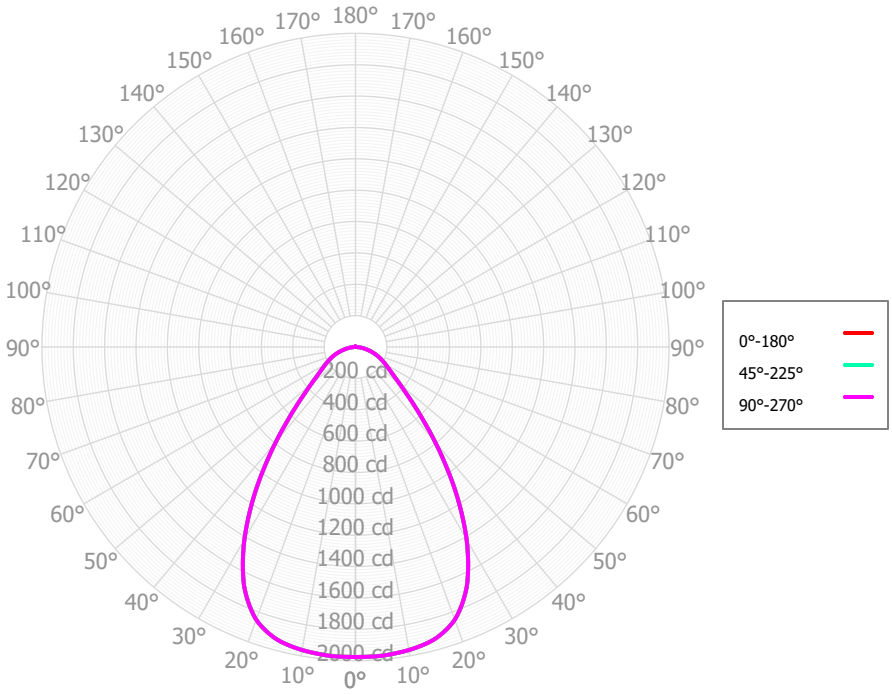
### Full Beam Angle

| | |
|---|---|
| **0° - 180°** | 73° |
| **90° - 270°** | 73° |

## IES File Header Contents

| Keyword | Value |
|---|---|
| TEST | SP-01174 |
| TESTLAB | Spectrum Lighting Photometric Lab, VLS-245-981 |
| MANUFAC | Spectrum Lighting |
| TESTDATE | 6/16/2020 |
| ISSUEDATE | 7/16/2020 |
| LUMCAT | SGECS4SQFX 40L 35K XX CA4FX SO MW |
| LUMINAIRE | Nom 4" square Chicago Plenum downlight, Solite lens, Matte white finish |
| OTHER | Beam angle: 73.5 deg |
| LAMPCAT | N/A |
| LAMP | N/A |
| OTHER | Total luminaire wattage is approximate |
| OTHER | CCT Output Multipliers: 30K x 0.97, 40K x 1.03, 50K x 1.03 |
| OTHER | This report prepared by Spectrum Lighting |
| _CCT | 80+ |
| _CCTMULT | 30K x 0.97, 40K x 1.03, 50K x 1.03 |
| _LAMPMULT | 10L x 0.24, 20L x 0.50, 30L x 0.75 |

## Candela Polar Plot




## Zonal Lumen Summary

| Zone | Lumens | % Fixture | Zone | Lumens | % Fixture |
|---|---|---|---|---|---|
| 0.00° - 10.00° | 195.99 | 6.18% | 90.00° - 100.00° | 2.19 | 0.07% |
| 10.00° - 20.00° | 542.88 | 17.12% | 100.00° - 110.00° | 1.13 | 0.04% |
| 20.00° - 30.00° | 762.13 | 24.04% | 100.00° - 120.00° | 2.25 | 0.07% |
| 30.00° - 40.00° | 682.56 | 21.53% | 120.00° - 130.00° | 1.24 | 0.04% |
| 40.00° - 50.00° | 421.28 | 13.29% | 130.00° - 140.00° | 1.14 | 0.04% |
| 50.00° - 60.00° | 252.72 | 7.97% | 140.00° - 150.00° | 1.01 | 0.03% |
| 60.00° - 70.00° | 175.22 | 5.53% | 150.00° - 160.00° | 0.74 | 0.02% |
| 70.00° - 80.00° | 99.27 | 3.13% | 160.00° - 170.00° | 0.50 | 0.02% |
| 80.00° - 90.00° | 28.89 | 0.91% | 170.00° - 180.00° | 0.18 | 0.01% |
| 0.00° - 90.00° | 3,160.93 | 99.71% | 0.00° - 180.00° | 3,170.18 | 100.00% |

## Candela Distribution

| | 0.00° | 45.00° | 90.00° |
|---|---|---|---|
| **0.00°** | 1,977.80 | 1,977.80 | 1,977.80 |
| **2.50°** | 1,977.80 | 1,977.80 | 1,977.80 |
| **5.00°** | 1,976.64 | 1,976.64 | 1,976.64 |
| **7.50°** | 1,970.48 | 1,970.48 | 1,970.48 |
| **10.00°** | 1,962.87 | 1,962.87 | 1,962.87 |
| **12.50°** | 1,950.58 | 1,950.58 | 1,950.58 |
| **15.00°** | 1,932.24 | 1,932.24 | 1,932.24 |
| **17.50°** | 1,898.88 | 1,898.88 | 1,898.88 |
| **20.00°** | 1,851.50 | 1,851.50 | 1,851.50 |
| **22.50°** | 1,776.16 | 1,776.16 | 1,776.16 |
| **25.00°** | 1,681.70 | 1,681.70 | 1,681.70 |
| **27.50°** | 1,556.37 | 1,556.37 | 1,556.37 |
| **30.00°** | 1,417.73 | 1,417.73 | 1,417.73 |
| **32.50°** | 1,261.60 | 1,261.60 | 1,261.60 |
| **35.00°** | 1,102.26 | 1,102.26 | 1,102.26 |
| **37.50°** | 939.43 | 939.43 | 939.43 |
| **40.00°** | 788.72 | 788.72 | 788.72 |
| **42.50°** | 648.88 | 648.88 | 648.88 |
| **45.00°** | 535.06 | 535.06 | 535.06 |
| **47.50°** | 440.32 | 440.32 | 440.32 |
| **50.00°** | 370.51 | 370.51 | 370.51 |
| **52.50°** | 315.74 | 315.74 | 315.74 |
| **55.00°** | 276.82 | 276.82 | 276.82 |
| **57.50°** | 245.64 | 245.64 | 245.64 |
| **60.00°** | 220.67 | 220.67 | 220.67 |
| **62.50°** | 198.10 | 198.10 | 198.10 |
| **65.00°** | 176.87 | 176.87 | 176.87 |
| **67.50°** | 156.05 | 156.05 | 156.05 |
| **70.00°** | 135.05 | 135.05 | 135.05 |
| **72.50°** | 114.00 | 114.00 | 114.00 |
| **75.00°** | 93.68 | 93.68 | 93.68 |
| **77.50°** | 73.47 | 73.47 | 73.47 |
| **80.00°** | 56.31 | 56.31 | 56.31 |
| **82.50°** | 39.45 | 39.45 | 39.45 |
| **85.00°** | 24.94 | 24.94 | 24.94 |
| **87.50°** | 10.65 | 10.65 | 10.65 |
| **90.00°** | 6.12 | 6.12 | 6.12 |
| **92.50°** | 1.83 | 1.83 | 1.83 |
| **95.00°** | 1.46 | 1.46 | 1.46 |
| **97.50°** | 1.13 | 1.13 | 1.13 |
| **100.00°** | 1.08 | 1.08 | 1.08 |
| **102.50°** | 1.04 | 1.04 | 1.04 |
| **105.00°** | 1.06 | 1.06 | 1.06 |
| **107.50°** | 1.07 | 1.07 | 1.07 |
| **110.00°** | 1.10 | 1.10 | 1.10 |
| **112.50°** | 1.12 | 1.12 | 1.12 |

## 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% |
| RCR | 0 | 3,772 | 3,772 | 3,772 | 3,772 | 3,683 | 3,683 | 3,683 | 3,683 | 3,517 | 3,517 | 3,517 | 3,366 | 3,366 | 3,366 | 3,226 | 3,226 | 3,226 | 3,161 |
| | 1 | 3,523 | 3,404 | 3,298 | 3,202 | 3,440 | 3,333 | 3,237 | 3,149 | 3,200 | 3,121 | 3,050 | 3,077 | 3,014 | 2,956 | 2,965 | 2,915 | 2,868 | 2,854 |
| | 2 | 3,278 | 3,071 | 2,900 | 2,756 | 3,200 | 3,013 | 2,856 | 2,723 | 2,904 | 2,773 | 2,660 | 2,803 | 2,695 | 2,600 | 2,710 | 2,622 | 2,543 | 2,567 |
| | 3 | 3,052 | 2,784 | 2,576 | 2,410 | 2,980 | 2,736 | 2,544 | 2,389 | 2,646 | 2,482 | 2,348 | 2,562 | 2,424 | 2,308 | 2,485 | 2,369 | 2,269 | 2,319 |
| | 4 | 2,847 | 2,537 | 2,309 | 2,136 | 2,781 | 2,497 | 2,285 | 2,122 | 2,422 | 2,239 | 2,094 | 2,352 | 2,194 | 2,066 | 2,287 | 2,152 | 2,040 | 2,108 |
| | 5 | 2,661 | 2,323 | 2,087 | 1,913 | 2,601 | 2,290 | 2,068 | 1,903 | 2,226 | 2,032 | 1,884 | 2,168 | 1,998 | 1,864 | 2,113 | 1,965 | 1,846 | 1,926 |
| | 6 | 2,492 | 2,137 | 1,899 | 1,728 | 2,437 | 2,109 | 1,885 | 1,721 | 2,056 | 1,856 | 1,707 | 2,006 | 1,829 | 1,693 | 1,959 | 1,802 | 1,680 | 1,768 |
| | 7 | 2,339 | 1,975 | 1,738 | 1,573 | 2,290 | 1,951 | 1,727 | 1,568 | 1,905 | 1,704 | 1,557 | 1,862 | 1,682 | 1,547 | 1,822 | 1,661 | 1,537 | 1,630 |
| | 8 | 2,200 | 1,832 | 1,600 | 1,440 | 2,155 | 1,811 | 1,590 | 1,436 | 1,772 | 1,572 | 1,429 | 1,735 | 1,554 | 1,421 | 1,700 | 1,536 | 1,413 | 1,509 |
| | 9 | 2,074 | 1,705 | 1,479 | 1,326 | 2,034 | 1,687 | 1,471 | 1,323 | 1,653 | 1,456 | 1,317 | 1,622 | 1,441 | 1,311 | 1,591 | 1,426 | 1,305 | 1,402 |
| | 10 | 1,960 | 1,593 | 1,373 | 1,227 | 1,923 | 1,577 | 1,366 | 1,224 | 1,548 | 1,354 | 1,220 | 1,520 | 1,341 | 1,215 | 1,494 | 1,329 | 1,210 | 1,308 |

## Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|---|---|---|
| 5.5 ft | 65.4 fc | 8.2 ft |
| 6.5 ft | 46.8 fc | 9.7 ft |
| 7.5 ft | 35.2 fc | 11.2 ft |
| 8.0 ft | 30.9 fc | 11.9 ft |
| 10.0 ft | 19.8 fc | 14.9 ft |
| 12.0 ft | 13.7 fc | 17.9 ft |
| 14.0 ft | 10.1 fc | 20.9 ft |
| 16.0 ft | 7.7 fc | 23.9 ft |
| 20.0 ft | 4.9 fc | 29.9 ft |
| 24.0 ft | 3.4 fc | 35.8 ft |
| 28.0 ft | 2.5 fc | 41.8 ft |

## Average Luminaire Luminance [cd/m²]

| | 0.00° | 45.00° | 90.00° |
|---|---|---|---|
| 0.00° | 236,543 | 236,543 | 236,543 |
| 45.00° | 90,499 | 90,499 | 90,499 |
| 55.00° | 57,722 | 57,722 | 57,722 |
| 65.00° | 50,053 | 50,053 | 50,053 |
| 75.00° | 43,288 | 43,288 | 43,288 |
| 85.00° | 34,227 | 34,227 | 34,227 |

## 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 | 23.8 | 25.1 | 24.2 | 25.5 | 25.8 | 23.8 | 25.1 | 24.2 | 25.5 | 25.8 |
| | 3H | 25.5 | 26.7 | 25.9 | 27.0 | 27.4 | 25.5 | 26.7 | 25.9 | 27.0 | 27.4 |
| | 4H | 26.1 | 27.2 | 26.5 | 27.6 | 28.0 | 26.1 | 27.2 | 26.5 | 27.6 | 28.0 |
| | 6H | 26.6 | 27.6 | 27.0 | 28.0 | 28.4 | 26.6 | 27.6 | 27.0 | 28.0 | 28.4 |
| | 8H | 26.7 | 27.7 | 27.1 | 28.1 | 28.5 | 26.7 | 27.7 | 27.1 | 28.1 | 28.5 |
| | 12H | 26.8 | 27.7 | 27.2 | 28.1 | 28.5 | 26.8 | 27.7 | 27.2 | 28.1 | 28.5 |
| 4H | 2H | 24.4 | 25.5 | 24.8 | 25.8 | 26.2 | 24.4 | 25.5 | 24.8 | 25.8 | 26.2 |
| | 3H | 26.3 | 27.2 | 26.7 | 27.6 | 28.0 | 26.3 | 27.2 | 26.7 | 27.6 | 28.0 |
| | 4H | 27.0 | 27.8 | 27.5 | 28.3 | 28.7 | 27.0 | 27.8 | 27.5 | 28.3 | 28.7 |
| | 6H | 27.6 | 28.3 | 28.0 | 28.7 | 29.2 | 27.6 | 28.3 | 28.0 | 28.7 | 29.2 |
| | 8H | 27.8 | 28.4 | 28.2 | 28.9 | 29.3 | 27.8 | 28.4 | 28.2 | 28.9 | 29.3 |
| | 12H | 27.9 | 28.5 | 28.4 | 29.0 | 29.4 | 27.9 | 28.5 | 28.4 | 29.0 | 29.4 |
| 8H | 4H | 27.3 | 27.9 | 27.7 | 28.4 | 28.8 | 27.3 | 27.9 | 27.7 | 28.4 | 28.8 |
| | 6H | 27.9 | 28.5 | 28.4 | 29.0 | 29.5 | 27.9 | 28.5 | 28.4 | 29.0 | 29.5 |
| | 8H | 28.2 | 28.7 | 28.7 | 29.2 | 29.7 | 28.2 | 28.7 | 28.7 | 29.2 | 29.7 |
| | 12H | 28.4 | 28.8 | 28.9 | 29.3 | 29.9 | 28.4 | 28.8 | 28.9 | 29.3 | 29.9 |
| 12H | 4H | 27.3 | 27.9 | 27.8 | 28.3 | 28.8 | 27.3 | 27.9 | 27.8 | 28.3 | 28.8 |
| | 6H | 28.0 | 28.5 | 28.5 | 28.9 | 29.5 | 28.0 | 28.5 | 28.5 | 28.9 | 29.5 |
| | 8H | 28.3 | 28.7 | 28.8 | 29.2 | 29.8 | 28.3 | 28.7 | 28.8 | 29.2 | 29.8 |

Corrected UGR values based on total output lumens

SHR = 1.0