UL Verification Services Inc.
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300

ACCREDITED
Testing Laboratory

NVLAP LAB CODE 201042-0

# Indoor Distribution Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-10-2014

**Prepared For**

## H E Williams Inc

831 W Fairview Ave
PO Box 837
Carthage, MO 64836-0837
United States

**Catalog Number**

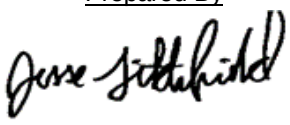
**2DS-L15/835-DIM-UNV-LN-OF-WH-x-xx**

Order Number
13257153
Test Number
13257153.22

Test Date

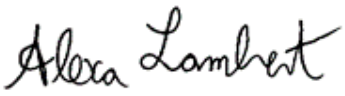
2020-03-13

Prepared By



Jesse Litchfield, Technician

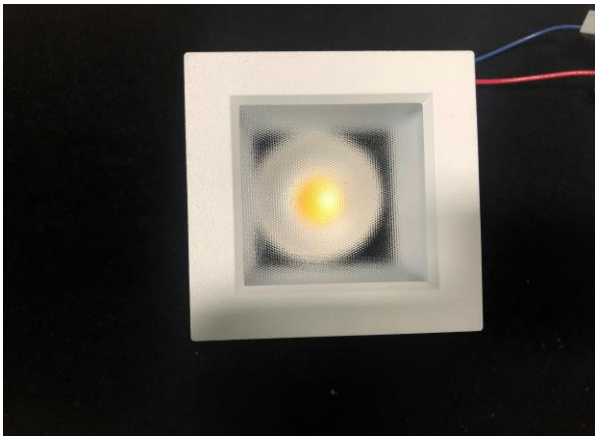
Approved By



Alexa Lambert, Project Handler

**Luminaire Description:** Aluminum housing, optics, and trim enclosure
**Lamp:** One white LED
**Mounting:** Recessed
**Ballast/Driver:** One Philips Advance XI025C070V054DSM1 Driver

**Luminaire**



**Luminaire Characteristics**

| | | |
|---|---|---|
| Luminous Length: | 2.50 | in. |
| Luminous Width: | 2.500 | in. |

**Summary of Results**

| | |
|---|---|
| Total Luminaire Output: | 1555 Lumens |
| Luminaire Efficacy: | 89.9 lm/w |
| Maximum Candela: | 5644 Candela |

**Test Conditions**

| | | |
|---|---|---|
| Test Temperature: | 25.2 | °C |
| Voltage: | 120.1 | VAC |
| Current: | 0.1452 | A |
| Power: | 17.30 | W |
| Power Factor: | 0.992 | |
| Frequency: | 60 | Hz |
| Current THD: | 10.9 | % |

Laboratory results may not be representative of field performance
Ballast factors have not been applied

# Distribution - Goniophotometer

Distribution Test Conditions

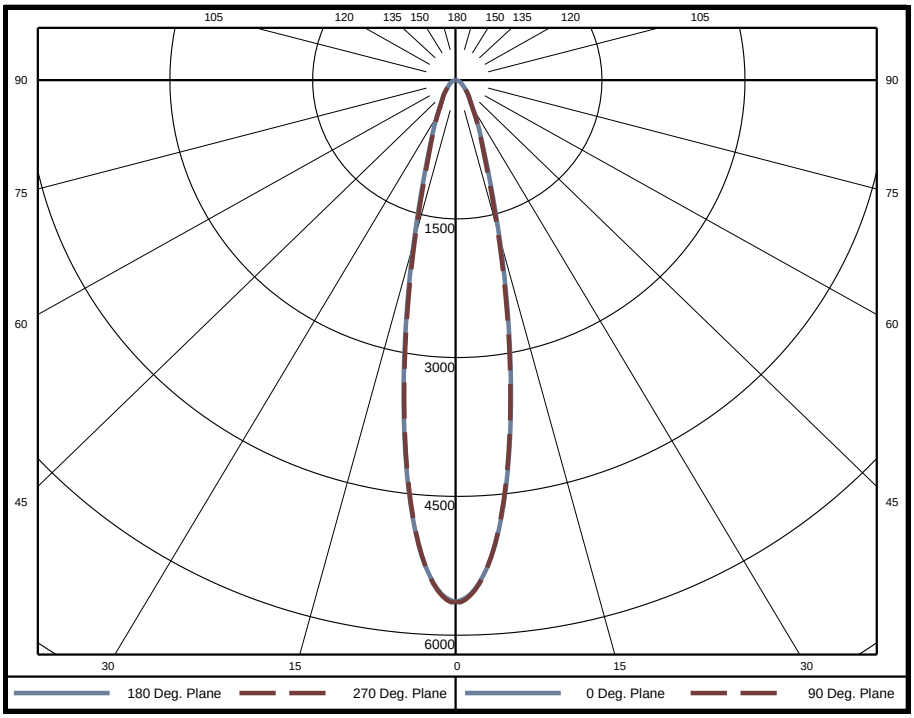
| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|---|---|---|---|---|---|---|
| 25.2 °C | 120.1 VAC | 0.1452 A | 17.30 W | 0.992 | 60 Hz | 10.9 % |

## Summary of Results

**Spacing Criteria**
0-180: 0.37
90-270: 0.37

**Total Lumen Output:** 1555 Lumens
**Luminaire Efficacy:** 89.9 lm/w
**Maximum Candela:** 5644 Candela

## Polar Plot




## Zonal Lumen Summary

| Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire |
|---|---|---|---|---|---|---|---|---|
| 0-5 | 125.9 | 8.1% | 60-65 | 27.1 | 1.7% | 120-125 | 0 | 0.0% |
| 5-10 | 283.6 | 18.2% | 65-70 | 20.5 | 1.3% | 125-130 | 0 | 0.0% |
| 10-15 | 268.4 | 17.3% | 70-75 | 14.3 | 0.9% | 130-135 | 0 | 0.0% |
| 15-20 | 188.1 | 12.1% | 75-80 | 8.7 | 0.6% | 135-140 | 0 | 0.0% |
| 20-25 | 142.9 | 9.2% | 80-85 | 4.1 | 0.3% | 140-145 | 0 | 0.0% |
| 25-30 | 117.1 | 7.5% | 85-90 | 0.8 | 0.1% | 145-150 | 0 | 0.0% |
| 30-35 | 92.4 | 5.9% | 90-95 | 0 | 0.0% | 150-155 | 0 | 0.0% |
| 35-40 | 75.6 | 4.9% | 95-100 | 0 | 0.0% | 155-160 | 0 | 0.0% |
| 40-45 | 62.2 | 4.0% | 100-105 | 0 | 0.0% | 160-165 | 0 | 0.0% |
| 45-50 | 49.9 | 3.2% | 105-110 | 0 | 0.0% | 165-170 | 0 | 0.0% |
| 50-55 | 40.3 | 2.6% | 110-115 | 0 | 0.0% | 170-175 | 0 | 0.0% |
| 55-60 | 33.4 | 2.1% | 115-120 | 0 | 0.0% | 175-180 | 0 | 0.0% |

| Zone | Lumens | % of Luminaire |
|---|---|---|
| 0-40 | 1294 | 83.2% |
| 0-60 | 1480 | 95.2% |
| 0-90 | 1555 | 100.0% |
| 90-180 | 0 | 0.0% |

## Candela Tabulation

Horizontal Angle (Degrees)

| Vertical Angle (Degrees) | 0 | 22.5 | 45 | 67.5 | 90 | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315 | 337.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 | 5640 |
| 5 | 4903 | 4892 | 4894 | 4893 | 4889 | 4893 | 4894 | 4892 | 4903 | 4892 | 4894 | 4893 | 4889 | 4893 | 4894 | 4892 |
| 10 | 3171 | 3163 | 3151 | 3132 | 3128 | 3132 | 3151 | 3163 | 3171 | 3163 | 3151 | 3132 | 3128 | 3132 | 3151 | 3163 |
| 15 | 1623 | 1615 | 1604 | 1573 | 1555 | 1573 | 1604 | 1615 | 1623 | 1615 | 1604 | 1573 | 1555 | 1573 | 1604 | 1615 |
| 20 | 845 | 859 | 869 | 830 | 807 | 830 | 869 | 859 | 845 | 859 | 869 | 830 | 807 | 830 | 869 | 859 |
| 25 | 523 | 561 | 614 | 554 | 511 | 554 | 614 | 561 | 523 | 561 | 614 | 554 | 511 | 554 | 614 | 561 |
| 30 | 335 | 372 | 447 | 365 | 326 | 365 | 447 | 372 | 335 | 372 | 447 | 365 | 326 | 365 | 447 | 372 |
| 35 | 242 | 260 | 296 | 255 | 240 | 255 | 296 | 260 | 242 | 260 | 296 | 255 | 240 | 255 | 296 | 260 |
| 40 | 184 | 196 | 207 | 196 | 183 | 196 | 207 | 196 | 184 | 196 | 207 | 196 | 183 | 196 | 207 | 196 |
| 45 | 134 | 146 | 152 | 145 | 132 | 145 | 152 | 146 | 134 | 146 | 152 | 145 | 132 | 145 | 152 | 146 |
| 50 | 100 | 108 | 112 | 106 | 96 | 106 | 112 | 108 | 100 | 108 | 112 | 106 | 96 | 106 | 112 | 108 |
| 55 | 79 | 83 | 84 | 81 | 76 | 81 | 84 | 83 | 79 | 83 | 84 | 81 | 76 | 81 | 84 | 83 |
| 60 | 63 | 65 | 64 | 64 | 62 | 64 | 64 | 65 | 63 | 65 | 64 | 64 | 62 | 64 | 64 | 65 |
| 65 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 | 47 | 48 |
| 70 | 34 | 34 | 33 | 34 | 33 | 34 | 33 | 34 | 34 | 34 | 33 | 34 | 33 | 34 | 33 | 34 |
| 75 | 22 | 22 | 21 | 22 | 21 | 22 | 21 | 22 | 22 | 22 | 21 | 22 | 21 | 22 | 21 | 22 |
| 80 | 12 | 12 | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 11 | 12 | 12 | 12 | 11 | 12 |
| 85 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 95 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 105 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 125 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 130 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 150 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 155 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 165 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 170 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 175 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Average Luminance (cd/m$^2$)

Horizontal Angle (Degrees)

| Vertical Angle (Degrees) | 0 | 45 | 90 |
|---|---|---|---|
| 0 | 1399000 | 1399000 | 1399000 |
| 45 | 46920 | 53350 | 46190 |
| 55 | 34240 | 36230 | 33060 |
| 65 | 27790 | 27590 | 27680 |
| 75 | 21060 | 20040 | 20410 |
| 85 | 12390 | 10680 | 11650 |

## Coefficients of Utilization - Zonal Cavity Method

| Effective Floor Cavity Reflectance 20% | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ceiling Cavity Reflectance | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| Wall Reflectance | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| Room Cavity Ratio (RCR) | ** Values are expressed as percent of total lumen output delivered to the task surface ** | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 113 | 110 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 102 | 101 | 101 | 99 | 98 | 97 | 96 | 95 | 93 |
| 2 | 108 | 103 | 99 | 95 | 106 | 101 | 97 | 94 | 98 | 95 | 92 | 95 | 92 | 90 | 92 | 90 | 88 | 87 |
| 3 | 103 | 96 | 91 | 87 | 101 | 95 | 90 | 87 | 92 | 88 | 85 | 90 | 87 | 84 | 88 | 85 | 83 | 81 |
| 4 | 98 | 91 | 85 | 81 | 96 | 89 | 84 | 81 | 87 | 83 | 80 | 85 | 82 | 79 | 83 | 80 | 78 | 76 |
| 5 | 94 | 86 | 80 | 76 | 92 | 85 | 79 | 76 | 83 | 78 | 75 | 81 | 77 | 74 | 80 | 76 | 74 | 72 |
| 6 | 90 | 81 | 76 | 72 | 88 | 81 | 75 | 71 | 79 | 74 | 71 | 78 | 74 | 70 | 76 | 73 | 70 | 69 |
| 7 | 86 | 77 | 72 | 68 | 85 | 77 | 72 | 68 | 76 | 71 | 67 | 74 | 70 | 67 | 73 | 70 | 67 | 65 |
| 8 | 83 | 74 | 69 | 65 | 82 | 74 | 68 | 65 | 72 | 68 | 64 | 71 | 67 | 64 | 71 | 67 | 64 | 63 |
| 9 | 80 | 71 | 66 | 62 | 79 | 71 | 65 | 62 | 70 | 65 | 62 | 69 | 65 | 62 | 68 | 64 | 61 | 60 |
| 10 | 77 | 68 | 63 | 60 | 76 | 68 | 63 | 60 | 67 | 63 | 59 | 66 | 62 | 59 | 66 | 62 | 59 | 58 |

| Beam and Field Information | |
|---|---|
| CIE Type: | Direct |
| Center Beam Intensity: | 5640 Candela |
| Central Cone Intensity: | 5371 Candela |
| Beam Flux: | 463.1 Lumens |
| Beam Angle (0-180): | 22.0 Degrees |
| Beam Angle (90-270): | 21.7 Degrees |
| Field Angle (0-180): | 48.3 Degrees |
| Field Angle (90-270): | 47.8 Degrees |

## Cone of Light Tabulation

| Mounting Height (Feet) | Footcandles at Nadir | Diameter (Feet) |
|---|---|---|
| 4.00 | 353 | 1.48 |
| 6.00 | 157 | 2.22 |
| 8.00 | 88.1 | 2.96 |
| 10.0 | 56.4 | 3.71 |
| 12.0 | 39.2 | 4.45 |
| 14.0 | 28.8 | 5.19 |
| 16.0 | 22.0 | 5.93 |

## ISOFootcandle Plot

**Mounting Height - 8 Feet**