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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
2DR-L15/835-DIM-UNV-LW-OF-WH-x-xx
Order Number
13257153
Test Number
13257153.01

Test Date

2020-03-10

Prepared By

Jesse Litchfield, Technician

Approved By

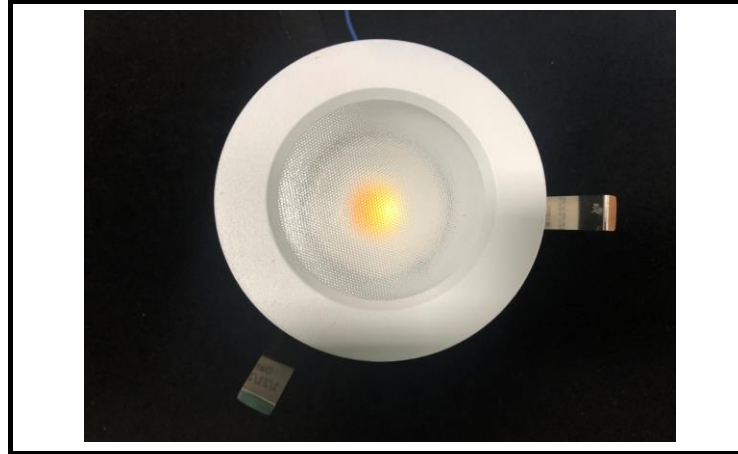
Alexa Lambert, Project Handler

The results contained in this report pertain only to the tested sample.
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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 Diameter: 2.50 in.

Summary of Results

| | |
|-------------------------|--------------|
| Total Luminaire Output: | 1645 Lumens |
| Luminaire Efficacy: | 95 lm/w |
| Maximum Candela: | 1941 Candela |

Test Conditions

| | |
|-------------------|-----------|
| Test Temperature: | 25.9 °C |
| Voltage: | 120.1 VAC |
| Current: | 0.1453 A |
| Power: | 17.31 W |
| Power Factor: | 0.992 |
| Frequency: | 60 Hz |
| Current THD: | 11.0 % |

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



Distribution - Goniophotometer

Distribution Test Conditions

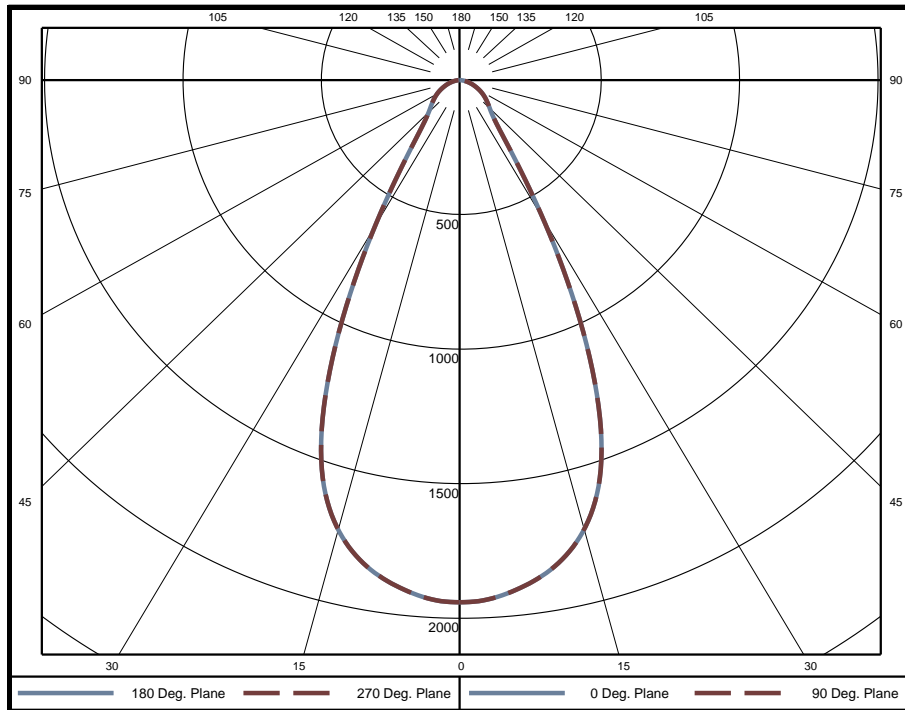
| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 25.9 °C | 120.1 VAC | 0.1453 A | 17.31 W | 0.992 | 60 Hz | 11.0 % |

Summary of Results

Spacing Criteria
0-180: 0.84
90-270: 0.84

Total Lumen Output: 1645 Lumens
Luminaire Efficacy: 95.0 lm/w
Maximum Candela: 1941 Candela

Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire |
|-------|--------|----------------|---------|--------|----------------|---------|--------|----------------|
| 0-5 | 46.1 | 2.8% | 60-65 | 37.6 | 2.3% | 120-125 | 0 | 0.0% |
| 5-10 | 134.6 | 8.2% | 65-70 | 29.6 | 1.8% | 125-130 | 0 | 0.0% |
| 10-15 | 211.9 | 12.9% | 70-75 | 21.7 | 1.3% | 130-135 | 0 | 0.0% |
| 15-20 | 263.7 | 16.0% | 75-80 | 14.0 | 0.9% | 135-140 | 0 | 0.0% |
| 20-25 | 262.9 | 16.0% | 80-85 | 6.8 | 0.4% | 140-145 | 0 | 0.0% |
| 25-30 | 199.7 | 12.1% | 85-90 | 1.1 | 0.1% | 145-150 | 0 | 0.0% |
| 30-35 | 122.3 | 7.4% | 90-95 | 0 | 0.0% | 150-155 | 0 | 0.0% |
| 35-40 | 78.4 | 4.8% | 95-100 | 0 | 0.0% | 155-160 | 0 | 0.0% |
| 40-45 | 62.5 | 3.8% | 100-105 | 0 | 0.0% | 160-165 | 0 | 0.0% |
| 45-50 | 56.2 | 3.4% | 105-110 | 0 | 0.0% | 165-170 | 0 | 0.0% |
| 50-55 | 51.0 | 3.1% | 110-115 | 0 | 0.0% | 170-175 | 0 | 0.0% |
| 55-60 | 45.0 | 2.7% | 115-120 | 0 | 0.0% | 175-180 | 0 | 0.0% |

| Zone | Lumens | % of Luminaire |
|--------|--------|----------------|
| 0-40 | 1320 | 80.2% |
| 0-60 | 1534 | 93.3% |
| 0-90 | 1645 | 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 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 | 1941 |
| | 5 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 | 1915 |
| | 10 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 | 1848 |
| | 15 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 | 1718 |
| | 20 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 | 1465 |
| | 25 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 | 1032 |
| | 30 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 | 575 |
| | 35 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 299 |
| | 40 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 | 192 |
| | 45 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 | 152 |
| | 50 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 | 128 |
| | 55 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 | 107 |
| | 60 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 |
| | 65 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | 70 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | 75 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| | 80 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 19 |
| | 85 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | 90 | 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 |
| | 100 | 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 |
| | 110 | 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 |
| | 120 | 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 |
| | 130 | 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 |
| | 140 | 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 |
| | 150 | 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 |
| | 160 | 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 |
| | 170 | 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 |
| | 180 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

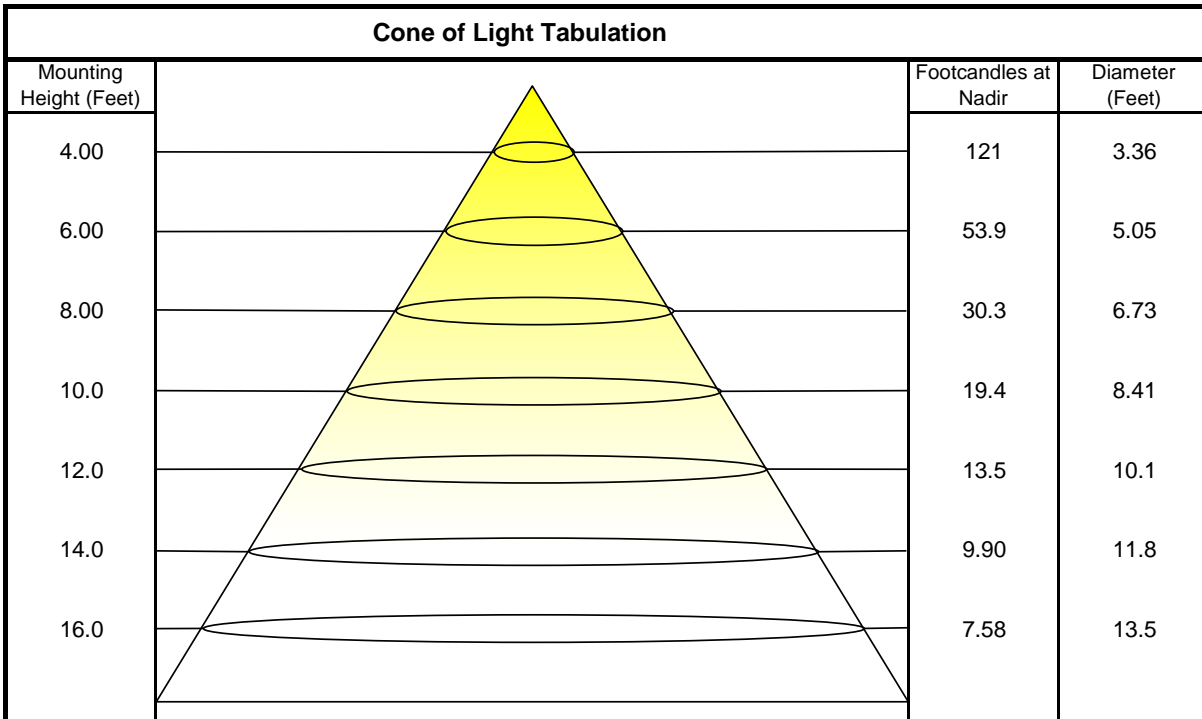
| Vertical Angle (Degrees) | 0 | 45 | 90 |
|--------------------------|----|--------|--------|
| | 0 | 612800 | 612800 |
| | 45 | 67700 | 67700 |
| | 55 | 59140 | 59140 |
| | 65 | 50490 | 50490 |
| | 75 | 40800 | 40800 |
| | 85 | 22670 | 22670 |



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 | 112 | 109 | 106 | 104 | 110 | 107 | 104 | 102 | 103 | 101 | 99 | 99 | 97 | 96 | 96 | 94 | 93 | 91 |
| 2 | 106 | 100 | 96 | 92 | 104 | 99 | 94 | 91 | 95 | 92 | 89 | 92 | 89 | 87 | 89 | 87 | 85 | 83 |
| 3 | 100 | 93 | 87 | 83 | 98 | 91 | 86 | 82 | 89 | 84 | 81 | 86 | 82 | 79 | 84 | 81 | 78 | 76 |
| 4 | 94 | 86 | 80 | 75 | 93 | 85 | 79 | 75 | 83 | 78 | 74 | 81 | 76 | 73 | 79 | 75 | 72 | 70 |
| 5 | 89 | 80 | 74 | 69 | 88 | 79 | 73 | 69 | 77 | 72 | 68 | 76 | 71 | 68 | 74 | 70 | 67 | 65 |
| 6 | 85 | 75 | 69 | 64 | 83 | 74 | 68 | 64 | 73 | 67 | 63 | 71 | 67 | 63 | 70 | 66 | 63 | 61 |
| 7 | 81 | 71 | 64 | 60 | 79 | 70 | 64 | 60 | 69 | 63 | 59 | 67 | 63 | 59 | 66 | 62 | 59 | 57 |
| 8 | 77 | 67 | 60 | 56 | 75 | 66 | 60 | 56 | 65 | 59 | 56 | 64 | 59 | 55 | 63 | 58 | 55 | 54 |
| 9 | 73 | 63 | 57 | 53 | 72 | 63 | 57 | 53 | 62 | 56 | 52 | 61 | 56 | 52 | 60 | 55 | 52 | 51 |
| 10 | 70 | 60 | 54 | 50 | 69 | 59 | 54 | 50 | 58 | 53 | 49 | 58 | 53 | 49 | 57 | 52 | 49 | 48 |

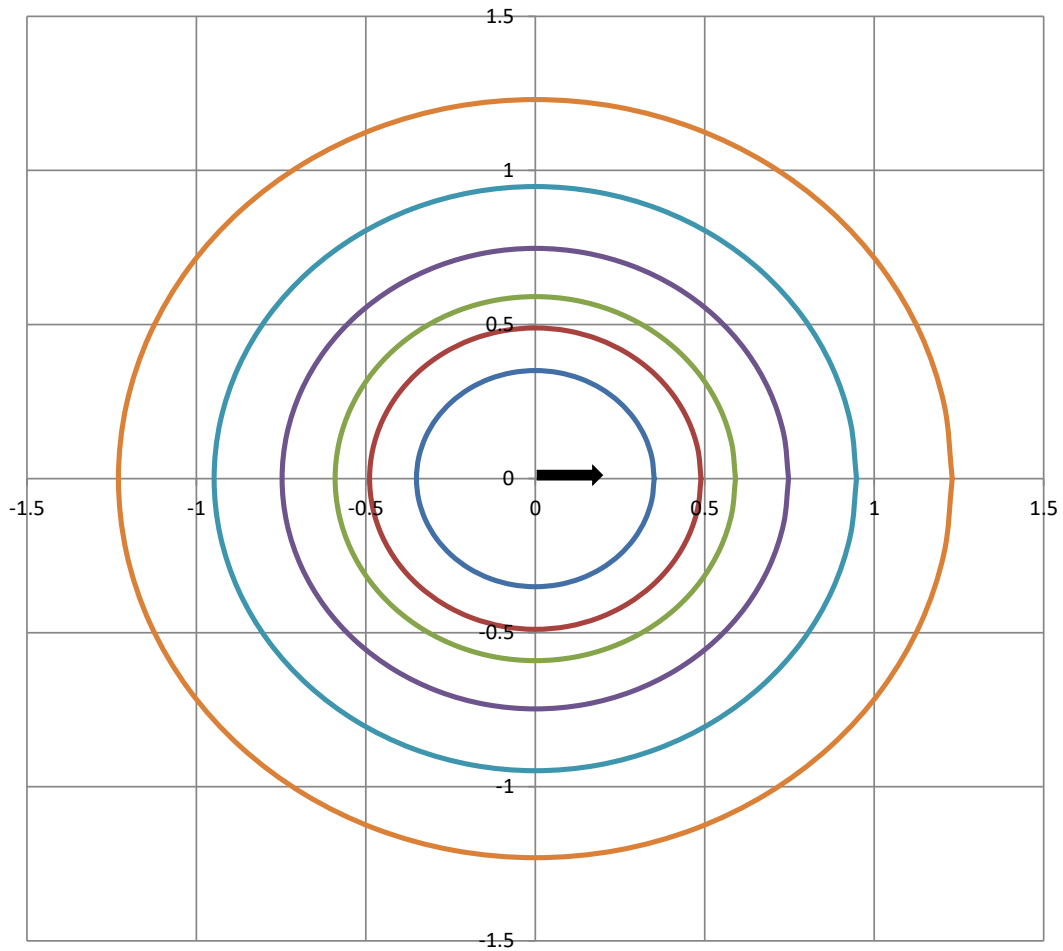
| Beam and Field Information | |
|----------------------------|--------------|
| CIE Type: | Direct |
| Center Beam Intensity: | 1941 Candela |
| Central Cone Intensity: | 1932 Candela |
| Beam Flux: | 949.5 Lumens |
| Beam Angle (0-180): | 51.3 Degrees |
| Beam Angle (90-270): | 51.3 Degrees |
| Field Angle (0-180): | 79.7 Degrees |
| Field Angle (90-270): | 79.7 Degrees |





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

20 fc 10 fc 5 fc 2 fc 1 fc 0.5 fc