



7826 East Evans Road  
Scottsdale, AZ 85260  
480-991-9260

## Photometric Indoor Test Report

Relevant Standards  
IES LM-79-2008  
ANSI C82.77-2002

Prepared For  
**Environmental Lights**  
11235 W. Bernardo Court, Suite 102  
San Diego, CA 92127

Catalog Number  
LN-WW-20  
Project Number  
10345709  
Test Number  
33051

Test Date

2014-06-10

Prepared By

Handwritten signature of Dennis Boyles in black ink.

Dennis Boyles, Technician

Approved By

Handwritten signature of Jim Domigan in black ink.

Jim Domigan, Laboratory Team Leader

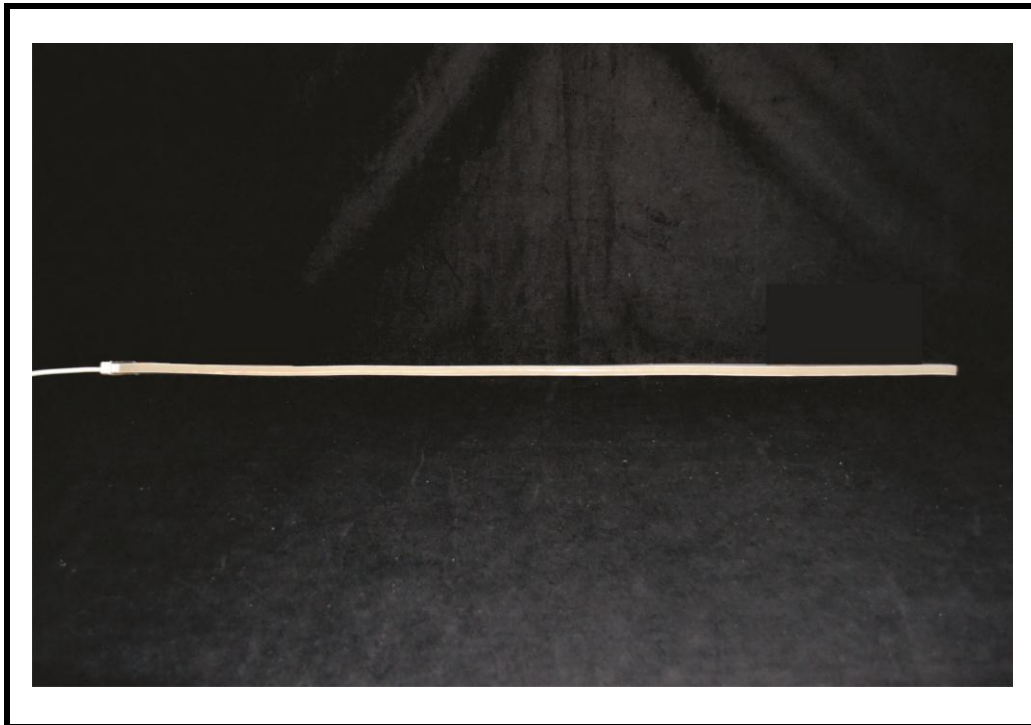
The results contained in this report pertain only to the tested sample.  
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Luminaire Description: LED Neon, Flat rope type  
Catalog Number: LN-WW-20  
Lamp: LED Array  
Ballast/Driver: One Mean Well SP-320-24 Driver

Luminaire

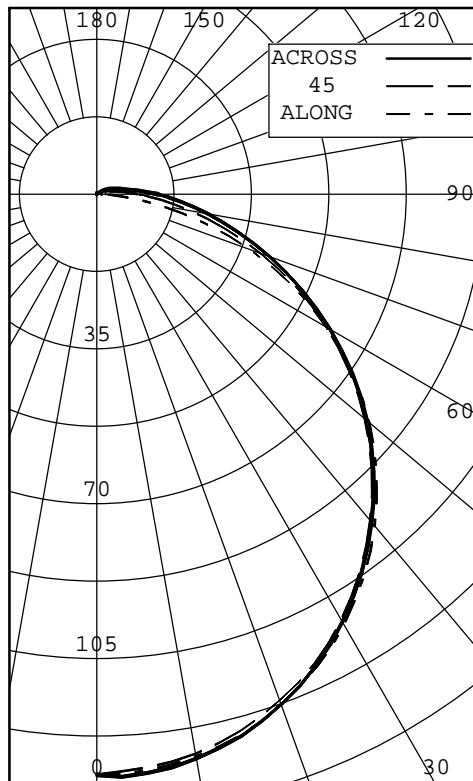


Test Conditions

Test Temperature: 24.2 °C  
Voltage: 24.0 VDC



INTENSITY (CANDLEPOWER) SUMMARY OUTPUT LUMENS



| ANGLE | ALONG | 22.5 | 45  | 67.5 | ACROSS | OUTPUT LUMENS |
|-------|-------|------|-----|------|--------|---------------|
| 0     | 131   | 131  | 131 | 131  | 131    |               |
| 5     | 131   | 130  | 130 | 131  | 131    | 13            |
| 15    | 127   | 125  | 126 | 127  | 127    | 36            |
| 25    | 118   | 117  | 117 | 118  | 118    | 54            |
| 35    | 105   | 104  | 104 | 105  | 104    | 65            |
| 45    | 89    | 88   | 88  | 89   | 88     | 68            |
| 55    | 71    | 69   | 70  | 71   | 71     | 62            |
| 65    | 49    | 48   | 50  | 51   | 51     | 49            |
| 75    | 25    | 27   | 30  | 32   | 33     | 31            |
| 85    | 6     | 9    | 15  | 18   | 19     | 15            |
| 90    | 1     | 4    | 9   | 13   | 14     |               |
| 95    | 1     | 2    | 6   | 9    | 10     | 6             |
| 105   | 1     | 1    | 3   | 4    | 5      | 3             |
| 115   | 1     | 1    | 1   | 2    | 3      | 2             |
| 125   | 1     | 1    | 1   | 1    | 1      | 1             |
| 135   | 1     | 0    | 0   | 0    | 0      | 0             |
| 145   | 0     | 0    | 0   | 0    | 0      | 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             |

ZONAL LUMENS AND PERCENTAGES

| ZONE   | LUMENS | % LUMINAIRE |
|--------|--------|-------------|
| 0-30   | 102    | 25.16       |
| 0-40   | 167    | 41.24       |
| 0-60   | 298    | 73.43       |
| 0-90   | 393    | 96.99       |
| 40-90  | 226    | 55.75       |
| 60-90  | 96     | 23.56       |
| 90-180 | 12     | 3.01        |
| 0-180  | 406    | 100.00      |

\*\*\* THIS IS AN ABSOLUTE TEST \*\*\*

LUMINOUS LENGTH: 39.370 INS  
 WIDTH: 0.375 INS

LUMINANCE SUMMARY CD./SQ.M.

S/MH: 1.3  
 SC: 1.3

| ANGLE | ALONG | 45    | ACROSS |
|-------|-------|-------|--------|
| 45    | 13280 | 13108 | 13182  |
| 55    | 12913 | 12806 | 12962  |
| 65    | 12085 | 12427 | 12755  |
| 75    | 10262 | 12204 | 13478  |
| 85    | 7167  | 17693 | 23217  |

TESTED IN ACCORDANCE WITH IES PROCEDURES.



INTENSITY (CANDLEPOWER) DATA

| ANGLE | PLANE |      |     |      |        |         | OUTPUT<br>LUMENS |
|-------|-------|------|-----|------|--------|---------|------------------|
|       | ALONG | 22.5 | 45  | 67.5 | ACROSS | AVERAGE |                  |
| 0     | 131   | 131  | 131 | 131  | 131    | 131     |                  |
| 5     | 131   | 130  | 130 | 131  | 131    | 131     | 13               |
| 10    | 129   | 128  | 128 | 130  | 130    | 129     |                  |
| 15    | 127   | 125  | 126 | 127  | 127    | 126     | 36               |
| 20    | 123   | 122  | 122 | 123  | 123    | 122     |                  |
| 25    | 118   | 117  | 117 | 118  | 118    | 117     | 54               |
| 30    | 112   | 111  | 111 | 112  | 111    | 111     |                  |
| 35    | 105   | 104  | 104 | 105  | 104    | 104     | 65               |
| 40    | 98    | 97   | 96  | 97   | 97     | 97      |                  |
| 45    | 89    | 88   | 88  | 89   | 88     | 88      | 68               |
| 50    | 80    | 79   | 79  | 80   | 80     | 80      |                  |
| 55    | 71    | 69   | 70  | 71   | 71     | 70      | 62               |
| 60    | 60    | 59   | 60  | 61   | 61     | 60      |                  |
| 65    | 49    | 48   | 50  | 51   | 51     | 50      | 49               |
| 70    | 37    | 37   | 40  | 41   | 42     | 39      |                  |
| 75    | 25    | 27   | 30  | 32   | 33     | 30      | 31               |
| 80    | 15    | 16   | 22  | 25   | 26     | 21      |                  |
| 85    | 6     | 9    | 15  | 18   | 19     | 14      | 15               |
| 90    | 1     | 4    | 9   | 13   | 14     | 8       |                  |
| 95    | 1     | 2    | 6   | 9    | 10     | 6       | 6                |
| 100   | 1     | 2    | 4   | 6    | 6      | 4       |                  |
| 105   | 1     | 1    | 3   | 4    | 5      | 3       | 3                |
| 110   | 1     | 1    | 2   | 3    | 4      | 2       |                  |
| 115   | 1     | 1    | 1   | 2    | 3      | 2       | 2                |
| 120   | 1     | 1    | 1   | 2    | 2      | 1       |                  |
| 125   | 1     | 1    | 1   | 1    | 1      | 1       | 1                |
| 130   | 1     | 1    | 1   | 1    | 1      | 1       |                  |
| 135   | 1     | 0    | 0   | 0    | 0      | 0       | 0                |
| 140   | 0     | 0    | 0   | 0    | 0      | 0       |                  |
| 145   | 0     | 0    | 0   | 0    | 0      | 0       | 0                |
| 150   | 0     | 0    | 0   | 0    | 0      | 0       |                  |
| 155   | 0     | 0    | 0   | 0    | 0      | 0       | 0                |
| 160   | 0     | 0    | 0   | 0    | 0      | 0       |                  |
| 165   | 0     | 0    | 0   | 0    | 0      | 0       | 0                |
| 170   | 0     | 0    | 0   | 0    | 0      | 0       |                  |
| 175   | 0     | 0    | 0   | 0    | 0      | 0       | 0                |
| 180   | 0     | 0    | 0   | 0    | 0      | 0       |                  |



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COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

| CC<br>WALL | 90    |       |       |      | 80    |       |       |      | 70    |       |       |      | 50    |       |      |       | 30    |      |       |       | 10   |      |    |    | 0 |
|------------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|------|----|----|---|
|            | 70    | 50    | 30    | 10   | 70    | 50    | 30    | 10   | 70    | 50    | 30    | 10   | 50    | 30    | 10   | 50    | 30    | 10   | 50    | 30    | 10   | 50   | 30 | 10 | 0 |
| RCR        |       |       |       |      |       |       |       |      |       |       |       |      |       |       |      |       |       |      |       |       |      |      |    |    |   |
| 0          | 1.211 | 1.211 | 1.211 | 1.21 | 1.181 | 1.181 | 1.181 | 1.18 | 1.151 | 1.151 | 1.151 | 1.15 | 1.091 | 1.091 | 1.09 | 1.041 | 1.041 | 1.04 | 0.990 | 0.990 | 0.99 | 0.97 |    |    |   |
| 1          | 1.111 | 1.051 | 1.010 | 0.97 | 1.081 | 1.030 | 0.990 | 0.95 | 1.051 | 1.010 | 0.970 | 0.93 | 0.960 | 0.920 | 0.89 | 0.910 | 0.890 | 0.86 | 0.870 | 0.850 | 0.83 | 0.81 |    |    |   |
| 2          | 1.010 | 0.930 | 0.860 | 0.79 | 0.990 | 0.910 | 0.840 | 0.78 | 0.960 | 0.880 | 0.820 | 0.77 | 0.840 | 0.790 | 0.75 | 0.810 | 0.760 | 0.73 | 0.770 | 0.740 | 0.71 | 0.68 |    |    |   |
| 3          | 0.930 | 0.810 | 0.730 | 0.66 | 0.900 | 0.800 | 0.720 | 0.65 | 0.870 | 0.780 | 0.710 | 0.65 | 0.750 | 0.680 | 0.63 | 0.710 | 0.660 | 0.62 | 0.690 | 0.640 | 0.60 | 0.58 |    |    |   |
| 4          | 0.850 | 0.730 | 0.640 | 0.57 | 0.830 | 0.710 | 0.630 | 0.56 | 0.810 | 0.700 | 0.620 | 0.56 | 0.670 | 0.600 | 0.55 | 0.640 | 0.580 | 0.54 | 0.620 | 0.570 | 0.53 | 0.50 |    |    |   |
| 5          | 0.790 | 0.650 | 0.560 | 0.49 | 0.760 | 0.640 | 0.550 | 0.48 | 0.740 | 0.620 | 0.540 | 0.48 | 0.600 | 0.530 | 0.47 | 0.580 | 0.510 | 0.46 | 0.550 | 0.500 | 0.46 | 0.43 |    |    |   |
| 6          | 0.720 | 0.580 | 0.490 | 0.43 | 0.700 | 0.570 | 0.480 | 0.42 | 0.680 | 0.560 | 0.480 | 0.42 | 0.540 | 0.470 | 0.41 | 0.520 | 0.450 | 0.40 | 0.500 | 0.440 | 0.40 | 0.38 |    |    |   |
| 7          | 0.660 | 0.520 | 0.430 | 0.37 | 0.640 | 0.510 | 0.420 | 0.37 | 0.630 | 0.500 | 0.420 | 0.36 | 0.480 | 0.410 | 0.36 | 0.460 | 0.400 | 0.35 | 0.450 | 0.390 | 0.34 | 0.33 |    |    |   |
| 8          | 0.620 | 0.470 | 0.380 | 0.32 | 0.600 | 0.460 | 0.380 | 0.32 | 0.580 | 0.450 | 0.370 | 0.32 | 0.440 | 0.370 | 0.31 | 0.420 | 0.360 | 0.31 | 0.410 | 0.350 | 0.31 | 0.29 |    |    |   |
| 9          | 0.570 | 0.430 | 0.340 | 0.28 | 0.550 | 0.420 | 0.340 | 0.28 | 0.540 | 0.410 | 0.340 | 0.28 | 0.400 | 0.330 | 0.28 | 0.390 | 0.320 | 0.27 | 0.370 | 0.310 | 0.27 | 0.25 |    |    |   |
| 10         | 0.530 | 0.390 | 0.300 | 0.25 | 0.520 | 0.380 | 0.300 | 0.25 | 0.500 | 0.380 | 0.300 | 0.25 | 0.360 | 0.290 | 0.25 | 0.350 | 0.290 | 0.24 | 0.340 | 0.280 | 0.24 | 0.22 |    |    |   |

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS  
 BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.  
 LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD  
 THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.  
 BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST  
 LUMINOUS OPENING OF LUMINAIRE.



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**All testing was conducted in accordance with LM-79-08,**

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products as published by the Illuminating Engineering Society of North America (IESNA).

The condition of the item tested was new. Stabilization time before testing meets the stabilization requirements of LM-79-08.

The test results (luminous distribution and flux) were obtained by using a Lighting Sciences series 6000 Type C Moving Mirror Goniophotometer

- The photometric reference standard used is a set of three incandescent luminous intensity standard lamps calibrated and traceable to the U.S. National Institute of Standards and Technology.

Power measurements were obtained with a Xitron 2801 power analyzer.

Ambient temperature during testing was  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , measured using an Omega model DP460.

Calibration certificates are on file at the laboratory

The results in this report apply to the test sample(s) mentioned in this report at the time of the testing period only and are not to be used to indicate applicability to other similar products.