

# PURE EDGE LIGHTING

## TEST REPORT

### SCOPE OF WORK

Electrical and Photometric tests as required to the IESNA test standard.

### MODEL NUMBER

ZSCW-7W-4S-36-30K-SN

### REPORT NUMBER

102602453CHI-022

### ISSUE DATE

June 4, 2018

### REVISION DATE

None

### DOCUMENT CONTROL NUMBER

TBD

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**REPORT DATE: June 4, 2018**

**TEST REPORT**

**TEST OF ONE LINEAR LED FIXTURE**

MODEL NO. ZSCW-7W-4S-36-30K-SN  
LED MODEL NO. LUMILED/SS7CL-12MM-24VDC-C-30K  
DRIVER MODEL NO. MEANWELL APV-16-28

**RENDERED TO:**

PURE EDGE LIGHTING  
1718 WEST FULLERTON  
CHICAGO, IL 60614

**AUTHORIZATION**

The testing performed was authorized by signed quote number Qu-00685500-1.

**STANDARDS USED**

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting  
ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

**DESCRIPTION OF SAMPLE**

The client submitted one production sample of model number ZSCW-7W-4S-36-30K-SN. The sample was received by Intertek on May 17, 2018 in undamaged condition and one sample was tested as received. The sample designation was AH05172018024639-022.

**DATE OF TESTS**

May 29, 2018 through May 30, 2018.

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**SUMMARY**

|                     |                      |
|---------------------|----------------------|
| <b>MODEL NO:</b>    | ZSCW-7W-4S-36-30K-SN |
| <b>DESCRIPTION:</b> | Linear LED fixture   |

| CRITERIA                           | RESULTS            |                 |
|------------------------------------|--------------------|-----------------|
|                                    | INTEGRATING SPHERE | GONIOPHOTOMETER |
| Lumen Output (lumens)              | 1095.3             | 1074.8          |
| Input Power (W) @ 120 (VAC)        | 25.56              | 25.474          |
| Lumen Efficacy (lm/W)              | 42.9               | 42.2            |
| Input Power Factor ( ) @ 120 (VAC) | 0.989              | 0.989           |

| CRITERIA                           | RESULTS |
|------------------------------------|---------|
| Input Current ATHD (%) @ 120 (VAC) | 12.28   |
| Correlated Color Temperature (K)   | 3006    |
| Color Rendering Index - Ra ( )     | 96.6    |
| Color Rendering - R9 ( )           | 85.6    |
| DUV ( )                            | 0.0030  |
| Chromaticity Coordinate (x)        | 0.432   |
| Chromaticity Coordinate (y)        | 0.395   |
| Chromaticity Coordinate (u')       | 0.251   |
| Chromaticity Coordinate (v')       | 0.517   |

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**EQUIPMENT LIST**

| EQUIPMENT USED                          | MODEL NO. | CONTROL NO. | LAST CAL DATE | CAL DUE DATE |
|---|-----------|-------------|---------------|--------------|
| Yokogawa Power Meter                    | WT210     | 146919      | 7/10/2017     | 7/10/2018    |
| Omega Newport Thermometer               | DPI8-C24  | 146920      | 10/4/2017     | 10/4/2018    |
| LSI High Speed Mirror Goniometer        | 6440T     | 146928      | VBV           | VBV          |
| Newport Thermohygrometer                | iServer   | 146957      | 11/17/2017    | 11/17/2018   |
| Pacific, AC power supply                | 118-ACX   | CHI0358     | VBV           | VBV          |
| Labsphere 2M Sphere & Spectroradiometer | CDS1100   | 146137      | VBV           | VBV          |
| Elgar AC Power Supply                   | CW1251M   | 146113      | VBV           | VBV          |
| Sorenson DC Power Supply                | XFR150-8  | 146847      | VBV           | VBV          |
| Yokogawa Power Analyzer                 | WT1600    | 146767      | 4/5/2018      | 4/5/2019     |
| Omega Temperature                       | MDSi8     | 146873      | 7/20/2017     | 7/20/2018    |
| Newport Thermohygrometer                | iTHX-M    | 146382      | 7/14/2017     | 7/14/2018    |

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**TEST METHODS**

**SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS**

No seasoning was performed in accordance with IESNA LM-79.

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD**

A Spectroradiometer and integrating sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD**

A Type C Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

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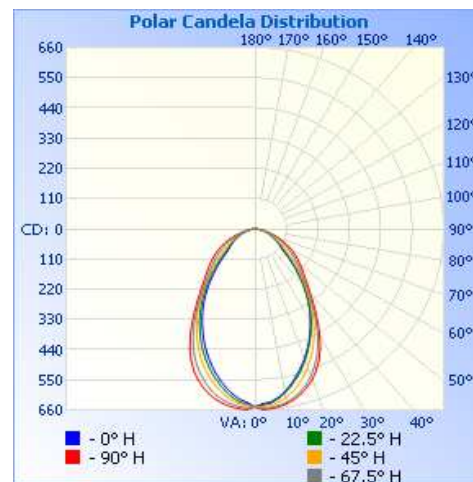
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

| INTERTEK CONTROL NO. | BASE POSITION | INPUT VOLTAGE (VAC) | INPUT CURRENT (mA) | INPUT POWER (W) | INPUT POWER FACTOR ( ) | LIGHT OUTPUT (lm) | LUMEN EFFICACY (lm/W) |
|----------------------|---------------|---------------------|--------------------|-----------------|------------------------|-------------------|-----------------------|
| AH05172018024639-022 | Base Up       | 120.0               | 214.7              | 25.474          | 0.989                  | 1074.8            | 42.2                  |

INTENSITY SUMMARY - CANDELAS

| Angle | 0   | 22.5 | 45  | 67.5 | 90  |
|-------|-----|------|-----|------|-----|
| 0     | 648 | 648  | 648 | 648  | 648 |
| 5     | 632 | 637  | 644 | 652  | 657 |
| 10    | 601 | 607  | 624 | 640  | 646 |
| 15    | 556 | 562  | 587 | 614  | 622 |
| 20    | 504 | 510  | 537 | 570  | 584 |
| 25    | 449 | 453  | 479 | 512  | 528 |
| 30    | 389 | 390  | 413 | 438  | 453 |
| 35    | 327 | 326  | 343 | 356  | 369 |
| 40    | 260 | 261  | 274 | 284  | 297 |
| 45    | 197 | 199  | 215 | 230  | 245 |
| 50    | 139 | 144  | 168 | 190  | 208 |
| 55    | 109 | 109  | 131 | 158  | 176 |
| 60    | 88  | 87   | 98  | 126  | 143 |
| 65    | 68  | 68   | 75  | 96   | 110 |
| 70    | 50  | 50   | 55  | 67   | 77  |
| 75    | 35  | 34   | 37  | 42   | 46  |
| 80    | 21  | 20   | 22  | 24   | 23  |
| 85    | 8   | 8    | 10  | 10   | 6   |
| 90    | 0   | 0    | 0   | 0    | 0   |



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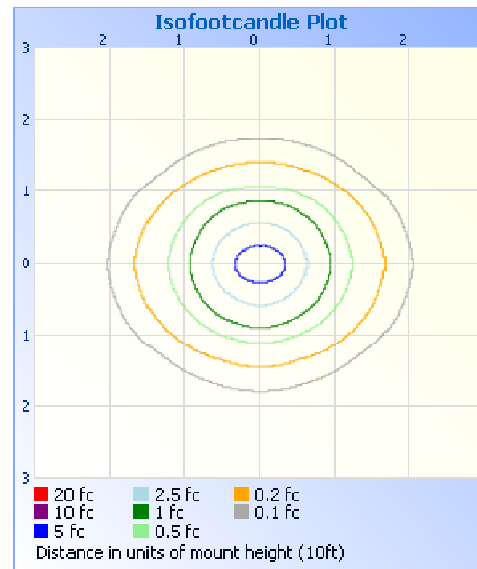
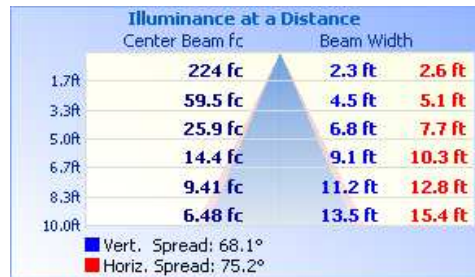
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**RESULTS OF TESTS**

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)**

| MOUNTING HEIGHT: 10ft       |                      |
|-----------------------------|----------------------|
| ILLUMINANCE - CONE OF LIGHT | ISOILLUMINATION PLOT |



**ZONAL LUMEN SUMMARY AND PERCENTAGES**

| ZONE   | LUMENS | % LUMINAIRE |
|--------|--------|-------------|
| 0-30   | 443.3  | 41.2        |
| 0-40   | 656.0  | 61.0        |
| 0-60   | 942.5  | 87.7        |
| 60-90  | 132.2  | 12.3        |
| 70-100 | 51.5   | 4.8         |
| 90-120 | 0.0    | 0.0         |
| 0-90   | 1074.8 | 100.0       |
| 90-180 | 0.0    | 0.0         |
| 0-180  | 1074.8 | 100.0       |

| ZONE  | LUMENS | % LUMINAIRE |
|-------|--------|-------------|
| 0-10  | 60.5   | 5.6         |
| 10-20 | 163.5  | 15.2        |
| 20-30 | 219.2  | 20.4        |
| 30-40 | 212.7  | 19.8        |
| 40-50 | 166.3  | 15.5        |
| 50-60 | 120.3  | 11.2        |
| 60-70 | 80.7   | 7.5         |
| 70-80 | 41.2   | 3.8         |
| 80-90 | 10.4   | 1.0         |

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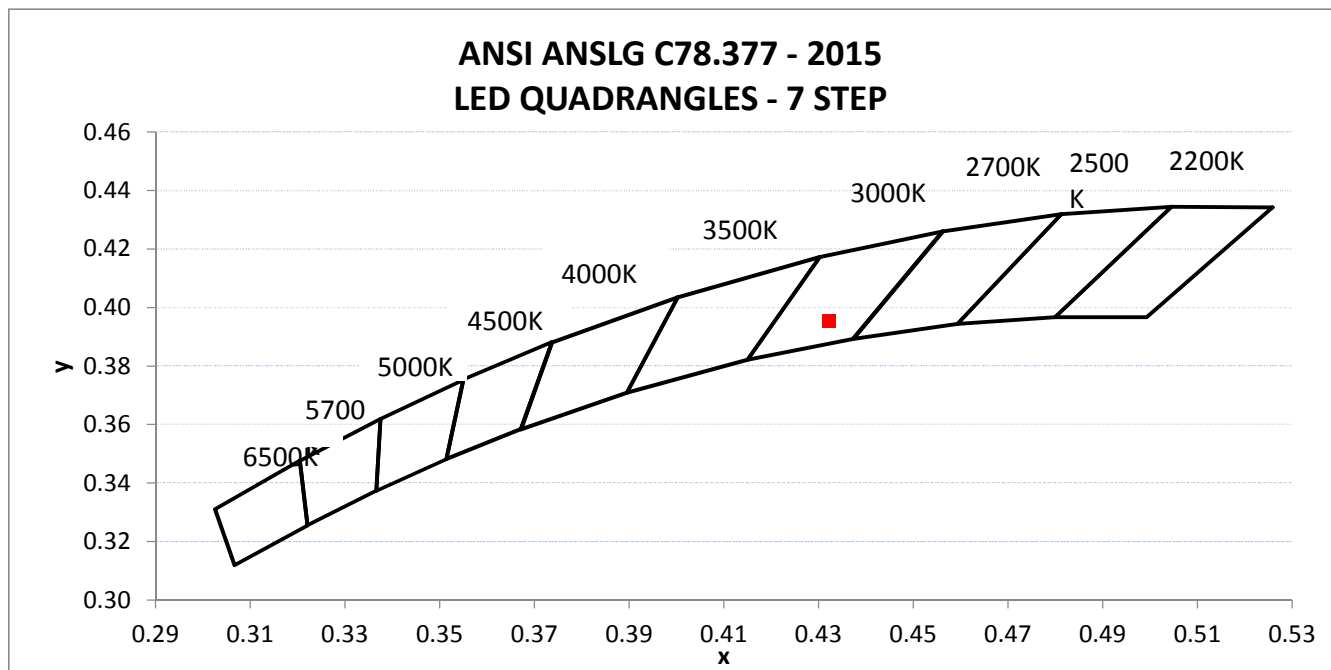
RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

| INTERTEK CONTROL NO. | BASE POSITION | INPUT VOLTAGE (VAC) | INPUT CURRENT (mA) | INPUT POWER (W) | INPUT POWER FACTOR ( ) | INPUT CURRENT ATHD (%) |
|----------------------|---------------|---------------------|--------------------|-----------------|------------------------|------------------------|
| AH05172018024639-022 | Base Up       | 120.01              | 215.31             | 25.56           | 0.989                  | 12.28                  |

| LIGHT OUTPUT (lm) | LUMEN EFFICACY (lm/W) | CORRELATED COLOR TEMPERATURE - CCT (K) | CRI - Ra | CRI - R9 | DUV    |
|-------------------|-----------------------|--|----------|----------|--------|
| 1095.3            | 42.9                  | 3006                                   | 96.6     | 85.6     | 0.0030 |

| CIE 1931 CHROMATICITY COORDINATE (x) | CIE 1931 CHROMATICITY COORDINATE (y) | CIE 1976 CHROMATICITY COORDINATE (u') | CIE 1976 CHROMATICITY COORDINATE (v') |
|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| 0.432                                | 0.395                                | 0.251                                 | 0.517                                 |



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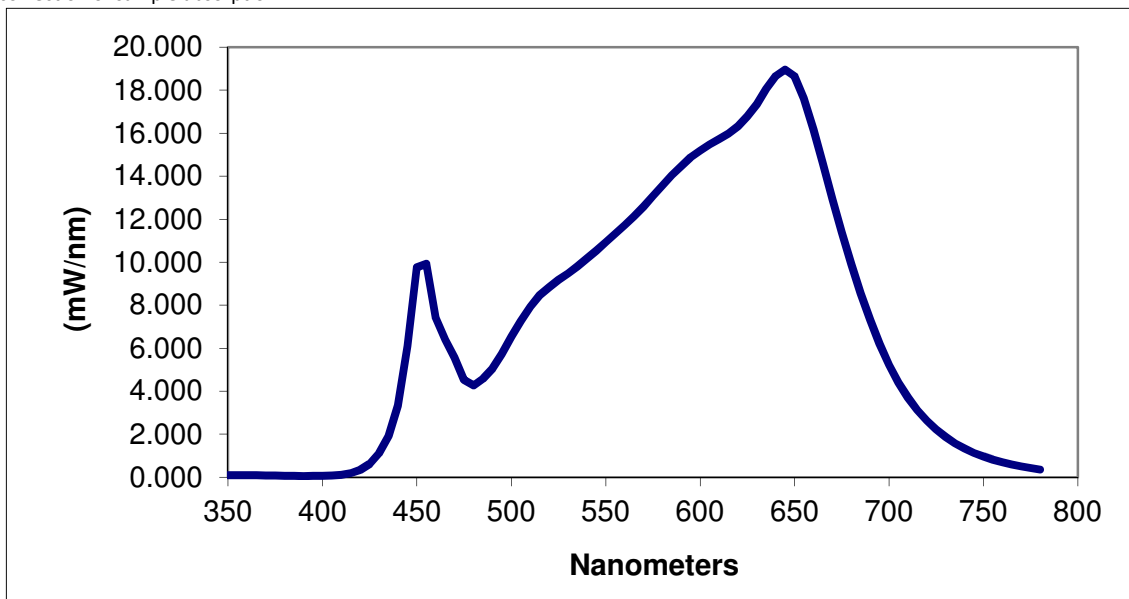
TEST REPORT

RESULTS OF TESTS

PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

| SPECTRAL DISTRIBUTION OVER VISIBLE WAVELENGTHS* |       |     |        |     |        |     |       |
|---|-------|-----|--------|-----|--------|-----|-------|
| nm  | mW/nm | nm  | mW/nm  | nm  | mW/nm  | nm  | mW/nm |
| 350   | 0.089 | 460 | 7.421  | 570 | 12.593 | 680 | 9.907 |
| 355   | 0.090 | 465 | 6.399  | 575 | 13.087 | 685 | 8.550 |
| 360   | 0.095 | 470 | 5.561  | 580 | 13.566 | 690 | 7.313 |
| 365   | 0.084 | 475 | 4.520  | 585 | 14.051 | 695 | 6.211 |
| 370   | 0.075 | 480 | 4.272  | 590 | 14.460 | 700 | 5.228 |
| 375   | 0.069 | 485 | 4.582  | 595 | 14.874 | 705 | 4.402 |
| 380   | 0.059 | 490 | 5.064  | 600 | 15.201 | 710 | 3.697 |
| 385   | 0.056 | 495 | 5.733  | 605 | 15.478 | 715 | 3.117 |
| 390   | 0.050 | 500 | 6.550  | 610 | 15.733 | 720 | 2.637 |
| 395   | 0.051 | 505 | 7.268  | 615 | 15.985 | 725 | 2.223 |
| 400   | 0.053 | 510 | 7.925  | 620 | 16.321 | 730 | 1.876 |
| 405   | 0.069 | 515 | 8.467  | 625 | 16.784 | 735 | 1.582 |
| 410   | 0.107 | 520 | 8.840  | 630 | 17.356 | 740 | 1.334 |
| 415   | 0.189 | 525 | 9.179  | 635 | 18.064 | 745 | 1.131 |
| 420   | 0.345 | 530 | 9.484  | 640 | 18.657 | 750 | 0.962 |
| 425   | 0.625 | 535 | 9.812  | 645 | 18.954 | 755 | 0.820 |
| 430   | 1.107 | 540 | 10.183 | 650 | 18.642 | 760 | 0.699 |
| 435   | 1.918 | 545 | 10.536 | 655 | 17.618 | 765 | 0.589 |
| 440   | 3.330 | 550 | 10.938 | 660 | 16.161 | 770 | 0.498 |
| 445   | 6.097 | 555 | 11.329 | 665 | 14.595 | 775 | 0.423 |
| 450   | 9.764 | 560 | 11.729 | 670 | 12.939 | 780 | 0.360 |
| 455   | 9.931 | 565 | 12.130 | 675 | 11.402 |     |       |

\*Without correction of sample absorption.



End Of Test Results

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**PICTURES**



**CONCLUSION**

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

*Tess Gallagher*

Tess Gallagher  
Engineer  
Lighting Division

Report Reviewed By:

*Tim Quigley*

Timothy Quigley  
Engineer  
Lighting Division

Attachments: IES File

**REVISION HISTORY**

| JOB NUMBER | DATE OF REVISION | PROJECT HANDLER | REVIEWED BY | REVISION NOTE |
|------------|------------------|-----------------|-------------|---------------|
| None       |                  |                 |             |               |