

PURE EDGE LIGHTING

TEST REPORT

SCOPE OF WORK

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

MODEL NUMBER

NSUDD-12W-4S-36-30K-SN_UP

REPORT NUMBER

103597691CHI-013

ISSUE DATE

August 17, 2018

REVISION DATE

None

DOCUMENT CONTROL NUMBER

TBD

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TEST REPORT

REPORT NO.: 103597691CHI-013

REPORT DATE: August 17, 2018

TEST OF ONE LINEAR LED SUSPENSION

MODEL NO. NSUDD-12W-4S-36-30K-SN_UP
LED MODEL NO. SS5CL-12MM-24VDC-36-30K
DRIVER MODEL NO. HUARI /DR24V-2300-70D

RENDERED TO:

PURE EDGE LIGHTING
1718 WEST FULLERTON
CHICAGO, IL 60614

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-00901421-1.

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 NSUDD-12W-4S-36-30K-SN_UP. The sample was received by Intertek on August 1, 2018 in undamaged condition and one sample was tested as received. The sample designation was AH08012018090709-13.

DATE OF TESTS

August 6, 2018 through August 9, 2018.

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SUMMARY

| | |
|---------------------|---------------------------|
| MODEL NO: | NSUDD-12W-4S-36-30K-SN_UP |
| DESCRIPTION: | LINEAR LED SUSPENSION |

| CRITERIA | RESULTS | |
|--------------------------------|--------------------|-----------------|
| | INTEGRATING SPHERE | GONIOPHOTOMETER |
| Lumen Output (lumens) | 864.9 | 879.3 |
| Input Power (W) @ 120 (VAC) | 16.71 | 16.71 |
| Lumen Efficacy (lm/W) | 51.8 | 52.6 |
| Input Power Factor @ 120 (VAC) | 0.976 | 0.975 |

| CRITERIA | RESULTS |
|------------------------------------|---------|
| Input Current ATHD (%) @ 120 (VAC) | 14.92 |
| Correlated Color Temperature (K) | 3011 |
| Color Rendering Index - Ra | 97.1 |
| Color Rendering - R9 | 88.6 |
| DUV | 0.0033 |
| Chromaticity Coordinate (x) | 0.432 |
| Chromaticity Coordinate (y) | 0.394 |
| 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 | 7/9/2018 | 7/9/2019 |
| 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 Spectroradiometer | CDS1100 | CHI0091 | VBV | VBV |
| 3 Meter Sphere | SPR600 | CHI0088 | VBV | VBV |
| Elgar AC Power Supply | CW1251 | 146112 | VBV | VBV |
| Sorenson DC Power Supply | XFR150-8 | 146846 | VBV | VBV |
| Newport Humidity Recorder | iTHX-SD | 146379 | 4/16/2018 | 4/16/2019 |
| Yokogawa Power Meter | WT1600 | 146769 | 4/6/2018 | 4/6/2019 |
| Extech K Temperature Meter | SD200 | CHI0207 | 4/12/2018 | 4/12/2019 |

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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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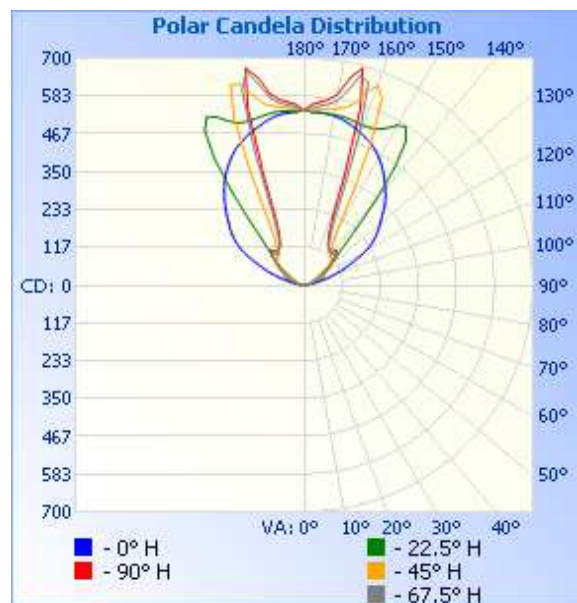
RESULTS OF TESTS

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) |
|----------------------|---------------|---------------------|--------------------|-----------------|------------------------|-------------------|-----------------------|
| AH08012018090709-13 | Base Up | 120.0 | 142.8 | 16.71 | 0.975 | 879.3 | 52.6 |

INTENSITY SUMMARY - CANDELAS

| Angle | 0 | 22.5 | 45 | 67.5 | 90 |
|-------|-----|------|-----|------|-----|
| 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 0 | 0 | 0 |
| 25 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 |
| 35 | 0 | 0 | 0 | 0 | 0 |
| 40 | 0 | 0 | 0 | 0 | 0 |
| 45 | 0 | 0 | 0 | 0 | 0 |
| 50 | 0 | 0 | 0 | 0 | 0 |
| 55 | 0 | 0 | 0 | 0 | 0 |
| 60 | 0 | 0 | 0 | 0 | 0 |
| 65 | 0 | 0 | 0 | 0 | 0 |
| 70 | 0 | 0 | 0 | 0 | 0 |
| 75 | 0 | 0 | 0 | 0 | 0 |
| 80 | 0 | 0 | 0 | 0 | 0 |
| 85 | 0 | 0 | 0 | 0 | 0 |
| 90 | 0 | 0 | 0 | 0 | 0 |
| 95 | 8 | 4 | 2 | 2 | 2 |
| 100 | 26 | 13 | 9 | 7 | 6 |
| 105 | 59 | 32 | 19 | 15 | 14 |
| 110 | 106 | 53 | 28 | 27 | 25 |
| 115 | 161 | 65 | 50 | 35 | 35 |
| 120 | 227 | 73 | 79 | 52 | 46 |
| 125 | 270 | 89 | 104 | 85 | 74 |
| 130 | 306 | 121 | 109 | 114 | 109 |
| 135 | 350 | 176 | 115 | 138 | 141 |
| 140 | 387 | 338 | 125 | 126 | 136 |
| 145 | 423 | 543 | 154 | 134 | 138 |
| 150 | 456 | 570 | 225 | 154 | 146 |
| 155 | 483 | 531 | 484 | 212 | 185 |
| 160 | 501 | 524 | 657 | 490 | 363 |
| 165 | 519 | 531 | 578 | 670 | 693 |
| 170 | 531 | 534 | 553 | 577 | 599 |
| 175 | 536 | 534 | 545 | 556 | 567 |
| 180 | 540 | 540 | 540 | 540 | 540 |



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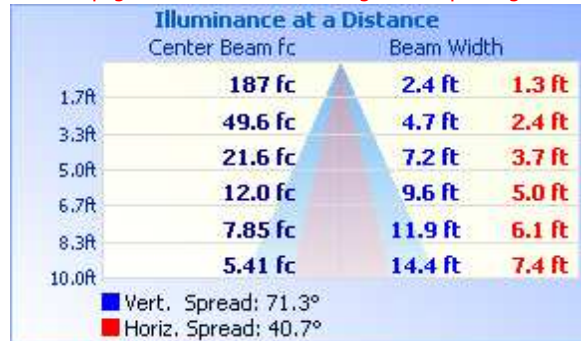
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RESULTS OF TESTS

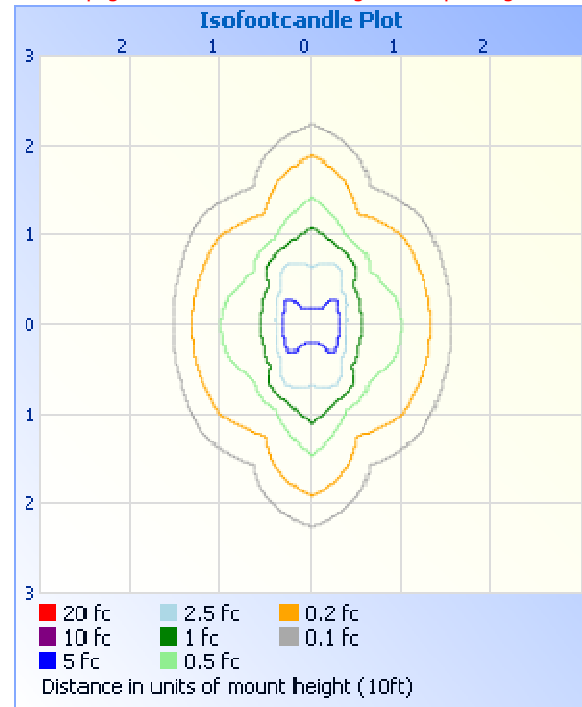
PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD (25°C +/- 1°C)

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

Uplight results rotated 180 degrees for plotting



Uplight results rotated 180 degrees for plotting



ZONAL LUMEN SUMMARY AND PERCENTAGES

| ZONE | LUMENS | % LUMINAIRE |
|--------|--------|-------------|
| 0-30 | 0.0 | 0.0 |
| 0-40 | 0.0 | 0.0 |
| 0-60 | 0.0 | 0.0 |
| 60-90 | 0.0 | 0.0 |
| 70-100 | 4.3 | 0.5 |
| 90-120 | 93.0 | 10.6 |
| 0-90 | 0.0 | 0.0 |
| 90-180 | 879.3 | 100.0 |
| 0-180 | 879.3 | 100.0 |

| ZONE | LUMENS | % LUMINAIRE |
|---------|--------|-------------|
| 0-10 | 0.0 | 0.0 |
| 10-20 | 0.0 | 0.0 |
| 20-30 | 0.0 | 0.0 |
| 30-40 | 0.0 | 0.0 |
| 40-50 | 0.0 | 0.0 |
| 50-60 | 0.0 | 0.0 |
| 60-70 | 0.0 | 0.0 |
| 70-80 | 0.0 | 0.0 |
| 80-90 | 0.0 | 0.0 |
| 90-100 | 4.3 | 0.5 |
| 100-110 | 27.2 | 3.1 |
| 110-120 | 61.6 | 7.0 |
| 120-130 | 99.1 | 11.3 |
| 130-140 | 127.9 | 14.5 |
| 140-150 | 163.9 | 18.6 |
| 150-160 | 179.6 | 20.4 |
| 160-170 | 163.2 | 18.6 |
| 170-180 | 52.6 | 6.0 |

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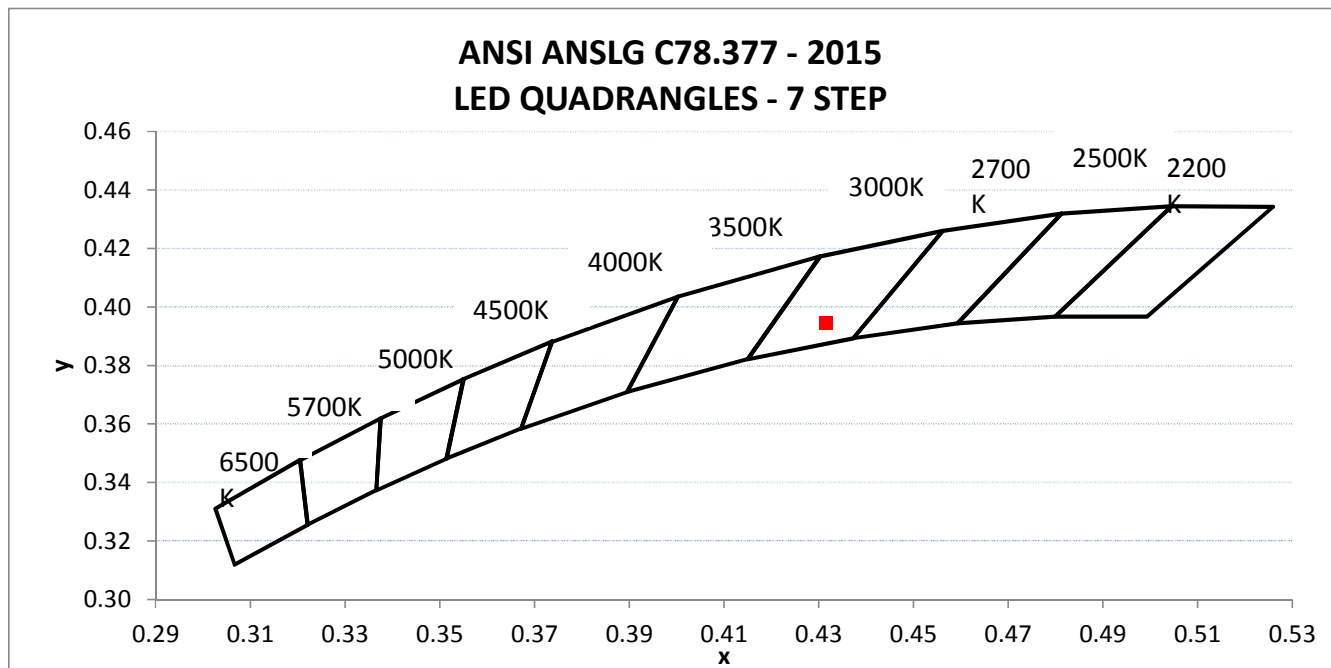
RESULTS OF TESTS

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 (%) |
|----------------------|---------------|---------------------|--------------------|-----------------|--------------------|------------------------|
| AH08012018090709-13 | Base Up | 119.90 | 142.69 | 16.71 | 0.976 | 14.92 |

| LIGHT OUTPUT (lm) | LUMEN EFFICACY (lm/W) | CORRELATED COLOR TEMPERATURE - CCT (K) | CRI - Ra | CRI - R9 | DUV |
|-------------------|-----------------------|--|----------|----------|--------|
| 864.9 | 51.8 | 3011 | 97.1 | 88.6 | 0.0033 |

| CIE 1931 CHROMATICITY COORDINATE (x) | CIE 1931 CHROMATICITY COORDINATE (y) | CIE 1976 CHROMATICITY COORDINATE (u') | CIE 1976 CHROMATICITY COORDINATE (v') |
|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| 0.432 | 0.394 | 0.251 | 0.517 |



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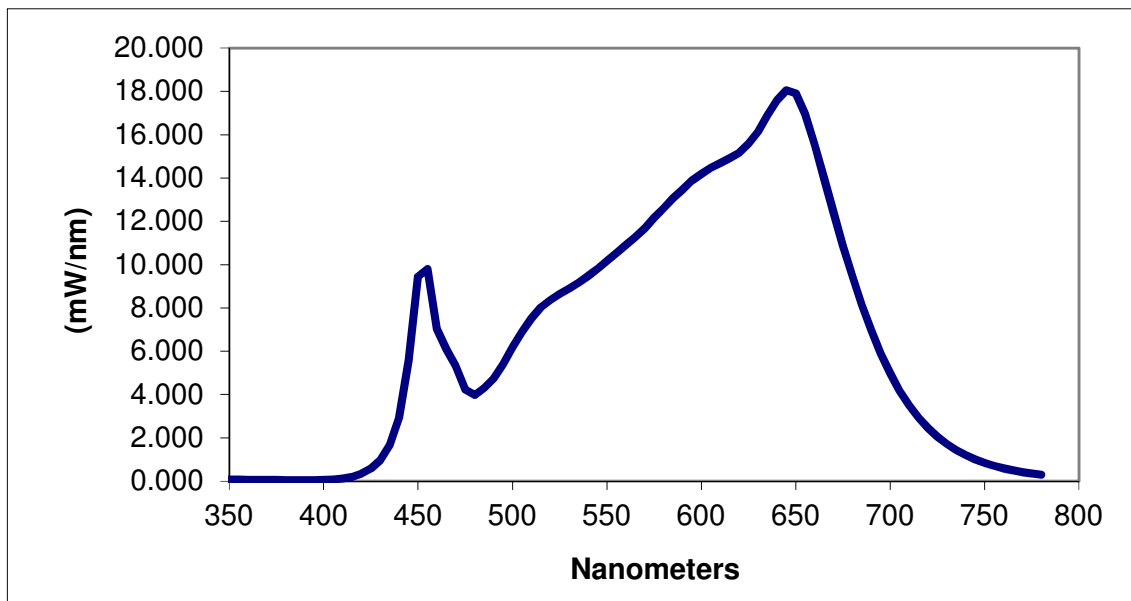
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PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD (25°C +/- 1°C)

| SPECTRAL DISTRIBUTION OVER VISIBLE WAVELENGTHS* | | | | | | | |
|---|-------|-----|--------|-----|--------|-----|-------|
| nm | mW/nm | nm | mW/nm | nm | mW/nm | nm | mW/nm |
| 350 | 0.079 | 460 | 7.040 | 570 | 11.680 | 680 | 9.464 |
| 355 | 0.071 | 465 | 6.089 | 575 | 12.160 | 685 | 8.151 |
| 360 | 0.067 | 470 | 5.326 | 580 | 12.603 | 690 | 6.968 |
| 365 | 0.067 | 475 | 4.224 | 585 | 13.071 | 695 | 5.906 |
| 370 | 0.057 | 480 | 3.979 | 590 | 13.465 | 700 | 4.980 |
| 375 | 0.054 | 485 | 4.300 | 595 | 13.874 | 705 | 4.191 |
| 380 | 0.046 | 490 | 4.753 | 600 | 14.196 | 710 | 3.509 |
| 385 | 0.043 | 495 | 5.402 | 605 | 14.471 | 715 | 2.942 |
| 390 | 0.045 | 500 | 6.200 | 610 | 14.695 | 720 | 2.456 |
| 395 | 0.050 | 505 | 6.894 | 615 | 14.908 | 725 | 2.060 |
| 400 | 0.055 | 510 | 7.526 | 620 | 15.166 | 730 | 1.722 |
| 405 | 0.075 | 515 | 8.025 | 625 | 15.574 | 735 | 1.436 |
| 410 | 0.118 | 520 | 8.373 | 630 | 16.145 | 740 | 1.197 |
| 415 | 0.197 | 525 | 8.650 | 635 | 16.889 | 745 | 1.003 |
| 420 | 0.336 | 530 | 8.900 | 640 | 17.586 | 750 | 0.845 |
| 425 | 0.575 | 535 | 9.159 | 645 | 18.054 | 755 | 0.709 |
| 430 | 0.966 | 540 | 9.483 | 650 | 17.910 | 760 | 0.593 |
| 435 | 1.665 | 545 | 9.802 | 655 | 16.947 | 765 | 0.498 |
| 440 | 2.927 | 550 | 10.176 | 660 | 15.541 | 770 | 0.420 |
| 445 | 5.577 | 555 | 10.529 | 665 | 13.992 | 775 | 0.354 |
| 450 | 9.451 | 560 | 10.907 | 670 | 12.406 | 780 | 0.300 |
| 455 | 9.799 | 565 | 11.264 | 675 | 10.895 | | |

*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:



Hector Huitron
Associate Engineer
Lighting Division

Report Reviewed By:



Timothy Quigley
Engineer
Lighting Division

Attachments: IES File

REVISION HISTORY

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