# ILLUMADYNE, INC

# TEST REPORT

**SCOPE OF WORK**
LED Performance Testing

**MODEL NUMBER**
2WR-UNV-22-25W-5000K

**PROJECT NUMBER**
G104560142

**REPORT NUMBER**
104560142CRT-002

**ISSUE DATE**
1/12/2021

**REVISED DATE**
None

**TEST DATES**
1/12/2021

**DOCUMENT CONTROL NUMBER**
RTTDS-R-AMER-Test-3407


**PAGES**
8

**REPORT NUMBER**
104560142CRT-002

**MODEL NUMBER(s)**
2WR-UNV-22-25W-5000K

**REPORT RENDERED TO:**
ILLUMADYNE, INC
3840 HOPKINS STREET
PENSACOLA, FL 32505

## STATEMENT OF LIMITATION

NVLAP Lab Code 100402-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

## AUTHORIZATION

The testing performed was authorized by signed quote number Qu-01137808-1.

## TEST STANDARDS

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting
ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

| In Charge of Testing: | Reviewer: |
|---|---|
| Melanie Brittain | Jacki Swiernik |
| Senior Associate Engineer | Staff Engineer |
| Lighting Division | Lighting Division |

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**SAMPLE INFORMATION** **REPORT NO. 104560142CRT-002**

ITEMS RECEIVED

| Item No. | Control No. | Model No. | Description | Type | Received |
|---|---|---|---|---|---|
| 1 | CRT2011050908-002A | 2WR-UNV-22-25W-5000K | LED Wrap | Production | 11/5/2020 |

SAMPLE PHOTOS - TESTED CONFIGURATIONS

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**SUMMARY** **REPORT NO. 104560142CRT-002**

PRODUCT INFORMATION AND SUMMARY OF DATA

| | |
|---|---|
| Product Model No.: | 2WR-UNV-22-25W-5000K |
| Product Description: | LED Wrap |
| LED Model No.: | SPMWH1228FD5WAUUSJ |
| Driver Model No.: | SS-25H-40 |
| Light Source: | LED |

| Criteria | Results |
|---|---|
| Light Output (lumens) | 4051.3 |
| Input Power (W) @ 120 (Vac) | 31.09 |
| Lumen Efficacy (lm/W) | 130.3 |
| Input Power Factor () @ 120 (Vac) | 0.994 |
| Input ATHD (%) @ 120 (Vac) | 5.0 |
| Correlated Color Temperature (K) | 4932 |
| Color Rendering Index - Ra () | 83.6 |
| Color Rendering Index - R9 () | 8.3 |
| Duv () | 0.0027 |
| Chromaticity Coordinate (x) | 0.348 |
| Chromaticity Coordinate (y) | 0.359 |
| Chromaticity Coordinate (u') | 0.210 |
| Chromaticity Coordinate (v') | 0.489 |
| Input Power (W) @ 277 (Vac) | 30.86 |
| Input Power Factor () @ 277 (Vac) | 0.934 |
| Input ATHD (%) @ 277 (Vac) | 11.5 |

TEST METHODS

**SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS**

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

**INTEGRATING SPHERE TESTING**

A spectroradiometer and integrating sphere were used to measure the spectral distribution for each EUT resulting in photometric and colorimetric data. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position inside the sphere and stabilization procedures to LM-79 were followed.

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**INTEGRATING SPHERE TESTING** **REPORT NO. 104560142CRT-002**

PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

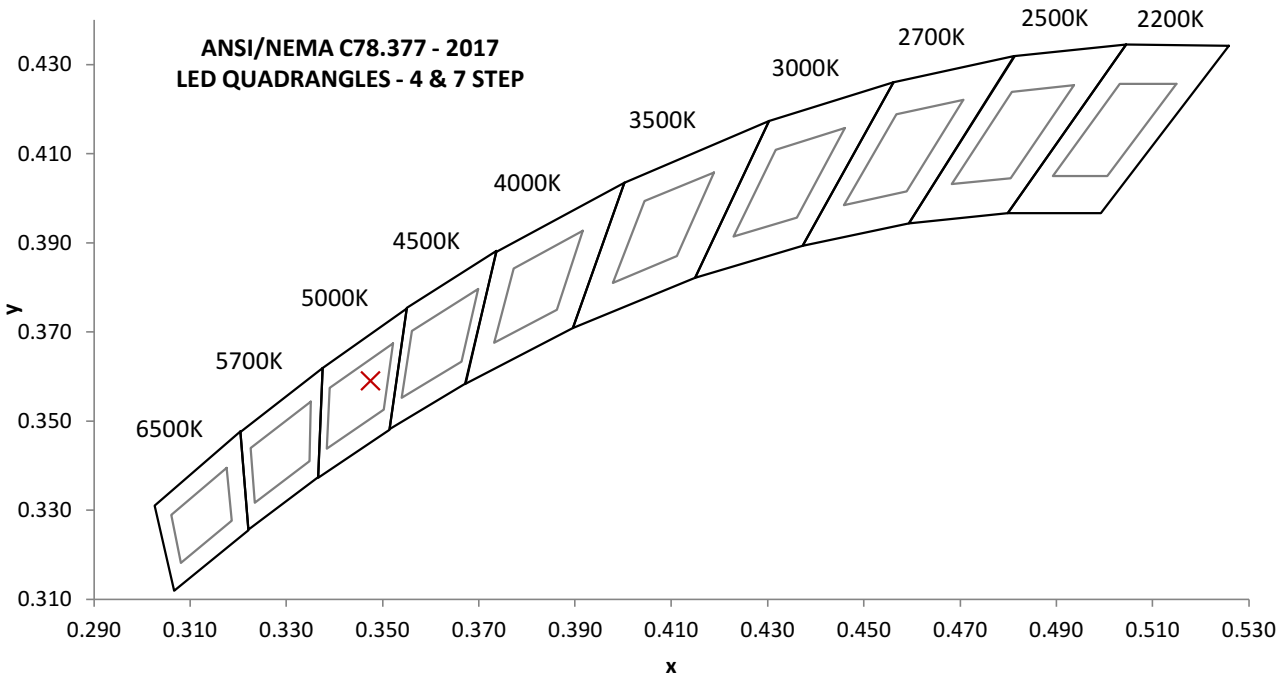
| Base Orientation |
|---|
| Up |

| Input Voltage (Vac) | Input Current (mA) | Input Power (W) | Input Power Factor () | Input ATHD (%) |
|---|---|---|---|---|
| 120.02 | 260.6 | 31.09 | 0.994 | 5.0 |
| 277.02 | 119.3 | 30.86 | 0.934 | 11.5 |

**Measured at 120.02(Vac)**

| Light Output (lm) | Lumen Efficacy (lm/W) | CCT (K) | CRI - Ra () | CRI - R9 () |
|---|---|---|---|---|
| 4051.3 | 130.3 | 4932 | 83.6 | 8.3 |

| Duv () | 1931 Chrom (x) | 1931 Chrom (y) | 1976 Chrom (u') | 1976 Chrom (v') |
|---|---|---|---|---|
| 0.0027 | 0.348 | 0.359 | 0.210 | 0.489 |



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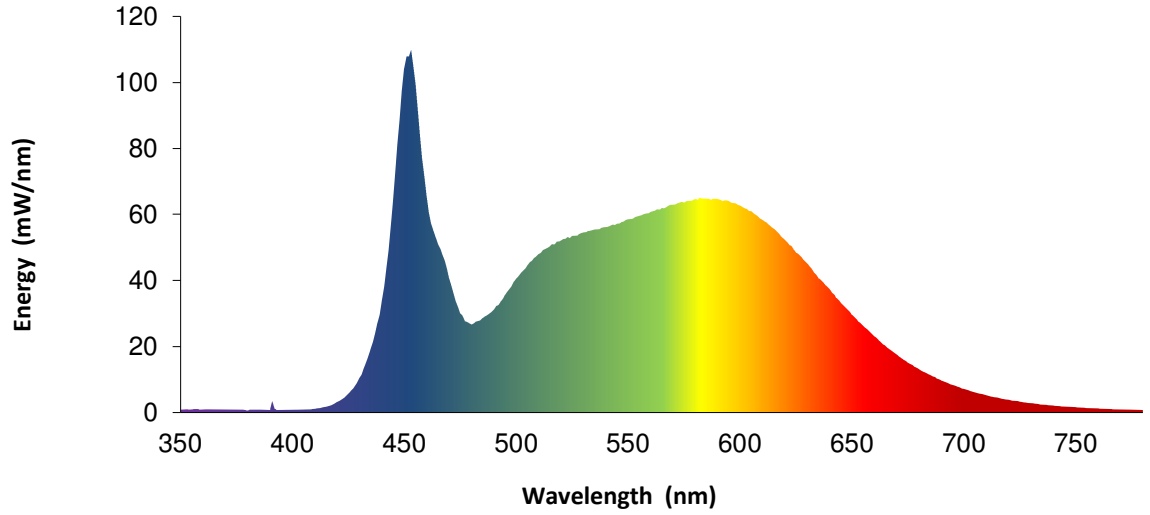
**REPORT NO. 104560142CRT-002**

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

| nm | mW/nm | | nm | mW/nm | | nm | mW/nm | | nm | mW/nm |
|---|---|---|---|---|---|---|---|---|---|---|
| 350 | 0.9 | | 460 | 65.8 | | 570 | 62.9 | | 680 | 13.1 |
| 355 | 0.8 | | 465 | 51.0 | | 575 | 63.5 | | 685 | 11.3 |
| 360 | 0.8 | | 470 | 40.9 | | 580 | 64.6 | | 690 | 9.6 |
| 365 | 0.9 | | 475 | 30.0 | | 585 | 64.7 | | 695 | 8.2 |
| 370 | 0.8 | | 480 | 26.7 | | 590 | 64.5 | | 700 | 7.0 |
| 375 | 0.7 | | 485 | 28.5 | | 595 | 64.0 | | 705 | 6.0 |
| 380 | 0.6 | | 490 | 31.2 | | 600 | 62.6 | | 710 | 5.2 |
| 385 | 0.7 | | 495 | 35.4 | | 605 | 60.9 | | 715 | 4.4 |
| 390 | 0.7 | | 500 | 40.4 | | 610 | 58.3 | | 720 | 3.7 |
| 395 | 0.6 | | 505 | 44.7 | | 615 | 55.6 | | 725 | 3.2 |
| 400 | 0.7 | | 510 | 47.9 | | 620 | 52.3 | | 730 | 2.7 |
| 405 | 0.8 | | 515 | 50.4 | | 625 | 48.5 | | 735 | 2.3 |
| 410 | 1.0 | | 520 | 52.0 | | 630 | 45.0 | | 740 | 2.0 |
| 415 | 1.6 | | 525 | 53.4 | | 635 | 40.7 | | 745 | 1.7 |
| 420 | 3.1 | | 530 | 54.4 | | 640 | 37.1 | | 750 | 1.5 |
| 425 | 5.5 | | 535 | 55.5 | | 645 | 33.3 | | 755 | 1.3 |
| 430 | 10.5 | | 540 | 56.1 | | 650 | 29.7 | | 760 | 1.1 |
| 435 | 19.0 | | 545 | 57.1 | | 655 | 26.3 | | 765 | 0.9 |
| 440 | 34.1 | | 550 | 58.4 | | 660 | 23.0 | | 770 | 0.8 |
| 445 | 63.4 | | 555 | 59.5 | | 665 | 20.1 | | 775 | 0.7 |
| 450 | 104.1 | | 560 | 60.7 | | 670 | 17.5 | | 780 | 0.6 |
| 455 | 99.2 | | 565 | 62.0 | | 675 | 15.1 | | --- | --- |




Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only

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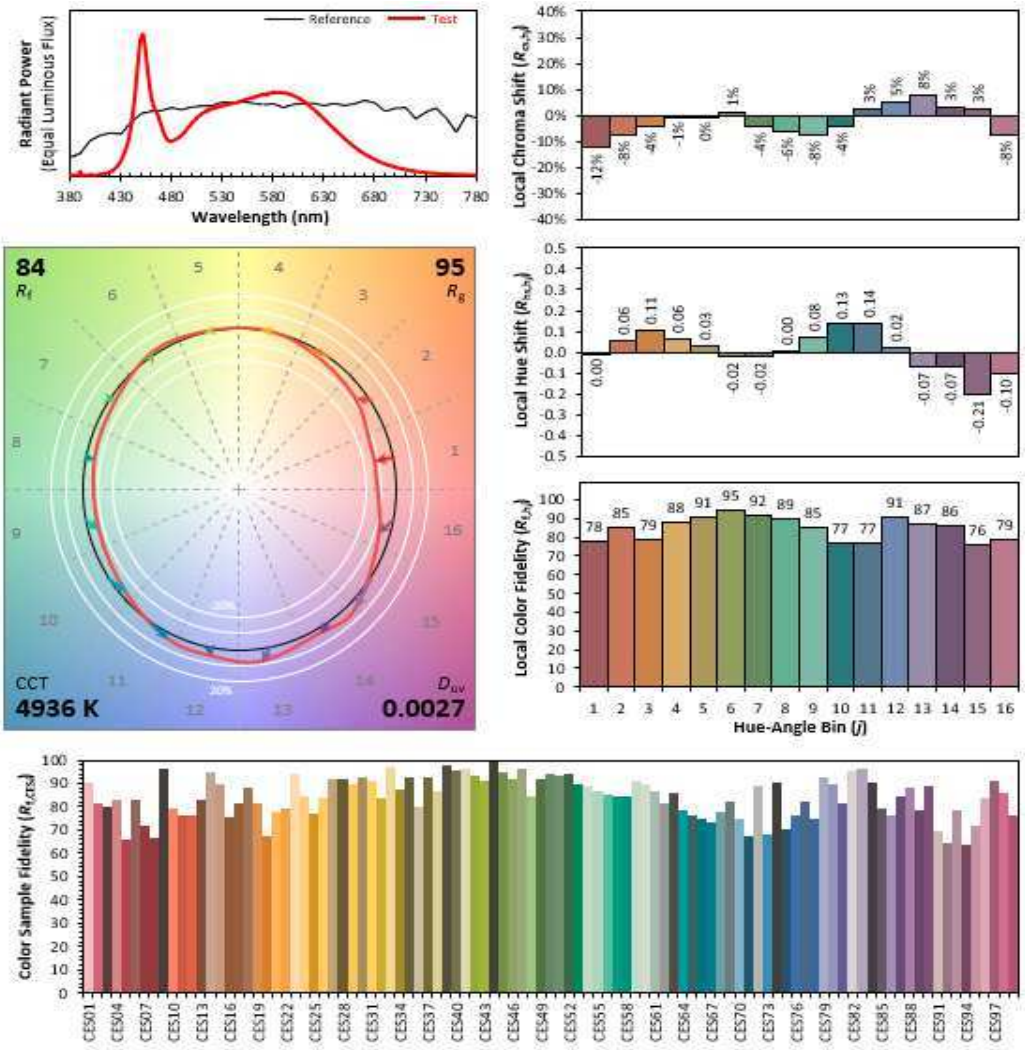
**ANNEX A - TM-30 CALCULATIONS** **REPORT NO. 104560142CRT-002**

TM-30 REPORT



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## EQUIPMENT LIST

**REPORT NO. 104560142CRT-002**

| # | Equipment | Model No | Control No. | Last Cal | Cal Due |
|---|---|---|---|---|---|
| 1 | Elgar AC Power Supply | CW1251 | --- | VBU | VBU |
| 2 | Sorenson DC Power Supply | XFR 150-8 | --- | VBU | VBU |
| 3 | Traceable Hygrothermometer | 4800 | L202 | 2/17/2020 | 2/17/2021 |
| 4 | Yokogawa Power Analyzer | WT1600 | E473 | 6/22/2020 | 6/22/2021 |
| 5 | Fluke Thermometer | 53 II | N1324 | 3/19/2020 | 3/19/2021 |
| 6 | Fluke Multimeter | 87V | D590 | 6/15/2020 | 6/15/2021 |
| 7 | 3M Integrating Sphere Spectrometer System | CDS 1100 | --- | 12/28/2020 | 3/28/2021 |
| 8 | Fisher Scientific Stopwatch | 14-649-9 | N1132 | 3/18/2020 | 3/18/2021 |

Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

## REVISION HISTORY

| # | Revision Date | Updated By | Reviewed By | Description of Change |
|---|---|---|---|---|
| --- | None | --- | --- | --- |
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |