

# ILLUMADYNE, INC

## TEST REPORT

### SCOPE OF WORK

LED Performance Testing

### MODEL NUMBER

4CB-UNV-44-N-3500-[OPTIONS]

### PROJECT NUMBER

G104427113

### REPORT NUMBER

104427113CRT-017

### ISSUE DATE

9/1/2020

### REVISED DATE

None

### TEST DATES

9/1/2020

### DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104427113CRT-017

**MODEL NUMBER(s)**

4CB-UNV-44-N-3500-[OPTIONS]

**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-01101681-0.

**TEST STANDARDS**

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

In Charge of Testing:



Melanie Brittain  
Senior Associate Engineer  
Lighting Division

Reviewer:



Jeff Davis  
Technical Lead  
Lighting Division

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# SAMPLE INFORMATION

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## ITEMS RECEIVED

| Item No. | Control No.        | Model No.                       | Description | Type       | Received  |
|----------|--------------------|---------------------------------|-------------|------------|-----------|
| 1        | CRT2008241426-001A | 4CB-UNV-44-N-3500-<br>[OPTIONS] | High Bay    | Production | 8/24/2020 |

\*options do not impact  
performance

## SAMPLE PHOTOS - TESTED CONFIGURATIONS



**SUMMARY**

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**PRODUCT INFORMATION AND SUMMARY OF DATA**

|                      |                                 |
|----------------------|---------------------------------|
| Product Model No.:   | 4CB-UNV-44-N-3500-[OPTIONS]     |
| Product Description: | High Bay                        |
| LED Model No.:       | Seoul Semiconductor 3528 Series |
| Driver Model No.:    | SS-150-VP-56BH                  |
| Light Source:        | LED                             |

| Criteria                           | Results |
|------------------------------------|---------|
| Light Output (lumens)              | 24592.5 |
| Input Power (W) @ 120 (Vac)        | 156.3   |
| Lumen Efficacy (lm/W)              | 157.3   |
| Input Power Factor ( ) @ 120 (Vac) | 0.998   |

**TEST METHODS**

**SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS**

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

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. 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 near the EUT at equal height and stabilization procedures to LM-79 were followed.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

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

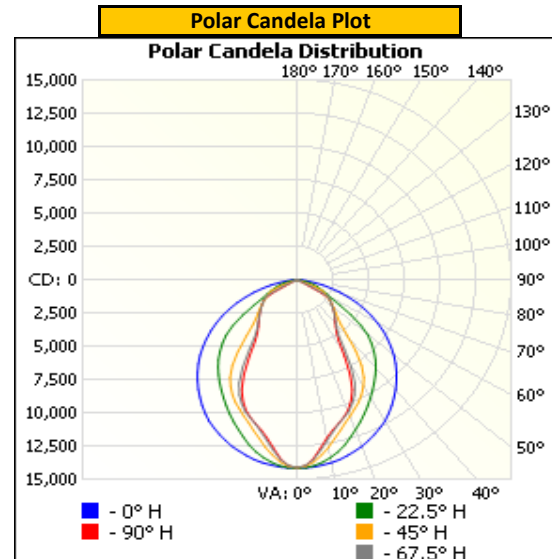
| Base Orientation | Input Voltage (Vac) | Input Current (mA) | Input Power (W) | Input Power Factor ( ) |
|------------------|---------------------|--------------------|-----------------|------------------------|
| Up               | 120.01              | 1305.8             | 156.34          | 0.998                  |

| Light Output (lm) | Lumen Efficacy (lm/W) |
|-------------------|-----------------------|
| 24592.5           | 157.3                 |

**INTENSITY SUMMARY - CANDELA**

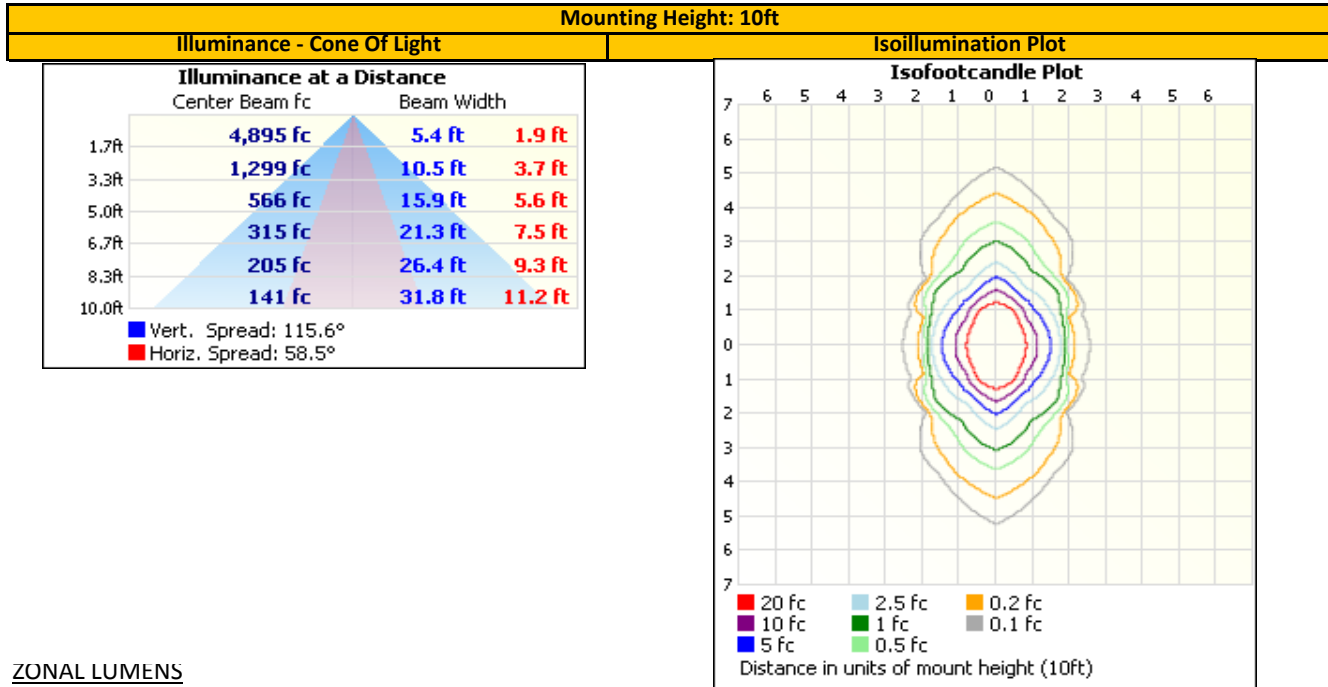
| Angle | 0     | 22.5  | 45    | 67.5  | 90    |
|-------|-------|-------|-------|-------|-------|
| 0     | 14146 | 14146 | 14146 | 14146 | 14146 |
| 5     | 14118 | 14031 | 13740 | 13549 | 13470 |
| 10    | 13961 | 13568 | 12781 | 12245 | 12068 |
| 15    | 13681 | 12878 | 11734 | 11238 | 11205 |
| 20    | 13321 | 11984 | 10897 | 10559 | 10447 |
| 25    | 12839 | 11140 | 10183 | 9542  | 9151  |
| 30    | 12292 | 10265 | 9284  | 7617  | 6664  |
| 35    | 11558 | 9434  | 7889  | 5088  | 4822  |
| 40    | 10759 | 8592  | 5498  | 4234  | 4163  |
| 45    | 9843  | 7624  | 4018  | 3709  | 3702  |
| 50    | 8858  | 6480  | 3389  | 3275  | 3293  |
| 55    | 7738  | 4622  | 2854  | 2870  | 2886  |
| 60    | 6524  | 2786  | 2411  | 2446  | 1963  |
| 65    | 5226  | 2024  | 1961  | 254   | 250   |
| 70    | 3825  | 1466  | 216   | 176   | 183   |
| 75    | 2485  | 978   | 130   | 126   | 128   |
| 80    | 1284  | 86    | 83    | 96    | 100   |
| 85    | 347   | 27    | 34    | 31    | 29    |
| 90    | 0     | 0     | 0     | 0     | 0     |
| 95    | 0     | 0     | 0     | 0     | 0     |
| 100   | 0     | 0     | 0     | 0     | 0     |
| 105   | 0     | 0     | 0     | 0     | 0     |
| 110   | 0     | 0     | 0     | 0     | 0     |
| 115   | 0     | 0     | 0     | 0     | 0     |
| 120   | 0     | 0     | 0     | 0     | 0     |
| 125   | 0     | 0     | 0     | 0     | 0     |
| 130   | 0     | 0     | 0     | 0     | 0     |
| 135   | 0     | 0     | 0     | 0     | 0     |
| 140   | 0     | 0     | 0     | 0     | 0     |
| 145   | 0     | 0     | 0     | 0     | 0     |
| 150   | 0     | 0     | 0     | 0     | 0     |
| 155   | 0     | 0     | 0     | 0     | 0     |
| 160   | 0     | 0     | 0     | 0     | 0     |
| 165   | 0     | 0     | 0     | 0     | 0     |
| 170   | 0     | 0     | 0     | 0     | 0     |
| 175   | 0     | 0     | 0     | 0     | 0     |
| 180   | 0     | 0     | 0     | 0     | 0     |

Entire luminous intensity matrix found in .IES file



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ILLUMINANCE SUMMARY



ZONAL LUMENS

| Zonal Lumen Summary |          |           |         |        |       |
|---------------------|----------|-----------|---------|--------|-------|
| Zone                | Lumens   | Luminaire | Zone    | Lumens | Total |
| 0-30                | 9,458.5  | 38.5%     | 90-100  | 0.0    | 0.0%  |
| 0-40                | 14,268.3 | 58.0%     | 100-110 | 0.0    | 0.0%  |
| 0-60                | 22,048.1 | 89.7%     | 110-120 | 0.0    | 0.0%  |
| 60-90               | 2,544.4  | 10.3%     | 120-130 | 0.0    | 0.0%  |
| 70-100              | 738.4    | 3.0%      | 130-140 | 0.0    | 0.0%  |
| 90-120              | 0.0      | 0.0%      | 140-150 | 0.0    | 0.0%  |
| 0-90                | 24,592.5 | 100.0%    | 150-160 | 0.0    | 0.0%  |
| 90-180              | 0.0      | 0.0%      | 160-170 | 0.0    | 0.0%  |
| 0-180               | 24,592.5 | 100.0%    | 170-180 | 0.0    | 0.0%  |

**EQUIPMENT LIST**

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| #  | Equipment                               | Model No   | Control No. | Last Cal  | Cal Due   |
|----|---|------------|-------------|-----------|-----------|
| 1  | LSI High Speed Mirror Goniometer        | 6440       | ---         | 8/21/2020 | 9/21/2020 |
| 2  | Elgar AC Power Supply                   | CW1251     | ---         | VBV       | VBV       |
| 3  | Yokogawa Power Analyzer                 | WT210      | E464        | 5/11/2020 | 5/11/2021 |
| 4  | Traceable Hygrothermometer              | 4800       | L203        | 2/17/2020 | 2/17/2021 |
| 5  | M-D Building Products Digital Level     | Smart Tool | 307-L112    | 5/14/2020 | 5/14/2021 |
| 6  | NIST Luminous Intensity Standard Source | NBS10322   | N1427       | 2/11/2019 | 2/11/2021 |
| 7  | NIST Luminous Intensity Standard Source | NBS10332   | N1435       | 2/11/2019 | 2/11/2021 |
| 8  | NIST Luminous Intensity Standard Source | NBS10265   | N1437       | 2/11/2019 | 2/11/2021 |
| 9  | NIST Luminous Flux Standard Source      | NBS10428   | N1424       | 1/3/2019  | 1/3/2021  |
| 10 | Sorenson DC Power Supply                | XG 150-10  | ---         | VBV       | VBV       |
| 11 | Omega Thermometer                       | DPi8-C24   | M263        | 2/27/2020 | 2/27/2021 |

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          | ---        | ---         | ---                   |
| --- | ---           | ---        | ---         | ---                   |
| --- | ---           | ---        | ---         | ---                   |