

# PURE EDGE LIGHTING

## TEST REPORT

### SCOPE OF WORK

LED Performance Testing

### MODEL NUMBER

SUN3-HDL4-RD-WW-SA

### PROJECT NUMBER

G104373788

### REPORT NUMBER

104373788CHI-028

### ISSUE DATE

9/14/2020

### REVISED DATE

None

### TEST DATES

09/04/2020 through 09/10/2020.

### DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104373788CHI-028

**MODEL NUMBER(s)**

SUN3-HDL4-RD-WW-SA

**REPORT RENDERED TO:**

PURE EDGE LIGHTING  
1718 W. FULLERTON AVE.  
CHICAGO, IL 60614  
USA

**STATEMENT OF LIMITATION**

NVLAP Lab Code 600186-0. 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-01087644-1.

**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:



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Engineer  
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Reviewer:



Jeff Davis  
NA Technical Lead  
Lighting Division

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## SAMPLE INFORMATION

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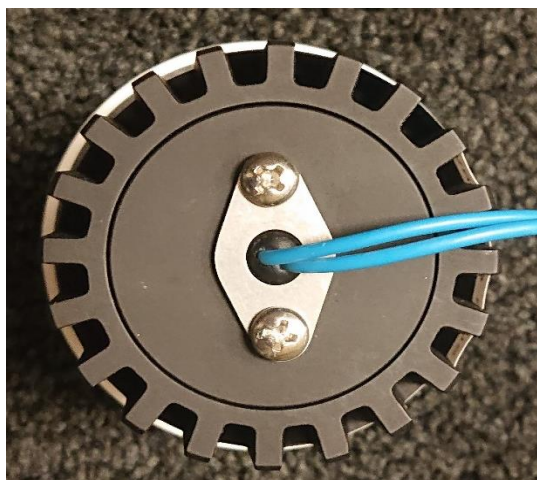
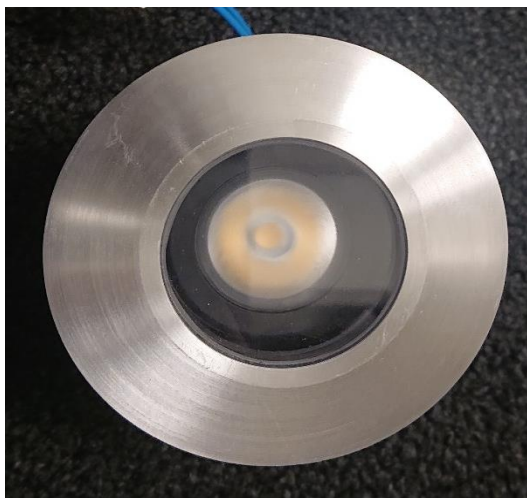
### ITEMS RECEIVED

| Item No. | Control No.      | Model No.          | Description | Type       | Received |
|----------|------------------|--------------------|-------------|------------|----------|
| 1        | AH09022020034516 | SUN3-HDL4-RD-WW-SA | Led fixture | Production | 9/2/2020 |

### TESTED SAMPLE CONFIGURATIONS

| Config No. | Tested Model No.   | Item Nos. Utilized |
|------------|--------------------|--------------------|
| 1          | SUN3-HDL4-RD-WW-SA | 1                  |

### SAMPLE PHOTOS - TESTED CONFIGURATIONS



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

|                      |                             |
|----------------------|-----------------------------|
| Product Model No.:   | SUN3-HDL4-RD-WW-SA          |
| Product Description: | Led fixture                 |
| LED Model No.:       | LUXEON-M                    |
| Driver Model No.:    | L.T.F/TA60WA12LEDS65B15-000 |
| Light Source:        | LED                         |

| Criteria                              | Results         |                    |
|---------------------------------------|-----------------|--------------------|
|                                       | Goniophotometer | Integrating Sphere |
| Light Output (lumens)                 | 428.4           | 434.9              |
| Input Power (W) @ 120VAC (Vac)        | 8.89            | 8.93               |
| Lumen Efficacy (lm/W)                 | 48.2            | 48.7               |
| Input Power Factor (I) @ 120VAC (Vac) | 0.663           | 0.687              |

| Criteria                         | Results |
|----------------------------------|---------|
| Input ATHD (%) @ 120VAC (Vac)    | 90.31   |
| Correlated Color Temperature (K) | 3065    |
| Color Rendering Index - Ra (I)   | 94.6    |
| Color Rendering Index - R9 (I)   | 75.2    |
| Duv (I)                          | 0.0008  |
| Chromaticity Coordinate (x)      | 0.433   |
| Chromaticity Coordinate (y)      | 0.405   |
| Chromaticity Coordinate (u')     | 0.248   |
| Chromaticity Coordinate (v')     | 0.521   |

## 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.

### 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**

**REPORT NO. 104373788CHI-028**

| Test Configuration | Tested Model No.   | Pass/Fail/NA |
|--------------------|--------------------|--------------|
| 1                  | SUN3-HDL4-RD-WW-SA | NA           |

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

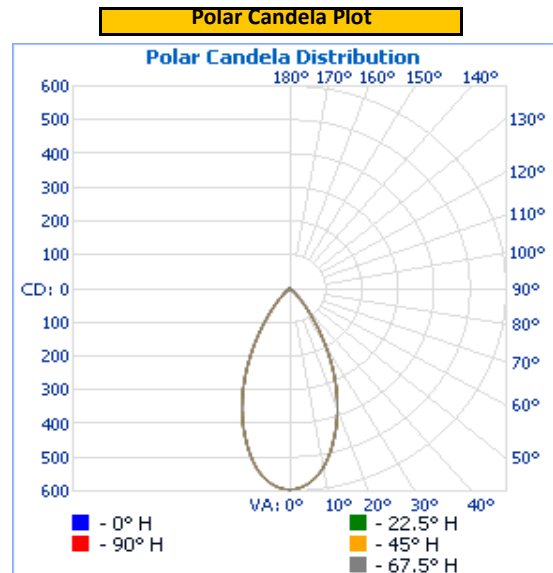
| Base Orientation | Input Voltage (Vac) | Input Current (mA) | Input Power (W) | Input Power Factor ( ) |
|------------------|---------------------|--------------------|-----------------|------------------------|
| Up               | 120.0               | 111.8              | 8.89            | 0.663                  |

| Light Output (lm) | Lumen Efficacy (lm/W) |
|-------------------|-----------------------|
| 428.4             | 48.2                  |

**INTENSITY SUMMARY - CANDELA**

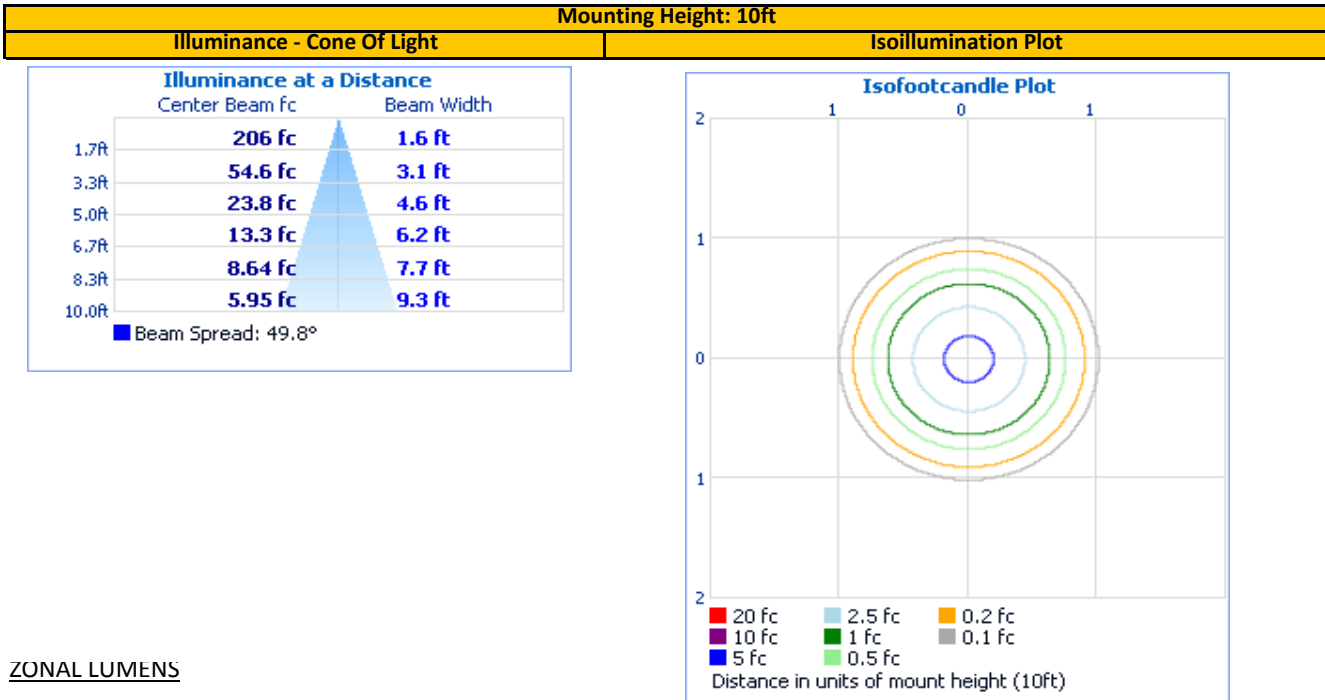
| Angle | 0   | 22.5 | 45  | 67.5 | 90  |
|-------|-----|------|-----|------|-----|
| 0     | 595 | 595  | 595 | 595  | 595 |
| 5     | 580 | 580  | 580 | 580  | 580 |
| 10    | 537 | 537  | 537 | 537  | 537 |
| 15    | 467 | 467  | 467 | 467  | 467 |
| 20    | 386 | 386  | 386 | 386  | 386 |
| 25    | 296 | 296  | 296 | 296  | 296 |
| 30    | 204 | 204  | 204 | 204  | 204 |
| 35    | 123 | 123  | 123 | 123  | 123 |
| 40    | 65  | 65   | 65  | 65   | 65  |
| 45    | 30  | 30   | 30  | 30   | 30  |
| 50    | 13  | 13   | 13  | 13   | 13  |
| 55    | 6   | 6    | 6   | 6    | 6   |
| 60    | 3   | 3    | 3   | 3    | 3   |
| 65    | 1   | 1    | 1   | 1    | 1   |
| 70    | 1   | 1    | 1   | 1    | 1   |
| 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    | 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                | 317.6  | 74.1%     | 0-10    | 54.0   | 12.6% |
| 0-40                | 395.5  | 92.3%     | 10-20   | 129.6  | 30.2% |
| 0-60                | 426.6  | 99.6%     | 20-30   | 134.1  | 31.3% |
| 60-90               | 1.8    | 0.4%      | 30-40   | 77.8   | 18.2% |
| 70-100              | 0.6    | 0.2%      | 40-50   | 25.0   | 5.8%  |
| 90-120              | 0.0    | 0.0%      | 50-60   | 6.2    | 1.4%  |
| 0-90                | 428.4  | 100.0%    | 60-70   | 1.2    | 0.3%  |
| 90-180              | 0.0    | 0.0%      | 70-80   | 0.5    | 0.1%  |
| 0-180               | 428.4  | 100.0%    | 80-90   | 0.2    | 0.0%  |
|                     |        |           | 90-100  | 0.0    | 0.0%  |
|                     |        |           | 100-110 | 0.0    | 0.0%  |
|                     |        |           | 110-120 | 0.0    | 0.0%  |
|                     |        |           | 120-130 | 0.0    | 0.0%  |
|                     |        |           | 130-140 | 0.0    | 0.0%  |
|                     |        |           | 140-150 | 0.0    | 0.0%  |
|                     |        |           | 150-160 | 0.0    | 0.0%  |
|                     |        |           | 160-170 | 0.0    | 0.0%  |
|                     |        |           | 170-180 | 0.0    | 0.0%  |

# **INTEGRATING SPHERE TESTING**

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| Test Configuration | Tested Model No.   | Pass/Fail/NA |
|--------------------|--------------------|--------------|
| 1                  | SUN3-HDL4-RD-WW-SA | NA           |

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

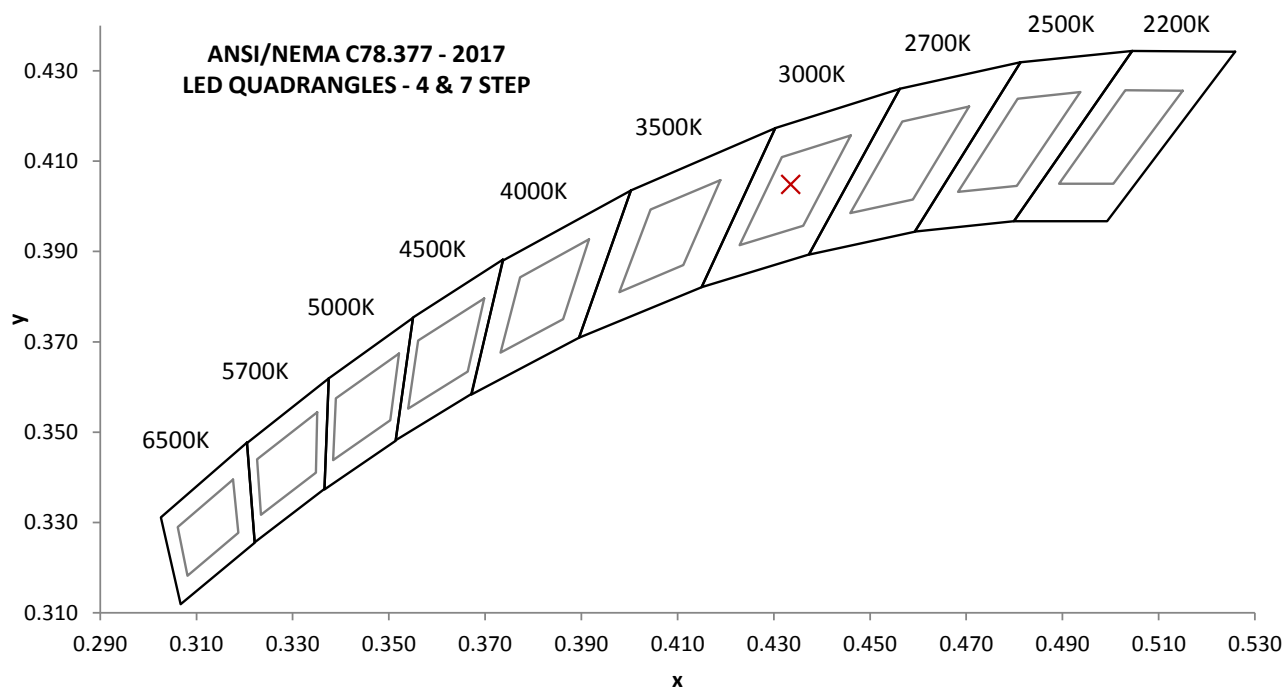
| Base Orientation |
|------------------|
| Up               |

| Input Voltage (Vac) | Input Current (mA) | Input Power (W) | Input Power Factor ( ) | Input ATHD (%) |
|---------------------|--------------------|-----------------|------------------------|----------------|
| 120.00              | 108.4              | 8.93            | 0.687                  | 90.31          |

Measured at 120(Vac)

| Light Output (lm) | Lumen Efficacy (lm/W) | CCT (K) | CRI - Ra ( ) | CRI - R9 ( ) |
|-------------------|-----------------------|---------|--------------|--------------|
| 434.9             | 48.7                  | 3065    | 94.6         | 75.2         |

| Duv ( ) | 1931 Chrom (x) | 1931 Chrom (y) | 1976 Chrom (u') | 1976 Chrom (v') |
|---------|----------------|----------------|-----------------|-----------------|
| 0.0008  | 0.433          | 0.405          | 0.248           | 0.521           |

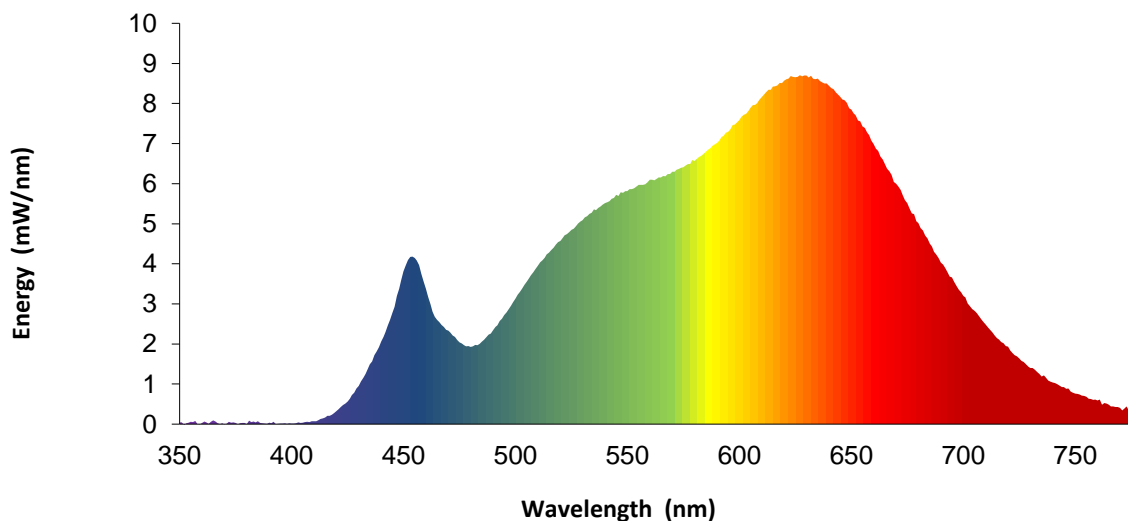


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

| nm  | mW/nm |  | nm  | mW/nm |  | nm  | mW/nm |  | nm  | mW/nm |
|-----|-------|--|-----|-------|--|-----|-------|--|-----|-------|
| 350 | 0.0   |  | 460 | 3.4   |  | 570 | 6.3   |  | 680 | 5.0   |
| 355 | 0.1   |  | 465 | 2.6   |  | 575 | 6.4   |  | 685 | 4.5   |
| 360 | 0.0   |  | 470 | 2.3   |  | 580 | 6.6   |  | 690 | 4.0   |
| 365 | 0.1   |  | 475 | 2.0   |  | 585 | 6.8   |  | 695 | 3.7   |
| 370 | 0.0   |  | 480 | 1.9   |  | 590 | 7.0   |  | 700 | 3.2   |
| 375 | 0.0   |  | 485 | 2.1   |  | 595 | 7.3   |  | 705 | 2.8   |
| 380 | 0.0   |  | 490 | 2.3   |  | 600 | 7.6   |  | 710 | 2.5   |
| 385 | 0.1   |  | 495 | 2.7   |  | 605 | 7.9   |  | 715 | 2.1   |
| 390 | 0.0   |  | 500 | 3.1   |  | 610 | 8.2   |  | 720 | 1.9   |
| 395 | 0.0   |  | 505 | 3.6   |  | 615 | 8.4   |  | 725 | 1.6   |
| 400 | 0.0   |  | 510 | 4.0   |  | 620 | 8.6   |  | 730 | 1.4   |
| 405 | 0.0   |  | 515 | 4.3   |  | 625 | 8.7   |  | 735 | 1.2   |
| 410 | 0.1   |  | 520 | 4.6   |  | 630 | 8.7   |  | 740 | 1.0   |
| 415 | 0.2   |  | 525 | 4.8   |  | 635 | 8.6   |  | 745 | 0.9   |
| 420 | 0.3   |  | 530 | 5.1   |  | 640 | 8.4   |  | 750 | 0.8   |
| 425 | 0.6   |  | 535 | 5.4   |  | 645 | 8.2   |  | 755 | 0.7   |
| 430 | 1.0   |  | 540 | 5.5   |  | 650 | 7.8   |  | 760 | 0.6   |
| 435 | 1.5   |  | 545 | 5.7   |  | 655 | 7.4   |  | 765 | 0.5   |
| 440 | 2.1   |  | 550 | 5.8   |  | 660 | 7.0   |  | 770 | 0.4   |
| 445 | 2.8   |  | 555 | 6.0   |  | 665 | 6.5   |  | 775 | 0.3   |
| 450 | 3.8   |  | 560 | 6.1   |  | 670 | 6.0   |  | 780 | 0.3   |
| 455 | 4.1   |  | 565 | 6.2   |  | 675 | 5.5   |  | --- | ---   |

Without correction of sample absorption.



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



**EQUIPMENT LIST**

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| #  | Equipment                        | Model No | Control No. | Last Cal   | Cal Due    |
|----|----------------------------------|----------|-------------|------------|------------|
| 1  | Yokogawa Power Meter             | WT210    | 146919      | 7/1/2020   | 7/1/2021   |
| 2  | Omega Thermometer                | DPI8-C24 | 146920      | 10/3/2019  | 10/3/2020  |
| 3  | LSI High Speed Mirror Goniometer | 6440T    | 146928      | VBU        | VBU        |
| 4  | Newport Thermohygrometer         | iServer  | 146957      | 12/2/2019  | 12/2/2020  |
| 5  | Pacific AC Power Supply          | 118-ACX  | CHI0153     | VBU        | VBU        |
| 6  | Newport Humidity Recorder        | iServer  | CHI0456     | 10/11/2019 | 10/11/2020 |
| 7  | Labsphere Spectroradiometer      | CDS-600  | 146923      | VBU        | VBU        |
| 8  | 2M Rotating Sphere               | 7660-ROT | 146923      | VBU        | VBU        |
| 9  | Omega thermometer                | USB TC08 | EQAH002615  | 4/7/2020   | 4/7/2021   |
| 10 | Ametek DC Power Supply           | XFR150-8 | 1468464     | VBU        | VBU        |
| 11 | Yokogawa Power Meter             | WT210    | 146880      | 10/2/2019  | 10/2/2020  |
| 12 | Chroma Power Supply              | 61604    | CHI0371     | VBU        | VBU        |
| 13 |                                  |          |             |            |            |
| 14 |                                  |          |             |            |            |
| 15 |                                  |          |             |            |            |
| 16 |                                  |          |             |            |            |
| 17 |                                  |          |             |            |            |
| 18 |                                  |          |             |            |            |
| 19 |                                  |          |             |            |            |
| 20 |                                  |          |             |            |            |
| 21 |                                  |          |             |            |            |
| 22 |                                  |          |             |            |            |
| 23 |                                  |          |             |            |            |
| 24 |                                  |          |             |            |            |
| 25 |                                  |          |             |            |            |
| 26 |                                  |          |             |            |            |
| 27 |                                  |          |             |            |            |
| 28 |                                  |          |             |            |            |
| 29 |                                  |          |             |            |            |
| 30 |                                  |          |             |            |            |

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