

# VISUAL COMFORT AND COMPANY TEST REPORT

## SCOPE OF WORK

Performance Testing for Luminaires

## MODEL NUMBER

E3SRF-LO9303A w/ E3SLB-OW

## PROJECT NUMBER

G104622548

## REPORT NUMBER

104622548CRT-007

## ISSUE DATE

9/21/2021

## REVISED DATE

None

## TEST DATES

9/17/21 through 9/21/21

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104622548CRT-007

**MODEL NUMBER(s)**

E3SRF-LO9303A w/ E3SLB-OW

**REPORT RENDERED TO:**

VISUAL COMFORT AND COMPANY  
7400 LINDER AVE  
SKOKIE, IL 60077  
USA

**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-01154433-0.

**TEST STANDARDS**

CEC-400-2018-021-CMF Appendix JA8 - Qualification Requirements for High Efficacy Light Sources

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

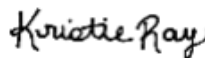
ANSI NEMA ANSLG C78.377: 2017: Specifications of the Chromaticity of Solid State Lighting Products

In Charge of Testing:



Gerald Gray  
Associate Engineer  
Lighting Division

Reviewer:



Kristie Ray  
Team Lead, Engineering  
Lighting Division

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**SAMPLE INFORMATION**

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**ITEMS RECEIVED**

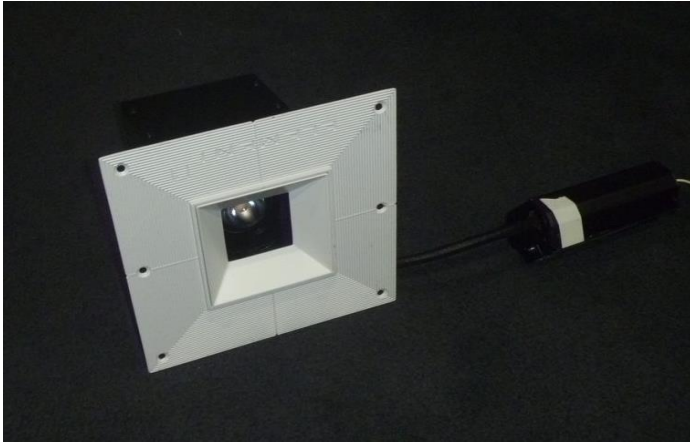
Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2109100744-001-1	--	Housing w/PTB15W-0300-38-VCC	Production	9/10/2021
2	CRT2109100744-001-9	--	3000K LED	Production	9/10/2021
3	CRT2109100744-001-17	--	30° Lens	Production	9/10/2021
4	CRT2109100744-001-19	--	Trim with Lens	Production	9/10/2021

**TESTED SAMPLE CONFIGURATIONS**

Config No.	Tested Model No.	Item Nos. Utilized
1	E3SRF-LO9303A w/ E3SLB-OW	1,2,3,4

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**SAMPLE PHOTOS - TESTED CONFIGURATIONS**



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E3SRF-LO9303A w/ E3SLB-OW
Product Description:	E3 IC REMODEL-930-30DEG-NO LENS
LED Model No.:	Bridgelux® Gen 8 V10 Array Series
Driver Model No.:	PTB15W-0300-38-VCC
Light Source:	LED
CEC Product Type:	Inseparable

Criteria	Results
Light Output (lumens)	820.3
Input Power (W)	11.10
Lumen Efficacy (lm/W)	73.9
Input Power Factor ( )	0.987
Correlated Color Temperature (K)	2971
Color Rendering Index - Ra ( )	91.9
Color Rendering Index - R9 ( )	73.2
Duv ( )	-0.0014
Chromaticity Coordinate (x)	0.437
Chromaticity Coordinate (y)	0.400
Chromaticity Coordinate (u')	0.252
Chromaticity Coordinate (v')	0.520

### 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**

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	E3SRF-LO9303A w/ E3SLB-OW	NA

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

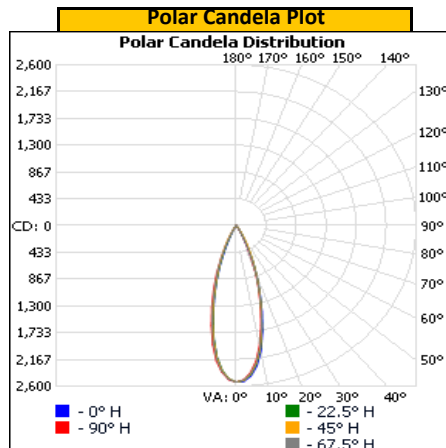
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	120.02	93.0	11.04	0.989

Light Output (lm)	Lumen Efficacy (lm/W)
806.0	73.0

**INTENSITY SUMMARY - CANDELA**

Angle	0	22.5	45	67.5	90
0	2532	2532	2532	2532	2532
5	2449	2420	2409	2399	2382
10	2057	2021	2003	1987	1955
15	1440	1417	1406	1406	1363
20	876	876	866	854	825
25	405	444	473	399	351
30	153	176	232	154	126
35	52	67	66	58	42
40	13	23	30	18	10
45	1	2	12	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	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



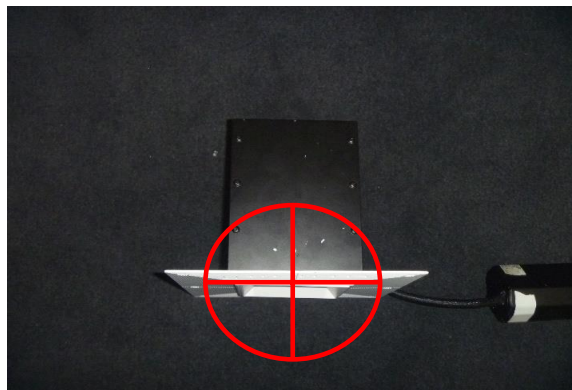
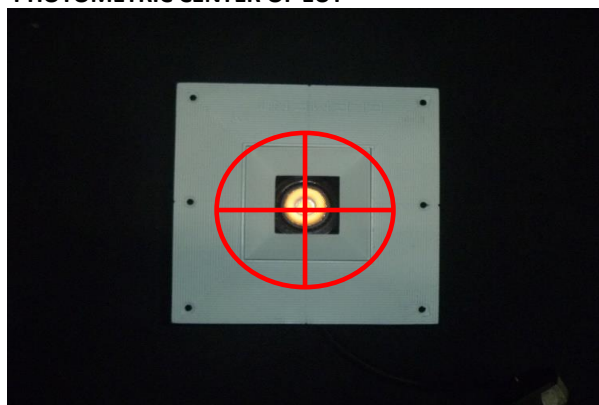
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ORIENTATION AND ALIGNMENT OF EUT

Luminous Opening		
Length (ft)	Width (ft)	Height (ft)
0.29	0.29	0.00
0°-180° H	90°-270° H	0°-180° V

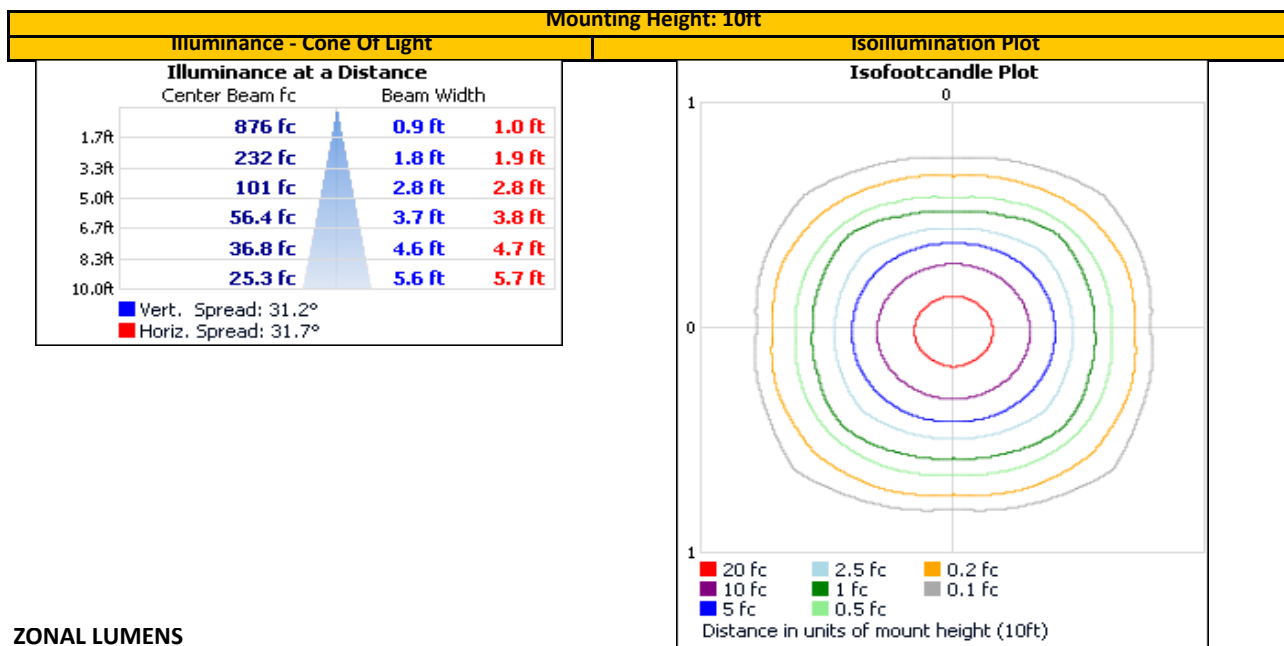
Test Distance (ft)
29.6

PHOTOMETRIC CENTER OF EUT



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## ILLUMINANCE SUMMARY



## ZONAL LUMENS

Zonal Lumen Summary								
Zone 1			Zone 2					
Zone	Lumens	% Lum	Zone	Lumens	% Total	% Total		
0-30	763.7	94.8%	0-10	213.0	26.4%	90-100	0.0	0.0%
0-40	802.1	99.5%	10-20	366.1	45.4%	100-110	0.0	0.0%
0-60	806.0	100.0%	20-30	184.6	22.9%	110-120	0.0	0.0%
60-90	0.0	0.0%	30-40	38.4	4.8%	120-130	0.0	0.0%
70-100	0.0	0.0%	40-50	3.9	0.5%	130-140	0.0	0.0%
90-120	0.0	0.0%	50-60	0.0	0.0%	140-150	0.0	0.0%
0-90	806.0	100.0%	60-70	0.0	0.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	70-80	0.0	0.0%	160-170	0.0	0.0%
0-180	806.0	100.0%	80-90	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	E3SRF-LO9303A w/ E3SLB-OW	NA

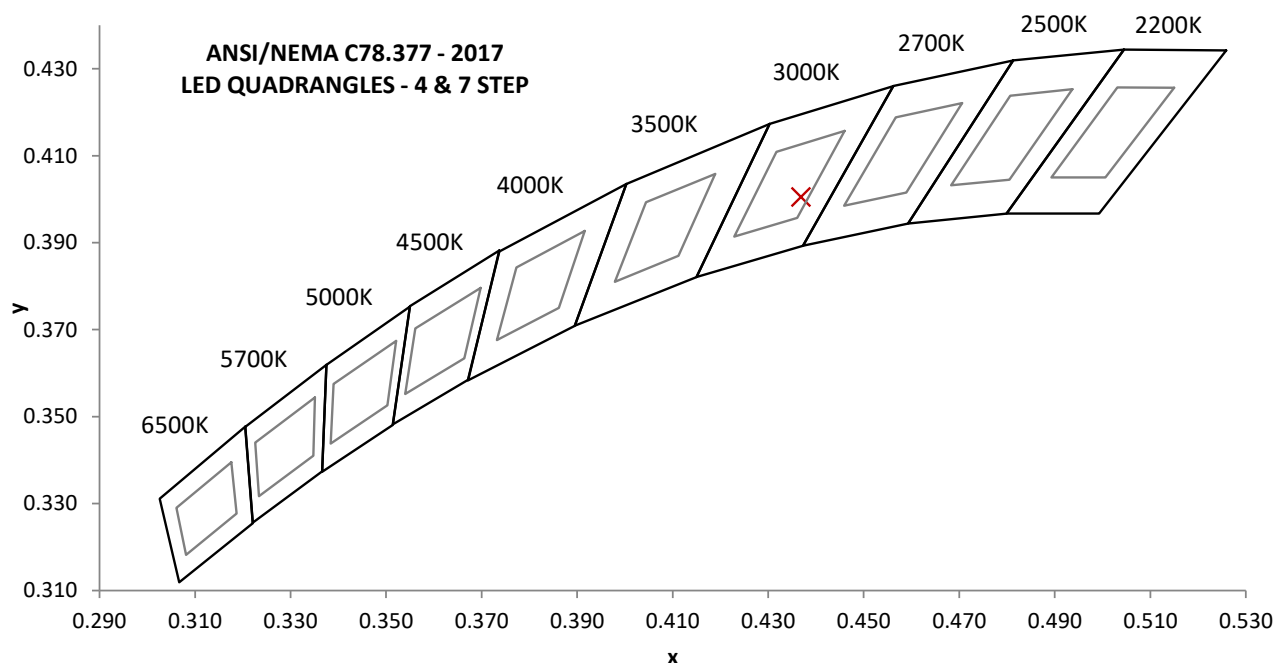
**PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)**

Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
120.01	93.7	11.10	0.987	10.91
277.00	45.6	11.50	0.910	14.73

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
820.3	73.9	2971	91.9	73.2

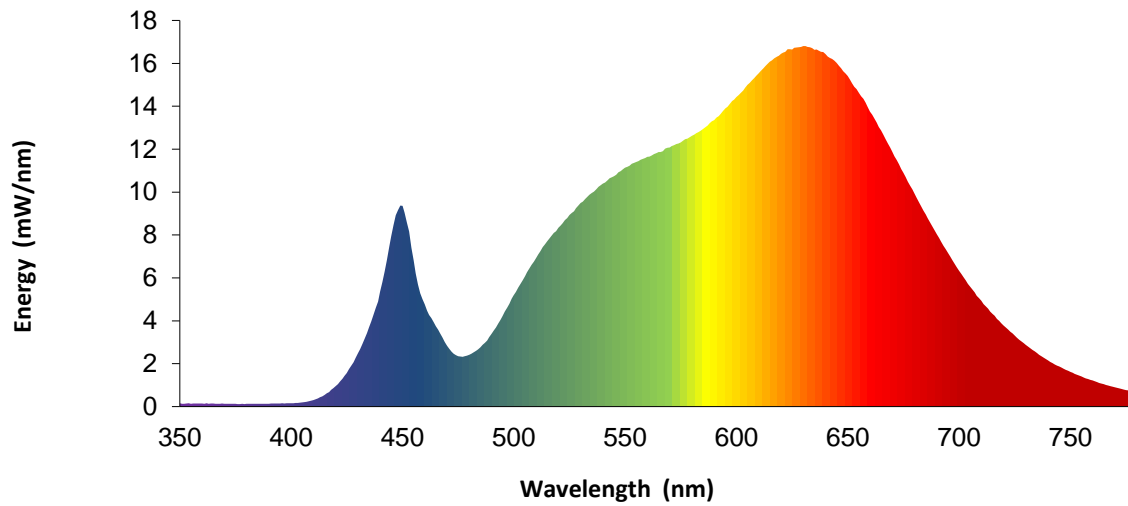
Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0014	0.437	0.400	0.252	0.520



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**SPECTRAL DISTRIBUTION OVER WAVELENGTHS**

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	4.8		570	12.1		680	9.9
355	0.1		465	3.7		575	12.3		685	9.0
360	0.1		470	2.8		580	12.6		690	8.0
365	0.1		475	2.3		585	12.9		695	7.2
370	0.1		480	2.4		590	13.4		700	6.3
375	0.1		485	2.8		595	13.9		705	5.6
380	0.1		490	3.4		600	14.4		710	4.9
385	0.1		495	4.2		605	15.0		715	4.3
390	0.1		500	5.2		610	15.5		720	3.8
395	0.1		505	6.1		615	16.1		725	3.3
400	0.2		510	6.9		620	16.5		730	2.9
405	0.2		515	7.7		625	16.6		735	2.5
410	0.3		520	8.3		630	16.8		740	2.2
415	0.5		525	8.9		635	16.6		745	1.9
420	1.0		530	9.5		640	16.4		750	1.6
425	1.6		535	10.0		645	16.0		755	1.4
430	2.5		540	10.4		650	15.4		760	1.2
435	3.7		545	10.7		655	14.6		765	1.0
440	5.4		550	11.1		660	13.8		770	0.9
445	7.9		555	11.4		665	12.9		775	0.8
450	9.4		560	11.6		670	11.9		780	0.7
455	6.8		565	11.9		675	10.9		---	---



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

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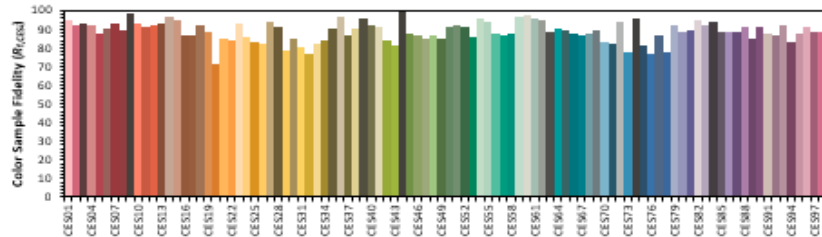
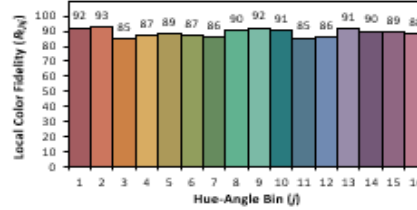
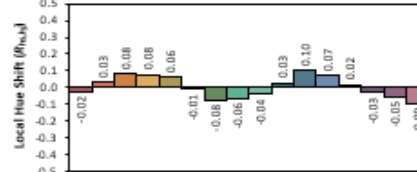
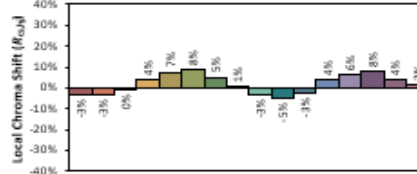
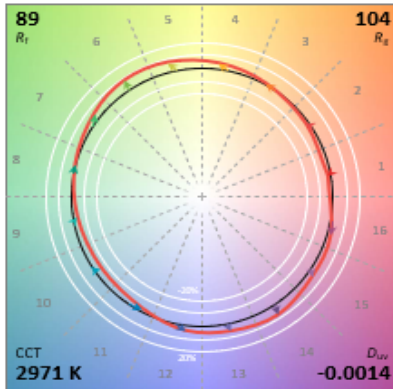
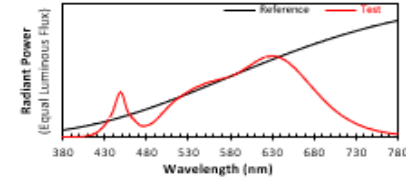
# ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 9/21/2021

Model: E3 IC REMODEL-930-30DEG-NO LENS



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$R_a$  0.4369  
 $R_s$  0.4004  
 $R_v$  0.2521  
 $R_{v'}$  0.5199

CIE 13.3-1995  
(CRI)  
 $R_a$  92  
 $R_s$  73

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

**EQUIPMENT LIST**

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Elgar AC Power Supply	CW1251	---	VBV	VBV
2	Sorenson DC Power Supply	XFR 150-8	---	VBV	VBV
3	Traceable Hygrothermometer	4800	L206	2/12/2021	2/12/2022
4	Yokogawa Power Analyzer	WT1600	E474	6/15/2021	6/15/2022
5	Fluke Thermometer	53 II	D587	2/5/2021	2/5/2022
6	3M Integrating Sphere Spectrometer System	CDS 2600	---	9/3/2021	12/3/2021
7	Fisher Scientific Stopwatch	14-649-9	N1132	3/26/2021	3/26/2022
8	LSI High Speed Mirror Goniophotometer	6440	---	8/16/2021	11/16/2021
9	Elgar AC Power Supply	CW1251	---	VBV	VBV
10	Yokogawa Power Analyzer	WT210	E464	5/11/2021	5/11/2022
11	Traceable Hygrothermometer	4800	L204	2/21/2021	2/21/2022
12	Sorenson DC Power Supply	XG 150-10	---	VBV	VBV
13	Omega Thermometer	DPI8-C24	M263	3/23/2021	3/23/2022
14	Bosch Distance Laser	Pro GLM 20	L211	3/3/2021	3/3/2022
15	M-D Building Products Digital Level	Smart Tool	L112	5/26/2021	5/26/2022
16	Tape Measure	Powerlock	N1342	3/11/2019	3/11/2022

**REVISION HISTORY**

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