

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

Performance Testing for Luminaires

MODEL NUMBER

E3SRF-LO9304A w/ E3SLB-OW

PROJECT NUMBER

G104622548

REPORT NUMBER

104622548CRT-004

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-004

MODEL NUMBER(s)

E3SRF-LO9304A 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

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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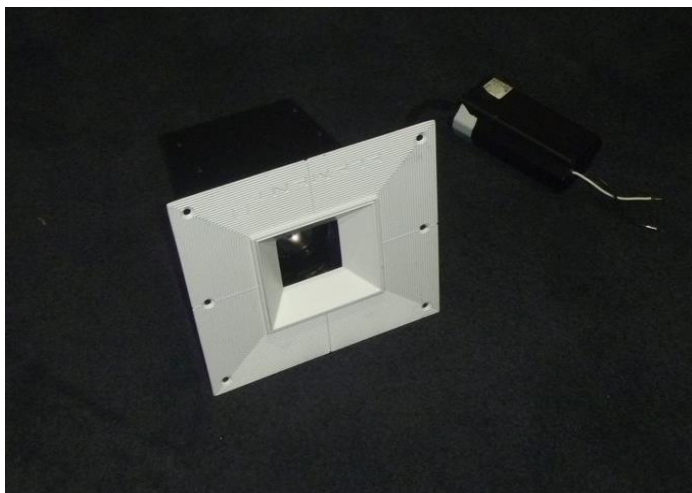
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2109100744-001-1	--	Housing w/PTB15W-0300-38-VCC	Production	9/10/2021
2	CRT2109100744-001-5	--	40° Lens	Production	9/10/2021
3	CRT2109100744-001-9	--	3000K LED	Production	9/10/2021
4	CRT2109100744-001-19	--	Trim No Lens	Production	9/10/2021

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	E3SRF-LO9304A w/ E3SLB-OW	1,2,3,4

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E3SRF-LO9304A w/ E3SLB-OW
Product Description:	E3 IC REMODEL-930-40DEG-NO LENS
LED Model No.:	Bridgelux® Gen 8 V10 Array Series
Driver Model No.:	PTB15W-0300-38-VCC
Light Source:	LED

Criteria	Results
Light Output (lumens)	817.3
Input Power (W)	11.11
Lumen Efficacy (lm/W)	73.6
Input Power Factor (I)	0.987
Correlated Color Temperature (K)	2982
Color Rendering Index - Ra (I)	91.9
Color Rendering Index - R9 (I)	73.2
Duv (I)	-0.0014
Chromaticity Coordinate (x)	0.436
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-LO9304A w/ E3SLB-OW	NA

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

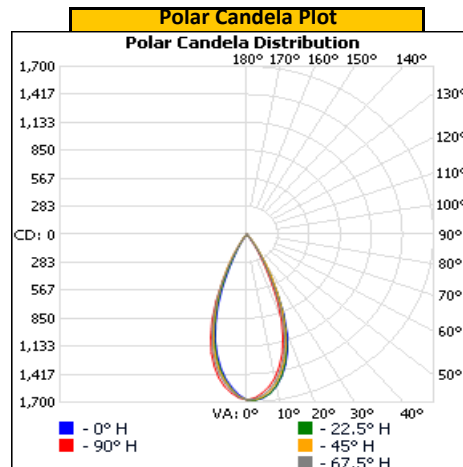
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.02	93.0	11.03	0.989

Light Output (lm)	Lumen Efficacy (lm/W)
814.3	73.8

INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	1674	1674	1674	1674	1674
5	1666	1660	1652	1636	1612
10	1560	1556	1532	1513	1474
15	1363	1347	1320	1290	1247
20	1075	1041	1022	980	924
25	657	659	660	576	518
30	311	317	346	265	220
35	91	114	122	90	68
40	24	32	48	27	19
45	5	6	14	6	4
50	0	0	1	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



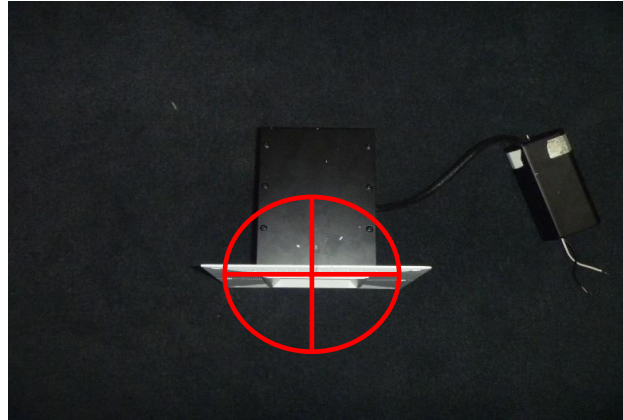
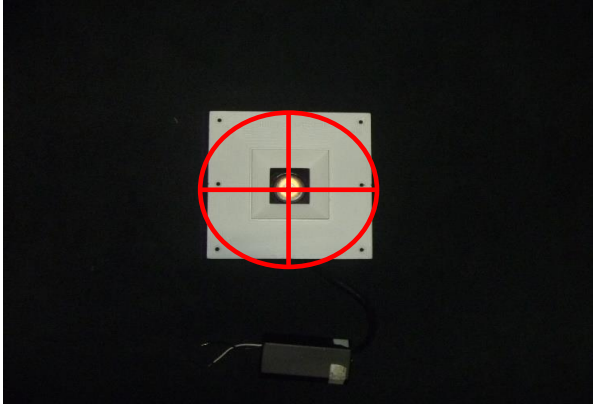
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ORIENTATION AND ALIGNMENT OF EUT

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

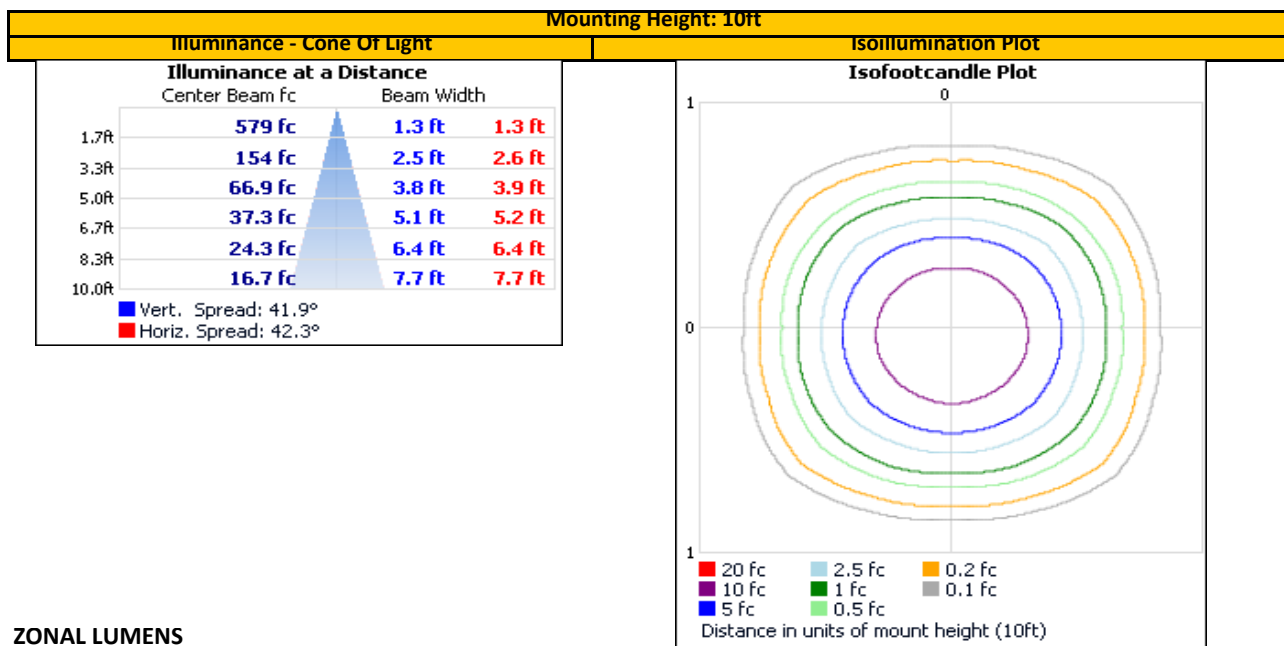
Test Distance (ft)
29.6

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	Zone
0-30	741.8	91.1%	0-10	149.4	18.3%	90-100
0-40	807.3	99.1%	10-20	339.0	41.6%	100-110
0-60	814.3	100.0%	20-30	253.4	31.1%	110-120
60-90	0.0	0.0%	30-40	65.5	8.0%	120-130
70-100	0.0	0.0%	40-50	7.0	0.9%	130-140
90-120	0.0	0.0%	50-60	0.0	0.0%	140-150
0-90	814.3	100.0%	60-70	0.0	0.0%	150-160
90-180	0.0	0.0%	70-80	0.0	0.0%	160-170
0-180	814.3	100.0%	80-90	0.0	0.0%	170-180

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	E3SRF-LO9304A w/ E3SLB-OW	NA

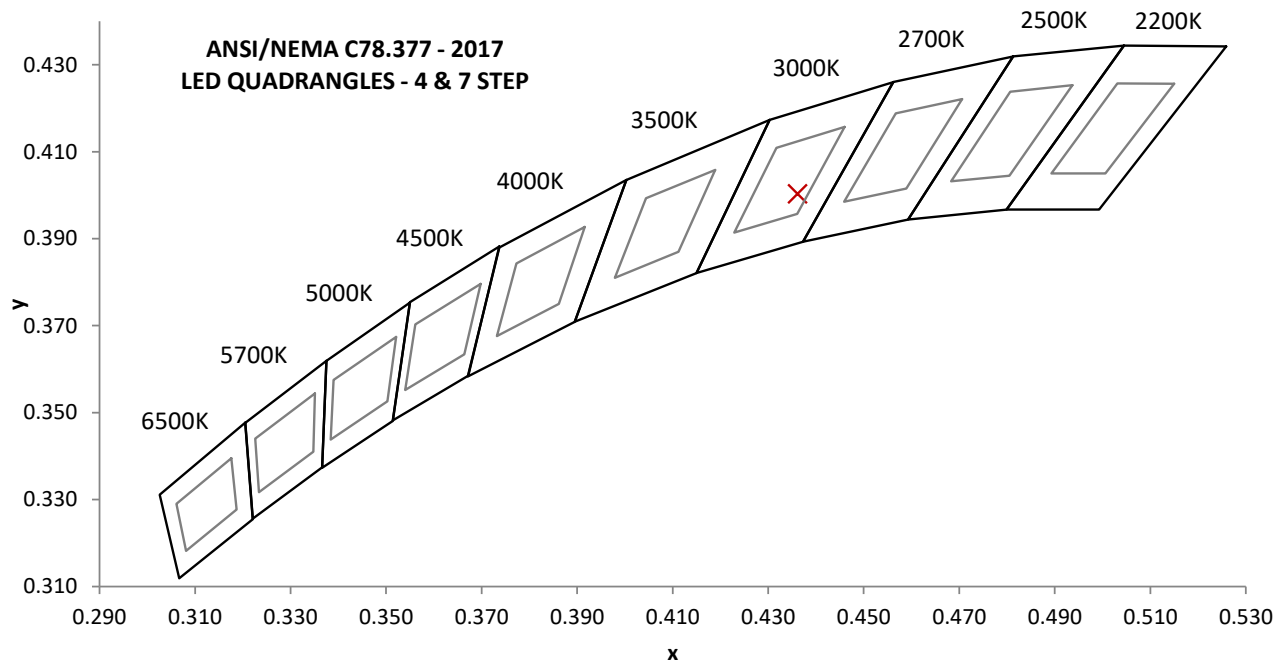
PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.03	93.8	11.11	0.987	10.98
277.00	45.0	11.30	0.906	14.74

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
817.3	73.6	2982	91.9	73.2

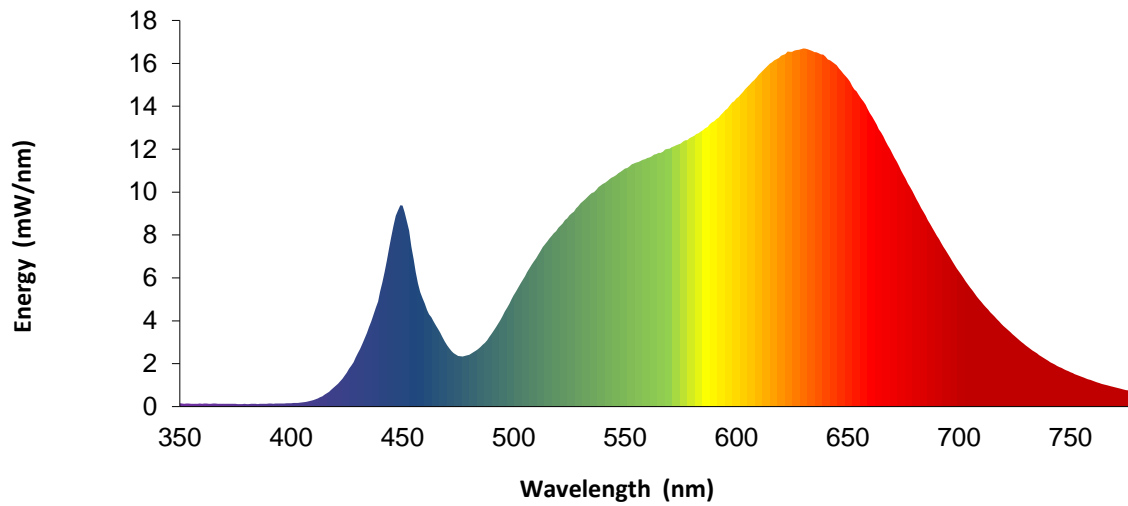
Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0014	0.436	0.400	0.252	0.520



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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	12.0		680	9.8
355	0.1		465	3.8		575	12.3		685	8.9
360	0.1		470	2.9		580	12.6		690	8.0
365	0.1		475	2.4		585	12.9		695	7.1
370	0.1		480	2.4		590	13.3		700	6.3
375	0.1		485	2.8		595	13.8		705	5.5
380	0.1		490	3.4		600	14.4		710	4.9
385	0.1		495	4.2		605	14.9		715	4.3
390	0.1		500	5.2		610	15.5		720	3.8
395	0.1		505	6.1		615	16.0		725	3.3
400	0.2		510	6.9		620	16.3		730	2.9
405	0.2		515	7.7		625	16.5		735	2.5
410	0.3		520	8.3		630	16.7		740	2.1
415	0.5		525	8.9		635	16.5		745	1.8
420	1.0		530	9.5		640	16.3		750	1.6
425	1.6		535	9.9		645	15.9		755	1.4
430	2.5		540	10.4		650	15.3		760	1.2
435	3.7		545	10.7		655	14.5		765	1.0
440	5.4		550	11.1		660	13.7		770	0.9
445	7.9		555	11.4		665	12.8		775	0.8
450	9.4		560	11.6		670	11.8		780	0.7
455	6.9		565	11.8		675	10.8		---	---



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

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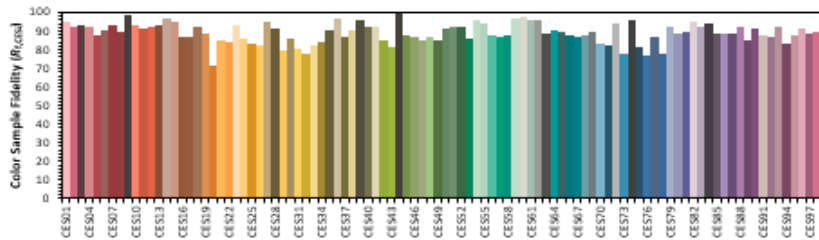
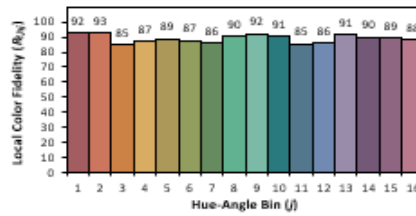
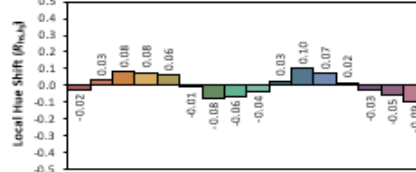
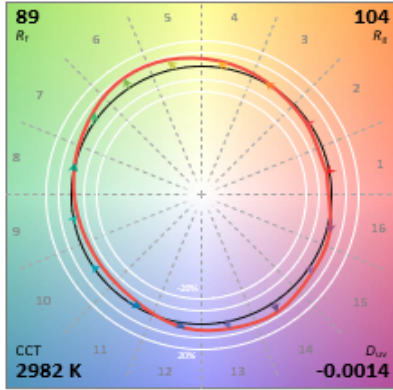
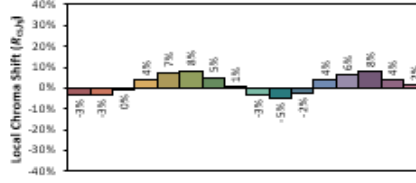
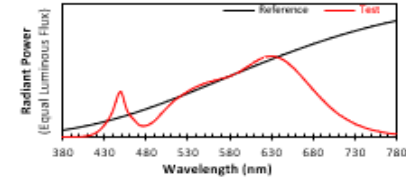
ANSI/IES TM-30-18 Color Rendition Report

Source: LED

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 9/21/2021

Model: E3SRF-LQ9304A w/ E3SLB-OW



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

\bar{r} 0.4361
 \bar{g} 0.4002
 \bar{u}' 0.2517
 \bar{v}' 0.5197

CIE 13.3-1995
(CRI)

R_a 92
 R_g 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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