VISUAL COMFORT AND COMPANY

TEST REPORT

SCOPE OF WORK
Performance Testing for Luminaires

MODEL NUMBER
E3SRF-LOTW524A w/ E3SLB-OW

PROJECT NUMBER
G104622548

REPORT NUMBER
104622548CRT-013

ISSUE DATE
9/20/2021

REVISED DATE
None

TEST DATES
9/17/21 through 9/20/21

DOCUMENT CONTROL NUMBER
RTTDS-R-AMER-Test-3407
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REPORT NUMBER
104622548CRT-013

MODEL NUMBER(s)
E3SRF-LOTW524A 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
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Lighting Division

Reviewer:

Kristie Ray
Team Lead, Engineering
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SAMPLE INFORMATION

REPORT NO. 104622548CRT-013

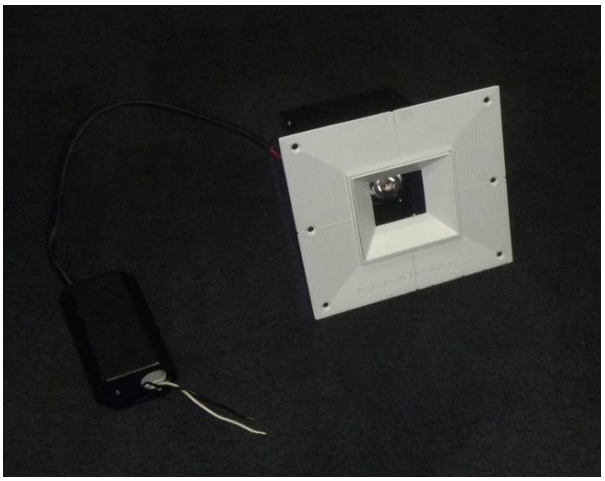
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2109100744-001-3	--	Housing w/EldoLED Tunable White 0.1% 0-10V Linear(333mA)	Production	9/10/2021
2	CRT2109100744-001-7	--	40° Lens	Production	9/10/2021
3	CRT2109100744-001-11	--	5000K 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-LOTW524A w/ E3SLB-OW	1,2,3,4

SAMPLE PHOTOS - TESTED CONFIGURATIONS



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SUMMARY **REPORT NO. 104622548CRT-013**

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E3SRF-LOTW524A w/ E3SLB-OW
Product Description:	E3 IC REMODEL-TW52-40DEG-NO LENS
LED Model No.:	Bridgelux® Vesta® Series Tunable White Gen 2 10mm Array
Driver Model No.:	EldoLED Tunable White 0.1% 0-10V Linear
Light Source:	LED
CEC Product Type:	Inseperable

Criteria	Results
Light Output (lumens)	972.0
Input Power (W)	13.77
Lumen Efficacy (lm/W)	70.6
Input Power Factor ()	0.959
Correlated Color Temperature (K)	4869
Color Rendering Index - Ra ()	93.6
Color Rendering Index - R9 ()	72.3
Duv ()	0.0020
Chromaticity Coordinate (x)	0.349
Chromaticity Coordinate (y)	0.359
Chromaticity Coordinate (u')	0.211
Chromaticity Coordinate (v')	0.489

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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.

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TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 104622548CRT-013

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E3SRF-LOTW524A 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	120.07	119.0	13.75	0.963

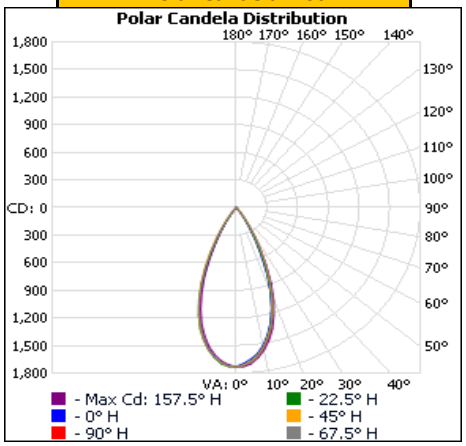
Light Output (lm)	Lumen Efficacy (lm/W)
938.1	68.2

INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	1727	1727	1727	1727	1727
5	1649	1671	1678	1686	1688
10	1517	1533	1538	1545	1558
15	1294	1306	1320	1323	1338
20	974	987	1012	1032	1035
25	584	620	677	687	690
30	276	302	370	372	369
35	81	109	153	158	138
40	21	31	56	46	38
45	3	6	16	10	8
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

Polar Candela Plot



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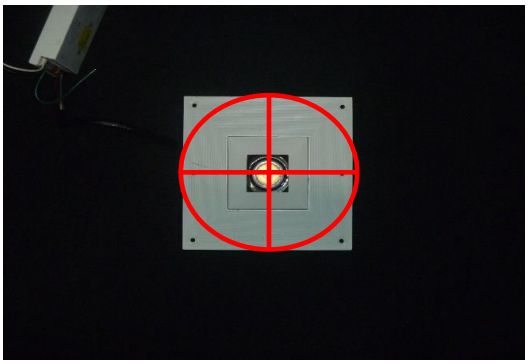
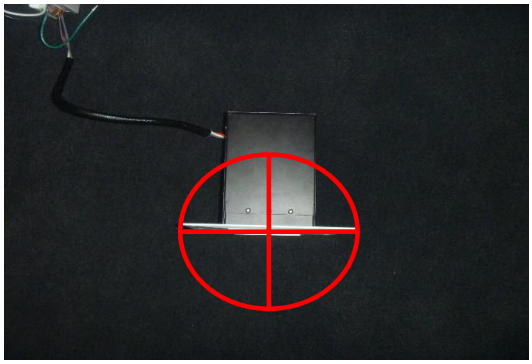
ORIENTATION AND ALIGNMENT OF EUT

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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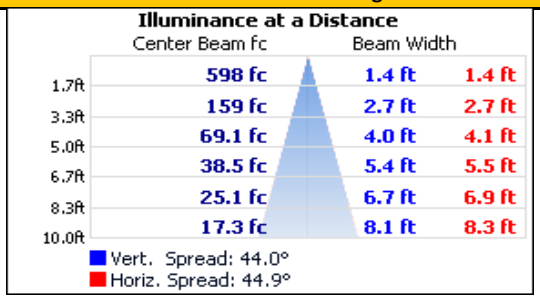
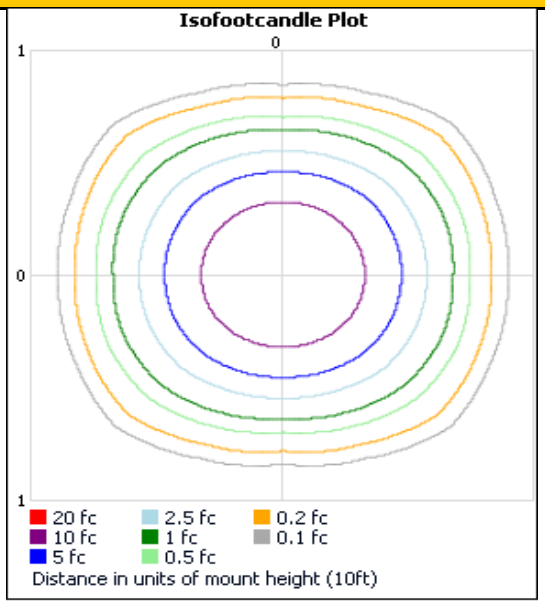
ILLUMINANCE SUMMARY

Mounting Height: 10ft

Illuminance - Cone Of Light



Isoillumination Plot



ZONAL LUMENS

Zonal Lumen Summary

Zone	Lumens	% Lum
0-30	829.3	88.4%
0-40	927.8	98.9%
0-60	938.1	100.0%
60-90	0.0	0.0%
70-100	0.0	0.0%
90-120	0.0	0.0%
0-90	938.1	100.0%
90-180	0.0	0.0%
0-180	938.1	100.0%

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	156.4	16.7%	90-100	0.0	0.0%
10-20	365.7	39.0%	100-110	0.0	0.0%
20-30	307.3	32.8%	110-120	0.0	0.0%
30-40	98.4	10.5%	120-130	0.0	0.0%
40-50	10.3	1.1%	130-140	0.0	0.0%
50-60	0.0	0.0%	140-150	0.0	0.0%
60-70	0.0	0.0%	150-160	0.0	0.0%
70-80	0.0	0.0%	160-170	0.0	0.0%
80-90	0.0	0.0%	170-180	0.0	0.0%

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INTEGRATING SPHERE TESTING **REPORT NO. 104622548CRT-013**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E3SRF-LOTW524A w/ E3SLB-OW	NA

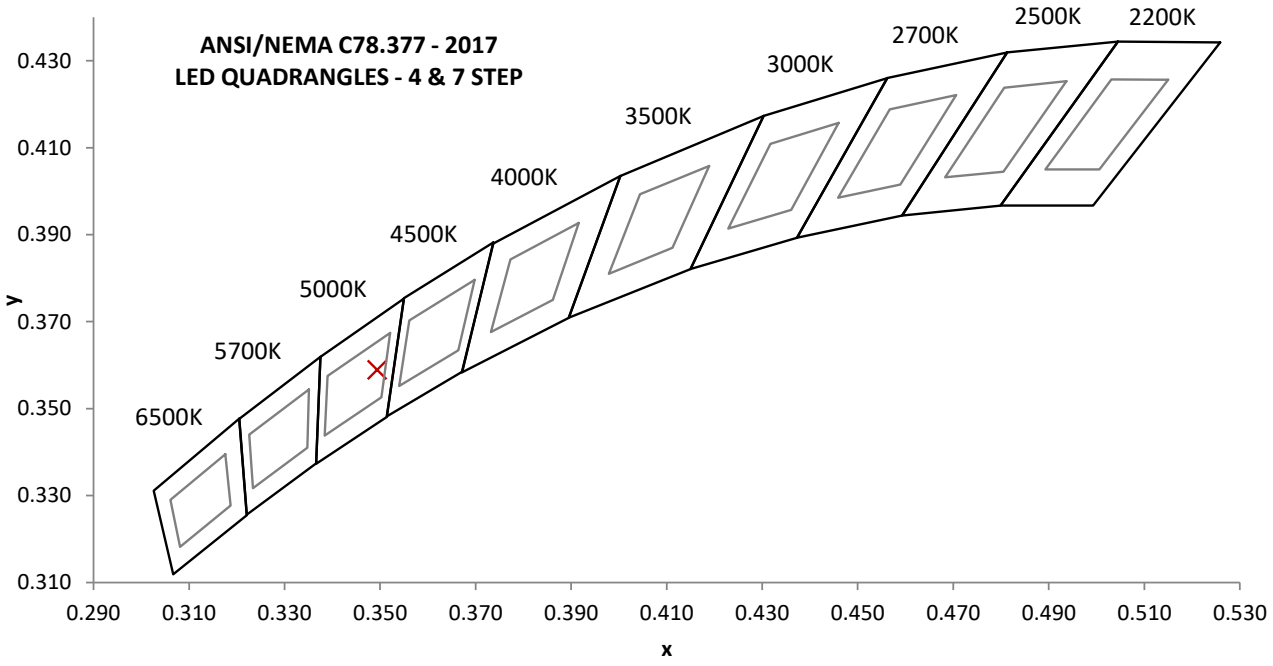
PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25˚C +/- 1˚C)

Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.01	119.7	13.77	0.959	10.83
277.00	77.04	15.05	0.705	20.49

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
972.0	70.6	4869	93.6	72.3

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0020	0.349	0.359	0.211	0.489



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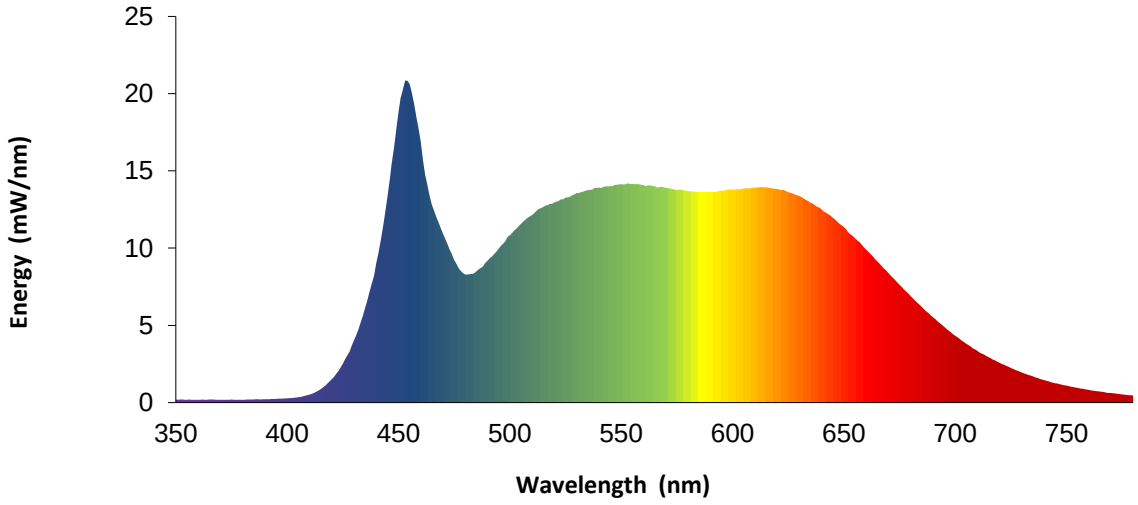
REPORT NO. 104622548CRT-013

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	16.9		570	13.9		680	6.9
355	0.2		465	12.8		575	13.8		685	6.2
360	0.2		470	10.9		580	13.7		690	5.5
365	0.2		475	9.2		585	13.6		695	4.9
370	0.2		480	8.3		590	13.6		700	4.3
375	0.2		485	8.5		595	13.7		705	3.8
380	0.2		490	9.2		600	13.8		710	3.4
385	0.2		495	9.9		605	13.9		715	2.9
390	0.2		500	10.8		610	13.9		720	2.6
395	0.2		505	11.6		615	13.9		725	2.3
400	0.3		510	12.2		620	13.8		730	2.0
405	0.3		515	12.7		625	13.6		735	1.7
410	0.5		520	13.0		630	13.4		740	1.5
415	0.9		525	13.3		635	12.9		745	1.3
420	1.5		530	13.6		640	12.5		750	1.1
425	2.5		535	13.8		645	12.0		755	1.0
430	4.0		540	13.9		650	11.4		760	0.8
435	6.1		545	14.0		655	10.7		765	0.7
440	9.0		550	14.1		660	9.9		770	0.6
445	13.2		555	14.2		665	9.2		775	0.5
450	18.8		560	14.1		670	8.4		780	0.5
455	20.6		565	14.0		675	7.6		---	---



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

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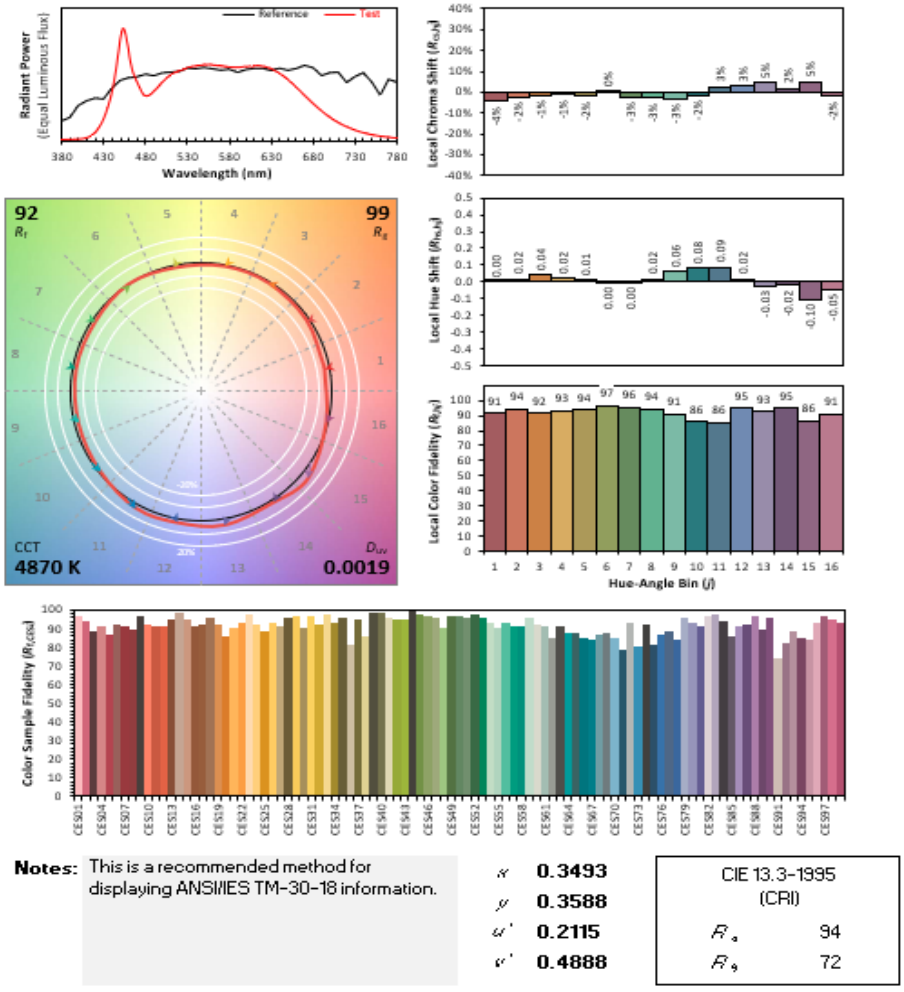
REPORT NO. 104622548CRT-013

ANSI/IES TM-30-18 Color Rendition Report

Source: LED
Manufacturer VISUAL COMFORT AND COMPANY
Date: 9/21/2021
Model: E3 IC REMODEL-TW52-40DEG-NO LENS



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

x	0.3493
y	0.3588
u'	0.2115
v'	0.4888

CIE 13.3-1995 (CRI)	
R_a	94
R_9	72

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

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EQUIPMENT LIST **REPORT NO. 104622548CRT-013**

#	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	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	---	VBU	VBU
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	---	VBU	VBU
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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