VISUAL COMFORT AND COMPANY

TEST REPORT

SCOPE OF WORK
Performance Testing for Luminaires

MODEL NUMBER
E3SRF-LOTW414A w/ E3SLB-OW

PROJECT NUMBER
G104622548

REPORT NUMBER
104622548CRT-003

ISSUE DATE
9/20/2021

REVISED DATE
None

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

DOCUMENT CONTROL NUMBER
RTTDS-R-AMER-Test-3407

REPORT NUMBER
104622548CRT-003

MODEL NUMBER(s)
E3SRF-LOTW414A 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

REPORT NO. 104622548CRT-003

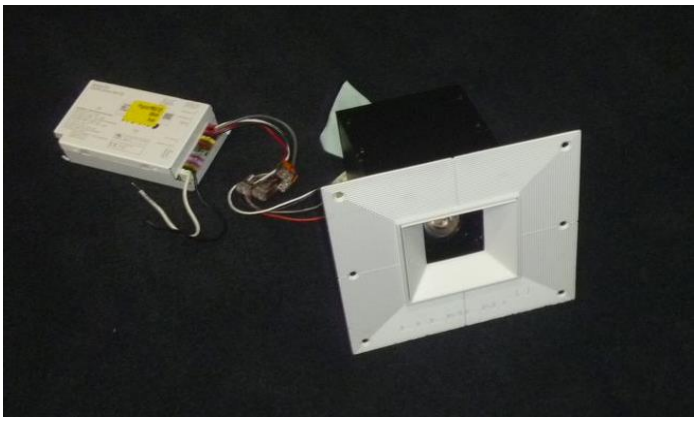
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	CRT2109100744-001-4	--	Housing w/EldoLED Tunable White 0.1% 0-10V Linear(666mA)	Production	9/10/2021
2	CRT2109100744-001-8	--	40° Lens	Production	9/10/2021
3	CRT2109100744-001-10	--	4000K 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-LOTW414A w/ E3SLB-OW	1,2,3,4

SAMPLE PHOTOS - TESTED CONFIGURATIONS



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SUMMARY

REPORT NO. 104622548CRT-003

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E3SRF-LOTW414A w/ E3SLB-OW
Product Description:	E3 IC REMODEL-TW41-40DEG-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:	Inseparable

Criteria	Results
Light Output (lumens)	898.7
Input Power (W)	15.25
Lumen Efficacy (lm/W)	58.9
Input Power Factor ()	0.961
Correlated Color Temperature (K)	3913
Color Rendering Index - Ra ()	93.6
Color Rendering Index - R9 ()	80.7
Duv ()	0.0011
Chromaticity Coordinate (x)	0.385
Chromaticity Coordinate (y)	0.382
Chromaticity Coordinate (u')	0.226
Chromaticity Coordinate (v')	0.505

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-003

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E3SRF-LOTW414A 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	120.05	132.6	15.37	0.966

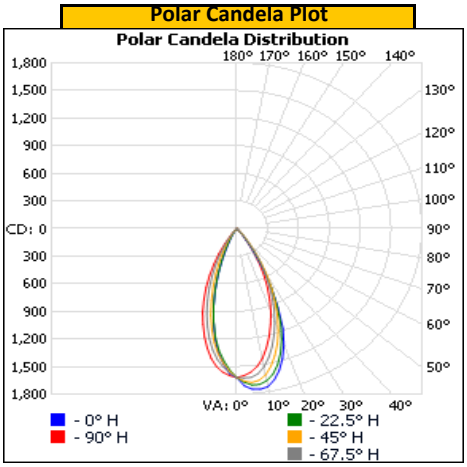
Light Output (lm)	Lumen Efficacy (lm/W)
913.9	59.5

INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	1619	1619	1619	1619	1619
5	1752	1706	1678	1623	1566
10	1744	1678	1615	1524	1433
15	1595	1533	1428	1326	1215
20	1337	1274	1178	1079	969
25	946	924	880	809	705
30	543	552	591	533	444
35	202	252	305	291	204
40	68	86	130	102	65
45	18	24	40	32	17
50	0	3	10	6	1
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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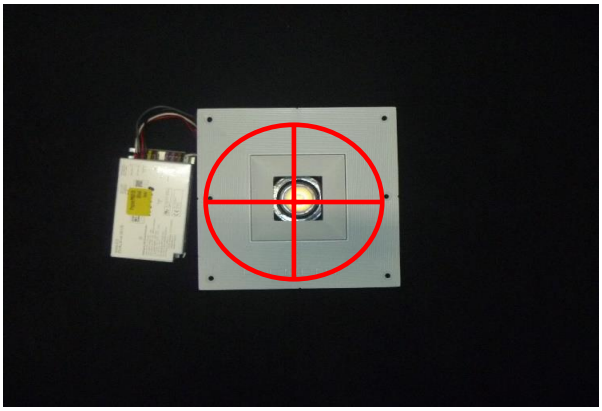
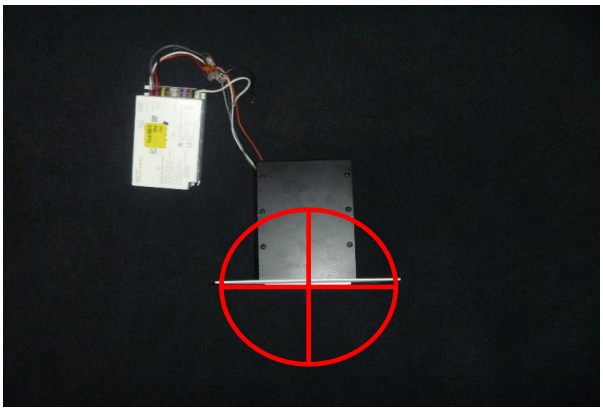
ORIENTATION AND ALIGNMENT OF EUT

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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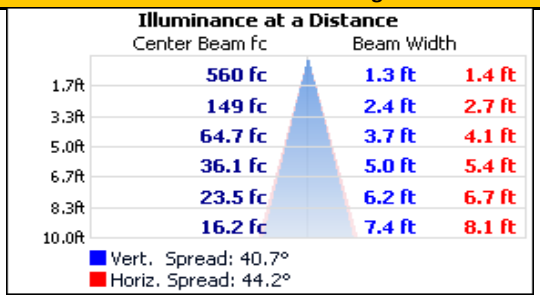
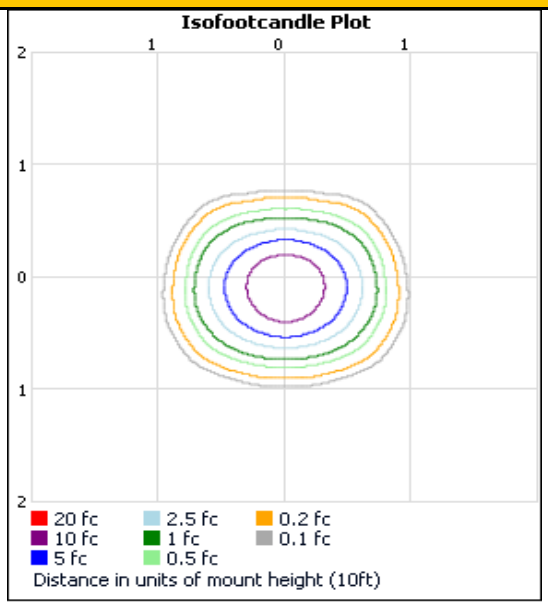
ILLUMINANCE SUMMARY

Mounting Height: 10ft

Illuminance - Cone Of Light



Isoillumination Plot



ZONAL LUMENS

Zonal Lumen Summary

Zone	Lumens	% Lum
0-30	772.4	84.5%
0-40	895.1	97.9%
0-60	913.9	100.0%
60-90	0.0	0.0%
70-100	0.0	0.0%
90-120	0.0	0.0%
0-90	913.9	100.0%
90-180	0.0	0.0%
0-180	913.9	100.0%

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	146.0	16.0%	90-100	0.0	0.0%
10-20	332.6	36.4%	100-110	0.0	0.0%
20-30	293.9	32.2%	110-120	0.0	0.0%
30-40	122.7	13.4%	120-130	0.0	0.0%
40-50	18.4	2.0%	130-140	0.0	0.0%
50-60	0.3	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-003**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E3SRF-LOTW414A w/ E3SLB-OW	NA

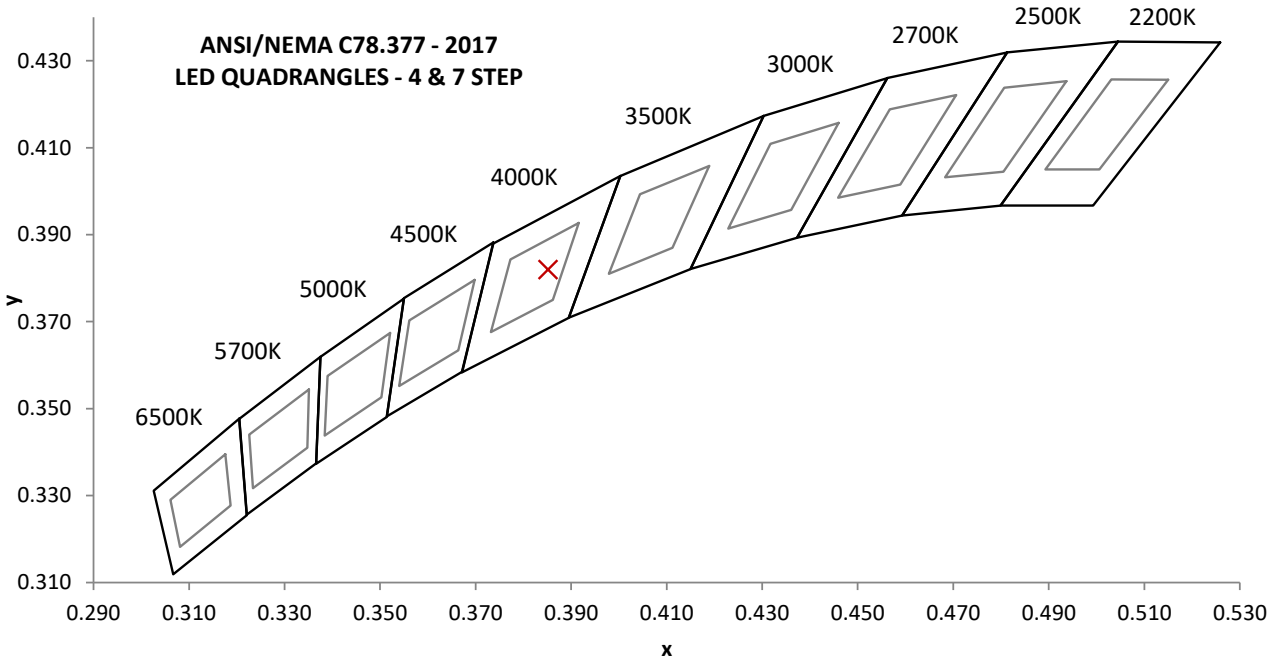
PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25˚C +/- 1˚C)

Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.04	132.2	15.25	0.961	14.15
277.01	79.47	16.68	0.758	16.45

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
898.7	58.9	3913	93.6	80.7

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0011	0.385	0.382	0.226	0.505



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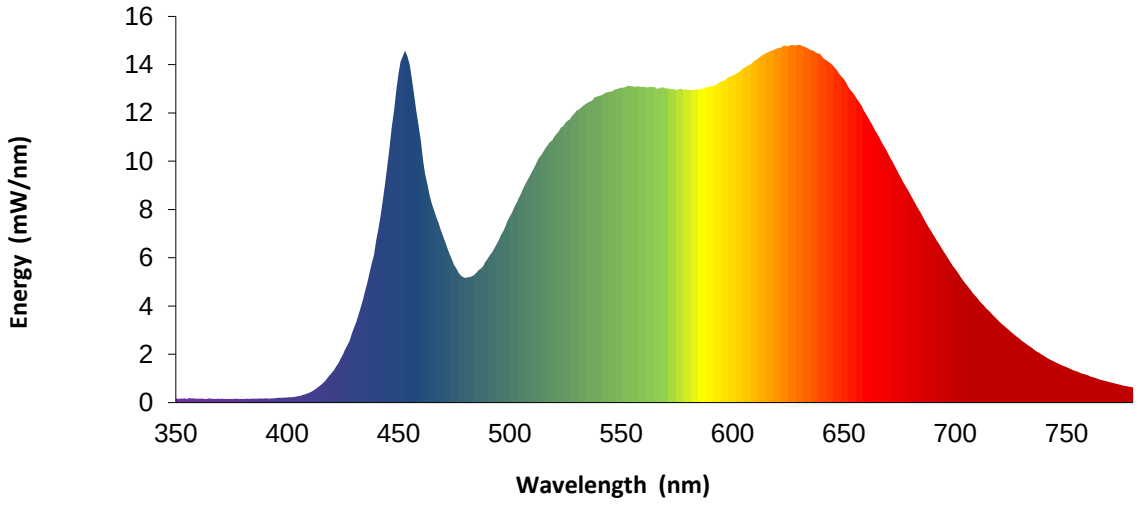
SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	10.9		570	13.0		680	8.6
355	0.2		465	8.2		575	12.9		685	7.8
360	0.2		470	6.9		580	13.0		690	7.0
365	0.2		475	5.7		585	13.0		695	6.2
370	0.2		480	5.2		590	13.1		700	5.5
375	0.1		485	5.4		595	13.3		705	4.9
380	0.1		490	5.9		600	13.5		710	4.3
385	0.2		495	6.7		605	13.9		715	3.8
390	0.2		500	7.7		610	14.2		720	3.4
395	0.2		505	8.7		615	14.5		725	2.9
400	0.2		510	9.6		620	14.7		730	2.6
405	0.3		515	10.4		625	14.8		735	2.2
410	0.4		520	11.0		630	14.8		740	1.9
415	0.7		525	11.6		635	14.6		745	1.7
420	1.2		530	12.1		640	14.4		750	1.5
425	2.0		535	12.4		645	14.0		755	1.3
430	3.1		540	12.7		650	13.4		760	1.1
435	4.6		545	12.9		655	12.7		765	1.0
440	6.7		550	13.1		660	11.9		770	0.8
445	9.8		555	13.1		665	11.1		775	0.7
450	13.7		560	13.1		670	10.3		780	0.6
455	14.0		565	13.1		675	9.4		---	---



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

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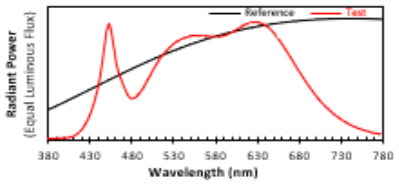
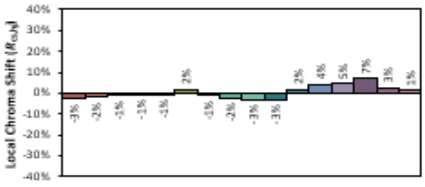
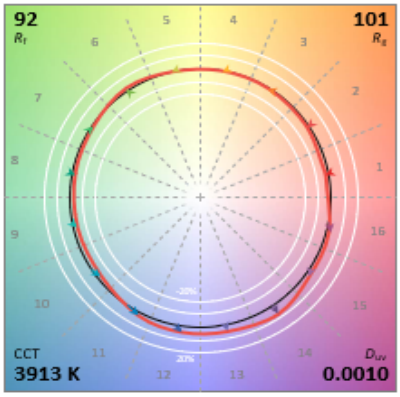
REPORT NO. 104622548CRT-003

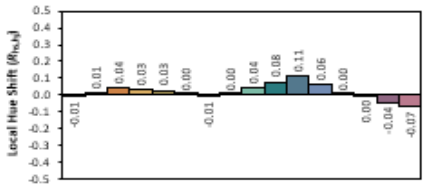
ANSI/IES TM-30-18 Color Rendition Report

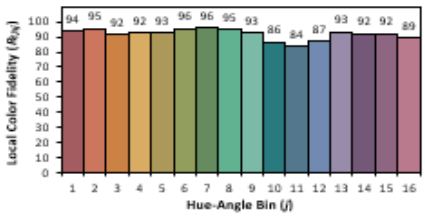
Source: LED
Manufacturer VISUAL COMFORT AND COMPANY
Date: 9/21/2021
Model: E3SRF-LOTW414A w/ E3SLB-OW

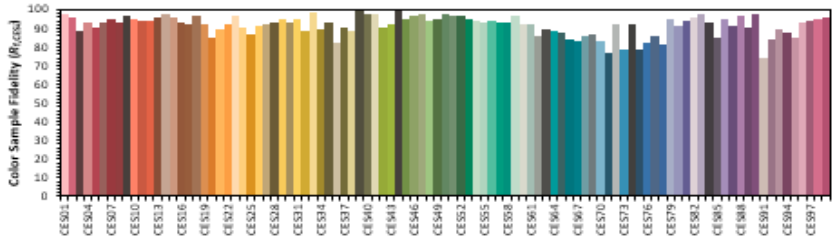












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	**0.3851**
y	**0.3819**
u'	**0.2261**
v'	**0.5045**

CIE 13.3-1995 (CRI)

R_a	94
R_9	81

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-003**

#	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	---	---	---
---	---	---	---	---
---	---	---	---	---