

# VISUAL COMFORT AND COMPANY TEST REPORT

## SCOPE OF WORK

LED Performance Testing

## MODEL NUMBER

EC3RS-199WD314DN-  
UNV-W

## PROJECT NUMBER

## REPORT NUMBER

104941221CHI-091

## ISSUE DATE

9/30/2022

## REVISED DATE

None

## TEST DATES

2022-09-15.

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407  
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**REPORT NUMBER**

104941221CHI-091

**MODEL NUMBER(s)**

EC3RS-199WD314DN-UNV-W

**REPORT RENDERED TO:**

VISUAL COMFORT AND COMPANY  
7400 LINDER AVE  
SKOKIE, IL 60077  
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-01236637-1.

**TEST STANDARDS**

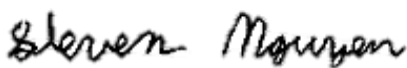
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI/IES LM-79-19 Optical and Electrical Measurements of Solid-State Lighting Products

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

IES TM-30-18: IES Method for Evaluating Light Source Color Rendition

In Charge of Testing:



Steven Nguyen  
Engineer  
Lighting Division

Reviewer:



Jeff Davis  
N.A. 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	AH08252022081536-02	EC3RS-199WD314 DN-UNV-W	3" DOWNLIGHT LUMINAIRE	Production	8/25/2022

**TESTED SAMPLE CONFIGURATIONS**

Config No.	Tested Model No.	Item Nos. Utilized
10	EC3RS-199WD314DN-UNV-W	1

**SAMPLE PHOTOS - TESTED CONFIGURATIONS**



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	EC3RS-199WD314DN-UNV-W
Product Description:	3" DOWNLIGHT LUMINAIRE
LED Model No.:	Bridgelux / BXRV-DR-1830G-200V-A-22
Driver Model No.:	ERP / ESS030W-0500-42
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1338.2	1309.8
Input Power (W) @ 120VAC (Vac)	19.41	19.39
Lumen Efficacy (lm/W)	68.9	67.5
Input Power Factor (I) @ 120VAC (Vac)	0.986	0.990

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	11.76
Correlated Color Temperature (K)	3051
Color Rendering Index - Ra (I)	93.8
Color Rendering Index - R9 (I)	72.6
Duv (I)	0.0007
Chromaticity Coordinate (x)	0.434
Chromaticity Coordinate (y)	0.405
Chromaticity Coordinate (u')	0.249
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**

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Test Configuration	Tested Model No.	Pass/Fail/NA
10	EC3RS-199WD314DN-UNV-W	NA

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

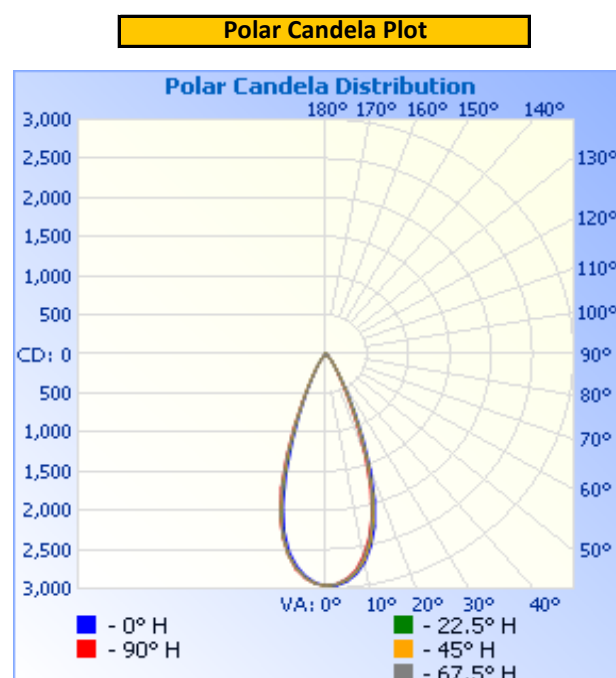
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	120.07	164.0	19.41	0.986

Light Output (lm)	Lumen Efficacy (lm/W)
1338.2	68.9

**INTENSITY SUMMARY - CANDELA**

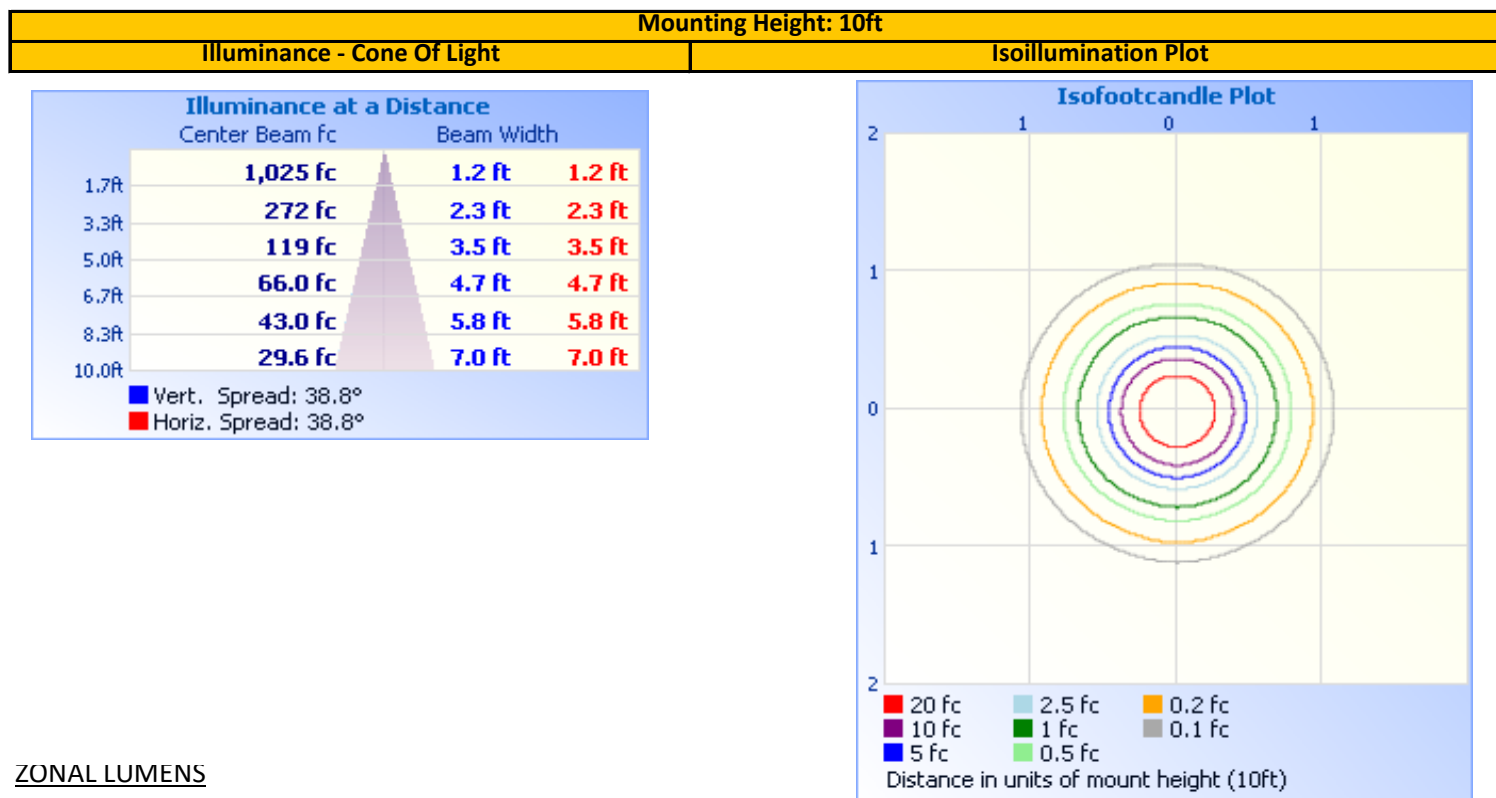
Angle	0	22.5	45	67.5	90
0	2964	2964	2964	2964	2964
5	2923	2903	2900	2889	2882
10	2709	2673	2676	2640	2615
15	2284	2214	2204	2171	2148
20	1579	1488	1484	1445	1397
25	840	781	755	722	676
30	383	356	349	324	306
35	191	179	178	167	158
40	87	82	81	77	74
45	47	44	43	41	39
50	27	25	24	23	22
55	12	11	11	11	11
60	8	8	8	8	8
65	6	5	5	5	5
70	2	2	2	2	2
75	2	2	2	2	2
80	1	1	1	1	1
85	1	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	1,178.2	88.0%	0-10	267.0	20.0%
0-40	1,286.6	96.1%	10-20	575.0	43.0%
0-60	1,331.3	99.5%	20-30	336.2	25.1%
60-90	6.9	0.5%	30-40	108.4	8.1%
70-100	2.0	0.2%	40-50	33.4	2.5%
90-120	0.0	0.0%	50-60	11.3	0.8%
0-90	1,338.2	100.0%	60-70	4.9	0.4%
90-180	0.0	0.0%	70-80	1.6	0.1%
0-180	1,338.2	100.0%	80-90	0.4	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
10	EC3RS-199WD314DN-UNV-W	NA

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

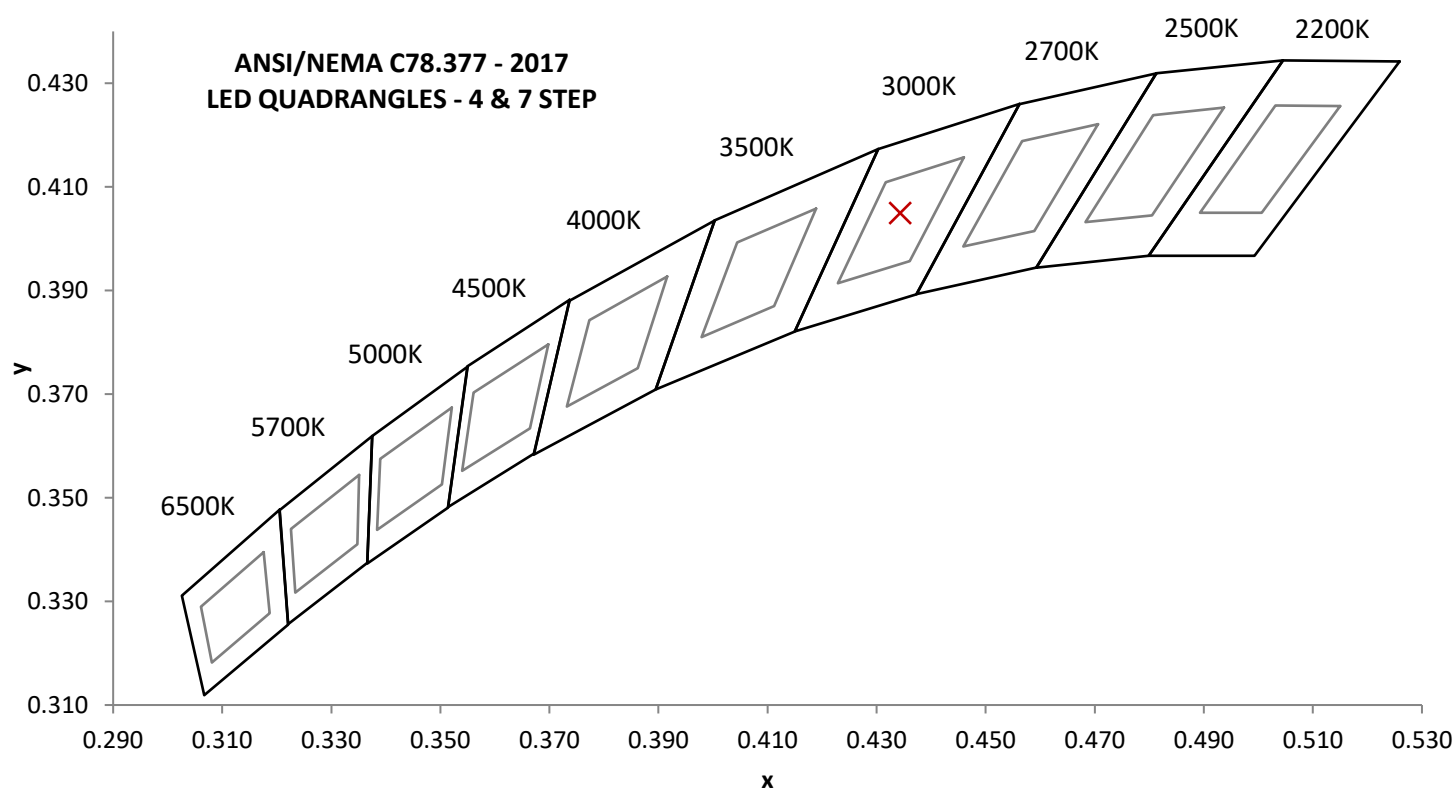
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
119.98	163.3	19.39	0.990	11.76

Measured at 119.98(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
1309.8	67.5	3051	93.8	72.6

Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0007	0.434	0.405	0.249	0.521

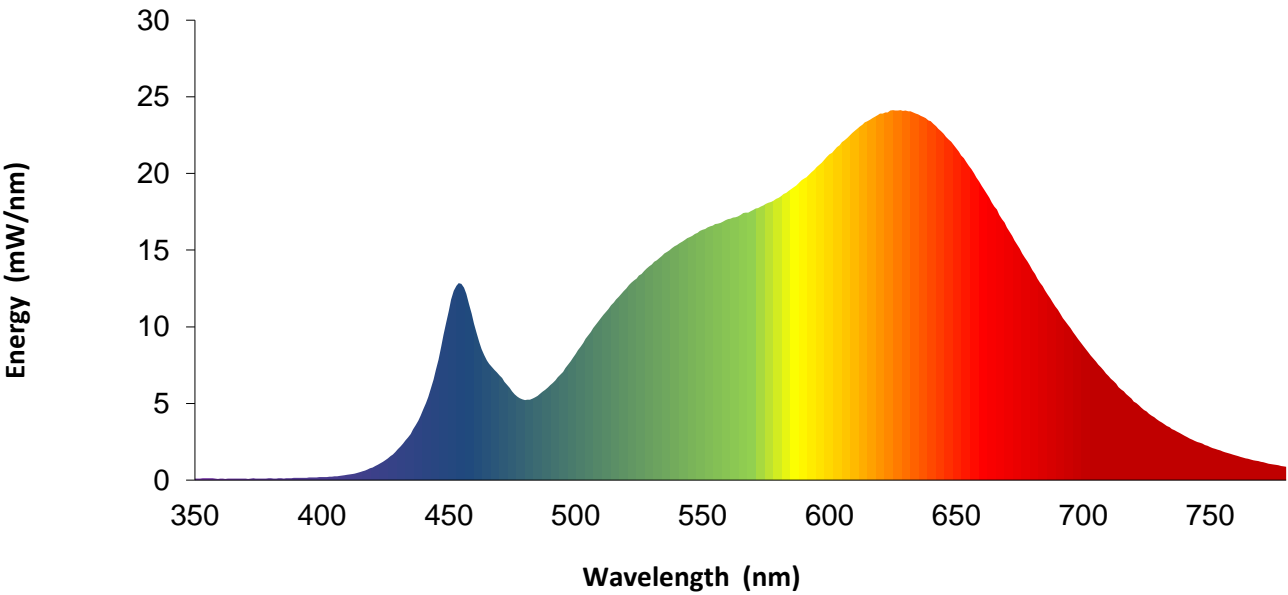


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	10.2		570	17.6		680	13.7
355	0.1		465	7.8		575	18.0		685	12.4
360	0.1		470	6.8		580	18.4		690	11.1
365	0.1		475	5.8		585	19.0		695	9.9
370	0.1		480	5.2		590	19.7		700	8.8
375	0.1		485	5.5		595	20.4		705	7.7
380	0.1		490	6.2		600	21.2		710	6.8
385	0.1		495	7.1		605	22.0		715	5.9
390	0.1		500	8.2		610	22.8		720	5.1
395	0.2		505	9.4		615	23.4		725	4.5
400	0.2		510	10.6		620	23.9		730	3.9
405	0.2		515	11.6		625	24.1		735	3.3
410	0.3		520	12.5		630	24.1		740	2.9
415	0.5		525	13.3		635	23.9		745	2.5
420	0.8		530	14.1		640	23.4		750	2.2
425	1.3		535	14.8		645	22.6		755	1.9
430	2.0		540	15.3		650	21.7		760	1.6
435	3.0		545	15.9		655	20.5		765	1.4
440	4.6		550	16.3		660	19.2		770	1.2
445	7.2		555	16.7		665	17.9		775	1.0
450	11.0		560	17.0		670	16.5		780	0.9
455	12.8		565	17.3		675	15.1		---	---

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	WT310E	CHI0664	3/30/2022	3/30/2023
2	Omega Thermometer	DPI8-C24	146920	10/4/2021	10/4/2022
3	LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
4	Newport Thermohygrometer	iServer	CHI0452	2/3/2022	2/3/2023
5	Chroma Power Supply	61604	CHI0371	VBU	VBU
8	Newport Humidity Recorder	iServer	146961	9/21/2021	9/21/2022
9	Labsphere Spectroradiometer	CDS2600	CHI0539	VBU	VBU
10	3 Meter Sphere	SPR600	CHI0088	VBU	VBU
11	Elgar AC Power Supply	CW1251	146112	VBU	VBU
12	Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
13	Yokogawa Power Meter	WT1600	146769	4/5/2022	4/5/2023
17	Omega thermometer	USB TC08	EQAH002615	4/5/2022	4/5/2023
26	Xitron Power Analyzer	XT-2640	CHI0611	7/6/2022	7/6/2023

Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

**REVISION HISTORY**

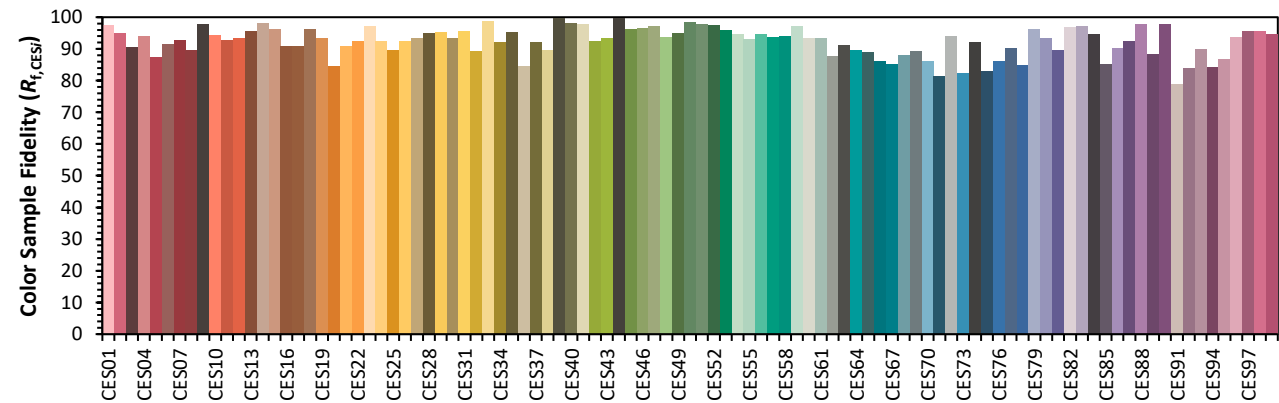
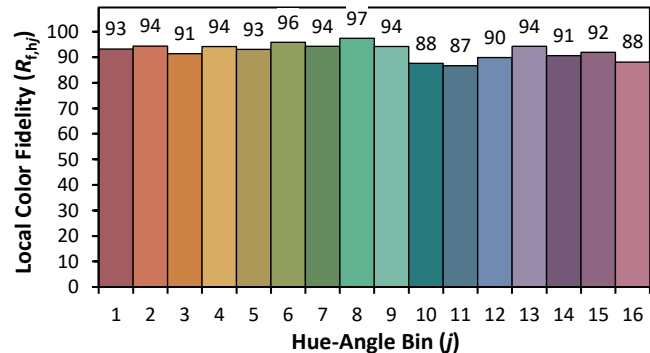
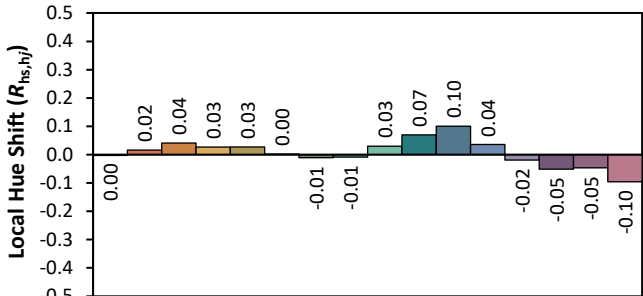
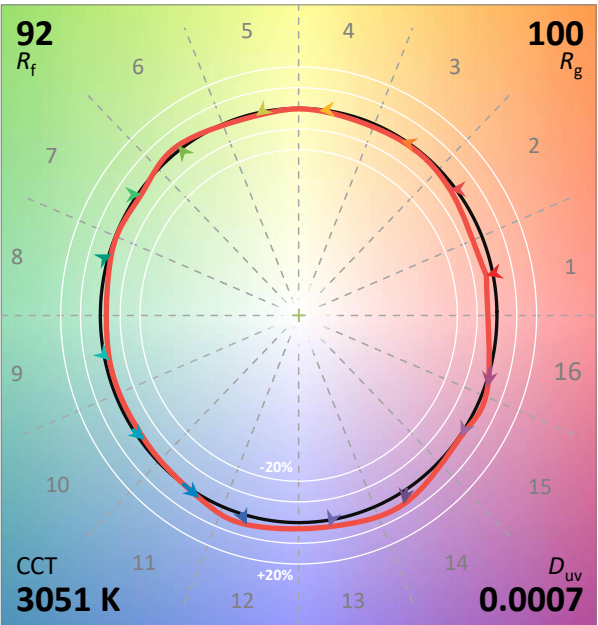
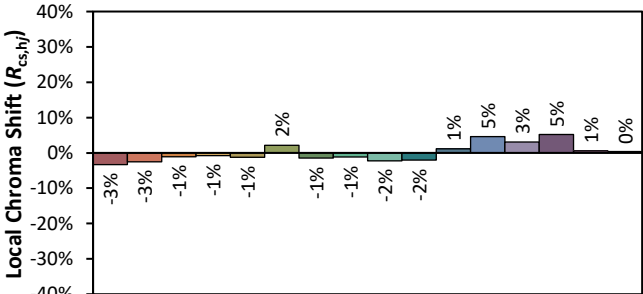
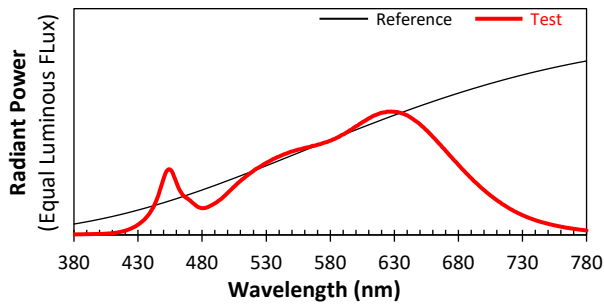
#	Revision Date	Updated By	Reviewed By	Description of Change
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Test Configuration	Tested Model No.	Pass/Fail/NA
10	EC3RS-199WD314DN-UNV-W	NA

ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD  
Date: 9/15/2022

Manufacturer: VISUAL COMFORT AND COMPANY  
Model: EC3RS-199WD314DN-UNV-W



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

x 0.4343  
y 0.4049  
u' 0.2486  
v' 0.5213