

# VISUAL COMFORT AND COMPANY TEST REPORT

## SCOPE OF WORK

LED Performance Testing

## MODEL NUMBER

EC3RS-199306DN-UNV-W

## PROJECT NUMBER

G104941221

## REPORT NUMBER

104941221CHI-090

## ISSUE DATE

9/30/2022

## REVISED DATE

None

## TEST DATES

2022-09-02 through 2022-09-27.

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104941221CHI-090

**MODEL NUMBER(s)**

EC3RS-199306DN-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**

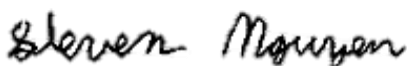
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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	EC3RS-199306DN-UNV-W	3" DOWNLIGHT LUMINAIRE	Production	8/25/2022

**TESTED SAMPLE CONFIGURATIONS**

Config No.	Tested Model No.	Item Nos. Utilized
1	EEC3RS-199306DN-UNV-W	1

**SAMPLE PHOTOS - TESTED CONFIGURATIONS**



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	EC3RS-199306DN-UNV-W
Product Description:	3" DOWNLIGHT LUMINAIRE
LED Model No.:	Bridgelux / BXRE-30G2000-C-81
Driver Model No.:	ERP / ESS030W-0500-42
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1652.5	1599.4
Input Power (W) @ 120VAC (Vac)	19.69	19.69
Lumen Efficacy (lm/W)	83.9	81.2
Input Power Factor (I) @ 120VAC (Vac)	0.986	0.990

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	11.33
Correlated Color Temperature (K)	3001
Color Rendering Index - Ra (I)	92.0
Color Rendering Index - R9 (I)	69.6
Duv (I)	-0.0013
Chromaticity Coordinate (x)	0.435
Chromaticity Coordinate (y)	0.400
Chromaticity Coordinate (u')	0.251
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	EC3RS-199306DN-UNV-W	NA

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

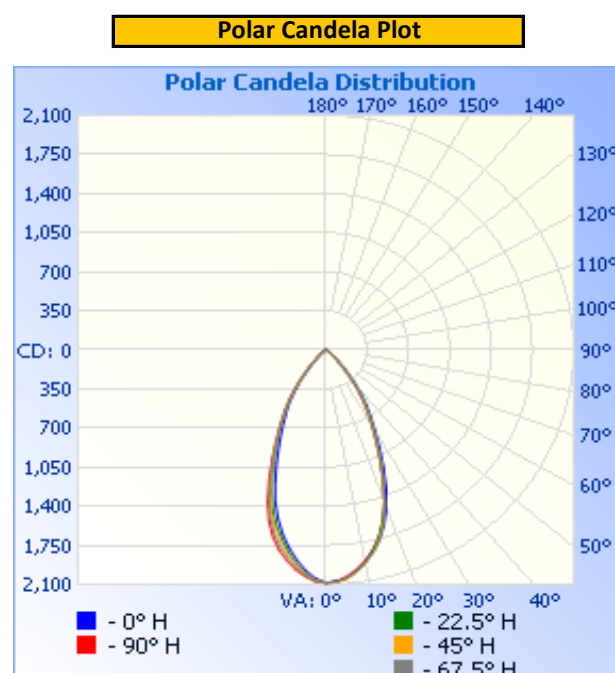
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	120.08	166.4	19.69	0.986

Light Output (lm)	Lumen Efficacy (lm/W)
1652.5	83.9

**INTENSITY SUMMARY - CANDELA**

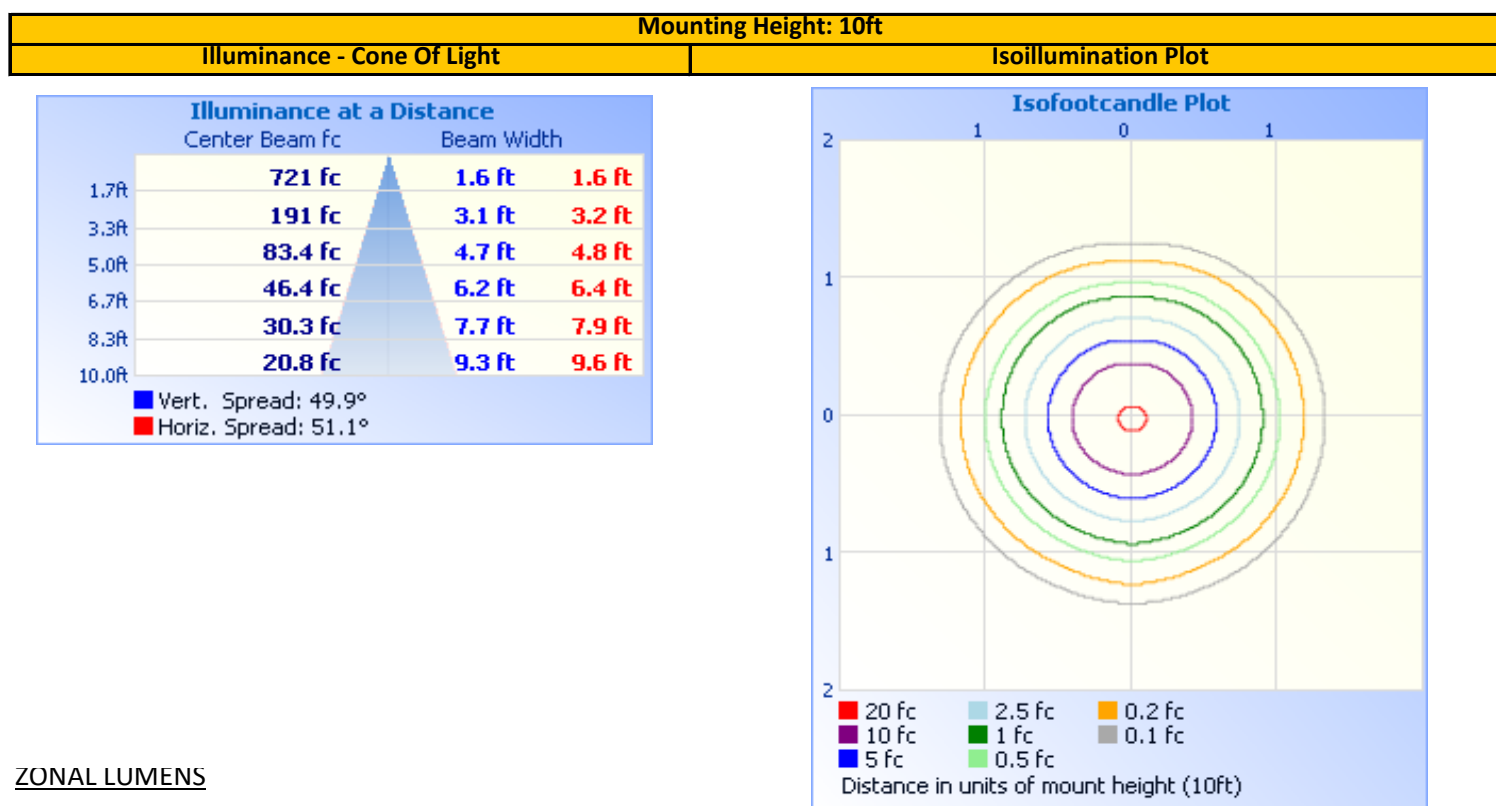
Angle	0	22.5	45	67.5	90
0	2084	2084	2084	2084	2084
5	2051	2053	2054	2044	2033
10	1925	1929	1936	1935	1913
15	1755	1733	1754	1762	1733
20	1501	1443	1463	1463	1444
25	1156	1098	1099	1099	1079
30	834	806	794	793	777
35	600	571	562	557	544
40	378	336	329	326	316
45	186	165	160	157	150
50	87	75	74	72	70
55	39	36	35	35	34
60	19	16	17	17	17
65	7	7	7	7	7
70	4	4	4	4	4
75	3	2	3	3	3
80	2	2	2	2	2
85	1	1	1	1	1
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	1,148.5	69.5%	0-10	189.1	11.4%
0-40	1,483.2	89.8%	10-20	469.8	28.4%
0-60	1,640.9	99.3%	20-30	489.6	29.6%
60-90	11.7	0.7%	30-40	334.7	20.3%
70-100	3.7	0.2%	40-50	125.5	7.6%
90-120	0.0	0.0%	50-60	32.2	1.9%
0-90	1,652.5	100.0%	60-70	8.0	0.5%
90-180	0.0	0.0%	70-80	2.8	0.2%
0-180	1,652.5	100.0%	80-90	0.8	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
1	EC3RS-199306DN-UNV-W	NA

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

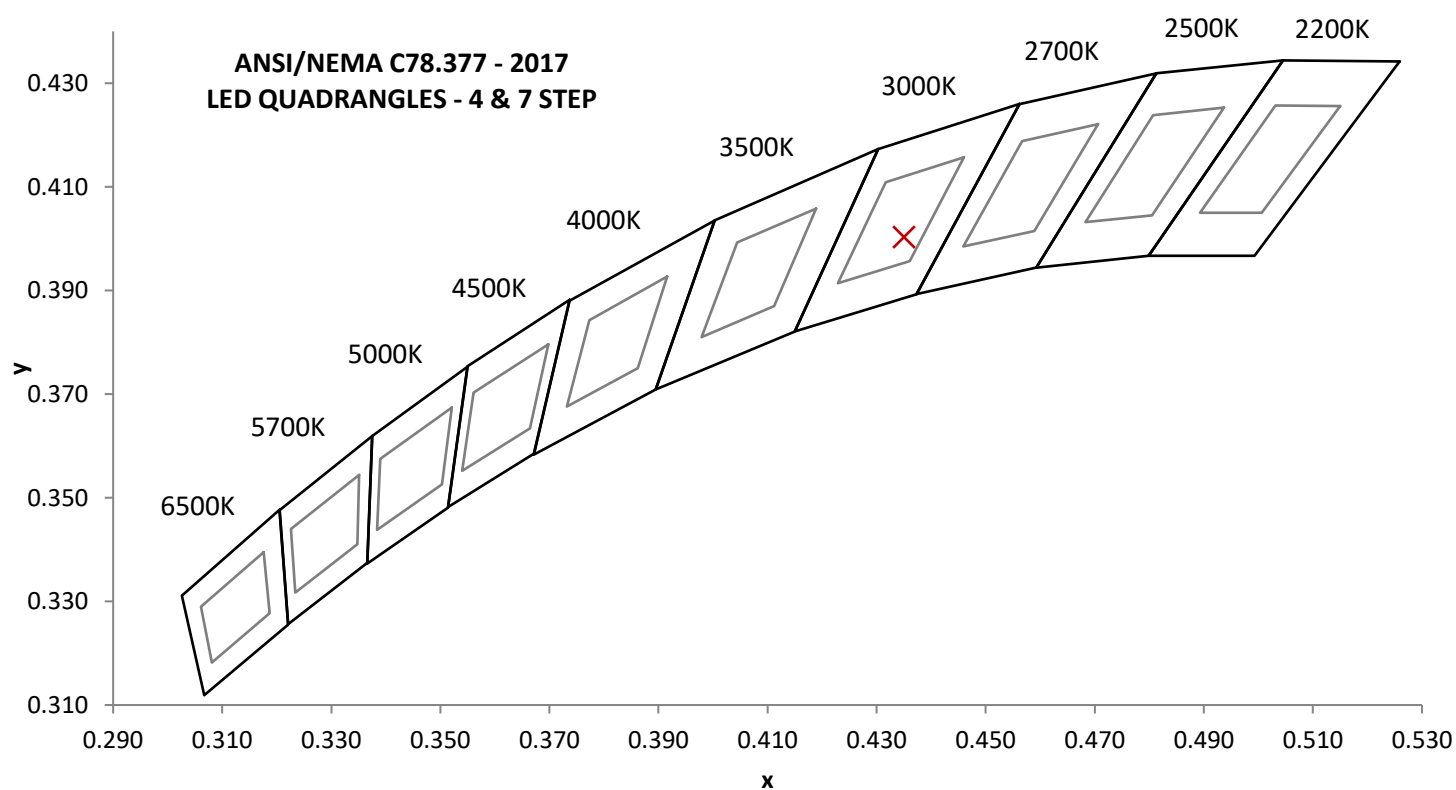
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
120.01	165.7	19.69	0.990	11.33

## Measured at 120.01(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
1599.4	81.2	3001	92.0	69.6

Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0013	0.435	0.400	0.251	0.520

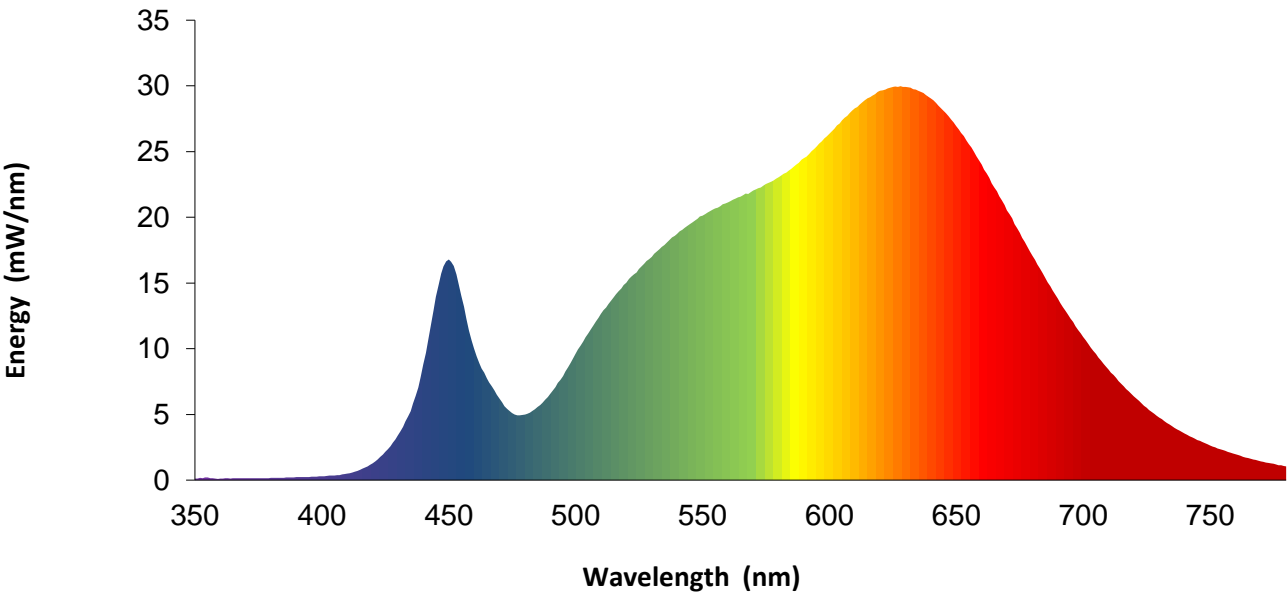


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	10.0		570	22.0		680	17.1
355	0.2		465	7.7		575	22.5		685	15.4
360	0.1		470	6.2		580	23.0		690	13.8
365	0.1		475	5.1		585	23.7		695	12.3
370	0.1		480	5.0		590	24.5		700	10.9
375	0.2		485	5.6		595	25.4		705	9.6
380	0.2		490	6.6		600	26.4		710	8.4
385	0.2		495	7.9		605	27.4		715	7.3
390	0.2		500	9.6		610	28.3		720	6.4
395	0.2		505	11.2		615	29.0		725	5.5
400	0.3		510	12.6		620	29.6		730	4.8
405	0.4		515	13.9		625	29.9		735	4.1
410	0.5		520	15.0		630	29.9		740	3.6
415	0.8		525	16.1		635	29.6		745	3.1
420	1.3		530	17.0		640	29.1		750	2.6
425	2.1		535	17.9		645	28.1		755	2.3
430	3.4		540	18.7		650	26.9		760	2.0
435	5.2		545	19.5		655	25.6		765	1.7
440	8.8		550	20.1		660	24.0		770	1.4
445	13.9		555	20.7		665	22.3		775	1.2
450	16.8		560	21.1		670	20.5		780	1.0
455	14.0		565	21.6		675	18.8		---	---

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

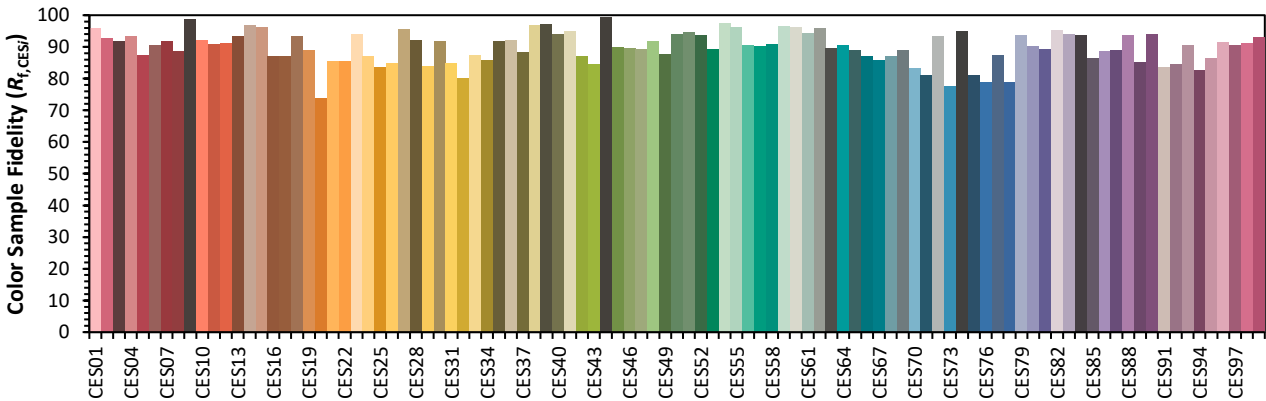
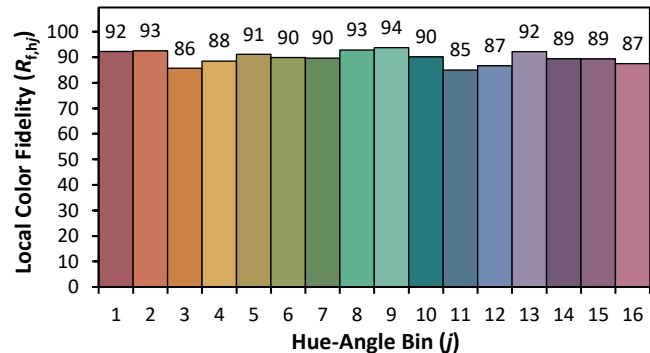
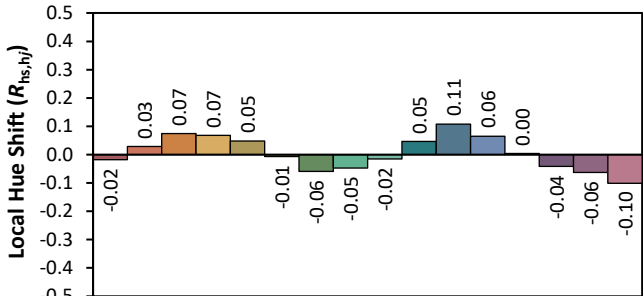
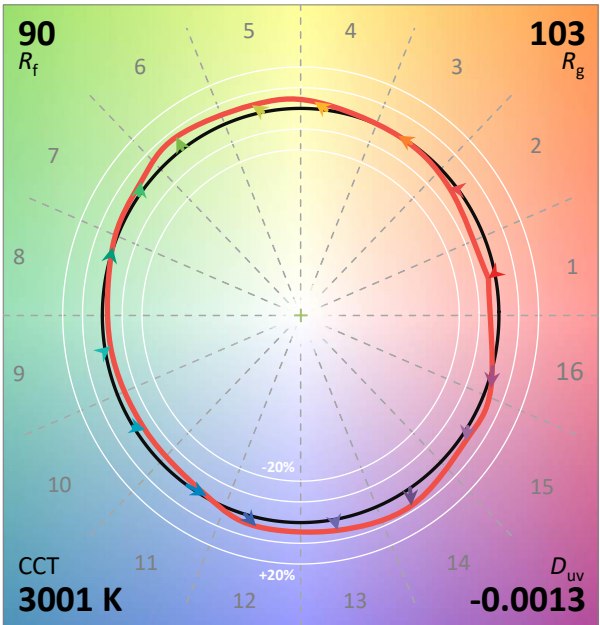
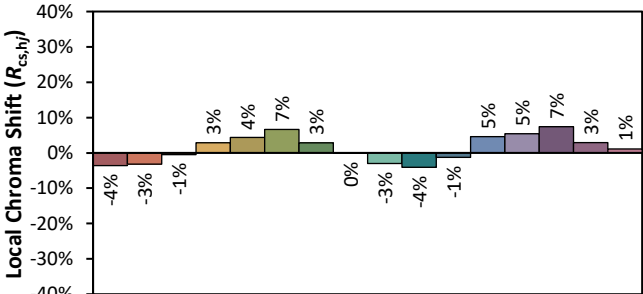
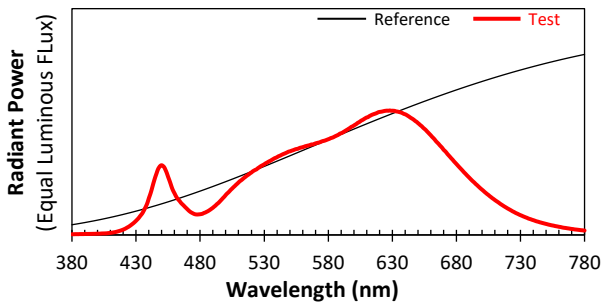
**REVISION HISTORY**

#	Revision Date	Updated By	Reviewed By	Description of Change
---	None	---	---	---
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	EC3RS-199306DN-UNV-W	NA

ANSI/IES TM-30-18 Color Rendition Report

Source:	User SPD	Manufacturer:	VISUAL COMFORT AND COMPANY
Date:	9/2/2022	Model:	EC3RS-199306DN-UNV-W



Notes:	This is a recommended method for displaying ANSI/IES TM-30-18 information.	x	0.4350
		y	0.4002
		u'	0.2510
		v'	0.5196