

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

EC3RS-199303DN-UNV-W

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CHI-087

ISSUE DATE

9/30/2022

REVISED DATE

None

TEST DATES

2022-09-29.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CHI-087

MODEL NUMBER(s)

EC3RS-199303DN-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

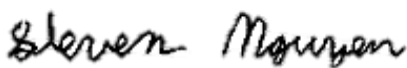
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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:



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Reviewer:



Jeff Davis
N.A. Technical Lead
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SAMPLE INFORMATION

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH08252022081536	EC3RS-199303DN-UNV-W	3" DOWNLIGHT LUMINAIRE	Production	8/25/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	EC3RS-199303DN-UNV-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	EC3RS-199303DN-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)	1702.5	1693.5
Input Power (W) @ 120VAC (Vac)	19.70	19.70
Lumen Efficacy (lm/W)	86.4	86.0
Input Power Factor (I) @ 120VAC (Vac)	0.986	0.990

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	11.45
Correlated Color Temperature (K)	3036
Color Rendering Index - Ra (I)	91.7
Color Rendering Index - R9 (I)	69.4
Duv (I)	-0.0009
Chromaticity Coordinate (x)	0.433
Chromaticity Coordinate (y)	0.401
Chromaticity Coordinate (u')	0.250
Chromaticity Coordinate (v')	0.519

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-199303DN-UNV-W	NA

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

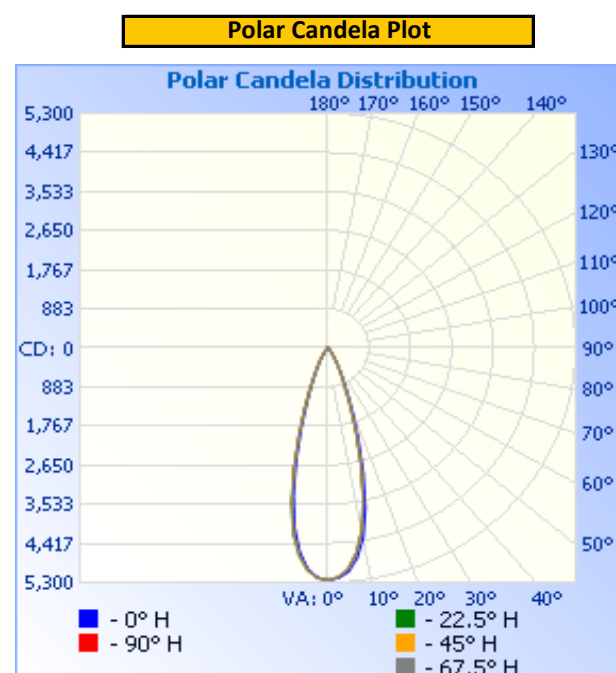
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	119.98	166.6	19.70	0.986

Light Output (lm)	Lumen Efficacy (lm/W)
1702.5	86.4

INTENSITY SUMMARY - CANDELA

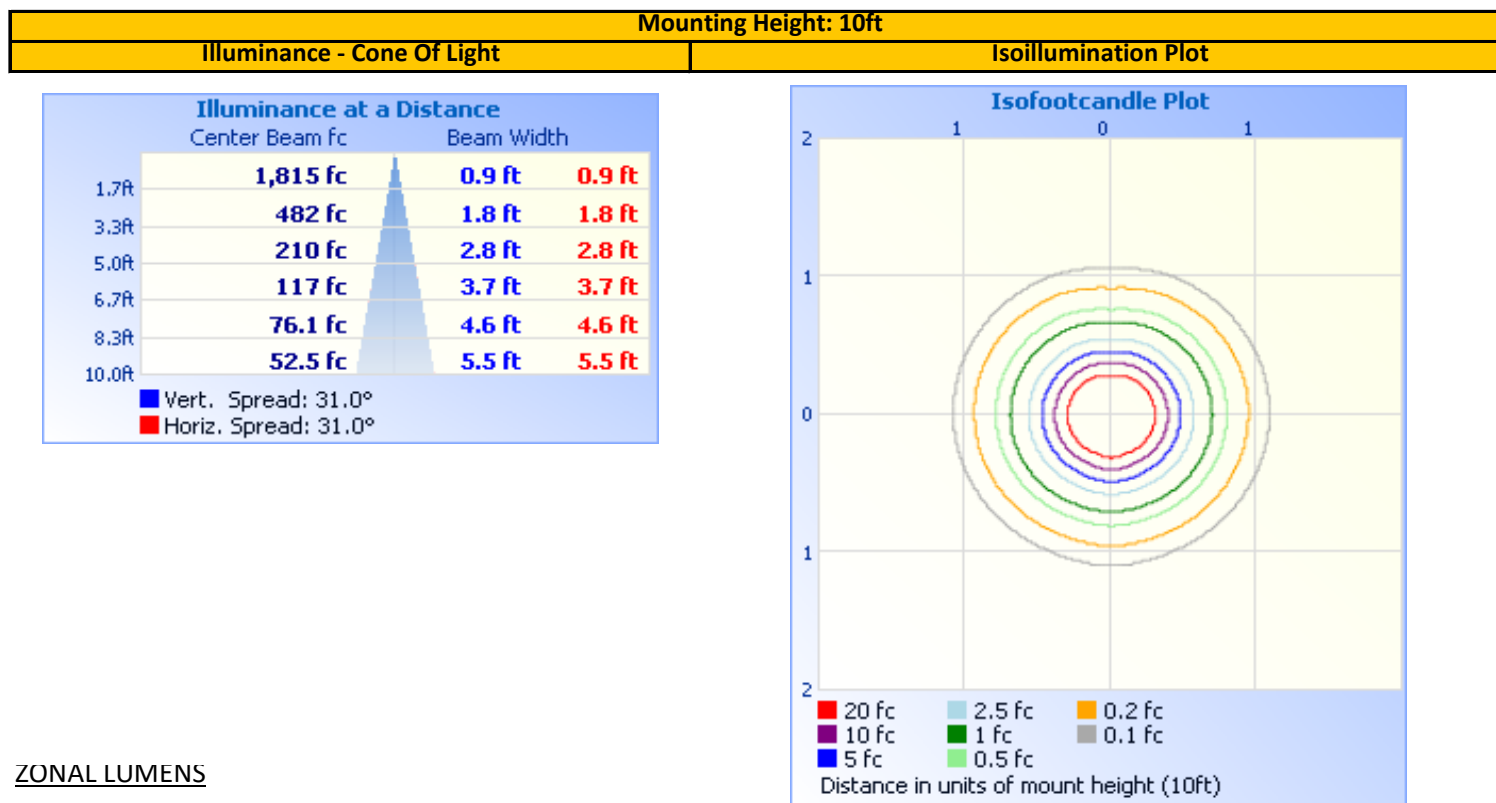
Angle	0	22.5	45	67.5	90
0	5246	5246	5246	5246	5246
5	5080	4997	4988	5001	5010
10	4357	4162	4166	4177	4194
15	2941	2710	2715	2744	2768
20	1556	1394	1408	1427	1456
25	765	686	686	699	709
30	379	344	342	350	350
35	184	167	169	170	171
40	84	76	77	78	79
45	43	40	40	40	41
50	23	20	20	21	22
55	11	10	10	11	11
60	8	8	8	8	8
65	6	5	6	6	6
70	3	2	2	3	3
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	1,537.4	90.3%	0-10	451.8	26.5%
0-40	1,650.3	96.9%	10-20	744.4	43.7%
0-60	1,695.0	99.6%	20-30	341.2	20.0%
60-90	7.6	0.4%	30-40	112.9	6.6%
70-100	2.3	0.1%	40-50	34.0	2.0%
90-120	0.0	0.0%	50-60	10.7	0.6%
0-90	1,702.5	100.0%	60-70	5.3	0.3%
90-180	0.0	0.0%	70-80	1.8	0.1%
0-180	1,702.5	100.0%	80-90	0.5	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-199303DN-UNV-W	NA

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

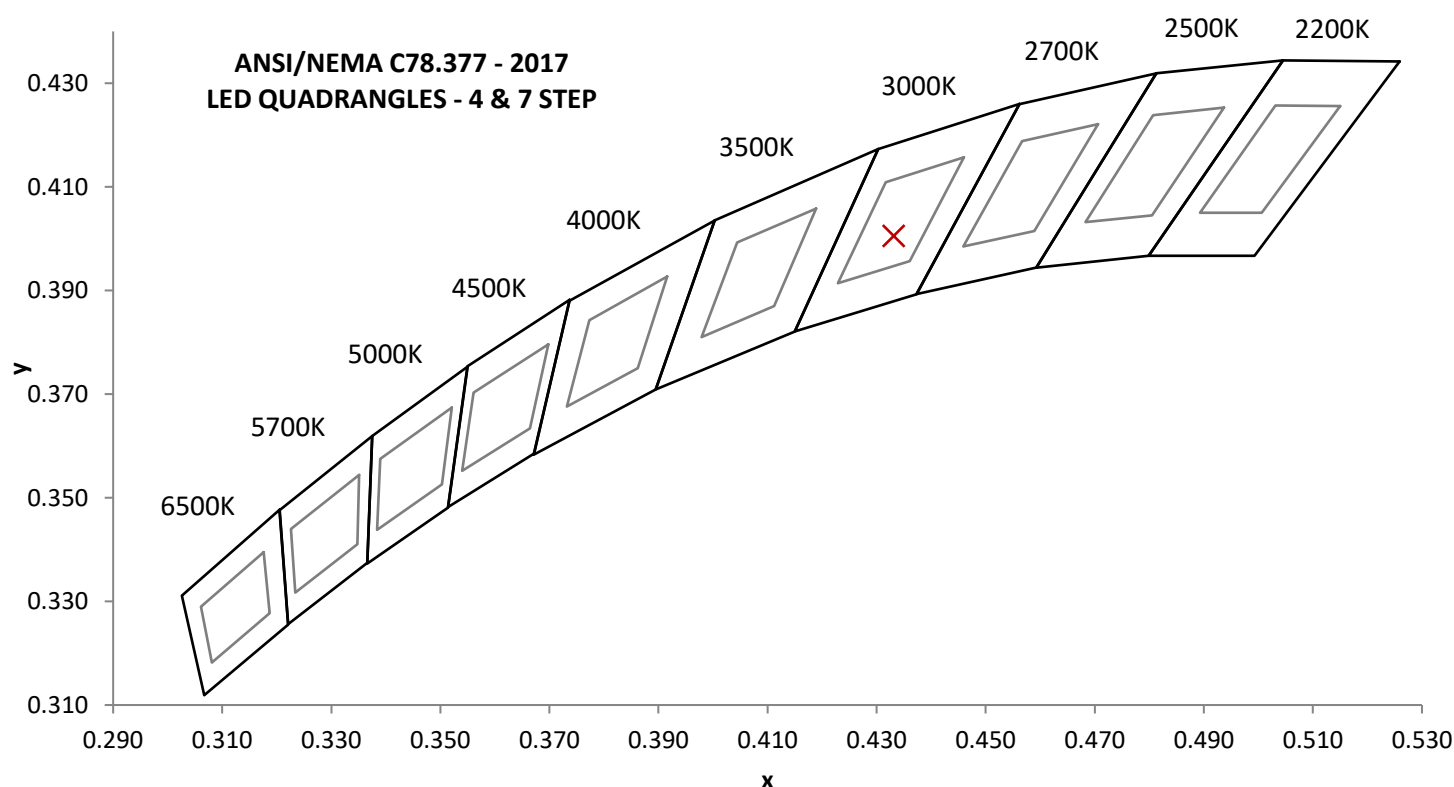
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
119.97	165.8	19.70	0.990	11.45

Measured at 119.97(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
1693.5	86.0	3036	91.7	69.4

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0009	0.433	0.401	0.250	0.519

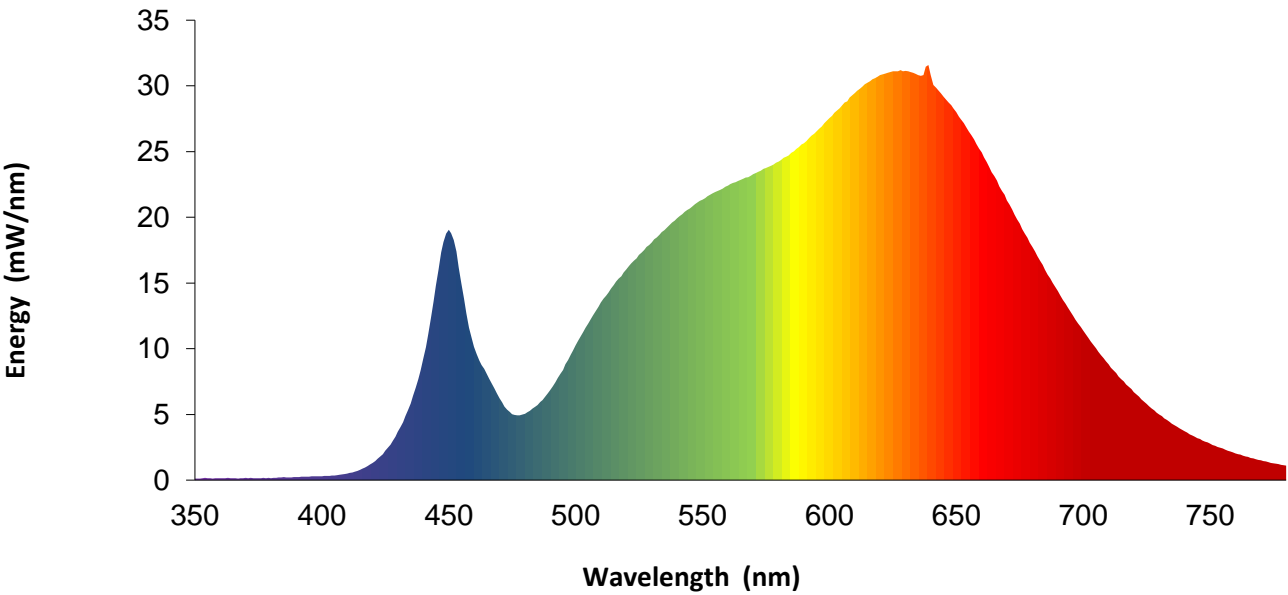


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	10.2		570	23.3		680	17.7
355	0.1		465	8.0		575	23.8		685	16.0
360	0.1		470	6.2		580	24.3		690	14.4
365	0.1		475	5.0		585	24.9		695	12.8
370	0.2		480	5.1		590	25.6		700	11.4
375	0.2		485	5.7		595	26.6		705	10.0
380	0.2		490	6.8		600	27.5		710	8.8
385	0.2		495	8.4		605	28.5		715	7.7
390	0.2		500	10.3		610	29.5		720	6.7
395	0.3		505	11.9		615	30.2		725	5.8
400	0.3		510	13.5		620	30.8		730	5.0
405	0.4		515	14.8		625	31.1		735	4.3
410	0.5		520	16.0		630	31.1		740	3.7
415	0.8		525	17.1		635	30.8		745	3.2
420	1.3		530	18.1		640	30.8		750	2.8
425	2.2		535	19.0		645	29.2		755	2.4
430	3.7		540	19.9		650	28.0		760	2.0
435	5.8		545	20.7		655	26.5		765	1.8
440	9.3		550	21.3		660	24.9		770	1.5
445	14.8		555	21.9		665	23.1		775	1.3
450	19.0		560	22.4		670	21.3		780	1.1
455	15.0		565	22.8		675	19.5		---	---

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

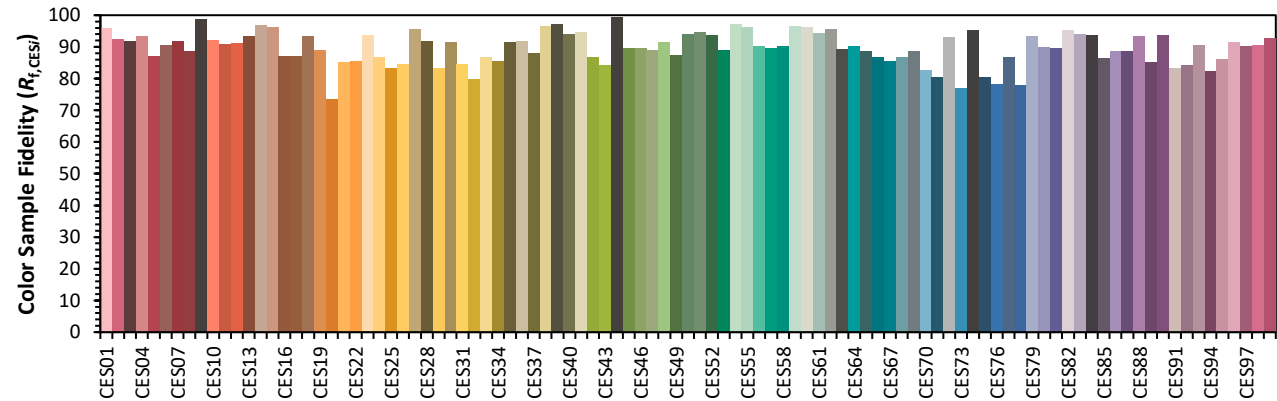
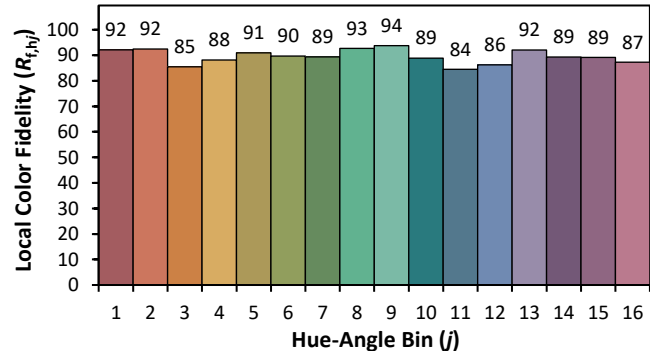
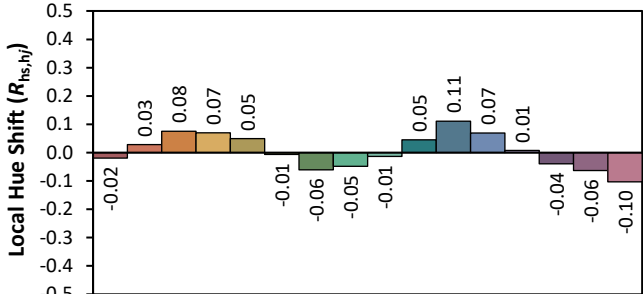
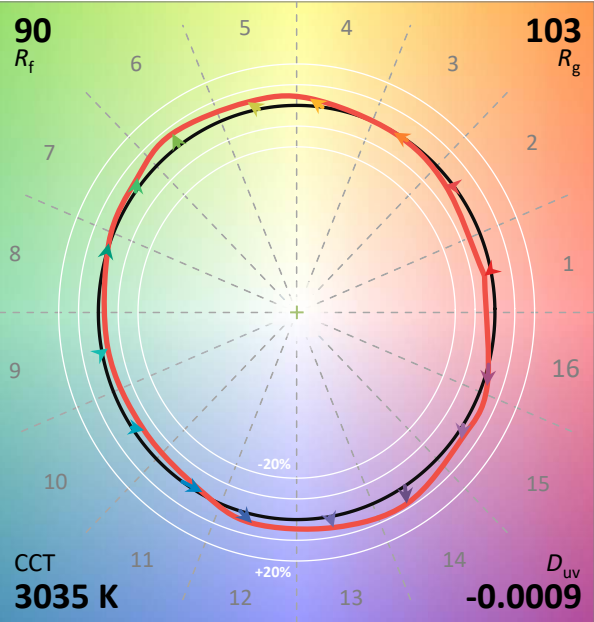
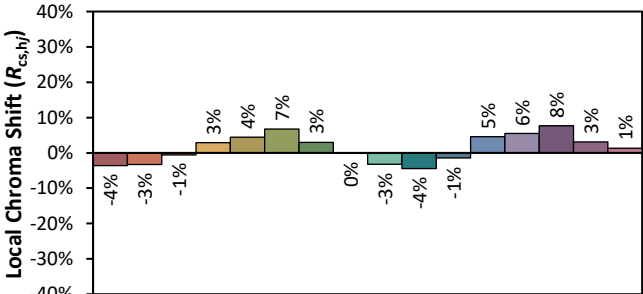
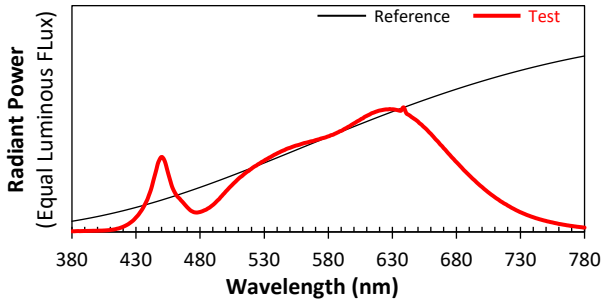
#	Revision Date	Updated By	Reviewed By	Description of Change
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	EC3RS-199303DN-UNV-W	NA

ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD
Date: 9/29/2022

Manufacturer: VISUAL COMFORT AND COMPANY
Model: EC3RS-199303DN-UNV-W



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

x 0.4331
y 0.4005
u' 0.2497
v' 0.5194