

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

EC3RS-19930W-UNV-W

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CHI-093

ISSUE DATE

9/30/2022

REVISED DATE

None

TEST DATES

2022-08-29 through 2022-09-27.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CHI-093

MODEL NUMBER(s)

EC3RS-19930W-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

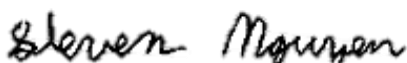
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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	AH08252022081536-03	EC3RS-19930W-UNV-W	3" WALL WASH LUMINAIRE	Production	8/25/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	EC3RS-19930W-UNV-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	EC3RS-19930W-UNV-W
Product Description:	3" WALL WASH LUMINAIRE
LED Model No.:	Bridgelux / BXRE-30G1000-C-81
Driver Model No.:	ERP / ESS030W-0500-42
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1189.0	1229.3
Input Power (W) @ 120VAC (Vac)	18.52	18.53
Lumen Efficacy (lm/W)	64.2	66.3
Input Power Factor (I) @ 120VAC (Vac)	0.983	0.988

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	12.88
Correlated Color Temperature (K)	2948
Color Rendering Index - Ra (I)	92.1
Color Rendering Index - R9 (I)	71.0
Duv (I)	-0.0006
Chromaticity Coordinate (x)	0.440
Chromaticity Coordinate (y)	0.403
Chromaticity Coordinate (u')	0.253
Chromaticity Coordinate (v')	0.522

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-19930W-UNV-W	NA

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

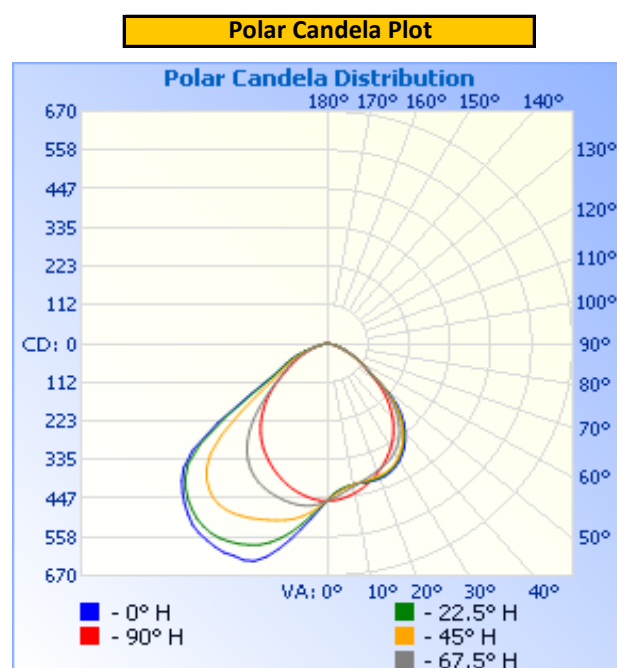
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.08	157.0	18.52	0.983

Light Output (lm)	Lumen Efficacy (lm/W)
1189.0	64.2

INTENSITY SUMMARY - CANDELA

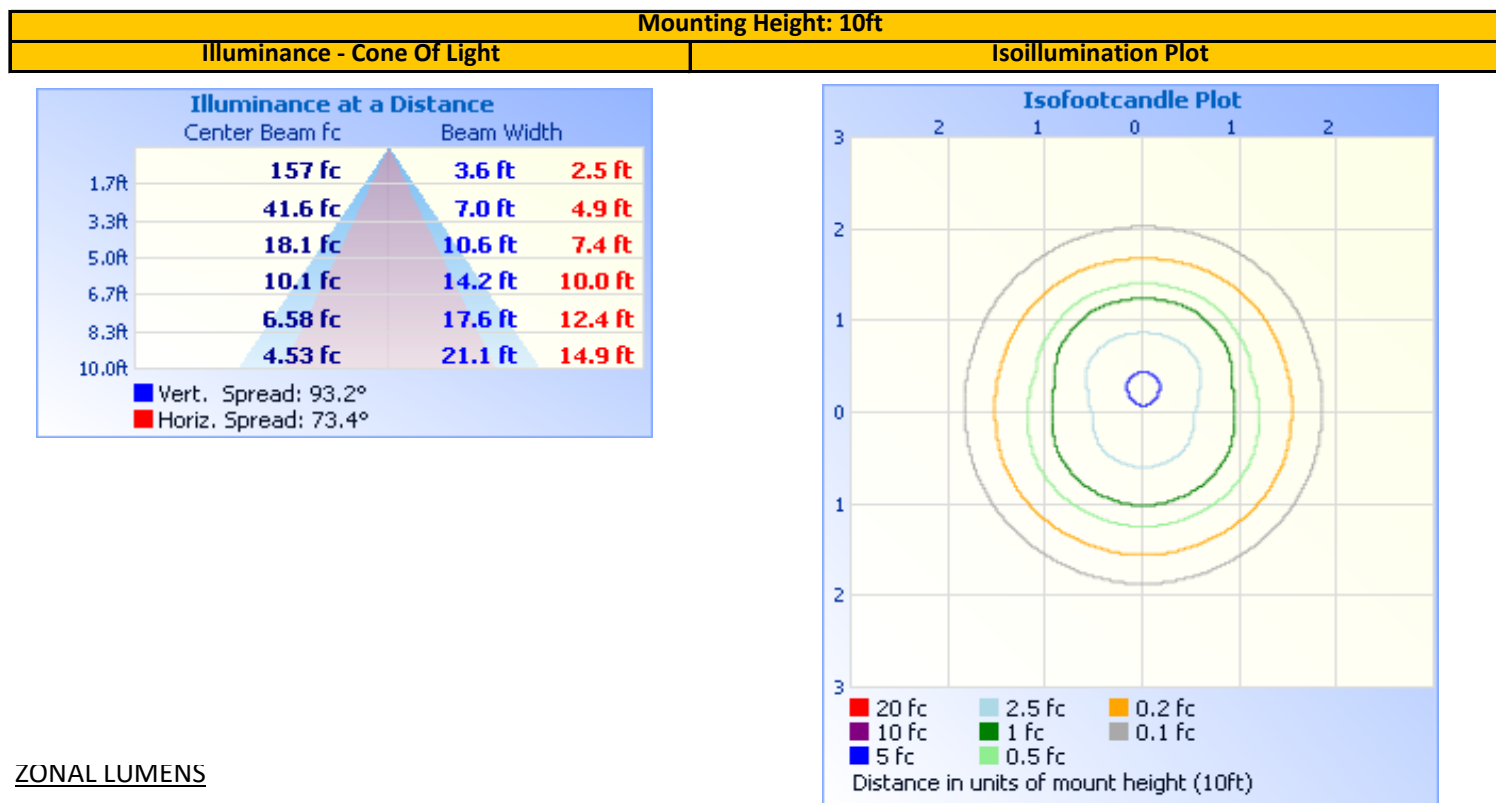
Angle	0	22.5	45	67.5	90
0	453	453	453	453	453
5	422	423	427	436	450
10	413	413	413	419	438
15	414	413	409	405	421
20	416	413	408	393	399
25	409	405	402	382	375
30	392	388	385	366	348
35	367	361	358	340	316
40	331	325	321	305	278
45	286	278	274	261	235
50	220	211	211	203	185
55	140	139	143	141	135
60	106	103	102	100	99
65	74	71	70	70	70
70	50	48	45	43	43
75	34	32	30	27	23
80	21	19	17	16	13
85	10	9	8	7	6
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	391.3	32.9%	0-10	43.9	3.7%
0-40	657.4	55.3%	10-20	133.1	11.2%
0-60	1,071.4	90.1%	20-30	214.3	18.0%
60-90	117.5	9.9%	30-40	266.1	22.4%
70-100	37.3	3.1%	40-50	258.8	21.8%
90-120	0.0	0.0%	50-60	155.3	13.1%
0-90	1,189.0	100.0%	60-70	80.3	6.8%
90-180	0.0	0.0%	70-80	30.2	2.5%
0-180	1,189.0	100.0%	80-90	7.1	0.6%
			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-19930W-UNV-W	NA

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

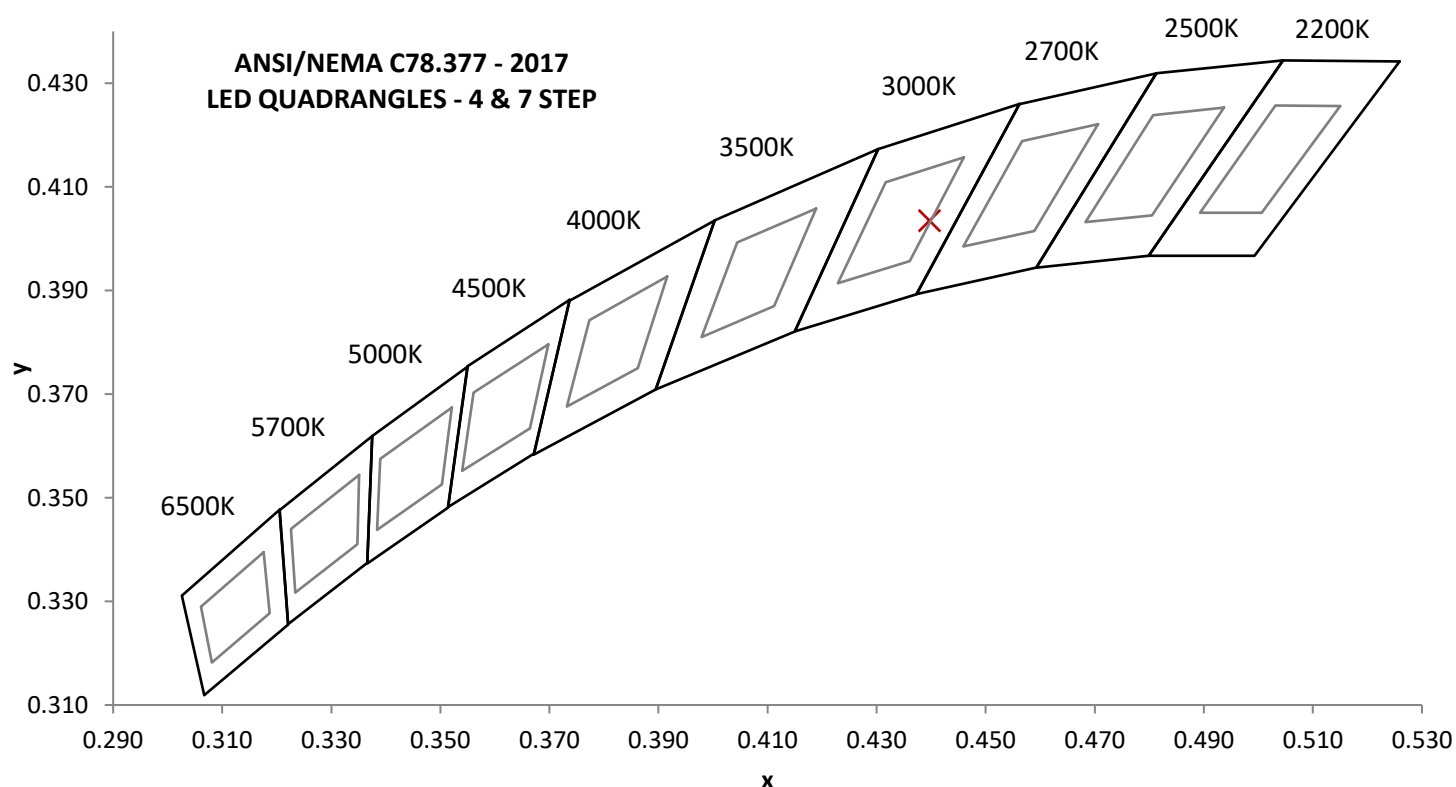
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.01	156.2	18.53	0.988	12.88

Measured at 120.01(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
1229.3	66.3	2948	92.1	71.0

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0006	0.440	0.403	0.253	0.522

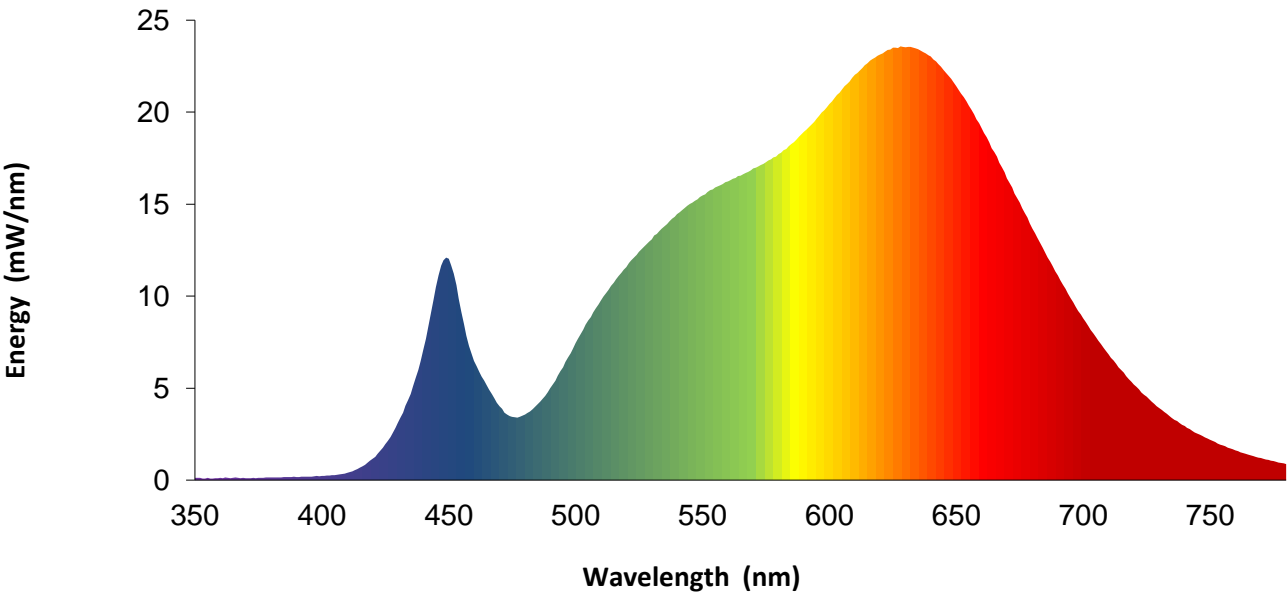


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	6.5		570	16.9		680	13.7
355	0.1		465	5.1		575	17.3		685	12.4
360	0.1		470	4.0		580	17.7		690	11.1
365	0.1		475	3.4		585	18.3		695	9.9
370	0.1		480	3.6		590	18.9		700	8.8
375	0.1		485	4.1		595	19.6		705	7.8
380	0.1		490	5.0		600	20.4		710	6.8
385	0.2		495	6.1		605	21.2		715	6.0
390	0.2		500	7.5		610	22.0		720	5.2
395	0.2		505	8.7		615	22.6		725	4.5
400	0.2		510	9.8		620	23.1		730	3.9
405	0.3		515	10.7		625	23.5		735	3.4
410	0.4		520	11.6		630	23.5		740	2.9
415	0.7		525	12.4		635	23.4		745	2.5
420	1.2		530	13.1		640	23.0		750	2.2
425	1.9		535	13.8		645	22.3		755	1.9
430	3.1		540	14.5		650	21.4		760	1.6
435	4.7		545	15.0		655	20.4		765	1.4
440	7.1		550	15.5		660	19.1		770	1.2
445	10.5		555	15.9		665	17.8		775	1.0
450	12.0		560	16.2		670	16.4		780	0.9
455	9.1		565	16.6		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

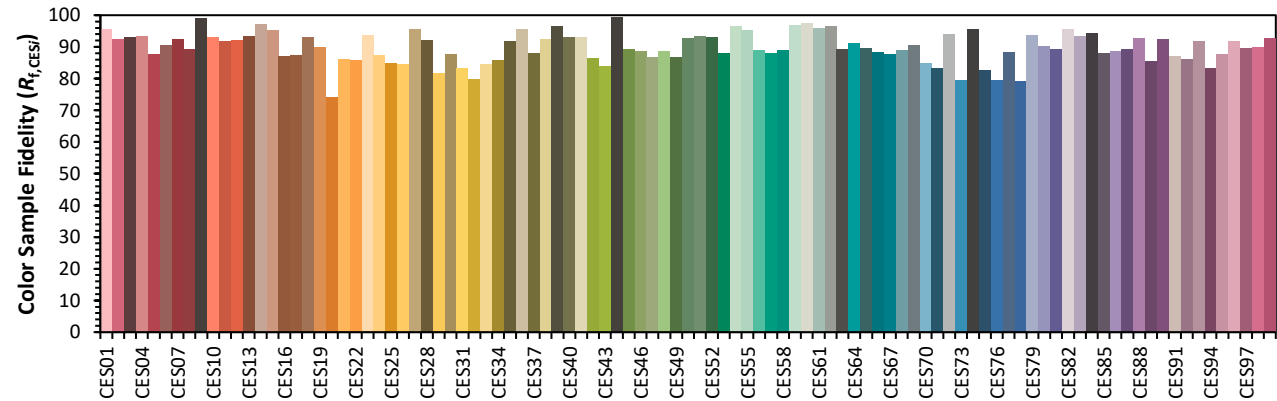
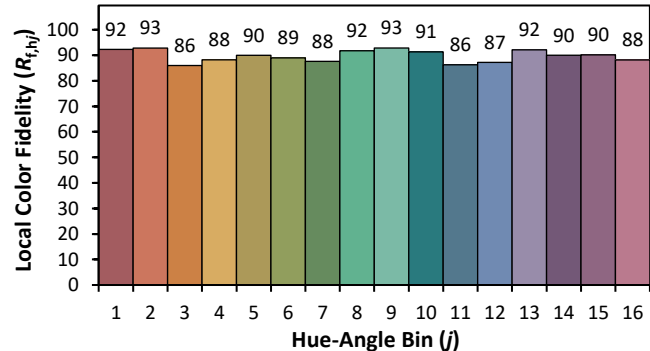
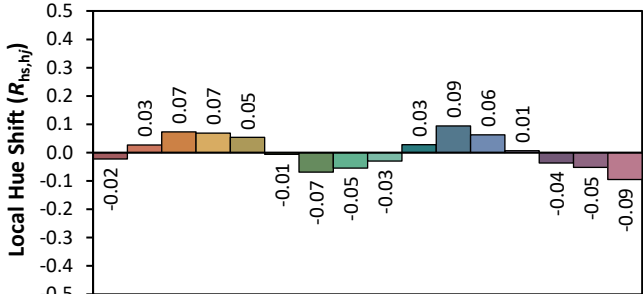
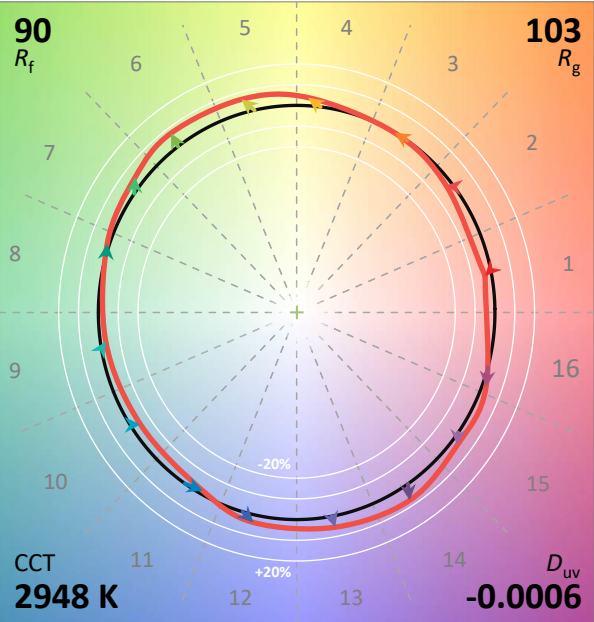
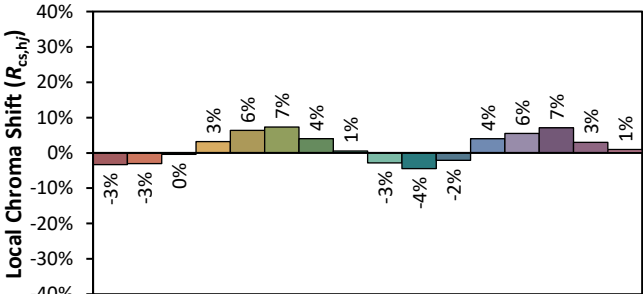
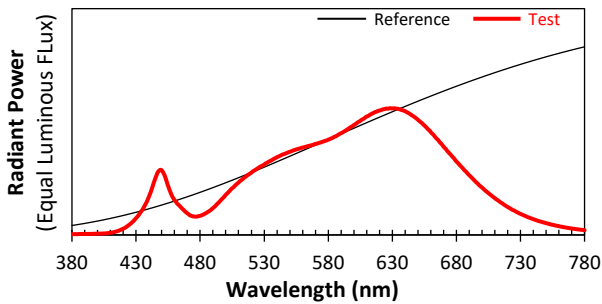
#	Revision Date	Updated By	Reviewed By	Description of Change
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	EC3RS-19930W-UNV-W	NA

ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD
Date: 8/29/2022

Manufacturer: VISUAL COMFORT AND COMPANY
Model: EC3RS-19930W-UNV-W



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

x 0.4397
y 0.4034
u' 0.2527
v' 0.5215