

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

EC3RS-199274DN-UNV-W

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CHI-085

ISSUE DATE

9/30/2022

REVISED DATE

None

TEST DATES

2022-09-02 through 2022-09-28.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CHI-085

MODEL NUMBER(s)

EC3RS-199274DN-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

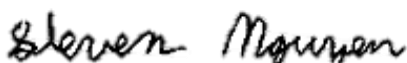
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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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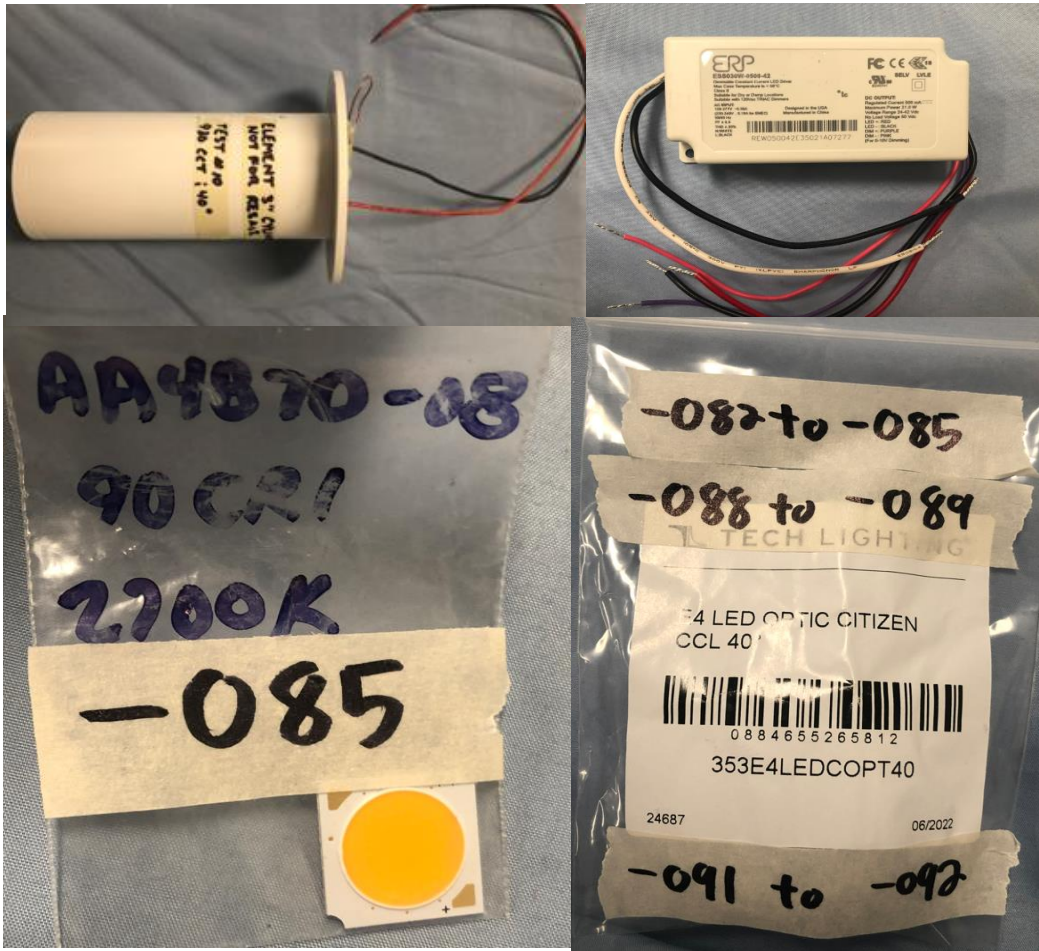
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH08252022081536	EC3RS-199274DN-UNV-W	3" DOWNLIGHT LUMINAIRE	Production	8/25/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	EC3RS-199274DN-UNV-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	EC3RS-199274DN-UNV-W
Product Description:	3" DOWNLIGHT LUMINAIRE
LED Model No.:	Bridgelux / BXRE-27G2000-C-81
Driver Model No.:	ERP / ESS030W-0500-42
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1760.3	1730.4
Input Power (W) @ 120VAC (Vac)	19.64	19.65
Lumen Efficacy (lm/W)	89.6	88.1
Input Power Factor (I) @ 120VAC (Vac)	0.986	0.991

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	11.45
Correlated Color Temperature (K)	2688
Color Rendering Index - Ra (I)	91.4
Color Rendering Index - R9 (I)	65.0
Duv (I)	-0.0003
Chromaticity Coordinate (x)	0.460
Chromaticity Coordinate (y)	0.410
Chromaticity Coordinate (u')	0.263
Chromaticity Coordinate (v')	0.527

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-199274DN-UNV-W	NA

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

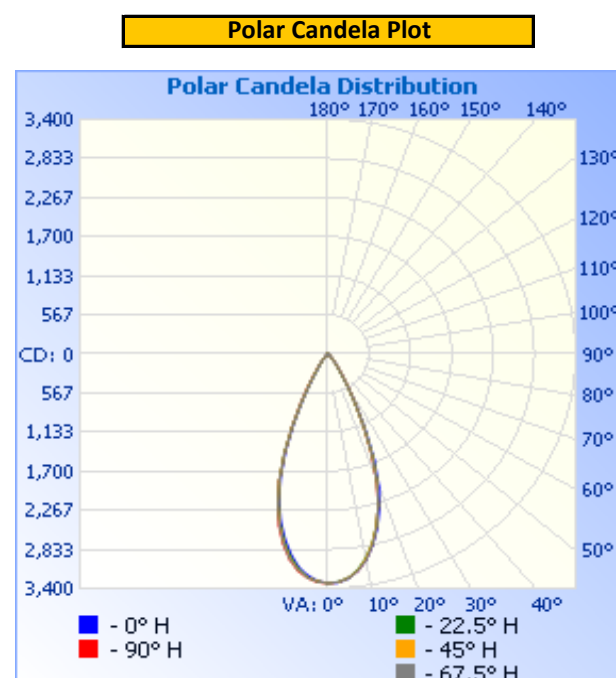
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.08	166.0	19.64	0.986

Light Output (lm)	Lumen Efficacy (lm/W)
1760.3	89.6

INTENSITY SUMMARY - CANDELA

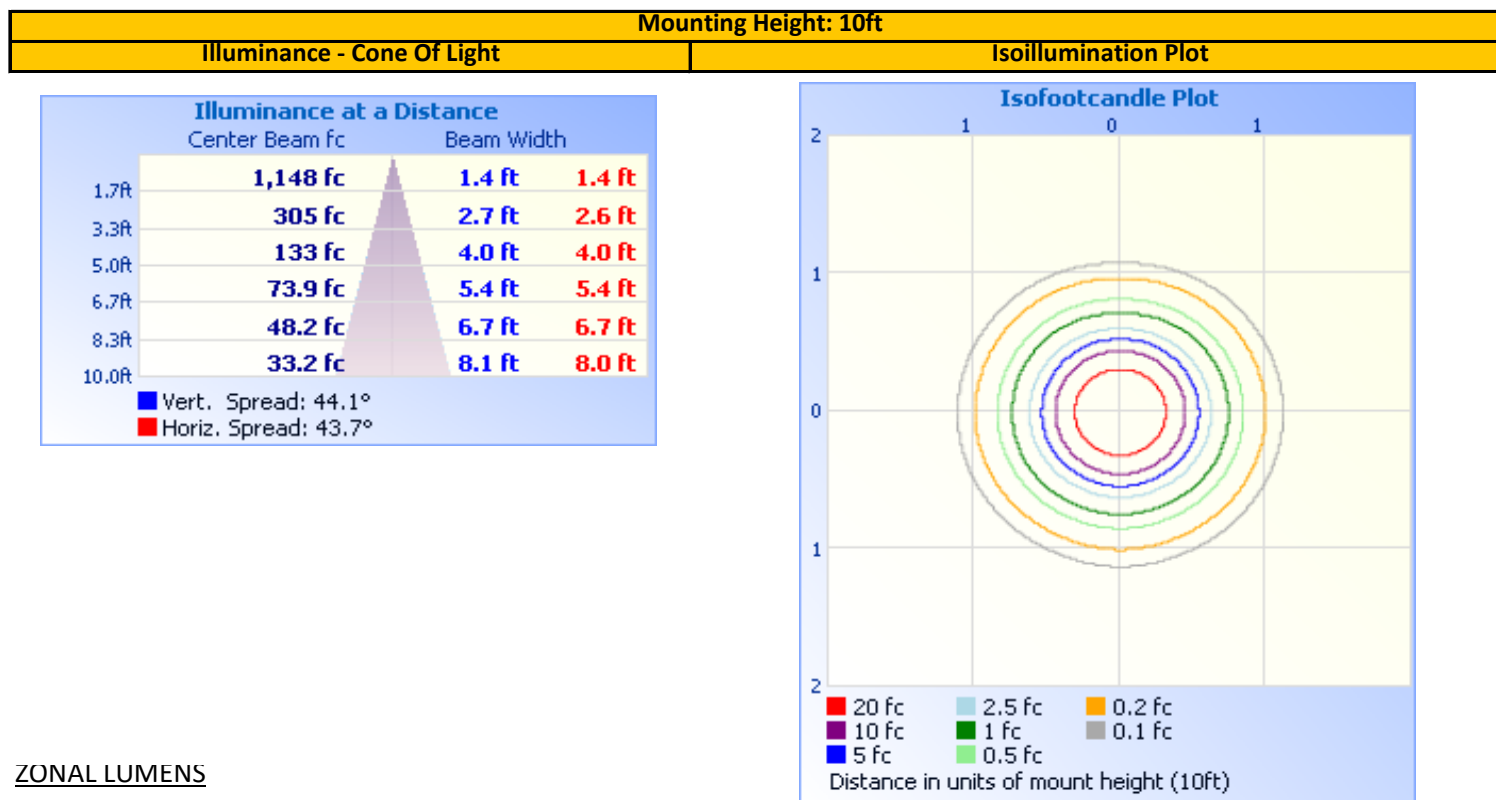
Angle	0	22.5	45	67.5	90
0	3318	3318	3318	3318	3318
5	3266	3254	3259	3261	3254
10	3024	3002	3006	3029	3023
15	2614	2573	2580	2592	2587
20	2044	1983	1978	1965	1956
25	1230	1183	1178	1176	1158
30	561	537	551	563	562
35	244	235	243	246	240
40	118	113	115	116	114
45	57	54	55	56	55
50	25	23	23	23	23
55	9	9	9	10	10
60	7	6	6	7	6
65	4	4	4	4	4
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	1,538.0	87.4%	0-10	302.0	17.2%
0-40	1,700.4	96.6%	10-20	702.4	39.9%
0-60	1,754.2	99.7%	20-30	533.5	30.3%
60-90	6.1	0.3%	30-40	162.4	9.2%
70-100	2.1	0.1%	40-50	44.2	2.5%
90-120	0.0	0.0%	50-60	9.6	0.5%
0-90	1,760.3	100.0%	60-70	4.1	0.2%
90-180	0.0	0.0%	70-80	1.6	0.1%
0-180	1,760.3	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

REPORT NO. 104941221CHI-085

Test Configuration	Tested Model No.	Pass/Fail/NA
1	EC3RS-199274DN-UNV-W	NA

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

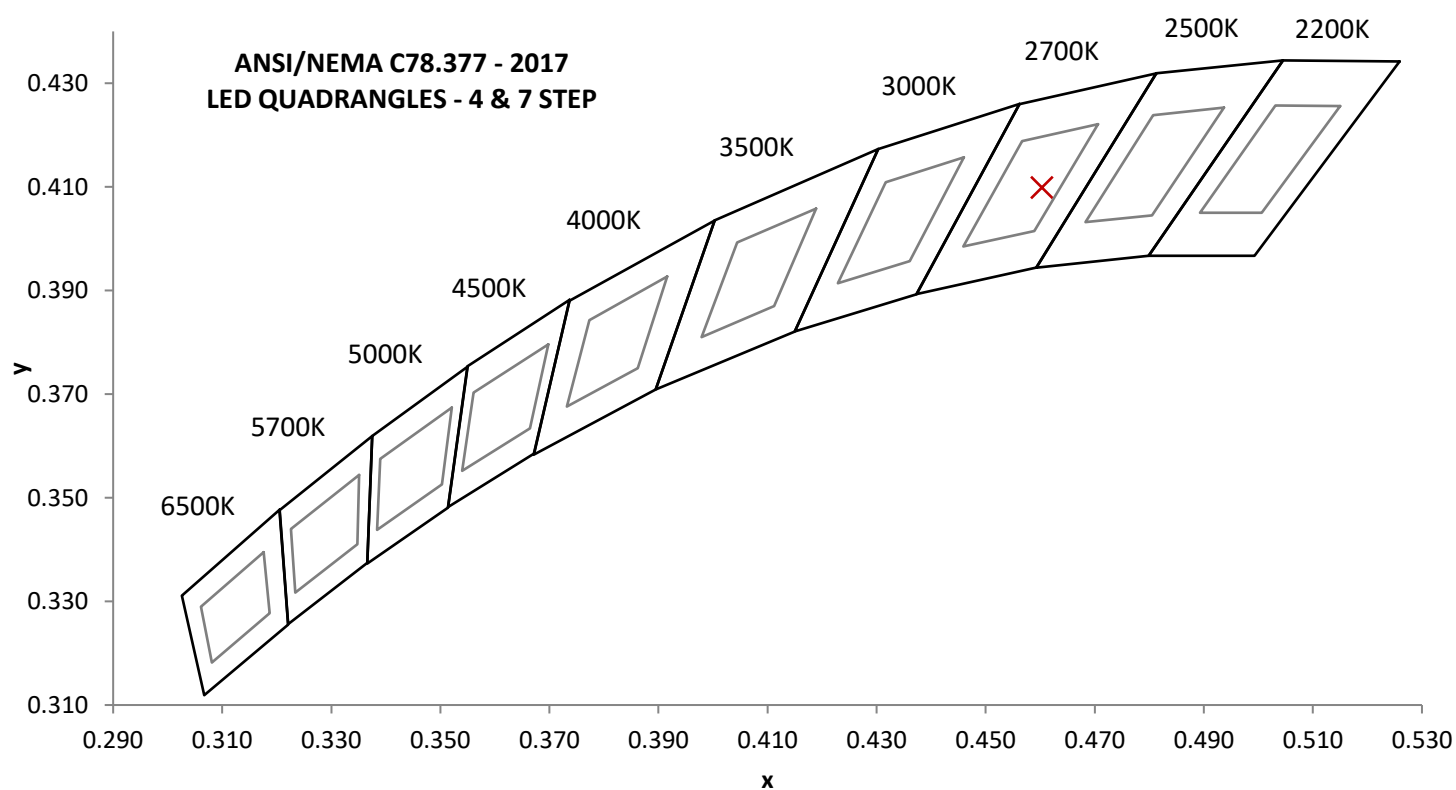
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
120.00	165.3	19.65	0.991	11.45

Measured at 120(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
1730.4	88.1	2688	91.4	65.0

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0003	0.460	0.410	0.263	0.527

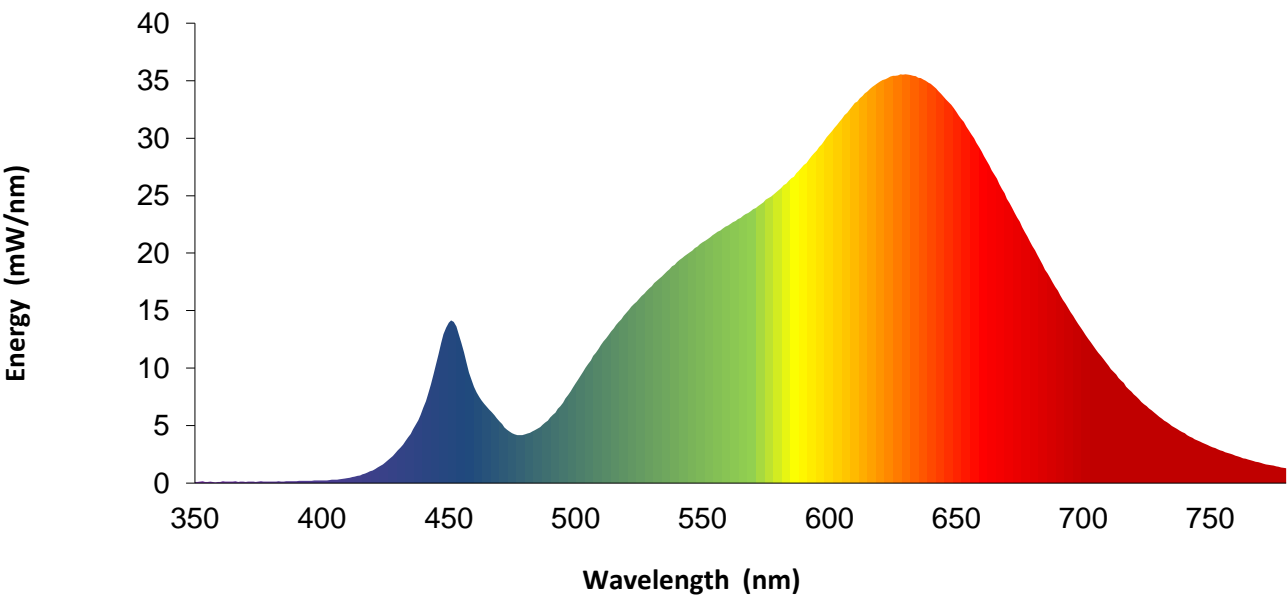


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	8.4		570	23.8		680	20.6
355	0.1		465	6.6		575	24.7		685	18.6
360	0.1		470	5.4		580	25.5		690	16.7
365	0.1		475	4.3		585	26.5		695	14.9
370	0.1		480	4.2		590	27.7		700	13.2
375	0.1		485	4.7		595	28.9		705	11.6
380	0.1		490	5.7		600	30.4		710	10.2
385	0.1		495	7.0		605	31.7		715	8.9
390	0.2		500	8.7		610	33.1		720	7.7
395	0.2		505	10.4		615	34.1		725	6.7
400	0.2		510	12.0		620	34.9		730	5.8
405	0.3		515	13.5		625	35.4		735	5.0
410	0.4		520	14.8		630	35.6		740	4.3
415	0.7		525	16.0		635	35.3		745	3.7
420	1.1		530	17.1		640	34.7		750	3.2
425	1.8		535	18.2		645	33.6		755	2.8
430	2.8		540	19.2		650	32.3		760	2.4
435	4.3		545	20.1		655	30.7		765	2.0
440	6.6		550	20.9		660	28.8		770	1.7
445	10.3		555	21.7		665	26.9		775	1.5
450	13.9		560	22.4		670	24.7		780	1.3
455	12.2		565	23.1		675	22.7		---	---

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

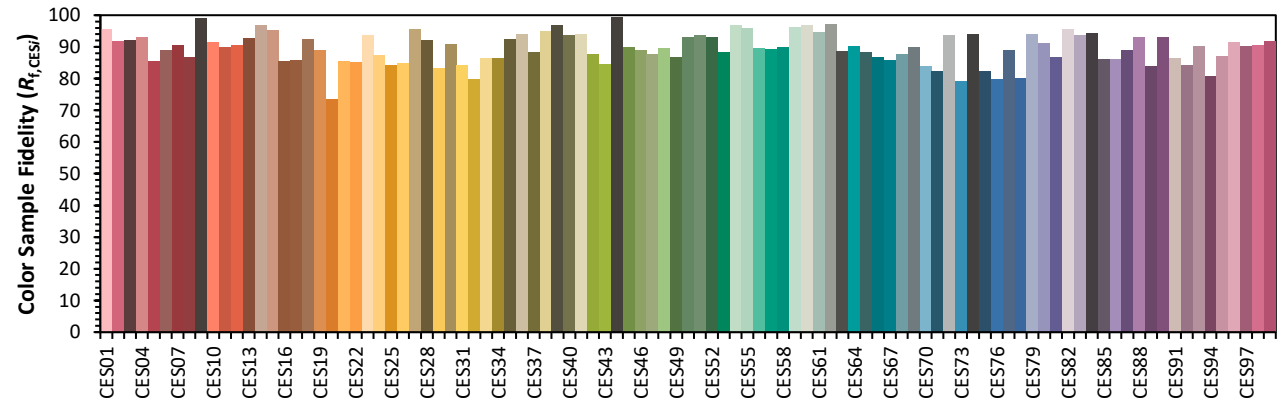
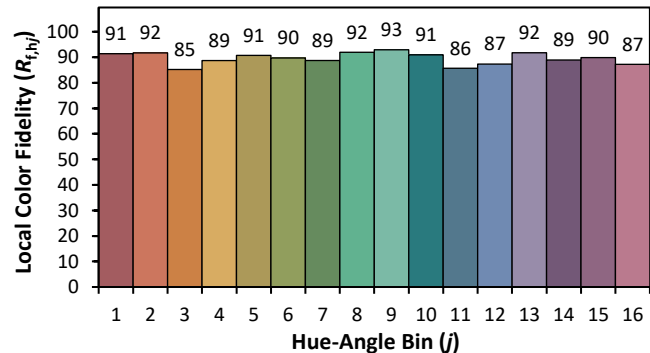
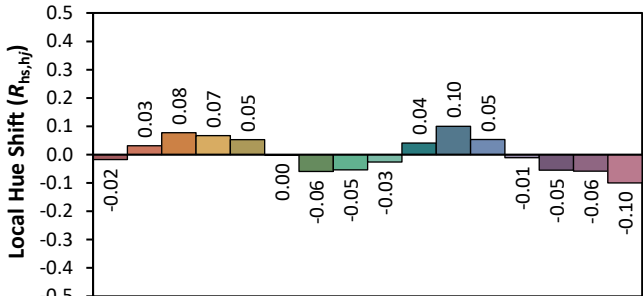
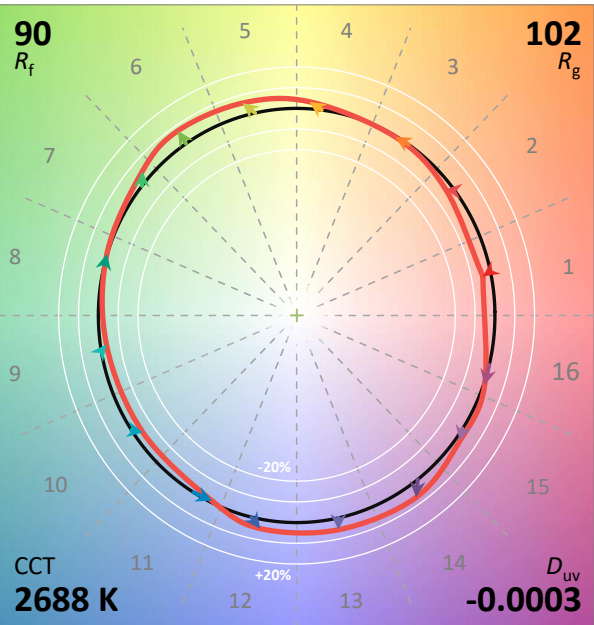
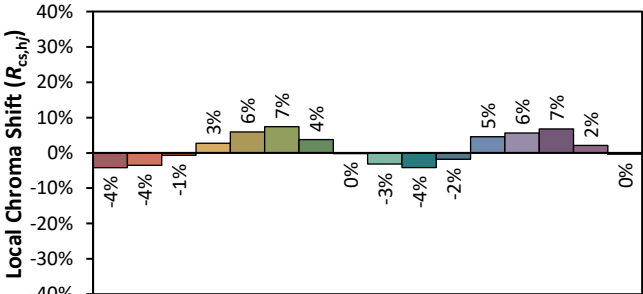
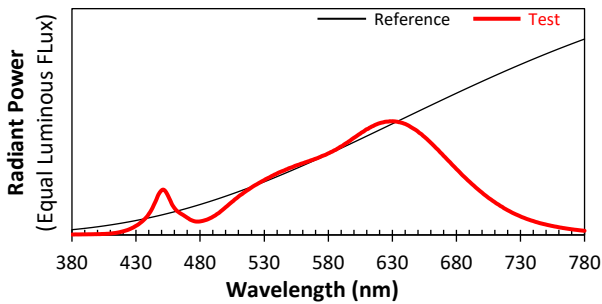
#	Revision Date	Updated By	Reviewed By	Description of Change
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	EC3RS-199274DN-UNV-W	NA

ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD
Date: 9/2/2022

Manufacturer: VISUAL COMFORT AND COMPANY
Model: EC3RS-199274DN-UNV-W



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

x 0.4603
y 0.4098
u' 0.2631
v' 0.5271