

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

EC2RS-129304DN-UNV-W

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CHI-073

ISSUE DATE

9/9/2022

REVISED DATE

None

TEST DATES

2022-08-26 through 2022-08-31.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CHI-073

MODEL NUMBER(s)

EC2RS-129304DN-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

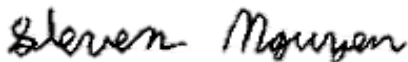
IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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
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Reviewer:



Jeff Davis
N.A. Technical Lead
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SAMPLE INFORMATION

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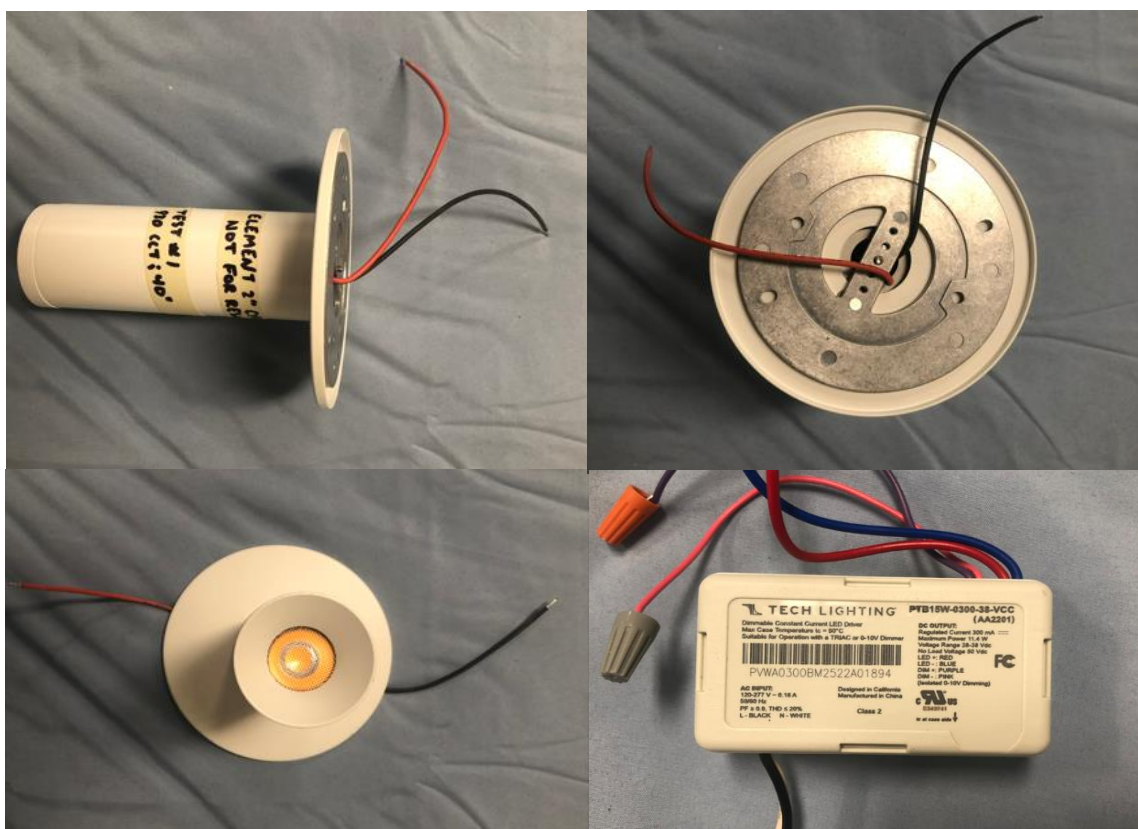
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH08252022081536	EC2RS-129304DN-UNV-W	2" DOWNLIGHT LUMINAIRE	Production	8/25/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	EC2RS-129304DN-UNV-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	EC2RS-129304DN-UNV-W
Product Description:	2" DOWNLIGHT LUMINAIRE
LED Model No.:	Bridgelux / BXRE-30G1000-C-81
Driver Model No.:	ERP / PTB15W-0300-38-VCC
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	838.1	864.8
Input Power (W) @ 120VAC (Vac)	11.11	11.12
Lumen Efficacy (lm/W)	75.4	77.8
Input Power Factor (PF) @ 120VAC (Vac)	0.983	0.985

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	14.67
Correlated Color Temperature (K)	2989
Color Rendering Index - Ra (I)	92.8
Color Rendering Index - R9 (I)	77.3
Duv (I)	-0.0015
Chromaticity Coordinate (x)	0.435
Chromaticity Coordinate (y)	0.400
Chromaticity Coordinate (u')	0.251
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	EC2RS-129304DN-UNV-W	NA

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

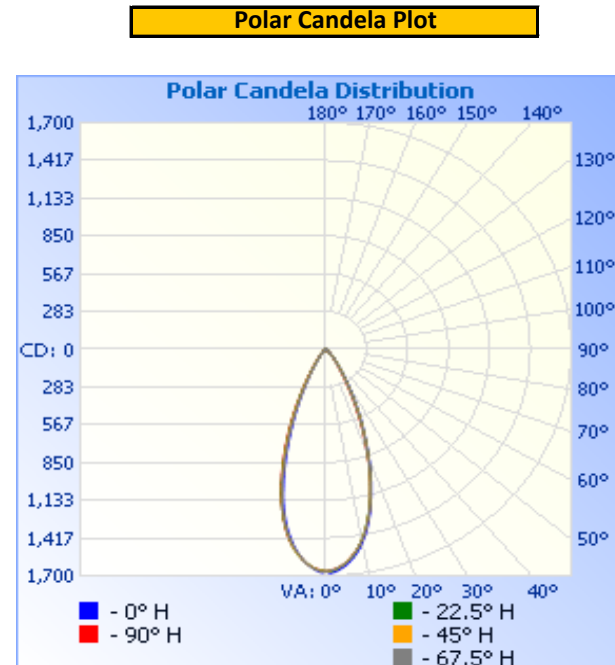
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	120.02	94.2	11.11	0.983

Light Output (lm)	Lumen Efficacy (lm/W)
838.1	75.4

INTENSITY SUMMARY - CANDELA

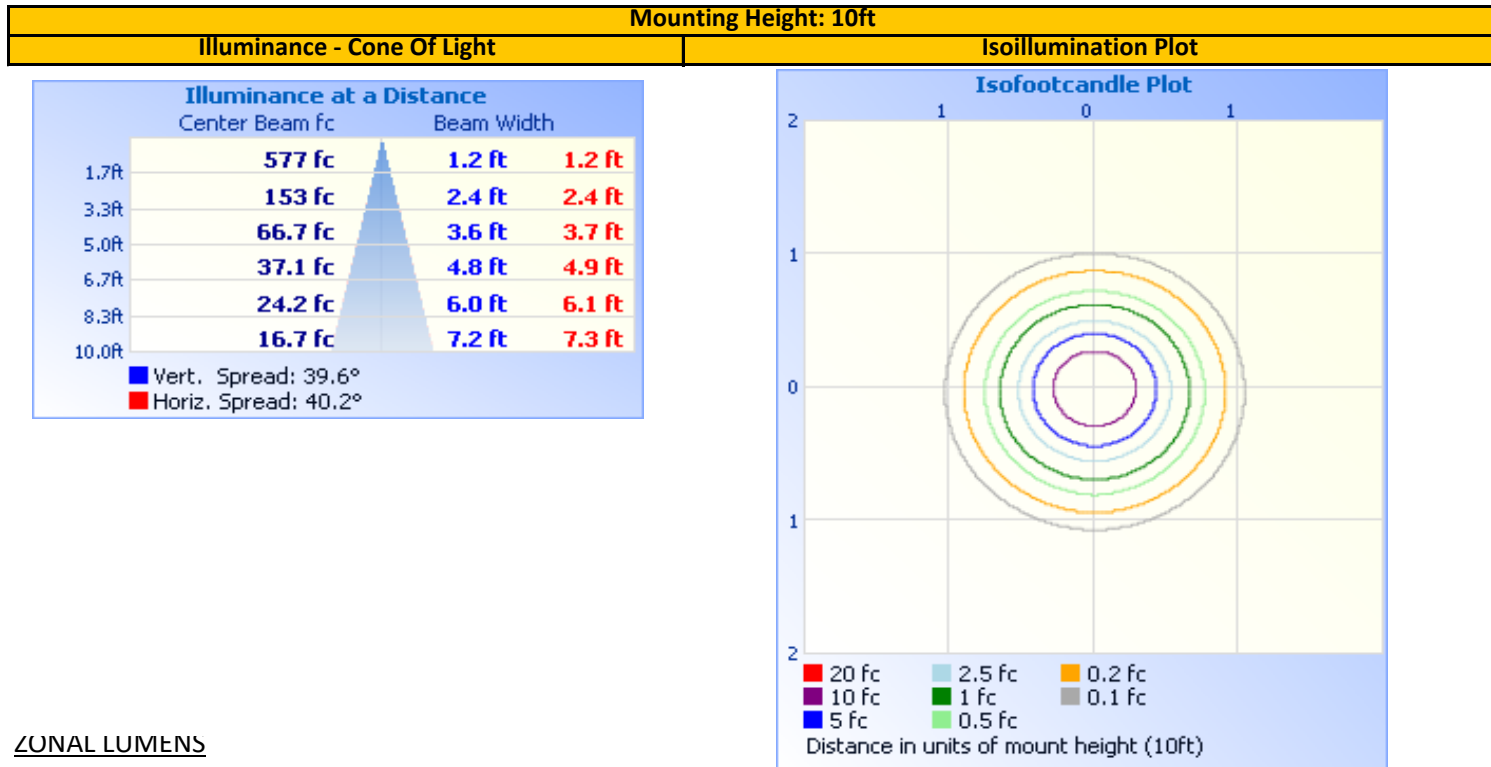
Angle	0	22.5	45	67.5	90
0	1666	1666	1666	1666	1666
5	1625	1607	1604	1606	1604
10	1464	1446	1446	1449	1453
15	1204	1184	1187	1185	1188
20	874	860	857	856	846
25	566	547	549	537	518
30	320	304	299	286	269
35	168	160	155	144	134
40	88	81	77	72	68
45	39	37	36	35	34
50	22	21	20	20	19
55	12	11	11	11	10
60	7	7	7	7	7
65	5	5	5	5	5
70	2	2	2	2	2
75	1	1	1	1	1
80	1	1	1	1	1
85	0	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	703.7	84.0%	0-10	148.0	17.7%
0-40	794.0	94.7%	10-20	320.4	38.2%
0-60	832.3	99.3%	20-30	235.3	28.1%
60-90	5.8	0.7%	30-40	90.3	10.8%
70-100	1.5	0.2%	40-50	28.4	3.4%
90-120	0.0	0.0%	50-60	9.8	1.2%
0-90	838.1	100.0%	60-70	4.3	0.5%
90-180	0.0	0.0%	70-80	1.2	0.1%
0-180	838.1	100.0%	80-90	0.3	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-073

Test Configuration	Tested Model No.	Pass/Fail/NA
1	EC2RS-129304DN-UNV-W	NA

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

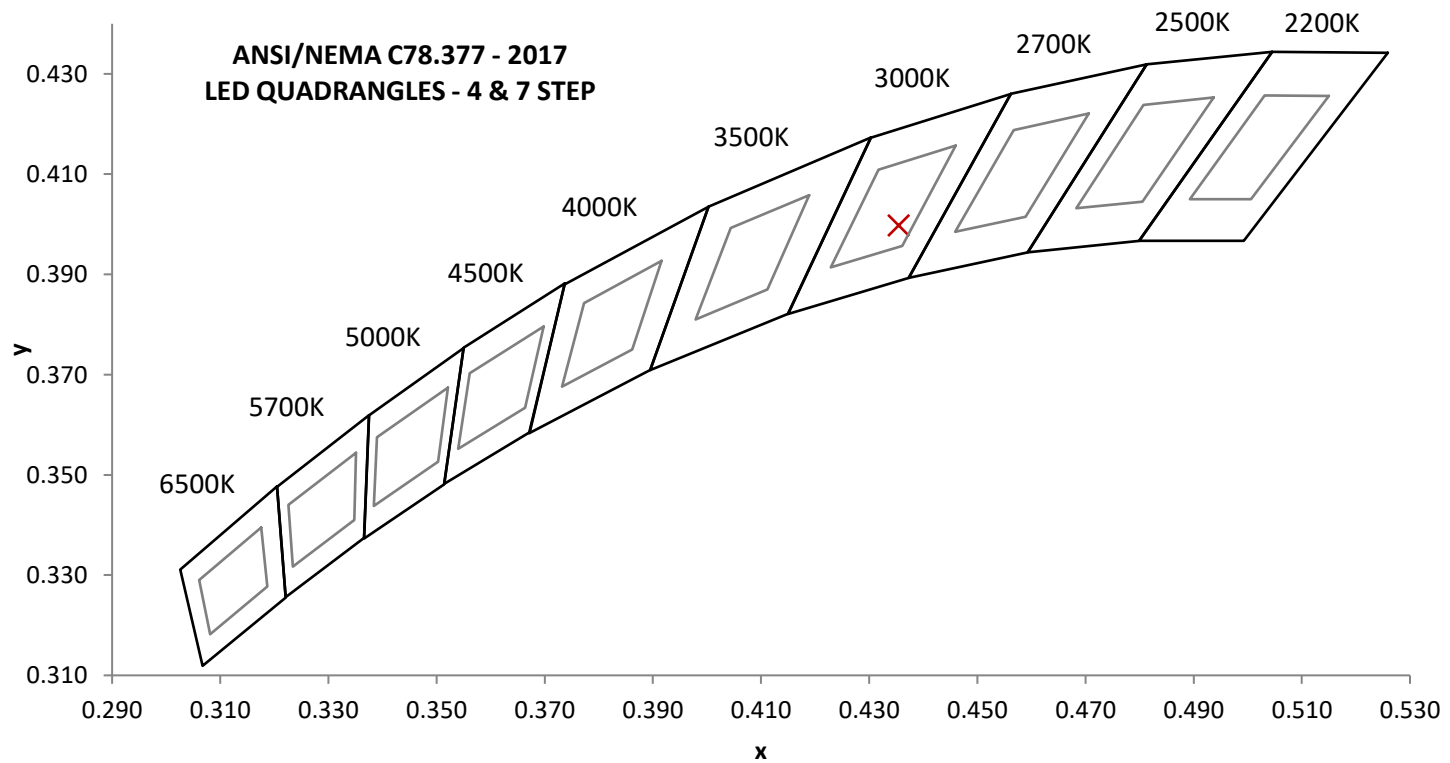
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
119.99	94.1	11.12	0.985	14.67

Measured at 119.99(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
864.8	77.8	2989	92.8	77.3

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0015	0.435	0.400	0.251	0.519

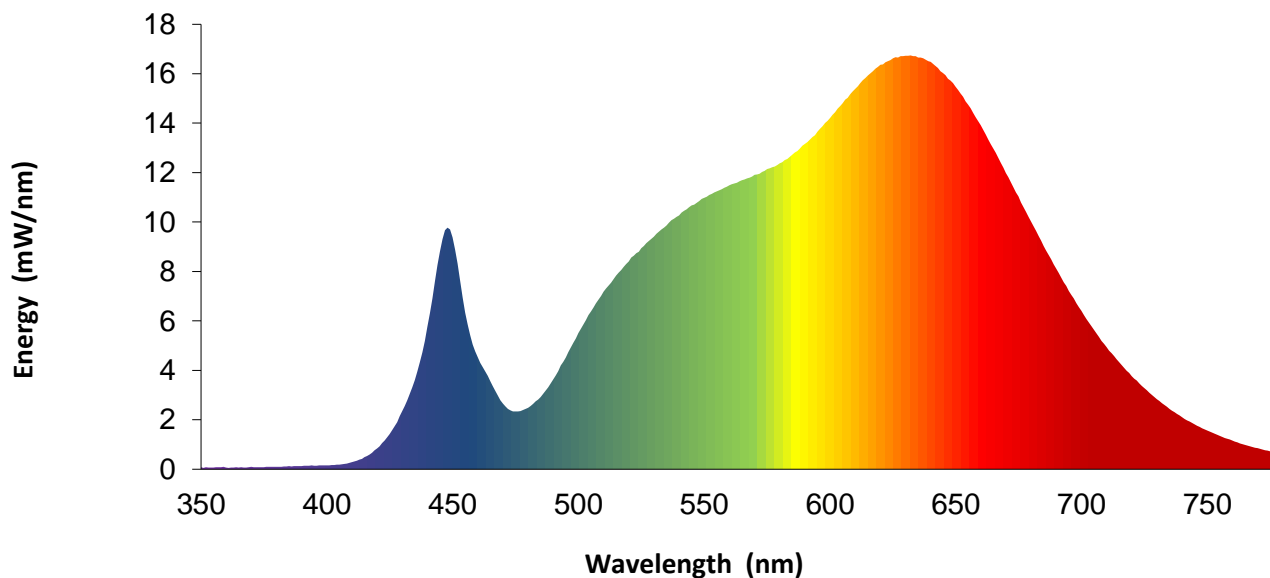


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	4.5		570	11.9		680	10.0
355	0.1		465	3.6		575	12.1		685	9.0
360	0.1		470	2.7		580	12.4		690	8.1
365	0.1		475	2.3		585	12.7		695	7.2
370	0.1		480	2.5		590	13.2		700	6.4
375	0.1		485	2.9		595	13.7		705	5.6
380	0.1		490	3.6		600	14.2		710	4.9
385	0.1		495	4.5		605	14.8		715	4.3
390	0.1		500	5.5		610	15.4		720	3.8
395	0.1		505	6.4		615	15.9		725	3.3
400	0.2		510	7.2		620	16.4		730	2.8
405	0.2		515	7.8		625	16.6		735	2.4
410	0.3		520	8.4		630	16.7		740	2.1
415	0.5		525	8.9		635	16.7		745	1.8
420	0.8		530	9.4		640	16.5		750	1.6
425	1.4		535	9.9		645	16.0		755	1.4
430	2.3		540	10.3		650	15.5		760	1.2
435	3.6		545	10.7		655	14.7		765	1.0
440	5.8		550	11.0		660	13.9		770	0.8
445	8.8		555	11.2		665	13.0		775	0.7
450	9.4		560	11.5		670	12.0		780	0.6
455	6.3		565	11.7		675	11.0		---	---

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	EC2RS-129304DN-UNV-W	NA

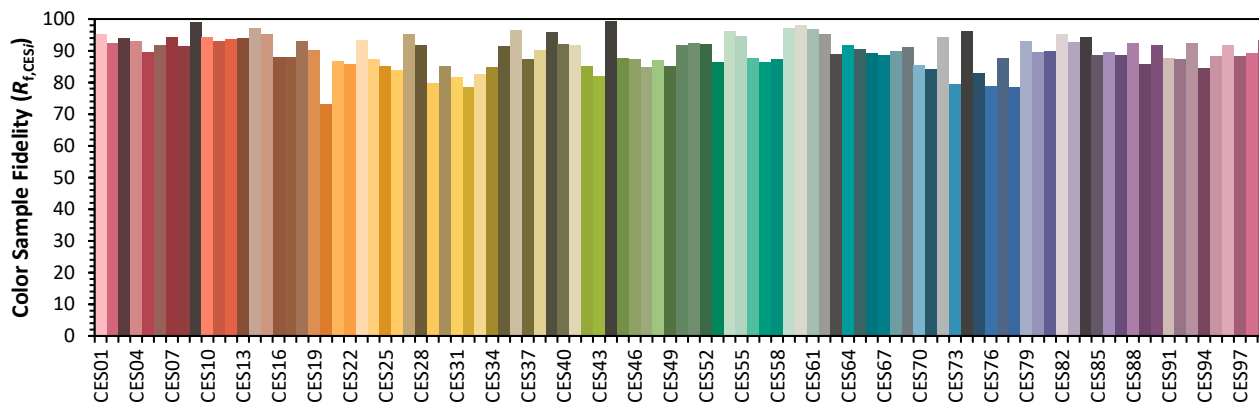
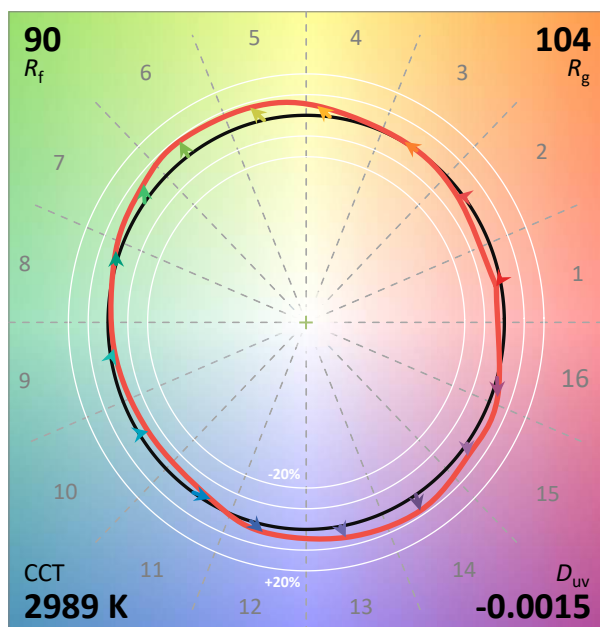
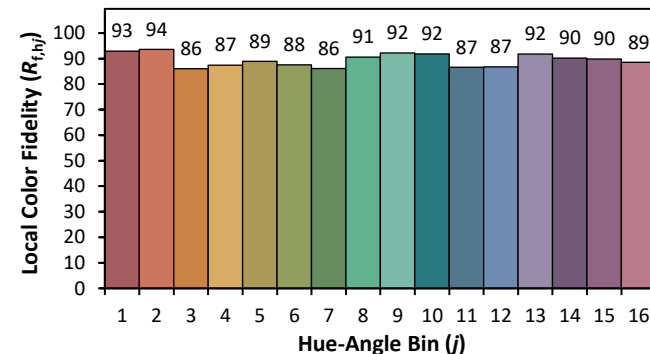
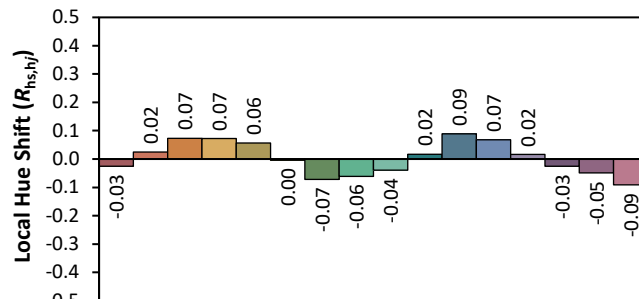
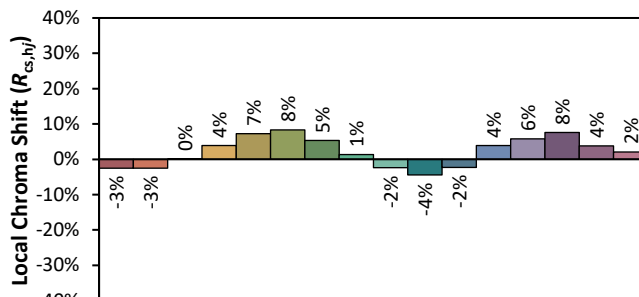
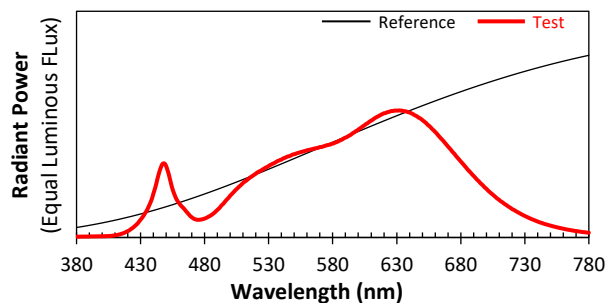
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 8/26/2022

Model: EC2RS-129304DN-UNV-W



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

x 0.4355

y 0.3997

 u' 0.2515 v' 0.5194