

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

V3R30 W/V3RWWH

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CHI-017

ISSUE DATE

4/14/2022

REVISED DATE

None

TEST DATES

2022-04-12 through 2022-04-13.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CHI-017

MODEL NUMBER(s)

V3R30 W/V3RWWH

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:



Nick Lau
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Reviewer:



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SAMPLE INFORMATION

REPORT NO. 104941221CHI-017

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH04052022104830	V3R30 W/V3RWWH	VERSE 3000K WITH ROUND WALL WASH TRIM	Prototype	4/5/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	V3R30 W/V3RWWH	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

REPORT NO. 104941221CHI-017

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	V3R30 W/V3RWWH
Product Description:	VERSE 3000K WITH ROUND WALL WASH TRIM
LED Model No.:	Bridgelux® SMD 2835 1W 9V
Driver Model No.:	NA
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	660.4	676.9
Input Power (W) @ 120 (Vac)	8.83	8.84
Lumen Efficacy (lm/W)	74.8	76.6
Input Power Factor () @ 120 (Vac)	0.990	0.990

Criteria	Results
Input ATHD (%) @ 120 (Vac)	13.49
Correlated Color Temperature (K)	2897
Color Rendering Index - Ra ()	95.5
Color Rendering Index - R9 ()	90.9
Duv ()	0.0006
Chromaticity Coordinate (x)	0.445
Chromaticity Coordinate (y)	0.408
Chromaticity Coordinate (u')	0.254
Chromaticity Coordinate (v')	0.524

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

REPORT NO. 104941221CHI-017

Test Configuration	Tested Model No.	Pass/Fail/NA
1	V3R30 W/V3RWWH	NA

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

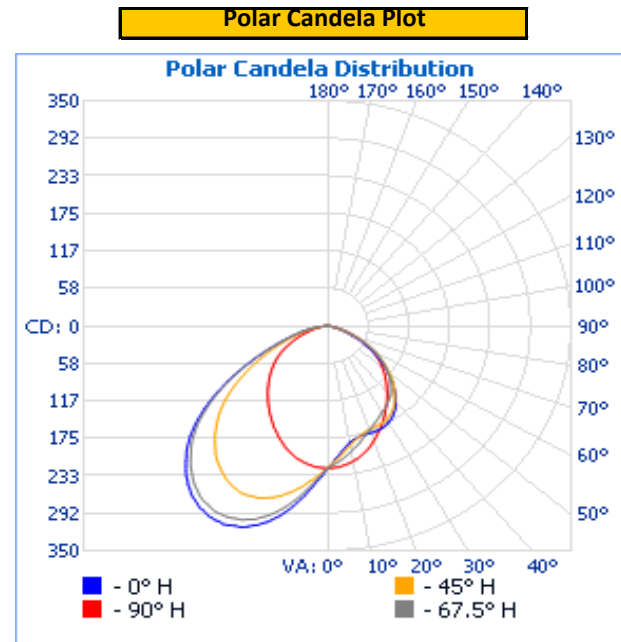
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	120.04	74.3	8.83	0.990

Light Output (lm)	Lumen Efficacy (lm/W)
660.4	74.8

INTENSITY SUMMARY - CANDELA

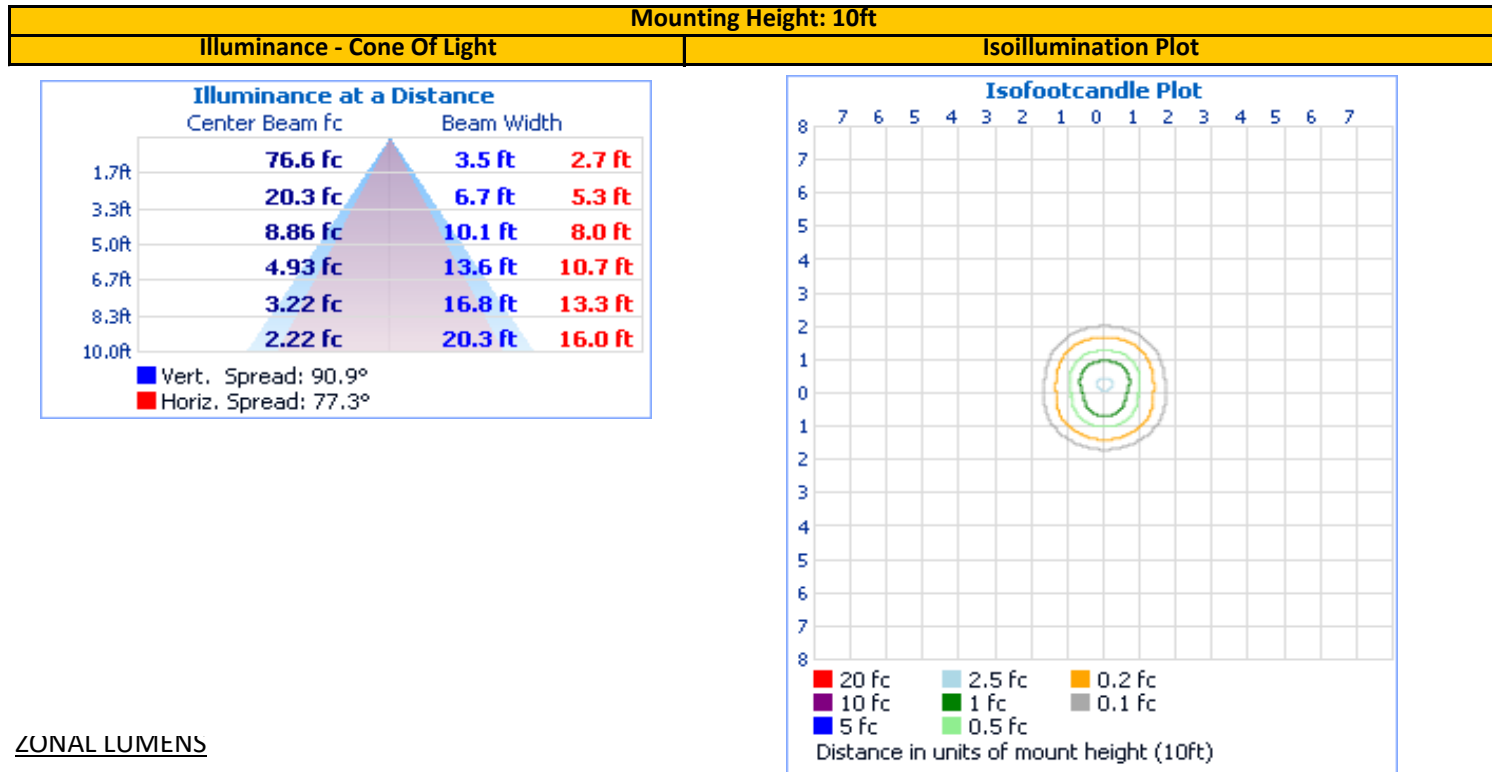
Angle	0	22.5	45	67.5	90
0	221.5	221.5	221.5	221.5	221.5
5	200.6	199.6	204	210.4	219.7
10	184.2	184.9	189	197.8	213.4
15	178	177.7	178.6	185.5	204.5
20	177.7	176.3	172.4	174.1	191.7
25	177.9	176.5	170.8	164.4	177.8
30	173.9	172.9	169.2	156	163.1
35	166	164.4	162	149.1	148.2
40	152.7	151.8	150.8	140.6	133.4
45	134.8	134.7	135.3	128.3	118.5
50	114.7	115.1	117.5	113.4	103.8
55	91.4	93	97.3	96.4	88.6
60	69	69.9	75.6	77.6	71.3
65	47	48	53.9	56.5	53.2
70	27.3	27.7	32.7	35.6	35.4
75	13.4	13	15.1	18	20.3
80	5.8	5.2	4.7	6.7	9.1
85	2.5	2.1	1.9	1.4	1.3
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



REPORT NO. 104941221CHI-017

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	188.3	28.5%	0-10	21.3	3.2%
0-40	317.6	48.1%	10-20	63.9	9.7%
0-60	561.6	85.0%	20-30	103.2	15.6%
60-90	98.8	15.0%	30-40	129.3	19.6%
70-100	31.2	4.7%	40-50	133.1	20.2%
90-120	0.0	0.0%	50-60	110.9	16.8%
0-90	660.4	100.0%	60-70	67.7	10.2%
90-180	0.0	0.0%	70-80	27.1	4.1%
0-180	660.4	100.0%	80-90	4.1	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

REPORT NO. 104941221CHI-017

Test Configuration	Tested Model No.	Pass/Fail/NA
1	V3R30 W/V3RWWH	NA

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

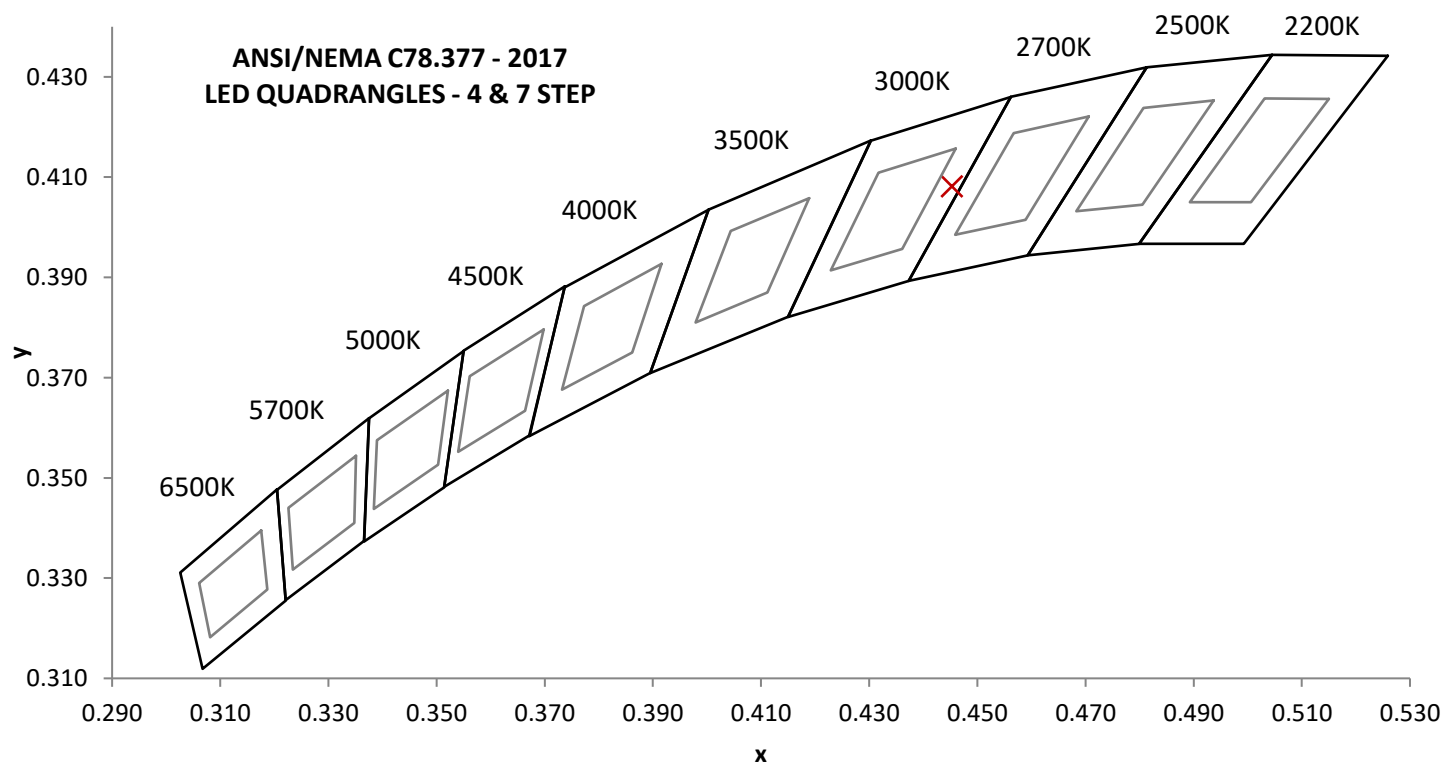
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
120.01	74.4	8.84	0.990	13.49

Measured at 120.01(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
676.9	76.6	2897	95.5	90.9

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0006	0.445	0.408	0.254	0.524

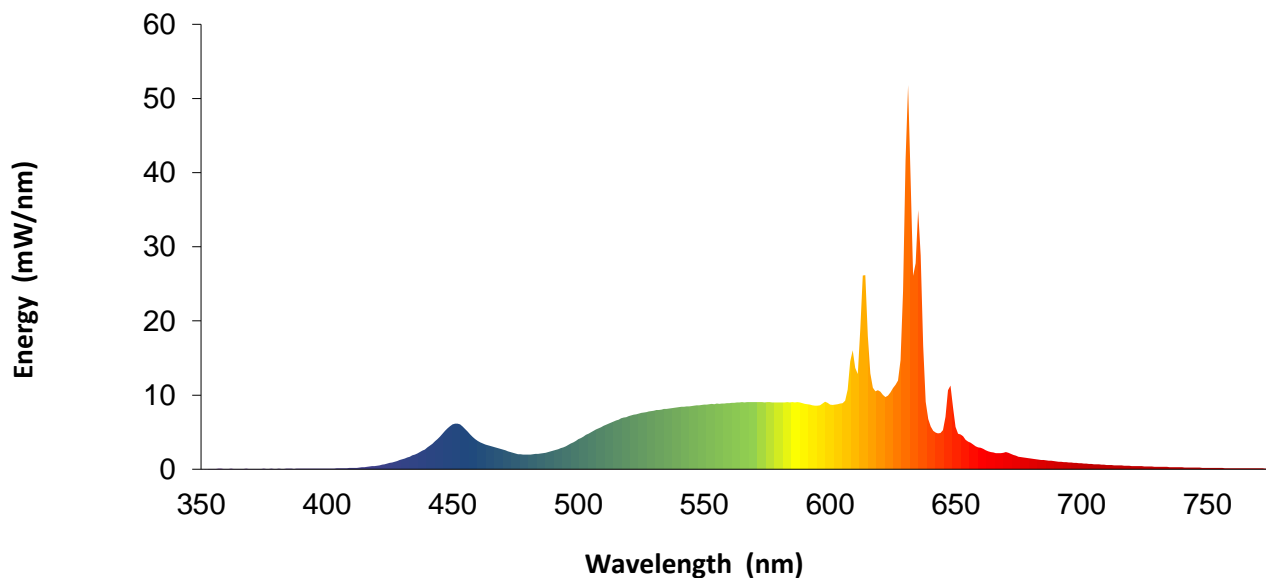


REPORT NO. 104941221CHI-017

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	3.8		570	9.0		680	1.4
355	0.1		465	3.1		575	9.1		685	1.2
360	0.0		470	2.7		580	9.0		690	1.1
365	0.0		475	2.1		585	9.0		695	0.9
370	0.1		480	2.0		590	8.8		700	0.8
375	0.1		485	2.1		595	8.6		705	0.7
380	0.1		490	2.5		600	8.7		710	0.6
385	0.1		495	3.1		605	8.9		715	0.5
390	0.1		500	4.1		610	13.7		720	0.4
395	0.1		505	5.0		615	18.0		725	0.4
400	0.1		510	5.9		620	10.5		730	0.3
405	0.1		515	6.6		625	11.0		735	0.3
410	0.2		520	7.2		630	41.7		740	0.3
415	0.3		525	7.6		635	35.0		745	0.2
420	0.5		530	7.9		640	5.7		750	0.2
425	0.8		535	8.2		645	5.3		755	0.2
430	1.3		540	8.4		650	5.7		760	0.1
435	2.0		545	8.5		655	3.7		765	0.1
440	3.0		550	8.7		660	2.9		770	0.1
445	4.4		555	8.8		665	2.2		775	0.1
450	6.1		560	8.9		670	2.3		780	0.1
455	5.4		565	9.0		675	1.7		---	---

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

REPORT NO. 104941221CHI-017

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT210	146919	7/1/2021	7/1/2022
2	Omega Thermometer	DPI8-C24	146920	10/4/2021	10/4/2022
3	LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
4	Newport Thermohygrometer	iServer	146379	4/13/2021	4/13/2022
5	Chroma Power Supply	61604	CHI0371	VBV	VBV
8	Newport Humidity Recorder	iServer	146961	9/21/2021	9/21/2022
9	Labsphere Spectroradiometer	CDS2600	CHI0539	VBV	VBV
10	3 Meter Sphere	SPR600	CHI0088	VBV	VBV
11	Elgar AC Power Supply	CW1251	146112	VBV	VBV
12	Sorenson DC Power Supply	XFR150-8	146846	VBV	VBV
13	Yokogawa Power Meter	WT1600	146767	4/4/2022	4/4/2023
17	Omega thermometer	USB TC08	EQAH002615	4/5/2022	4/5/2023
26	Xitron Power Analyzer	XT-2640	CHI0611	6/9/2021	6/9/2022

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	V3R30 W/V3RWWH	NA

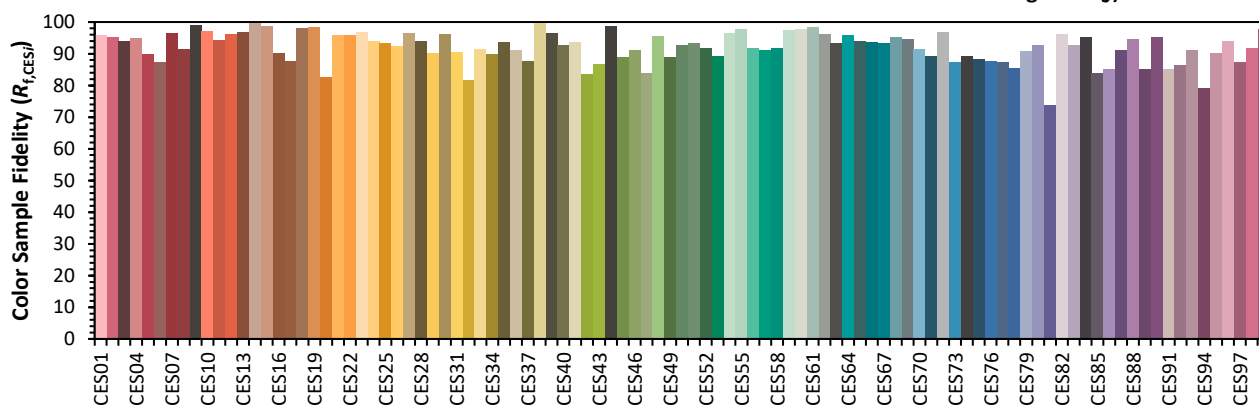
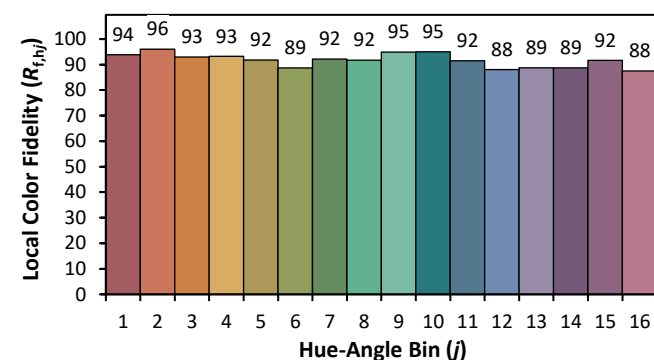
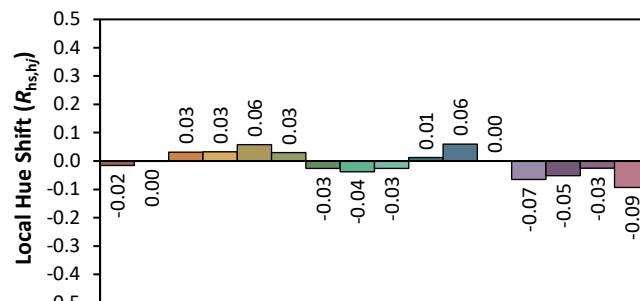
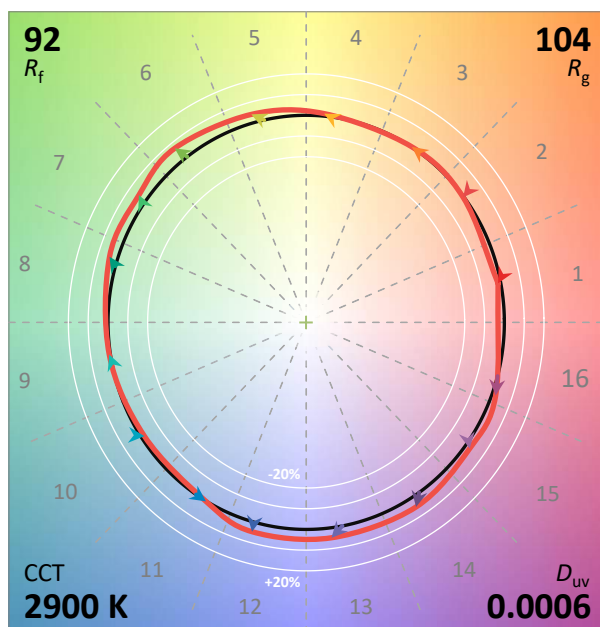
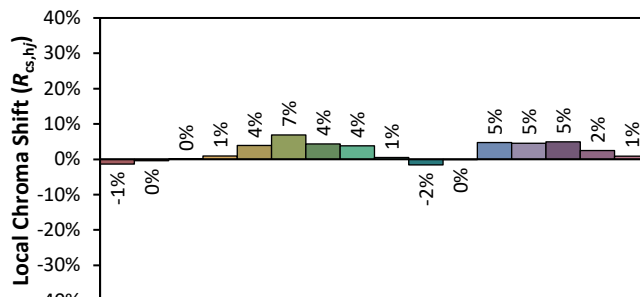
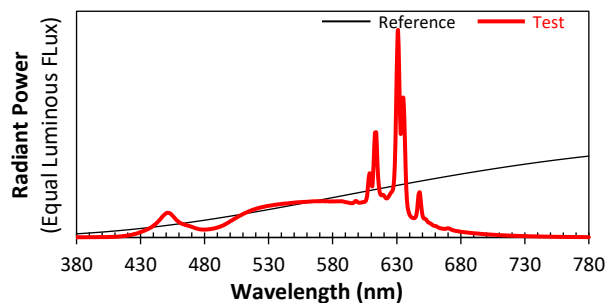
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 4/13/2022

Model: V3R30 W/V3RWWH



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

x 0.4451

y 0.4083

u' 0.2540

v' 0.5242