

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700WSCLR28NB-LED930

PROJECT NUMBER

G105408958

REPORT NUMBER

105408958CHI-003

ISSUE DATE

4/18/2023

REVISED DATE

None

TEST DATES

2023-04-12 through 2023-04-13.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

105408958CHI-003

MODEL NUMBER(s)

700WSCLR28NB-LED930

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-01297671-0.

TEST STANDARDS

IES 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

ANSI/IES TM-30-18: IES Method for Evaluating Light Source Color Rendition

In Charge of Testing:



David Dalo
Engineer
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Reviewer:



Jeff Davis
NA Technical Lead
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SAMPLE INFORMATION

REPORT NO. 105408958CHI-003

ITEMS RECEIVED

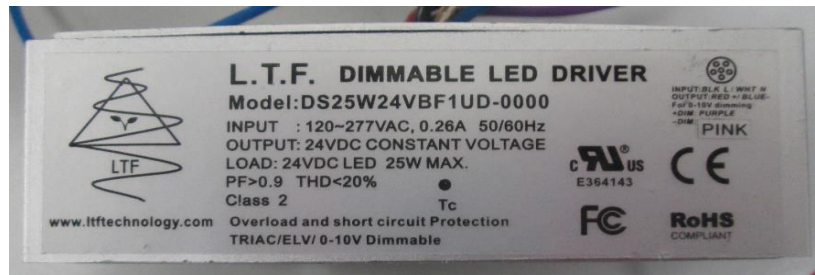
Item No.	Control No.	Model No.	Description	Type	Received
1	AH04062023065219-001	700WSCLR28NB-LED930	Collier 28 Wall Sconce	Production	4/6/2023

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
3	700WSCLR28NB-LED930	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS

Distribution was performed with below orientation and crystals aligned



SUMMARY

REPORT NO. 105408958CHI-003

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700WSCLR28NB-LED930
Product Description:	Collier 28 Wall Sconce
LED Model No.:	AA3965-01-0x (Samsung SPMWH12245Q7W8WMSA)
Driver Model No.:	DS25W24VBF1UD-0000 (AA7580)
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	497.6	478.1
Input Power (W) @ 120 (Vac)	9.27	9.29
Lumen Efficacy (lm/W)	53.7	51.5
Input Power Factor () @ 120 (Vac)	0.947	0.949

Criteria	Results
Input ATHD (%) @ 120 (Vac)	15.26
Correlated Color Temperature (K)	3001
Color Rendering Index - Ra ()	91.8
Color Rendering Index - R9 ()	52.1
Duv ()	-0.0007
Chromaticity Coordinate (x)	0.436
Chromaticity Coordinate (y)	0.402
Chromaticity Coordinate (u')	0.251
Chromaticity Coordinate (v')	0.520

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.

*ANSI/IES Technical Memorandums (TM) reported are not NVLAP accredited

TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

REPORT NO. 105408958CHI-003

Test Configuration	Tested Model No.	Pass/Fail/NA
3	700WSCLR28NB-LED930	NA

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

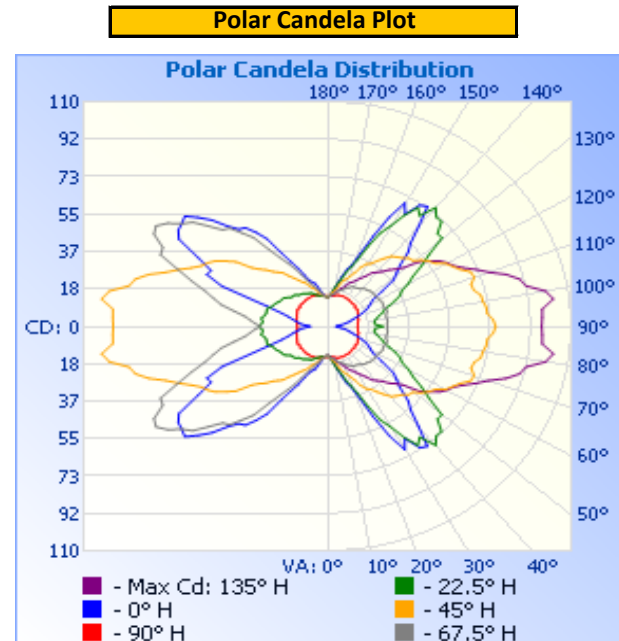
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	120.03	81.6	9.27	0.947

Light Output (lm)	Lumen Efficacy (lm/W)
497.6	53.7

INTENSITY SUMMARY - CANDELA

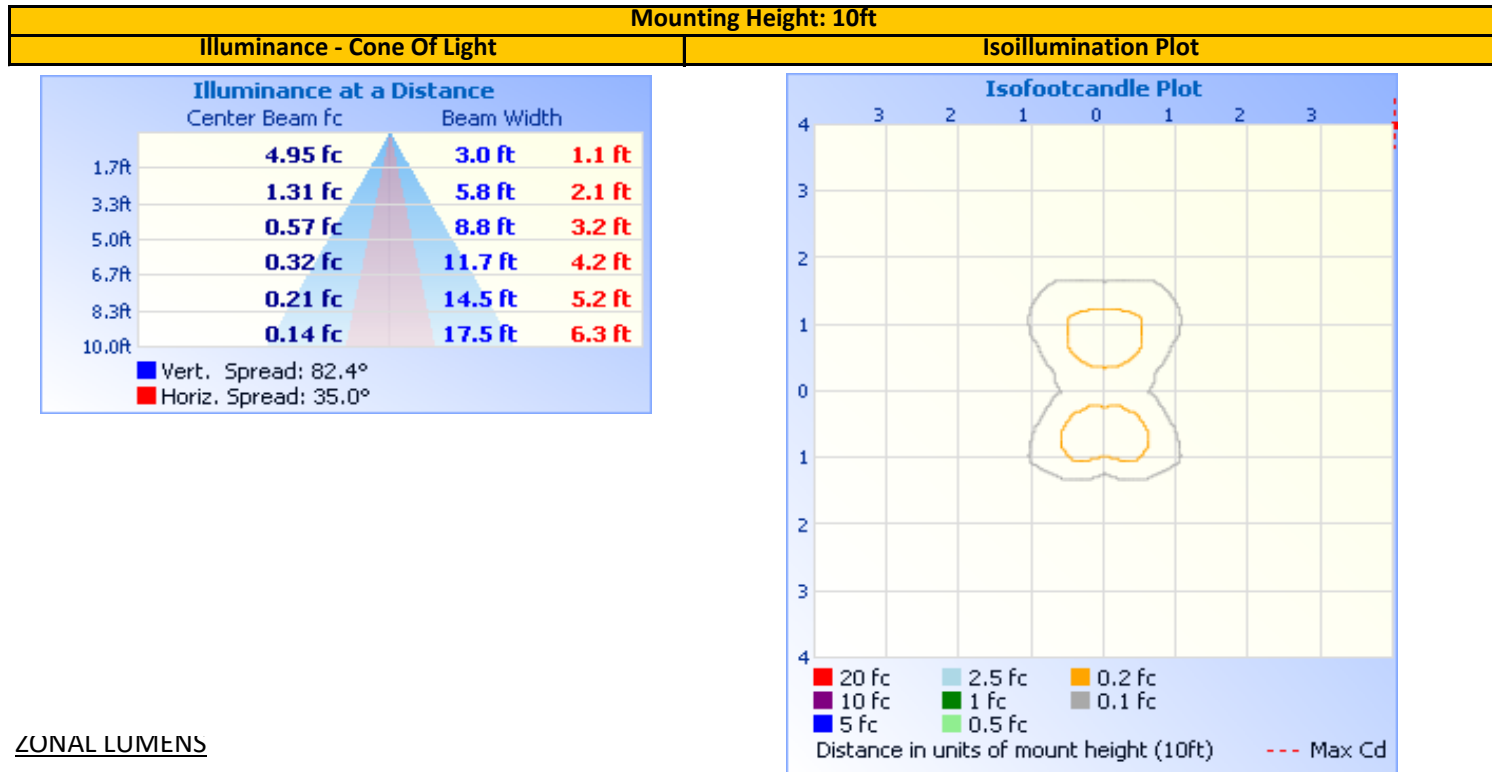
Angle	0	22.5	45	67.5	90
0	14	14	14	14	14
5	16	16	16	15	15
10	19	19	18	16	15
15	25	24	21	18	16
20	32	31	25	19	16
25	49	43	29	21	17
30	70	57	35	23	16
35	72	71	39	23	16
40	64	76	45	24	16
45	52	73	47	25	16
50	41	67	50	26	16
55	30	52	56	26	15
60	22	42	62	27	16
65	19	36	66	27	15
70	15	30	70	27	15
75	11	26	68	28	14
80	8	23	71	27	14
85	5	21	72	27	14
90	4	25	76	27	13
95	5	21	72	27	14
100	8	23	71	27	14
105	11	26	68	28	14
110	15	30	70	27	15
115	19	36	66	27	15
120	22	42	62	27	16
125	30	52	56	26	15
130	41	67	50	26	16
135	52	73	47	25	16
140	64	76	45	24	16
145	72	71	39	23	16
150	70	57	35	23	16
155	49	43	29	21	17
160	32	31	25	19	16
165	25	24	21	18	16
170	19	19	18	16	15
175	16	16	16	15	15
180	14	14	14	14	14

Entire luminous intensity matrix found in .IES file



REPORT NO. 105408958CHI-003

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	20.1	4.0%	0-10	1.5	0.3%
0-40	44.2	8.9%	10-20	5.6	1.1%
0-60	119.9	24.1%	20-30	12.9	2.6%
60-90	128.9	25.9%	30-40	24.1	4.8%
70-100	126.9	25.5%	40-50	34.0	6.8%
90-120	128.9	25.9%	50-60	41.7	8.4%
0-90	248.8	50.0%	60-70	44.1	8.9%
90-180	248.8	50.0%	70-80	42.7	8.6%
0-180	497.6	100.0%	80-90	42.1	8.5%
			90-100	42.1	8.5%
			100-110	42.7	8.6%
			110-120	44.1	8.9%
			120-130	41.7	8.4%
			130-140	34.0	6.8%
			140-150	24.1	4.8%
			150-160	12.9	2.6%
			160-170	5.6	1.1%
			170-180	1.5	0.3%

INTEGRATING SPHERE TESTING

REPORT NO. 105408958CHI-003

Test Configuration	Tested Model No.	Pass/Fail/NA
3	700WSCLR28NB-LED930	NA

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

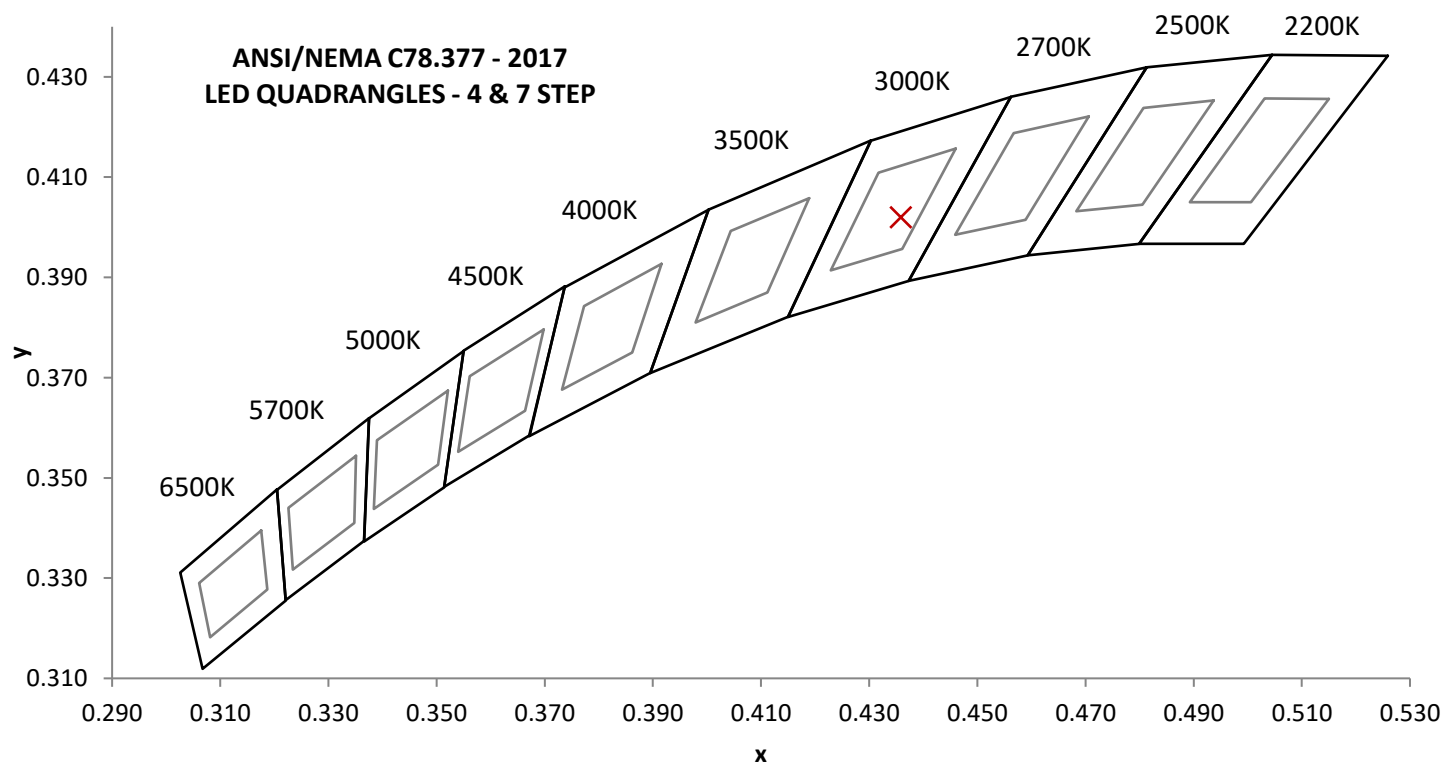
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)	Input ATHD (%)
120.02	81.6	9.29	0.949	15.26

Measured at 120.02(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (I)	CRI - R9 (I)
478.1	51.5	3001	91.8	52.1

Duv (I)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0007	0.436	0.402	0.251	0.520

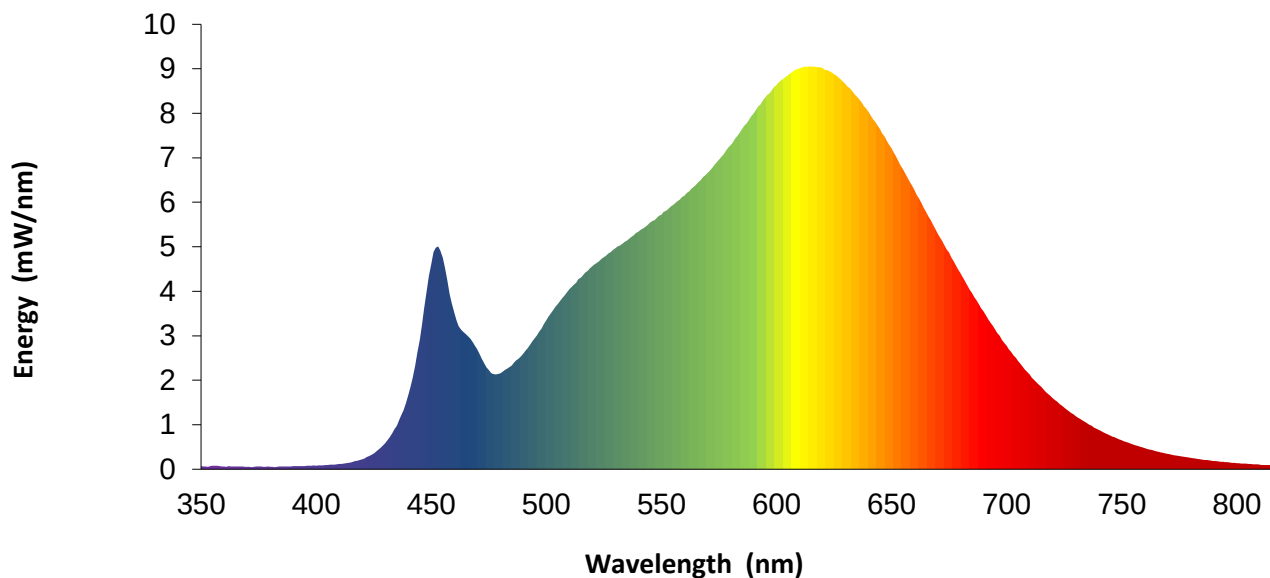


REPORT NO. 105408958CHI-003

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	3.5		570	6.7		680	4.4
355	0.1		465	3.0		575	7.0		685	4.0
360	0.1		470	2.7		580	7.3		690	3.5
365	0.1		475	2.2		585	7.6		695	3.1
370	0.1		480	2.2		590	8.0		700	2.8
375	0.1		485	2.3		595	8.3		705	2.4
380	0.1		490	2.6		600	8.6		710	2.1
385	0.1		495	3.0		605	8.9		715	1.9
390	0.1		500	3.4		610	9.0		720	1.6
395	0.1		505	3.7		615	9.0		725	1.4
400	0.1		510	4.0		620	9.0		730	1.2
405	0.1		515	4.3		625	8.9		735	1.0
410	0.1		520	4.6		630	8.7		740	0.9
415	0.2		525	4.8		635	8.4		745	0.8
420	0.2		530	5.0		640	8.0		750	0.7
425	0.4		535	5.1		645	7.6		755	0.6
430	0.6		540	5.3		650	7.2		760	0.5
435	1.0		545	5.5		655	6.7		765	0.4
440	1.7		550	5.7		660	6.3		770	0.3
445	2.9		555	5.9		665	5.8		775	0.3
450	4.6		560	6.2		670	5.3		780	0.3
455	4.8		565	6.4		675	4.9		---	---

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. 105408958CHI-003

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT310E	CHI0664	4/3/2023	4/3/2024
2	Omega Thermometer	DPI8-C24	146920	10/4/2022	10/4/2023
3	LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
4	Newport Thermohygrometer	iServer	146958	10/6/2022	10/6/2023
5	Chroma Power Supply	61604	CHI0371	VBU	VBU
8	Omega Thermohygrometer	OM-CP-RFPRHTEMP2000A	CHI0778	4/3/2023	4/3/2024
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	146767	4/4/2023	4/4/2024
17	Omega thermometer	USB TC08	EQAH002615	4/4/2023	4/4/2024
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
3	700WSCLR28NB-LED930	NA

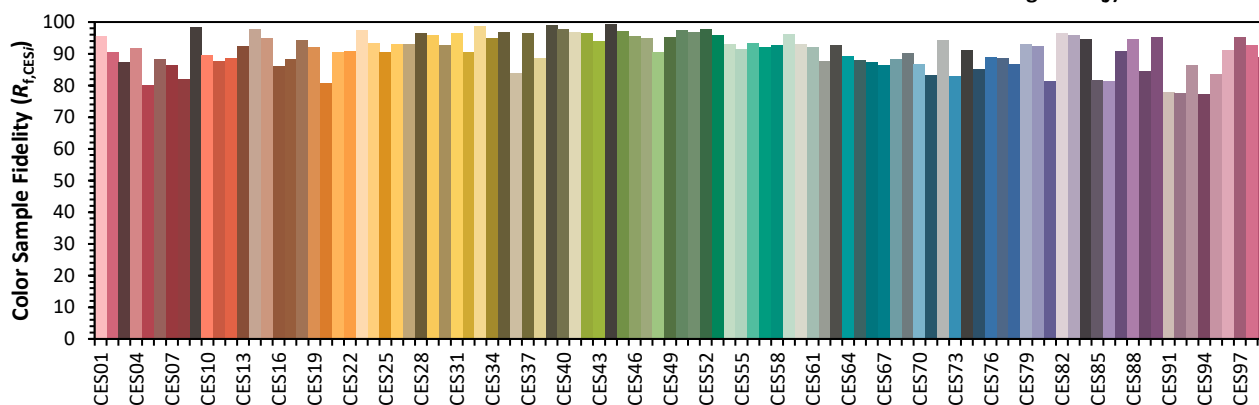
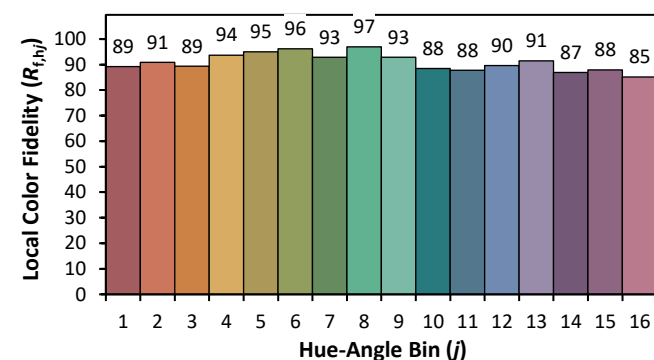
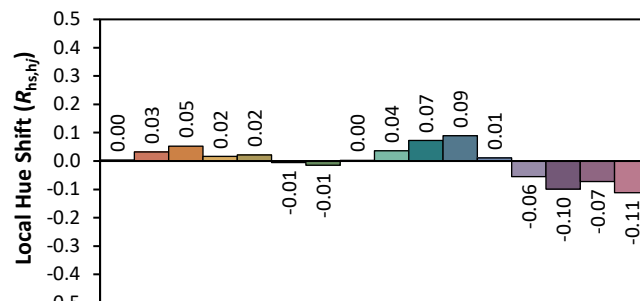
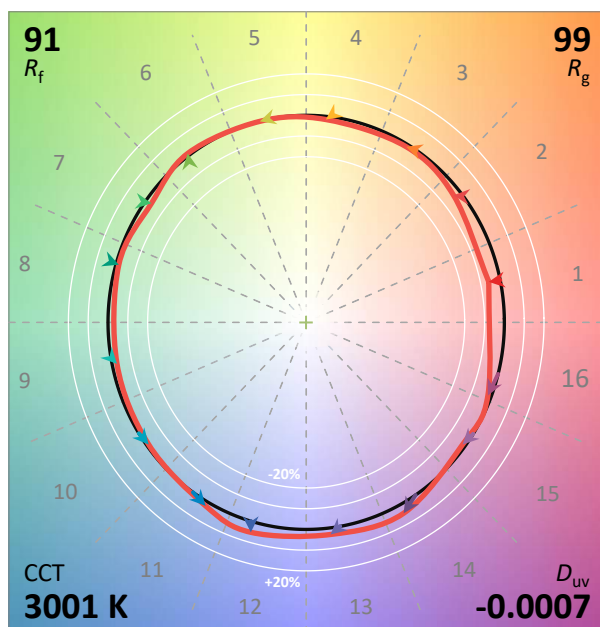
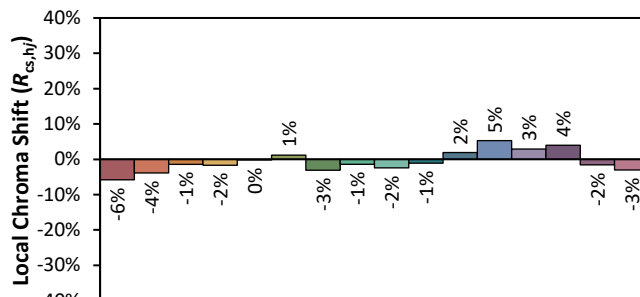
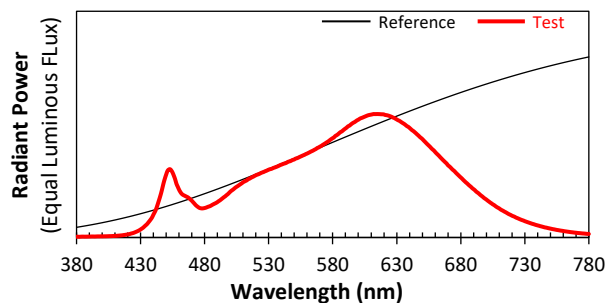
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 4/13/2023

Model: 700WSCLR28NB-LED930



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

x 0.4359

y 0.4019

u' 0.2508

v' 0.5204