

VISUAL COMFORT & COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

KWWS21027CNB

PROJECT NUMBER

G106149824

REPORT NUMBER

106149824CHI-005

ISSUE DATE

4/25/2025

REVISED DATE

None

TEST DATES

2025-04-17 through 2025-04-24.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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PAGES

13

REPORT NUMBER

106149824CHI-005

MODEL NUMBER(s)

KWWS21027CNB

REPORT RENDERED TO:

VISUAL COMFORT & COMPANY
7400 LINDER AVENUE
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-01505675-0.

TEST STANDARDS

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

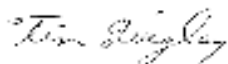
ANSI/IES LM-79-19 Optical and Electrical Measurements of Solid-State Lighting Products

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

ANSI/UL 1598-2018: Standard for Safety - Luminaires

In Charge of Testing:



T. Quigley
Engineer
Lighting Division

Reviewer:



J. Davis
N.A. Technical Lead
Lighting Division

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH04142025101921	KWWS21027CNB	LAUREL MD SCONCE 27 CLR NB	Production	4/14/2025

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	KWWS21027CNB	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	KWWS21027CNB
Product Description:	LAUREL MD SCONCE 27 CLR NB
LED Model No.:	GL-N283527-36-CV-200-LJ84 (2700K)
Driver Model No.:	EPT PVD11-C030V33-UNV3-HE-P (AA8514)
Light Source:	LED

Criteria	Results
	Goniophotometer
Light Output (lumens)	663.4
Input Power (W) @ 120 (Vac)	11.31
Lumen Efficacy (lm/W)	58.7
Input Power Factor (I) @ 120 (Vac)	0.991

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.54
Correlated Color Temperature (K)	2563
Color Rendering Index - Ra	96.2
Color Rendering Index - R9	75.0
Duv	-0.0018
Chromaticity Coordinate (x)	0.468
Chromaticity Coordinate (y)	0.407
Chromaticity Coordinate (u')	0.269
Chromaticity Coordinate (v')	0.527
Max LED Source Temperature (°C)	76.1
Max Driver Case Temperature (°C)	36.4
Reported L70 Hours from TM-21 Calculator (Hours)	>60000

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.

INSITU TEMPERATURE MEASUREMENT TESTING

Thermal measurements were taken on the EUT using a thermocouple and temperature meter. The EUT was allowed to reach thermal equilibrium for three and a half to seven and a half hours before measurements were taken. Temperatures were measured at the TMPps or Ts point as indicated by the included diagram in accordance with manufacturers declared thermal test point location, or at a thermal test point location found with a thermal camera when no diagram from the manufacturer is given. The maximum temperature was recorded for the sample. A simulated ceiling or other enclosure may be used in accordance to UL 1598, UL 153, or UL 1993 as applicable.

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

Test Configuration	Tested Model No.	Pass/Fail/NA
1	KWWS21027CNB	NA

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

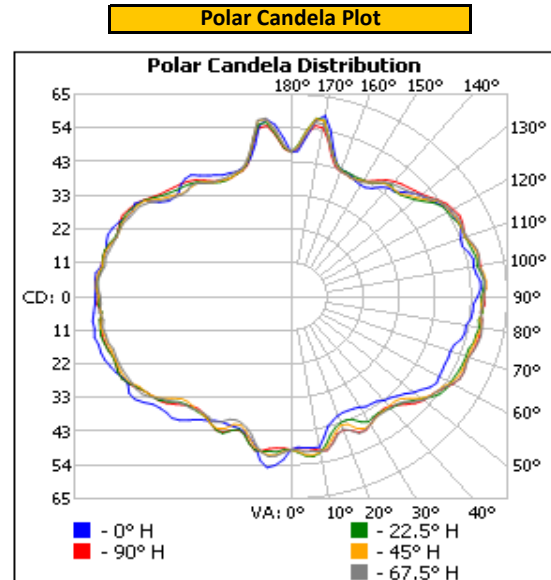
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor
Horizontal	120.04	95.1	11.31	0.991

Light Output (lm)	Lumen Efficacy (lm/W)
663.4	58.7

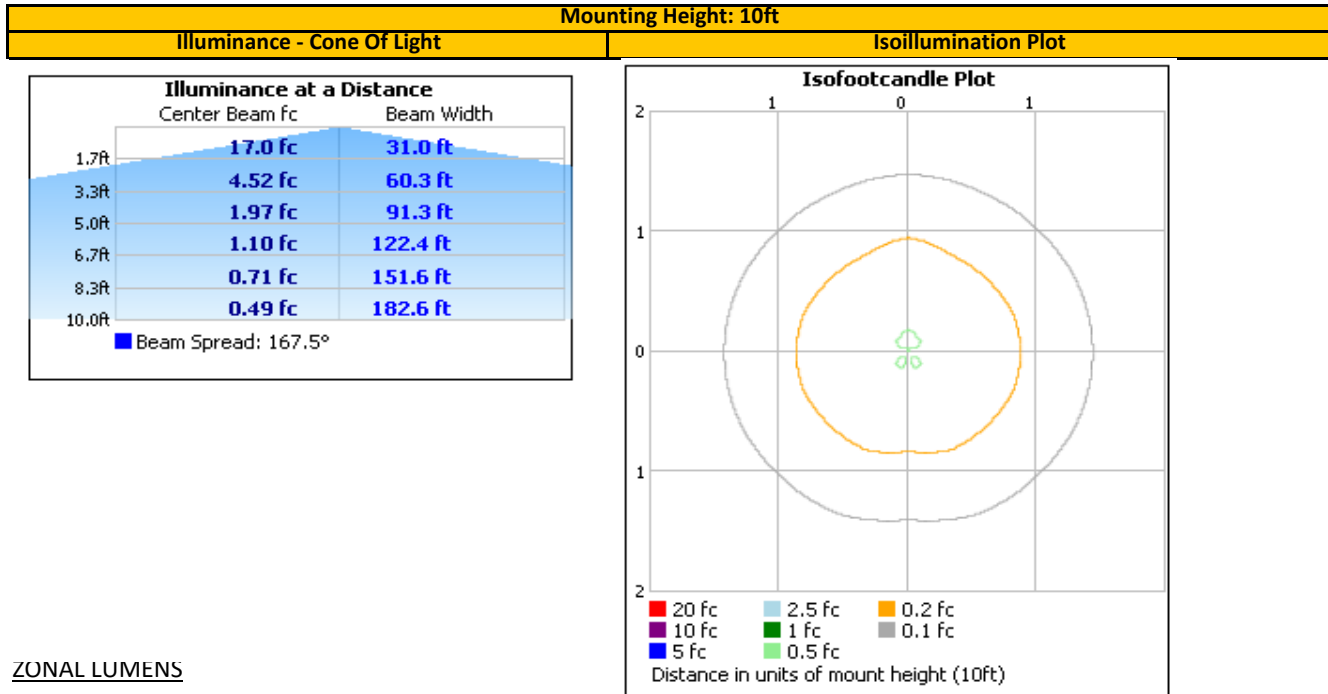
INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	49	49	49	49	49
5	49	51	51	50	49
10	49	51	51	51	50
15	43	46	47	49	49
20	41	43	44	45	46
25	40	44	47	49	48
30	41	46	48	48	48
35	42	46	46	46	46
40	44	47	46	47	46
45	45	48	46	48	49
50	48	51	51	52	52
55	51	55	53	53	53
60	51	55	55	56	56
65	51	56	57	57	57
70	51	56	57	57	57
75	53	57	57	58	58
80	53	57	58	58	58
85	55	58	57	57	57
90	56	57	58	58	58
95	57	58	59	58	59
100	56	57	57	57	58
105	55	57	58	58	58
110	54	56	56	56	56
115	56	56	56	56	57
120	55	54	55	56	56
125	53	52	54	54	54
130	51	49	49	51	51
135	48	46	47	48	50
140	46	47	46	47	48
145	42	44	45	45	46
150	41	43	43	42	43
155	43	43	42	42	42
160	43	44	43	43	43
165	49	48	48	47	47
170	59	58	57	56	55
175	51	54	53	52	52
180	46	46	46	46	46

Entire luminous intensity matrix found in .IES file



ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	39.4	5.9%	90-100	63.3	9.5%
0-40	68.4	10.3%	100-110	60.3	9.1%
0-60	154.0	23.2%	110-120	55.4	8.4%
60-90	178.9	27.0%	120-130	47.6	7.2%
70-100	186.4	28.1%	130-140	37.1	5.6%
90-120	179.0	27.0%	140-150	28.3	4.3%
0-90	333.0	50.2%	150-160	19.8	3.0%
90-180	330.5	49.8%	160-170	13.6	2.0%
0-180	663.4	100.0%	170-180	5.2	0.8%

Test Configuration	Tested Model No.	Pass/Fail/NA
1	KWWS21027CNB	NA

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

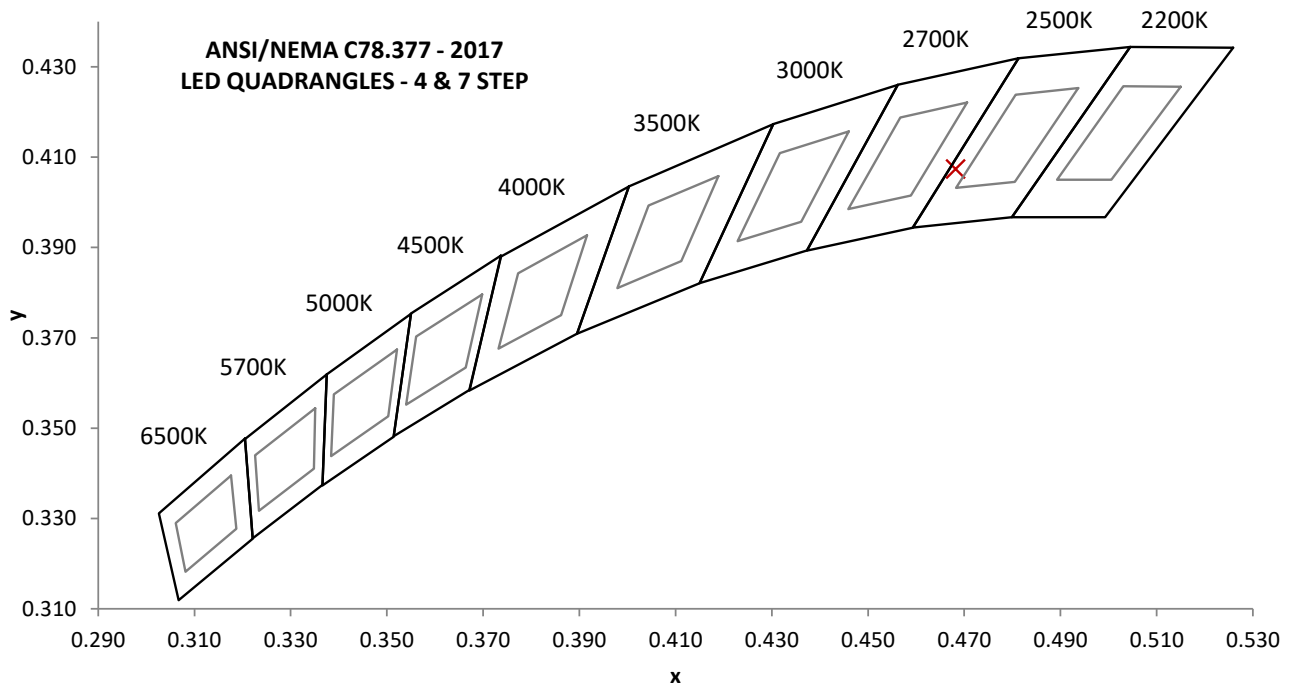
Base Orientation
Horizontal

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)	Input ATHD (%)
120.00	94.1	11.19	0.991	10.54

Measured at 120(Vac)

CCT (K)	CRI - Ra	CRI - R9
2563	96.2	75.0

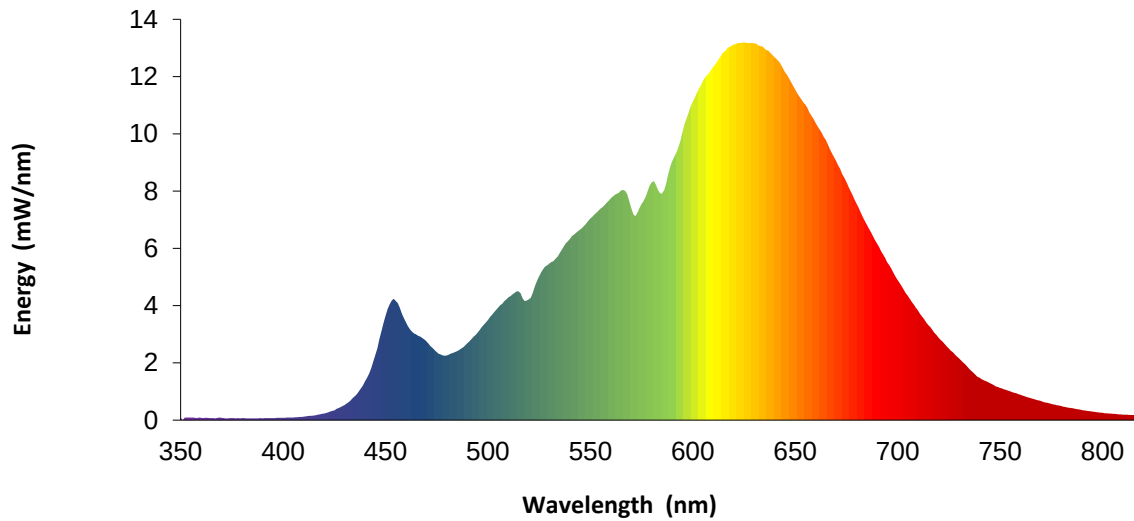
Duv	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0018	0.468	0.407	0.269	0.527



SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	3.4		570	7.4		680	7.5
355	0.1		465	3.0		575	7.5		685	6.8
360	0.1		470	2.8		580	8.3		690	6.2
365	0.1		475	2.4		585	7.9		695	5.5
370	0.1		480	2.3		590	9.0		700	4.9
375	0.1		485	2.4		595	10.0		705	4.3
380	0.1		490	2.7		600	11.1		710	3.8
385	0.1		495	3.1		605	11.9		715	3.3
390	0.1		500	3.5		610	12.3		720	2.9
395	0.1		505	3.9		615	12.9		725	2.5
400	0.1		510	4.3		620	13.1		730	2.2
405	0.1		515	4.5		625	13.2		735	1.8
410	0.1		520	4.2		630	13.2		740	1.5
415	0.2		525	5.0		635	13.0		745	1.3
420	0.2		530	5.5		640	12.7		750	1.1
425	0.3		535	5.8		645	12.2		755	1.0
430	0.5		540	6.3		650	11.6		760	0.9
435	0.8		545	6.7		655	11.0		765	0.8
440	1.3		550	7.0		660	10.4		770	0.7
445	2.2		555	7.4		665	9.8		775	0.6
450	3.6		560	7.8		670	9.0		780	0.5
455	4.2		565	8.0		675	8.3		---	---

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

Test Configuration	Tested Model No.	Pass/Fail/NA
1	KVWS21027CNB	NA

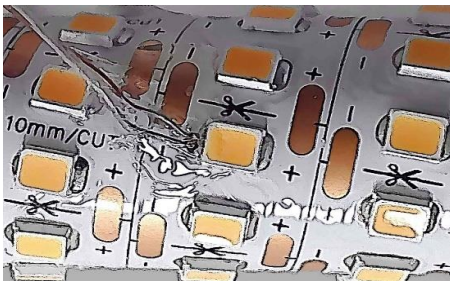
LED MEASUREMENTS AND RATINGS

Mounting Type	Input Voltage (Vac)
Wall Surface	120.00

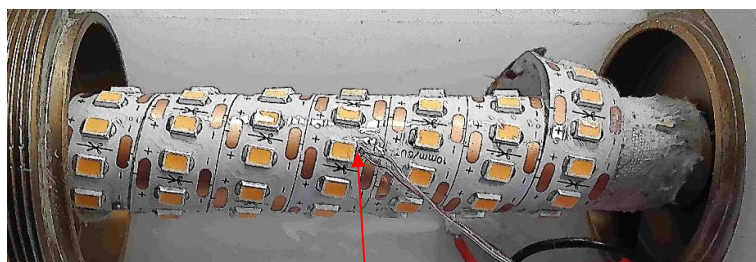
LED Model No.	GL-N283527-36-CV-200-LJ84 (2700K)
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Measured LED Current (mA)	Measured LED Temp - Ts (°C)
7.5	76.1

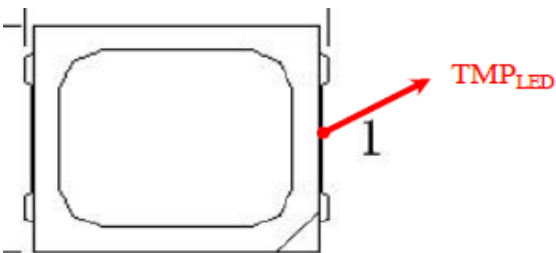
ISTMT Photo - Ts



ISTMT Photo - Ts Location



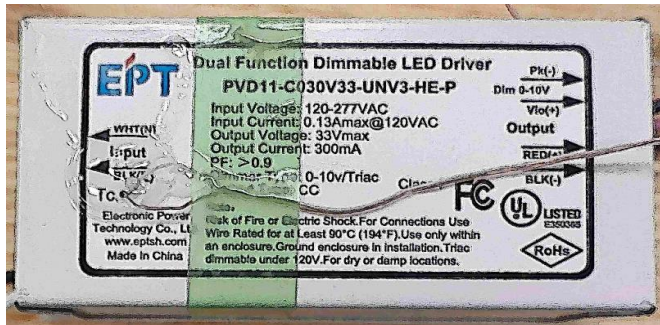
LED SOURCE MANUFACTURER'S SUPPORTING DOCUMENTATION



DRIVER MEASUREMENTS AND RATINGS

Measured Case Temp - Td (°C)	Max Case Temp (°C)
36.4	90.0

ISTMT Photo - Td



DRIVER MANUFACTURER'S SUPPORTING DOCUMENTATION



● Tc max 90°C, Life expectancy of 50,000h at Tcase ≤ 75°C

EQUIPMENT LIST

REPORT NO. 106149824CHI-005

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT310E	CHI0664	3/27/2025	3/27/2026
2	Omega Thermometer	DPI8-C24	146920	3/26/2025	3/26/2026
3	LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
4	Omega Thermohygrometer	OM-CP-RFPRHTEMP2000A	CHI0764	10/8/2024	10/8/2025
5	Chroma Power Supply	61604	CHI0371	VBV	VBV
8	Omega Thermohygrometer	OM-CP-RFPRHTEMP2000A	CHI0727	10/8/2024	10/8/2025
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	146769	3/28/2025	3/28/2026
17	Omega thermometer	USB TC08	CHI0625	3/26/2025	3/26/2026
26	Xitron Power Analyzer	XT2640	CHI0611	4/1/2025	4/1/2026
27	Yokogawa Power Analyzer	WT210	146453	09/30/24	09/30/25
28	Agilent Data Logger	34972A	CHI0113	03/25/25	03/25/26
29	Staco Variac	3PN1510B	146399	VBV	VBV
30	Omega Thermohygrometer	OM-CP-RFPRHTEMP2000A	CHI0765	10/7/2024	10/7/2025
31	Yokogawa Power Analyzer	WT1600	146770	10/2/2024	10/2/2025
32	Pacific AC Power Supply	118-ACX	CHI0154	VBV	VBV

Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

REVISION HISTORY

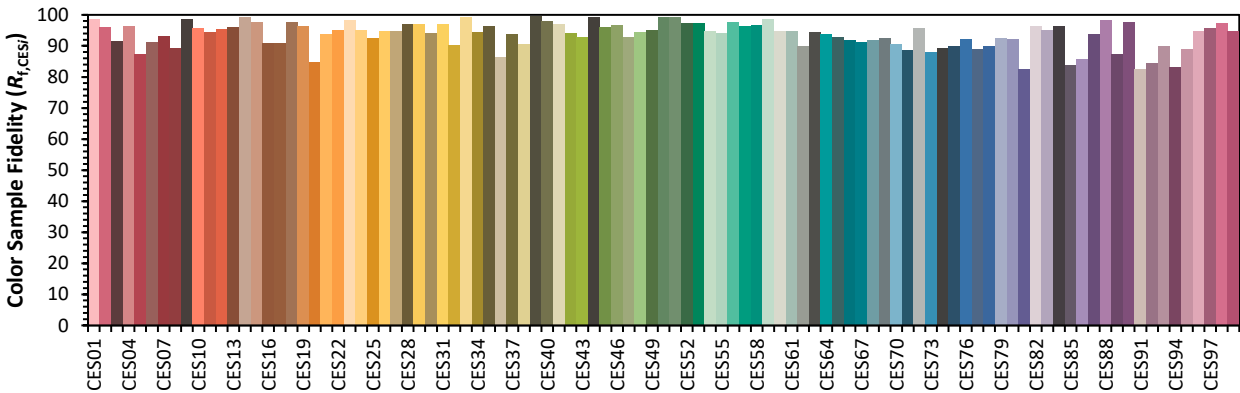
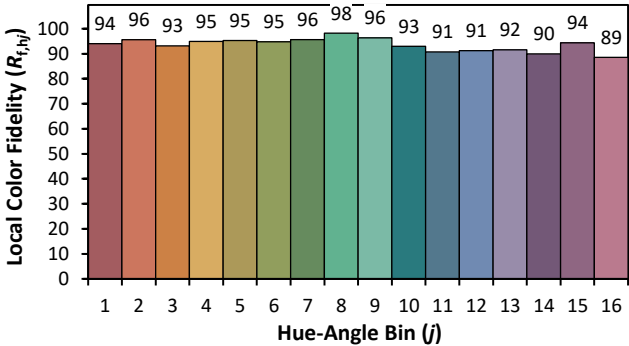
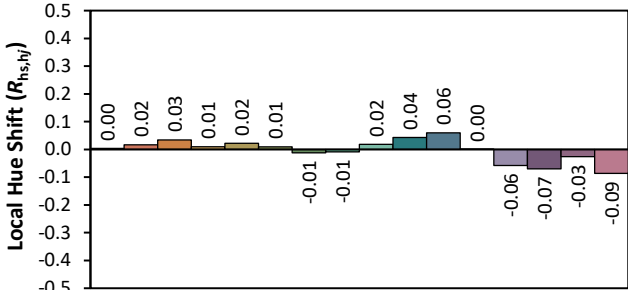
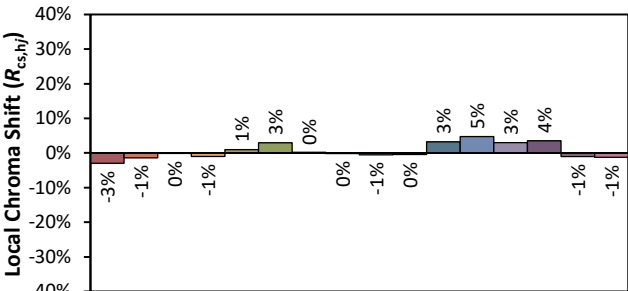
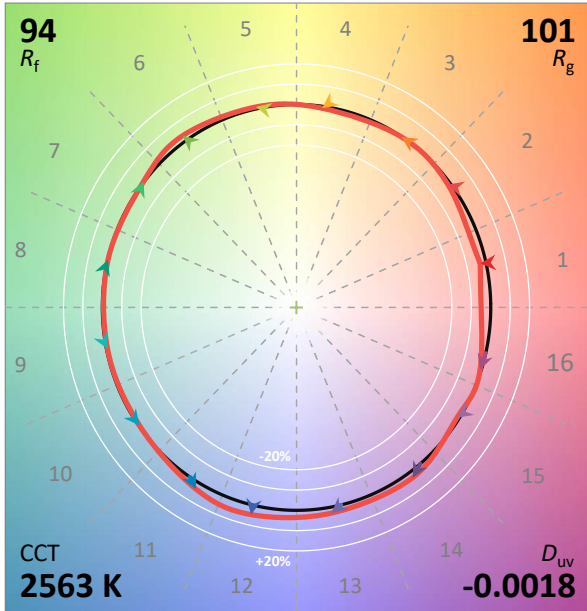
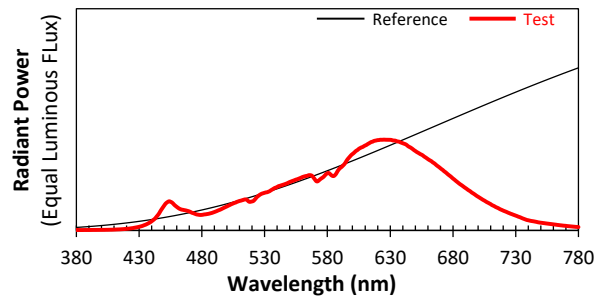
#	Revision Date	Updated By	Reviewed By	Description of Change
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Test Configuration	Tested Model No.	Pass/Fail/NA
1	KWWS21027CNB	NA

ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD
Date: 4/18/2025

Manufacturer: Visual Comfort & Company
Model: KWWS21027CNB



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

x 0.4682
y 0.4074
u' 0.2694
v' 0.5274