

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

SLWS23230N

PROJECT NUMBER

G105408958

REPORT NUMBER

105408958CHI-005

ISSUE DATE

4/14/2023

REVISED DATE

None

TEST DATES

2023-04-07 through 2023-04-13.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

105408958CHI-005

MODEL NUMBER(s)

SLWS23230N

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
Lighting Division

Reviewer:



Jeff Davis
NA Technical Lead
Lighting Division

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SAMPLE INFORMATION

REPORT NO. 105408958CHI-005

ITEMS RECEIVED

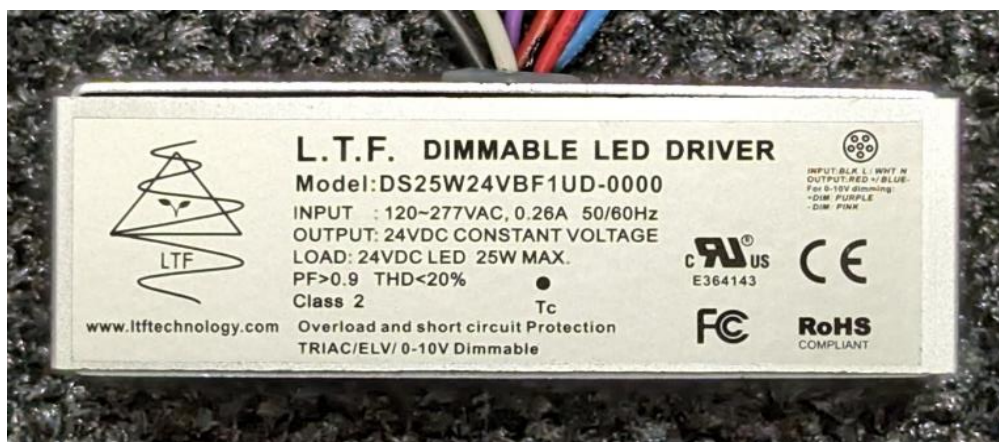
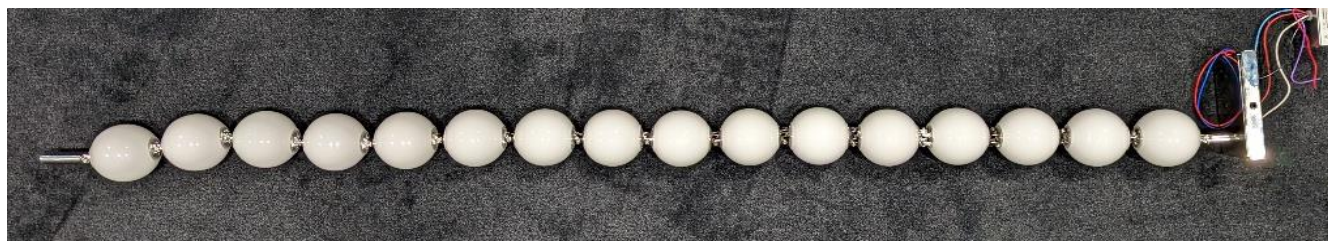
Item No.	Control No.	Model No.	Description	Type	Received
1	AH04062023065219-002	SLWS23230N	Perle 53 Wall Sconce	Production	4/6/2023

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	SLWS23230N	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS

Distribution was performed with below orientation and crystals aligned



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	SLWS23230N
Product Description:	Perle 53 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)	848.4	853.9
Input Power (W) @ 120 (Vac)	17.19	17.19
Lumen Efficacy (lm/W)	49.4	49.7
Input Power Factor (I) @ 120 (Vac)	0.958	0.961

Criteria	Results
Input ATHD (%) @ 120 (Vac)	14.40
Correlated Color Temperature (K)	2986
Color Rendering Index - Ra (I)	93.2
Color Rendering Index - R9 (I)	58.8
Duv (I)	-0.0008
Chromaticity Coordinate (x)	0.437
Chromaticity Coordinate (y)	0.402
Chromaticity Coordinate (u')	0.251
Chromaticity Coordinate (v')	0.521

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

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	SLWS23230N	NA

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

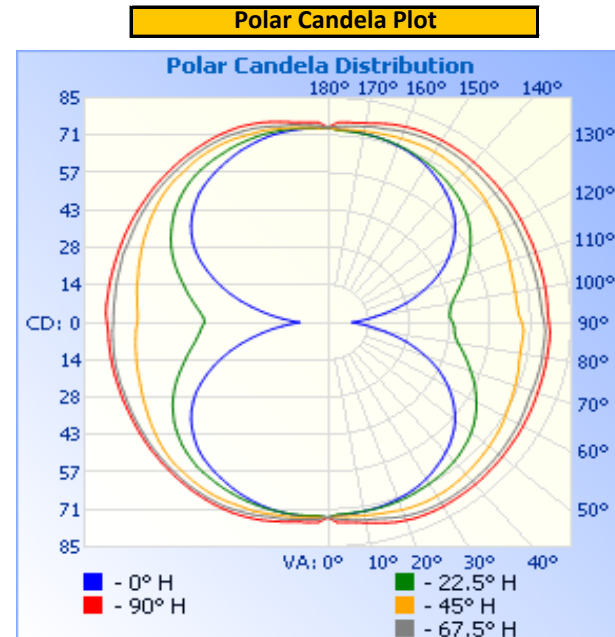
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	119.99	149.5	17.19	0.958

Light Output (lm)	Lumen Efficacy (lm/W)
848.4	49.4

INTENSITY SUMMARY - CANDELA

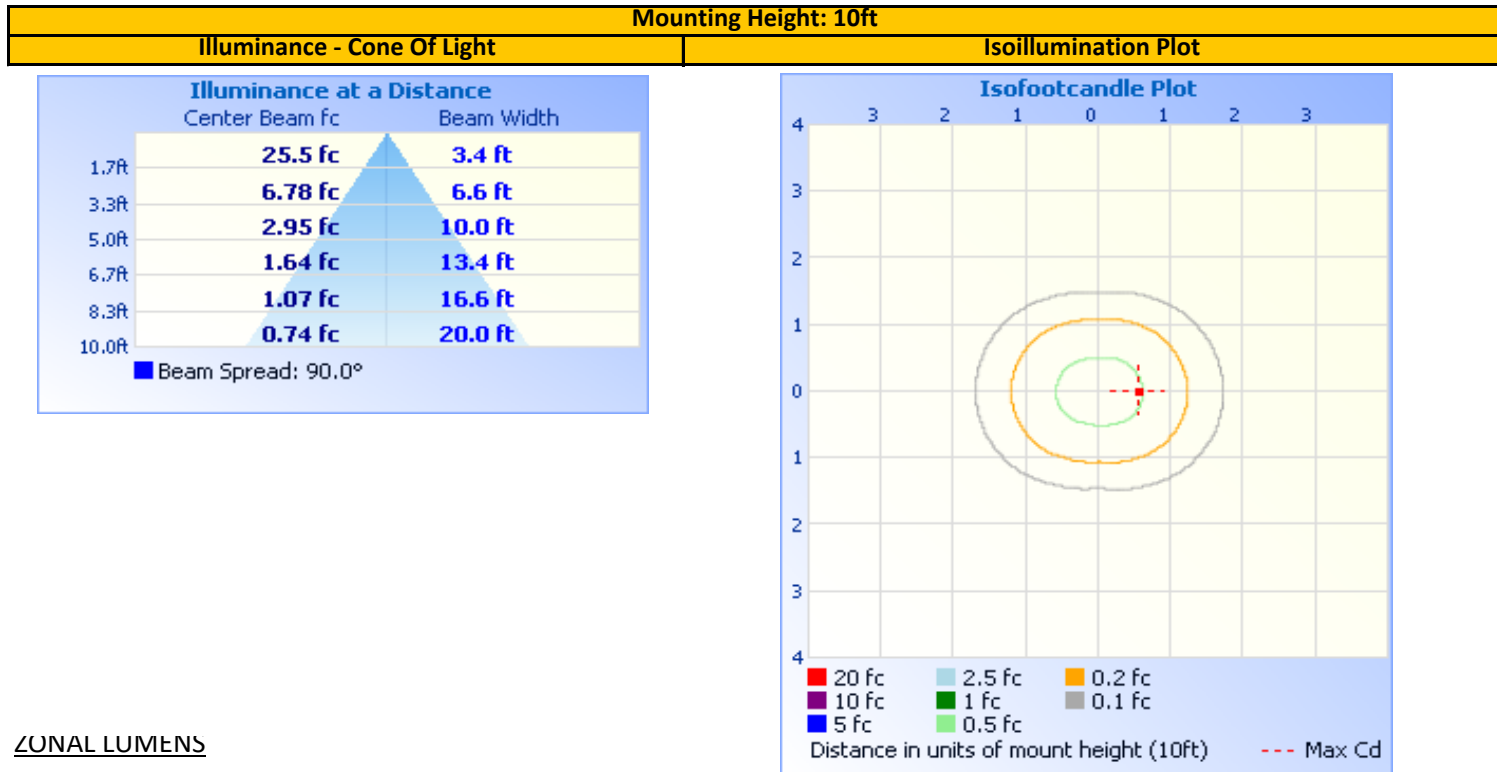
Angle	0	22.5	45	67.5	90
0	74	74	74	74	74
5	73	73	74	75	76
10	73	73	74	76	77
15	72	72	75	77	79
20	71	72	76	78	80
25	70	71	76	79	80
30	69	71	76	79	80
35	66	70	76	79	80
40	64	69	75	78	80
45	61	67	74	78	80
50	58	65	73	78	79
55	54	63	73	77	79
60	49	60	71	77	79
65	43	57	70	76	78
70	36	53	70	76	78
75	28	50	69	76	78
80	20	46	68	76	78
85	14	44	68	76	78
90	8	44	68	76	77
95	14	43	66	75	77
100	20	44	66	75	77
105	28	47	67	75	77
110	36	51	67	75	77
115	43	54	68	75	77
120	49	57	69	75	78
125	54	61	71	76	78
130	58	63	72	76	78
135	61	65	73	77	79
140	64	67	73	77	79
145	66	68	74	77	79
150	69	70	74	78	80
155	70	71	74	77	79
160	71	71	74	77	79
165	72	72	74	76	78
170	73	72	74	75	77
175	73	73	73	75	76
180	74	74	74	74	74

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	63.3	7.5%	0-10	7.1	0.8%
0-40	110.1	13.0%	10-20	21.3	2.5%
0-60	229.5	27.0%	20-30	34.9	4.1%
60-90	194.8	23.0%	30-40	46.9	5.5%
70-100	192.7	22.7%	40-50	56.4	6.7%
90-120	194.8	23.0%	50-60	62.9	7.4%
0-90	424.2	50.0%	60-70	65.7	7.7%
90-180	424.2	50.0%	70-80	65.5	7.7%
0-180	848.4	100.0%	80-90	63.6	7.5%
			90-100	63.6	7.5%
			100-110	65.5	7.7%
			110-120	65.7	7.7%
			120-130	62.9	7.4%
			130-140	56.4	6.7%
			140-150	46.9	5.5%
			150-160	34.9	4.1%
			160-170	21.3	2.5%
			170-180	7.1	0.8%

INTEGRATING SPHERE TESTING

REPORT NO. 105408958CHI-005

Test Configuration	Tested Model No.	Pass/Fail/NA
1	SLWS23230N	NA

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

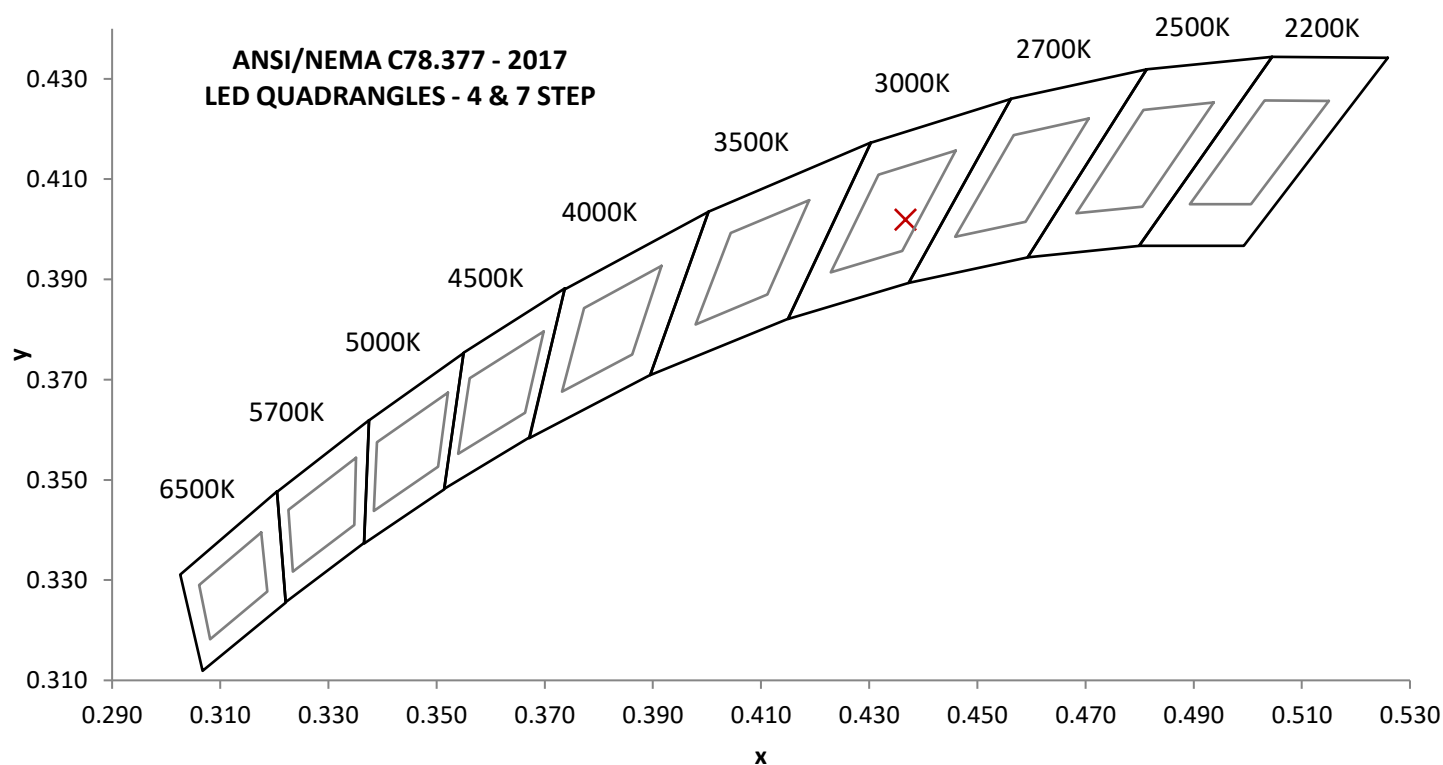
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
119.98	149.0	17.19	0.961	14.40

Measured at 119.98(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
853.9	49.7	2986	93.2	58.8

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0008	0.437	0.402	0.251	0.521

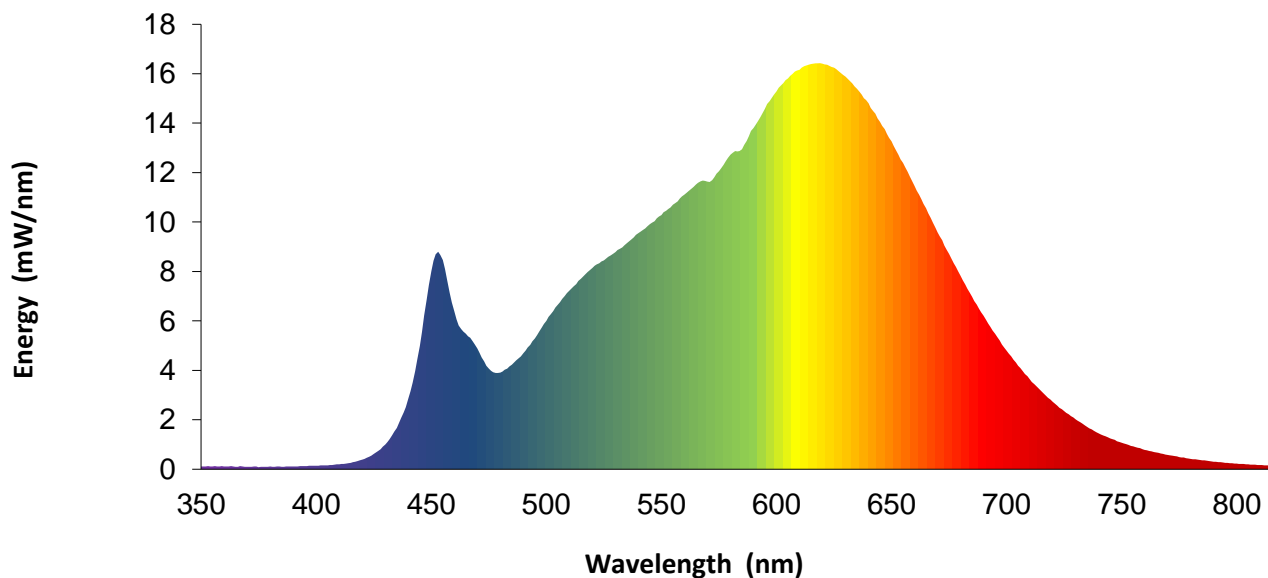


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	6.4		570	11.6		680	7.8
355	0.1		465	5.5		575	12.1		685	7.0
360	0.1		470	4.9		580	12.7		690	6.2
365	0.1		475	4.1		585	13.0		695	5.5
370	0.1		480	3.9		590	13.8		700	4.8
375	0.1		485	4.2		595	14.6		705	4.2
380	0.1		490	4.7		600	15.3		710	3.6
385	0.1		495	5.3		605	15.8		715	3.2
390	0.1		500	6.0		610	16.2		720	2.7
395	0.1		505	6.7		615	16.4		725	2.4
400	0.1		510	7.2		620	16.4		730	2.0
405	0.2		515	7.7		625	16.3		735	1.7
410	0.2		520	8.1		630	15.9		740	1.5
415	0.3		525	8.4		635	15.4		745	1.3
420	0.4		530	8.8		640	14.8		750	1.1
425	0.6		535	9.1		645	14.0		755	0.9
430	1.0		540	9.6		650	13.3		760	0.8
435	1.7		545	9.9		655	12.4		765	0.7
440	2.9		550	10.3		660	11.5		770	0.6
445	5.0		555	10.7		665	10.6		775	0.5
450	8.0		560	11.1		670	9.6		780	0.4
455	8.5		565	11.5		675	8.7		---	---

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	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
6	Sorenson DC Power Supply	XHR 150-7	146922	VBU	VBU
7	Multi Channel Spectroradiometer	OL770	CHI0092	VBU	VBU
8	Omega Thermohygrometer	OM-CP-RFPRHTEMP2000A	CHI0727	3/2/2023	3/2/2024
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
1	SLWS23230N	NA

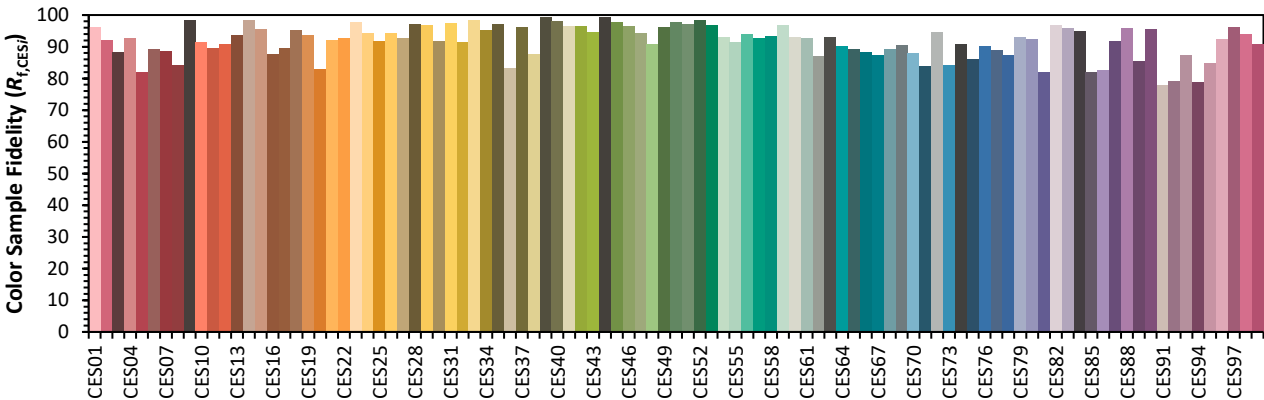
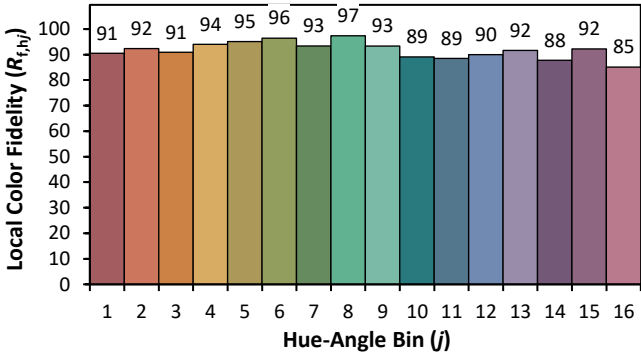
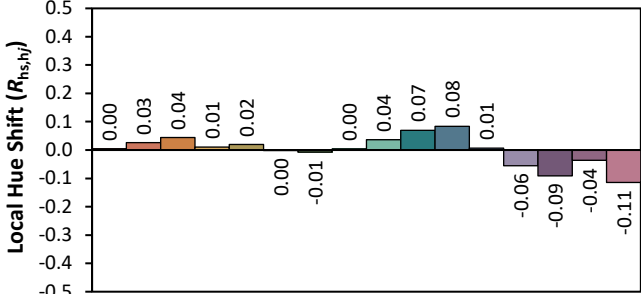
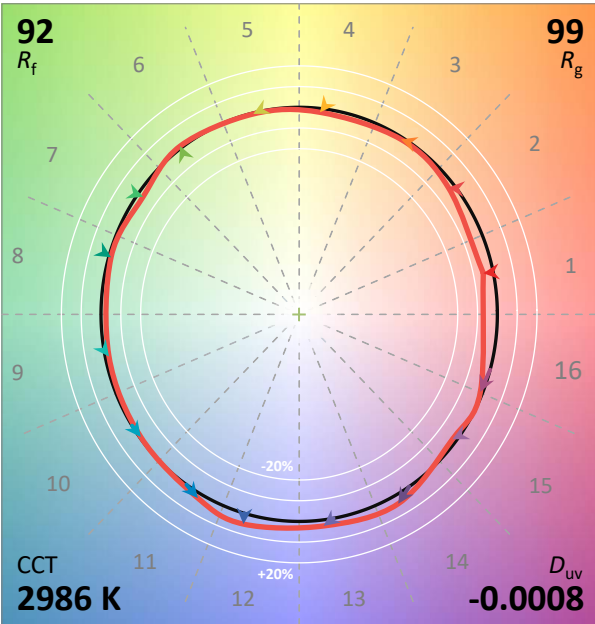
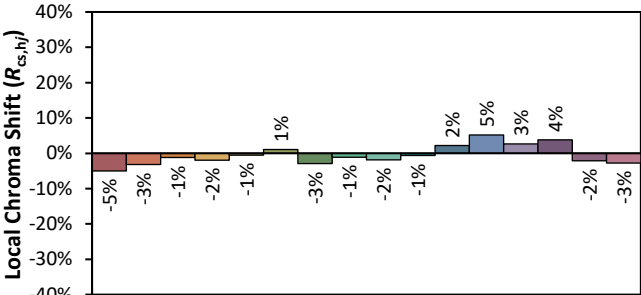
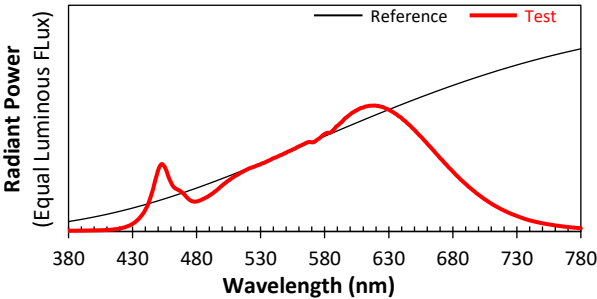
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 4/7/2023

Model: SLWS23230N



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

x 0.4367
y 0.4019
u' 0.2514
v' 0.5205