

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700BCBAU24*-LED930

PROJECT NUMBER

G105490479

REPORT NUMBER

105490479CHI-001

ISSUE DATE

6/29/2023

REVISED DATE

None

TEST DATES

2023-06-26 through 2023-06-27.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

105490479CHI-001

MODEL NUMBER(s)

700BCBAU24*-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-01236620-0.

TEST STANDARDS

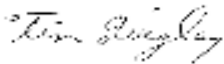
IES LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

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:



Tim Quigley
Project Engineer
Lighting Division

Reviewer:



Jeff Davis
NA Technical Lead
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SAMPLE INFORMATION

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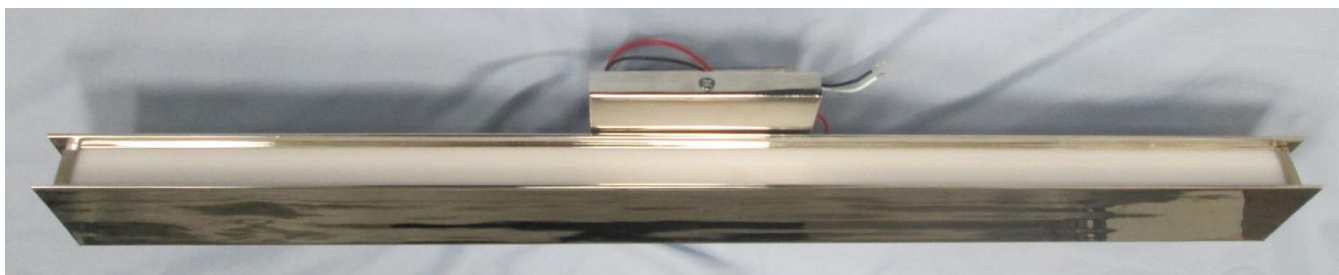
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH06232023013525	700BCBAU24*-LED930	Bau 24 Vanity	Production	6/23/2023

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	700BCBAU24*-LED930	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700BCBAU24*-LED930
Product Description:	Bau 24 Vanity
LED Model No.:	GL GL-N283530-36-CV-200-LJ84
Driver Model No.:	LTF DA12W300C2741-3001-01
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	397.0	386.0
Input Power (W) @ 120 (Vac)	11.63	11.53
Lumen Efficacy (lm/W)	34.1	33.5
Input Power Factor () @ 120 (Vac)	0.987	0.999

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.50
Correlated Color Temperature (K)	2810
Color Rendering Index - Ra ()	94.0
Color Rendering Index - R9 ()	68.1
Duv ()	-0.0015
Chromaticity Coordinate (x)	0.449
Chromaticity Coordinate (y)	0.404
Chromaticity Coordinate (u')	0.258
Chromaticity Coordinate (v')	0.523

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	700BCBAU24*-LED930	NA

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

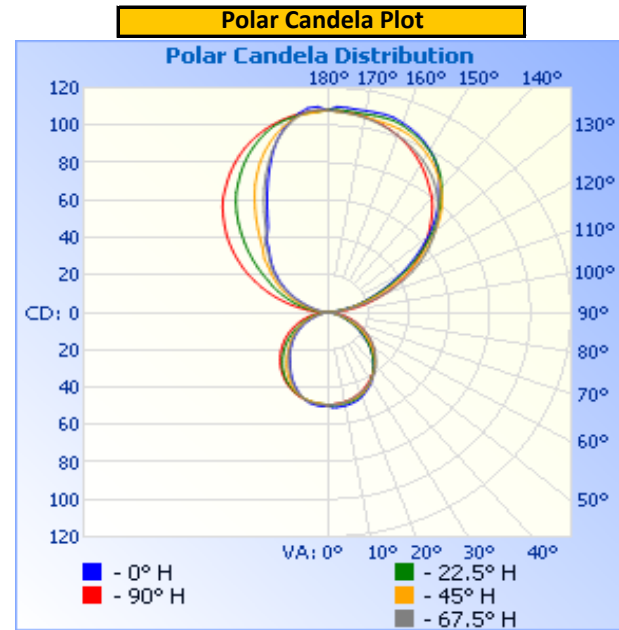
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up/Down	120.02	98.2	11.63	0.987

Light Output (lm)	Lumen Efficacy (lm/W)
397.0	34.1

INTENSITY SUMMARY - CANDELA

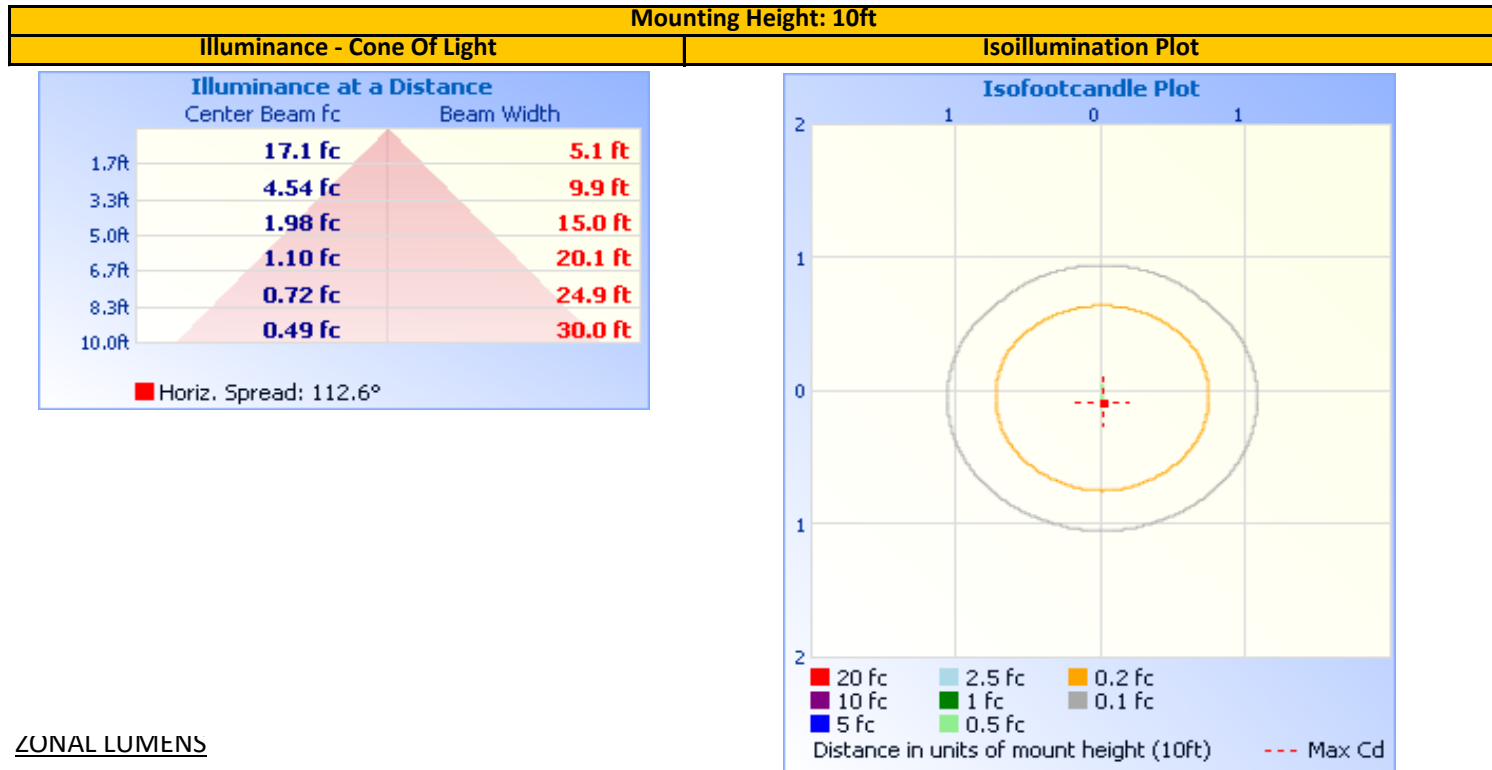
Angle	0	22.5	45	67.5	90
0	49	49	49	49	49
5	51	50	49	49	49
10	51	49	49	49	49
15	50	49	48	48	48
20	48	47	47	46	46
25	46	45	45	44	44
30	43	42	43	42	42
35	40	39	40	40	39
40	36	35	36	37	36
45	31	31	33	34	33
50	27	27	28	30	29
55	22	22	24	26	26
60	17	17	19	22	22
65	13	13	15	18	18
70	9	9	10	13	14
75	6	6	7	9	10
80	3	3	4	5	7
85	1	1	1	2	3
90	0	0	0	0	0
95	1	1	1	3	6
100	4	6	9	10	14
105	15	15	16	20	22
110	22	23	26	31	31
115	32	33	37	42	40
120	43	45	48	52	48
125	54	56	60	61	57
130	66	68	70	70	65
135	76	78	80	77	73
140	86	87	87	84	80
145	94	95	93	89	86
150	101	100	98	94	92
155	105	104	102	98	97
160	108	107	104	101	101
165	110	108	105	104	104
170	109	108	106	106	106
175	110	108	107	107	108
180	108	108	108	108	108

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	38.2	9.6%	0-10	4.7	1.2%
0-40	61.6	15.5%	10-20	13.4	3.4%
0-60	104.9	26.4%	20-30	20.1	5.1%
60-90	22.4	5.7%	30-40	23.4	5.9%
70-100	11.1	2.8%	40-50	23.3	5.9%
90-120	47.7	12.0%	50-60	20.0	5.0%
0-90	127.4	32.1%	60-70	14.0	3.5%
90-180	269.7	67.9%	70-80	7.1	1.8%
0-180	397.0	100.0%	80-90	1.4	0.3%
			90-100	2.7	0.7%
			100-110	15.2	3.8%
			110-120	29.9	7.5%
			120-130	42.3	10.7%
			130-140	49.2	12.4%
			140-150	49.1	12.4%
			150-160	42.3	10.7%
			160-170	28.8	7.3%
			170-180	10.2	2.6%

INTEGRATING SPHERE TESTING

REPORT NO. 105490479CHI-001

Test Configuration	Tested Model No.	Pass/Fail/NA
1	700BCBAU24*-LED930	NA

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

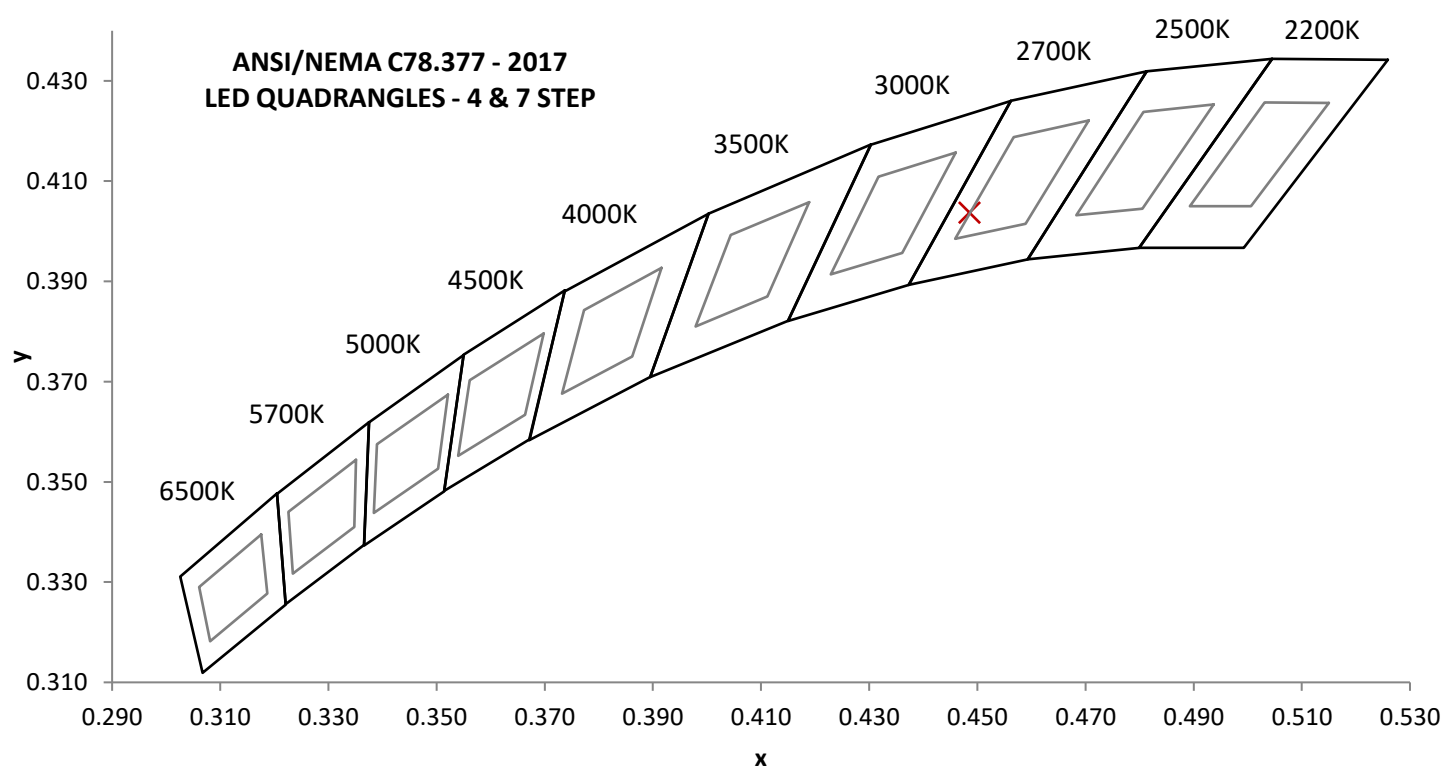
Base Orientation
Up/Down

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
120.01	96.7	11.53	0.999	10.50

Measured at 120.01(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
386.0	33.5	2810	94.0	68.1

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0015	0.449	0.404	0.258	0.523

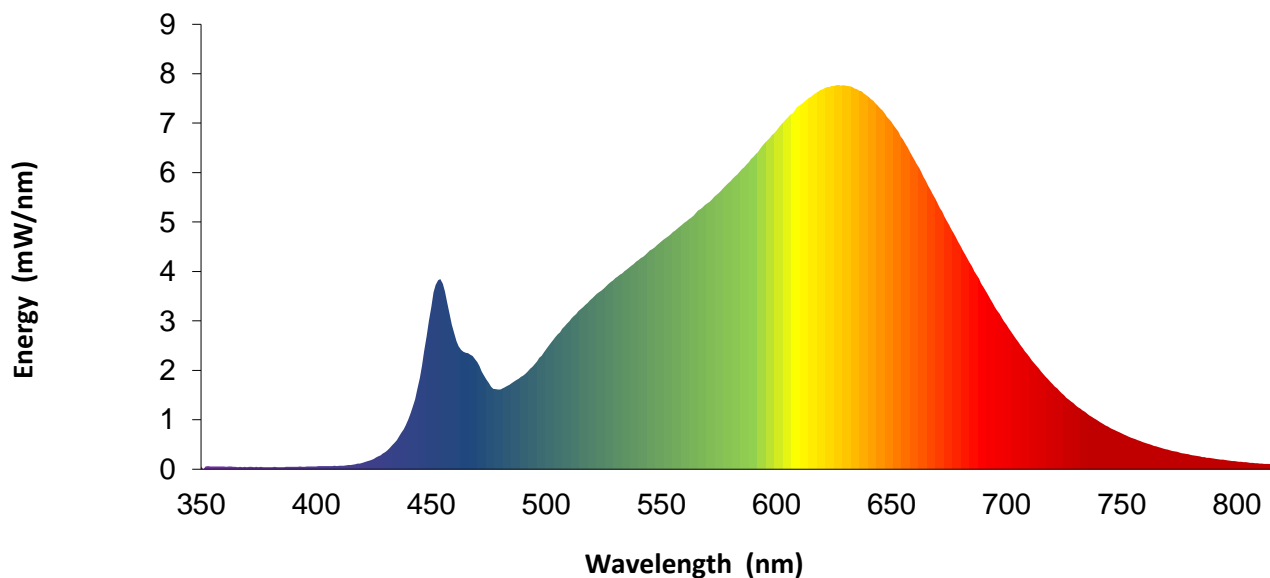


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	2.7		570	5.4		680	4.5
355	0.1		465	2.4		575	5.6		685	4.1
360	0.1		470	2.2		580	5.8		690	3.7
365	0.0		475	1.7		585	6.1		695	3.3
370	0.0		480	1.6		590	6.3		700	2.9
375	0.0		485	1.7		595	6.6		705	2.6
380	0.0		490	1.9		600	6.9		710	2.3
385	0.0		495	2.1		605	7.1		715	2.0
390	0.0		500	2.4		610	7.4		720	1.7
395	0.1		505	2.7		615	7.5		725	1.5
400	0.1		510	3.0		620	7.7		730	1.3
405	0.1		515	3.2		625	7.8		735	1.1
410	0.1		520	3.5		630	7.8		740	1.0
415	0.1		525	3.7		635	7.7		745	0.8
420	0.1		530	3.9		640	7.5		750	0.7
425	0.2		535	4.0		645	7.3		755	0.6
430	0.3		540	4.2		650	7.0		760	0.5
435	0.6		545	4.4		655	6.7		765	0.5
440	1.0		550	4.6		660	6.3		770	0.4
445	1.8		555	4.8		665	5.8		775	0.3
450	3.3		560	5.0		670	5.4		780	0.3
455	3.8		565	5.2		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. 105490479CHI-001

#	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	Omega Thermohygrometer	OM-CP-RFPRHTEMP2000A	CHI0780	4/3/2023	4/3/2024
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	EQA002615	4/4/2023	4/4/2024
26	Xitron Power Analyzer	2801	CHI0763	4/5/2023	4/5/2024

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	700BCBAU24*-LED930	NA

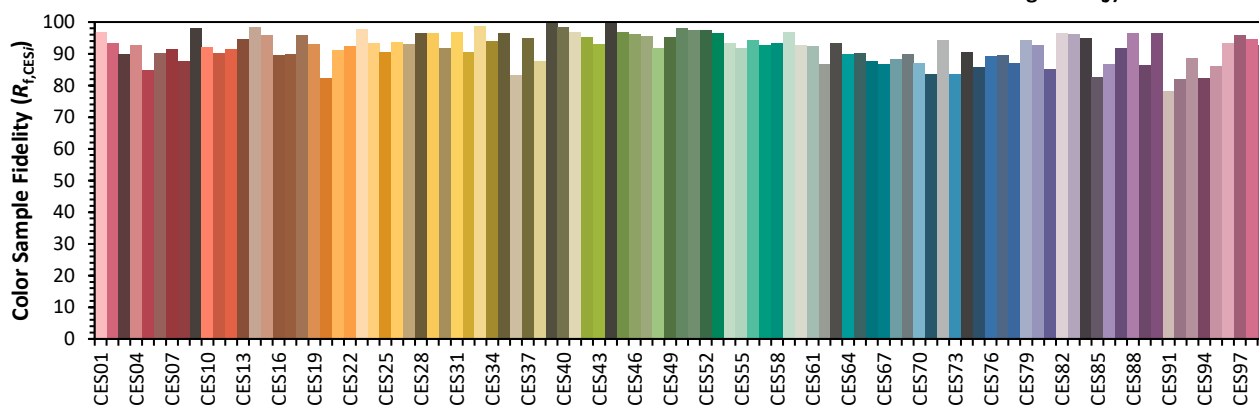
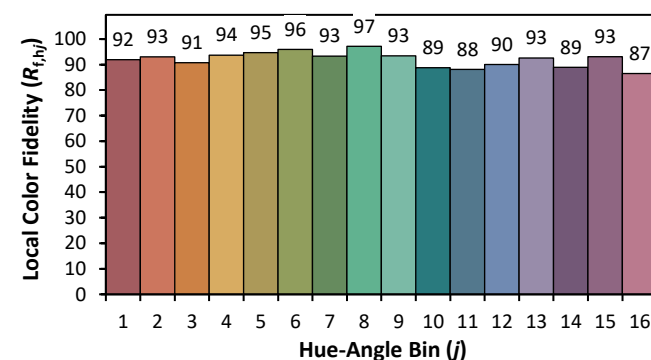
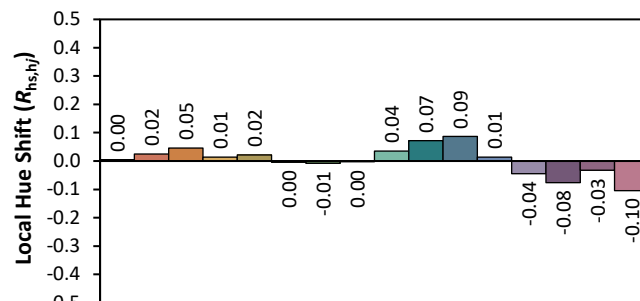
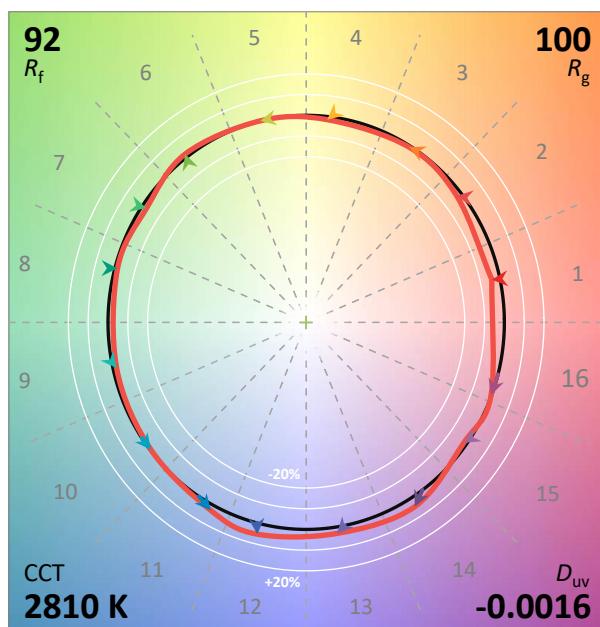
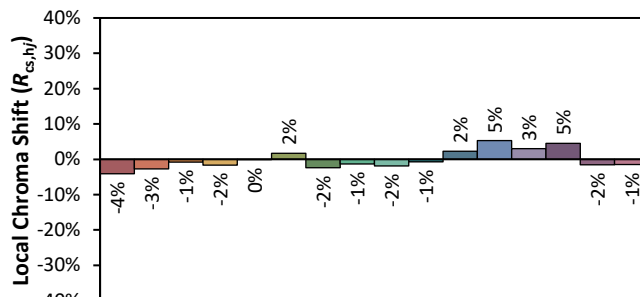
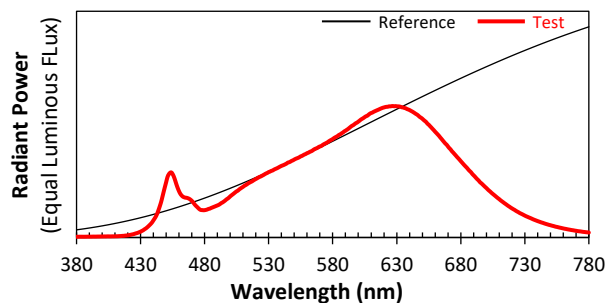
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 6/26/2023

Model: 700BCBAU24*-LED930



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

 x 0.4486 y 0.4037 u' 0.2583 v' 0.5230