

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700LSSTG48NB-LED927

PROJECT NUMBER

G105265097

REPORT NUMBER

105265097CHI-018

ISSUE DATE

1/4/2023

REVISED DATE

None

TEST DATES

01/04/2023.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

105265097CHI-018

MODEL NUMBER(s)

700LSSTG48NB-LED927

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

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

In Charge of Testing:



T. Quigley
Project Engineer
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Reviewer:



Jeff Davis
N.A Technical Lead
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SAMPLE INFORMATION

REPORT NO. 105265097CHI-018

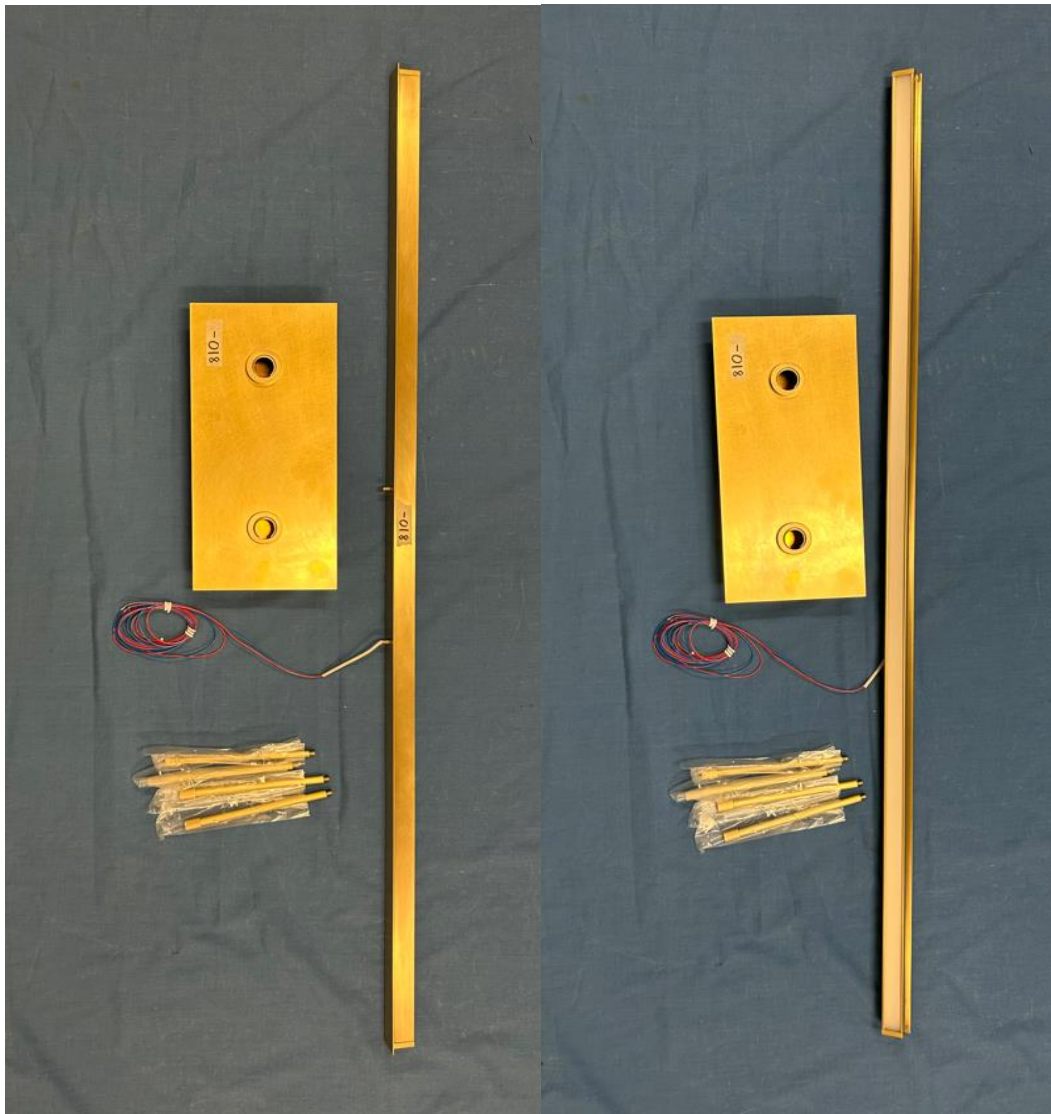
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH12072022025456-018	700LSSTG48NB-LED927	Stagger 48 Linear Suspension	Production	12/7/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	700LSSTG48NB-LED927	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700LSSTG48NB-LED927
Product Description:	Stagger 48 Linear Suspension
LED Model No.:	WW-FLS102T23WW240B-24(WCP)-UR-3S
Driver Model No.:	MDR-608-24-30-R1
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1089.4	1100.4
Input Power (W) @ 120VAC (Vac)	22.85	22.81
Lumen Efficacy (lm/W)	47.7	48.2
Input Power Factor (PF) @ 120VAC (Vac)	0.985	0.988

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	7.10
Correlated Color Temperature (K)	2606
Color Rendering Index - Ra (I)	93.7
Color Rendering Index - R9 (I)	69.5
Duv (I)	0.0001
Chromaticity Coordinate (x)	0.468
Chromaticity Coordinate (y)	0.412
Chromaticity Coordinate (u')	0.267
Chromaticity Coordinate (v')	0.529

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

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	700LSSTG48NB-LED927	NA

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

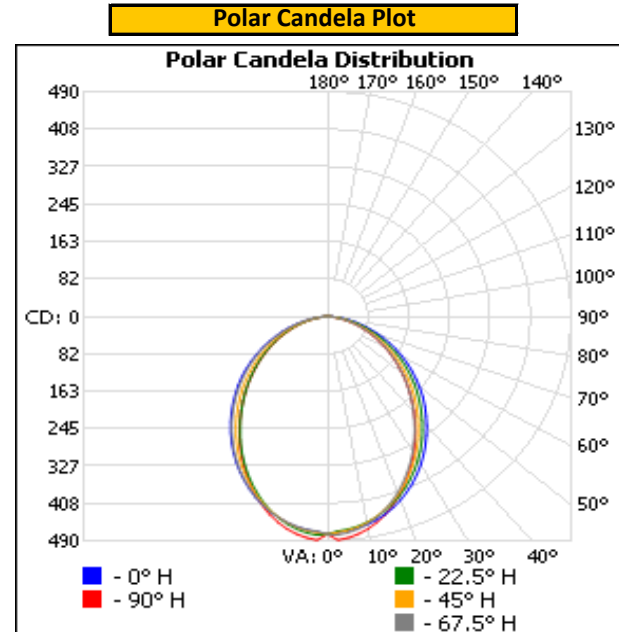
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	120.06	193.4	22.85	0.985

Light Output (lm)	Lumen Efficacy (lm/W)
1089.4	47.7

INTENSITY SUMMARY - CANDELA

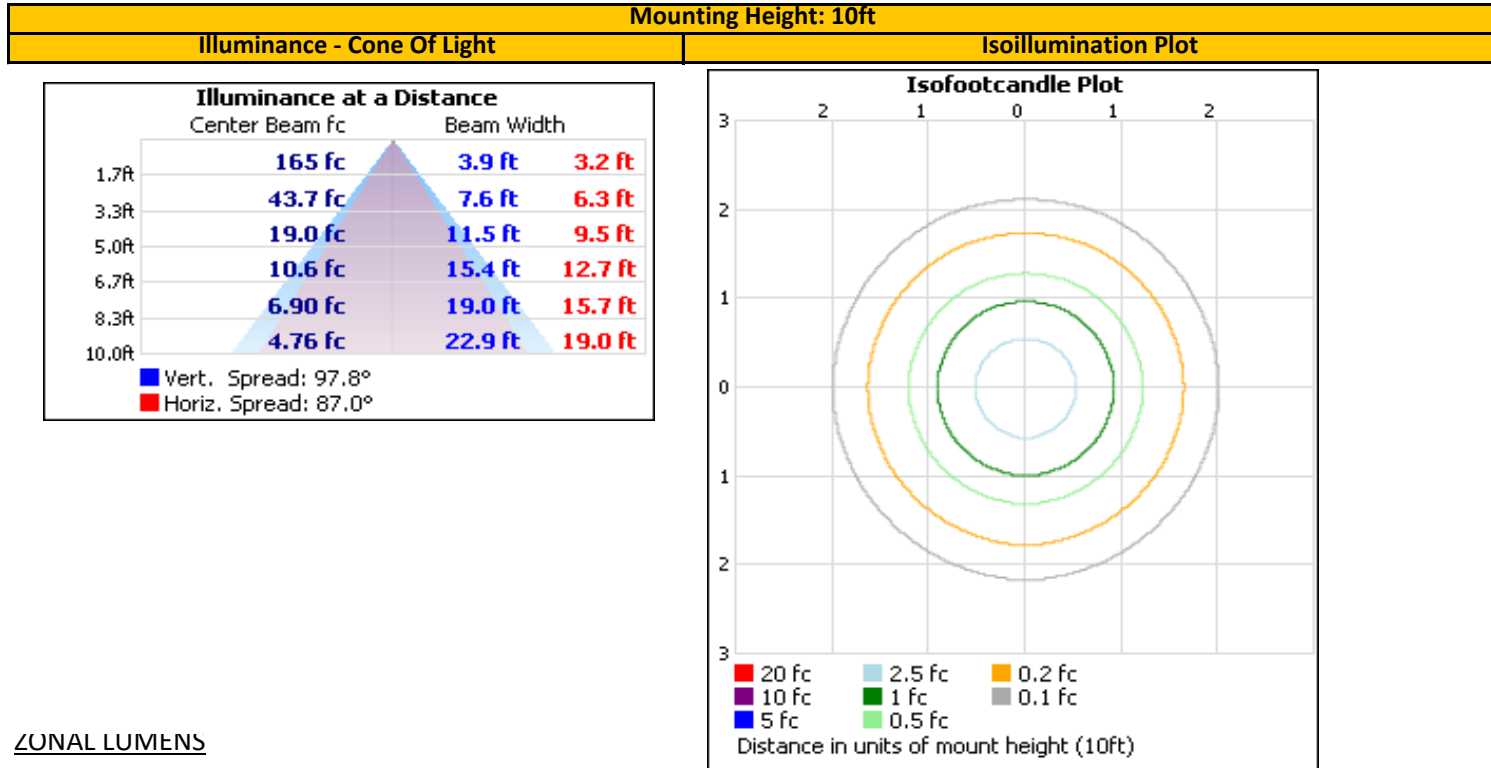
Angle	0	22.5	45	67.5	90
0	476	476	476	476	476
5	469	467	469	474	485
10	461	456	457	460	471
15	447	440	438	439	448
20	428	419	414	410	418
25	403	393	385	378	383
30	375	363	353	342	346
35	343	331	318	305	308
40	310	296	282	269	270
45	277	262	247	233	233
50	242	227	212	199	198
55	207	193	178	166	165
60	173	159	145	134	133
65	138	126	113	104	103
70	104	93	83	76	75
75	72	63	55	50	49
80	42	36	30	27	26
85	18	13	10	9	9
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



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ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	346.8	31.8%	0-10	44.6	4.1%
0-40	546.9	50.2%	10-20	124.1	11.4%
0-60	900.7	82.7%	20-30	178.1	16.3%
60-90	188.7	17.3%	30-40	200.1	18.4%
70-100	74.3	6.8%	40-50	192.3	17.7%
90-120	0.0	0.0%	50-60	161.5	14.8%
0-90	1,089.4	100.0%	60-70	114.5	10.5%
90-180	0.0	0.0%	70-80	60.5	5.6%
0-180	1,089.4	100.0%	80-90	13.7	1.3%
			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

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	700LSSTG48NB-LED927	NA

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

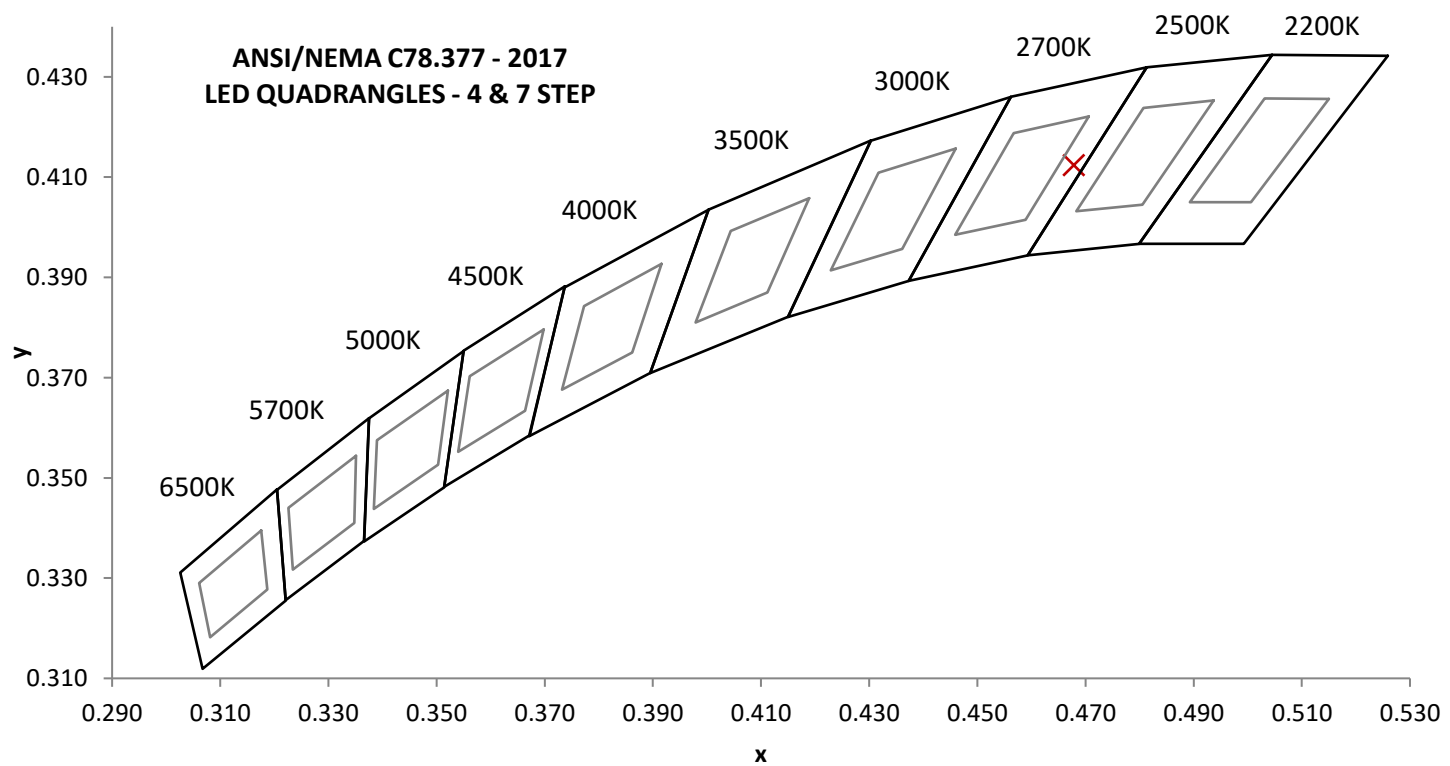
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
119.97	192.4	22.81	0.988	7.10

Measured at 119.97(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
1100.4	48.2	2606	93.7	69.5

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0001	0.468	0.412	0.267	0.529

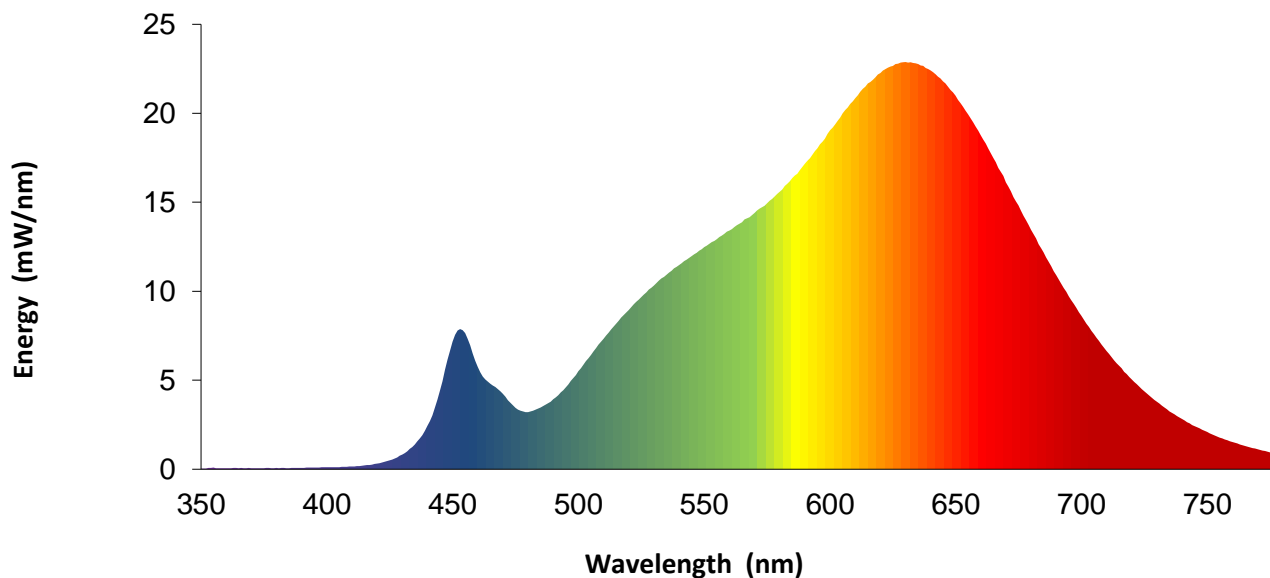


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	5.8		570	14.4		680	13.5
355	0.1		465	4.8		575	14.9		685	12.2
360	0.1		470	4.2		580	15.6		690	10.9
365	0.1		475	3.5		585	16.4		695	9.7
370	0.1		480	3.2		590	17.2		700	8.6
375	0.0		485	3.5		595	18.0		705	7.6
380	0.1		490	3.9		600	19.0		710	6.6
385	0.1		495	4.6		605	20.0		715	5.8
390	0.1		500	5.5		610	20.8		720	5.1
395	0.1		505	6.4		615	21.7		725	4.4
400	0.1		510	7.3		620	22.3		730	3.8
405	0.1		515	8.2		625	22.7		735	3.3
410	0.2		520	9.0		630	22.9		740	2.8
415	0.2		525	9.7		635	22.8		745	2.4
420	0.3		530	10.3		640	22.4		750	2.1
425	0.5		535	10.9		645	21.8		755	1.8
430	0.8		540	11.5		650	21.0		760	1.5
435	1.4		545	12.0		655	19.9		765	1.3
440	2.4		550	12.5		660	18.8		770	1.1
445	4.4		555	12.9		665	17.5		775	1.0
450	7.2		560	13.4		670	16.1		780	0.8
455	7.6		565	13.9		675	14.8		---	---

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. 105265097CHI-018

#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT310E	CHI0664	3/30/2022	3/30/2023
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	CHI0452	2/3/2022	2/3/2023
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	Newport Humidity Recorder	iServer	146379	5/11/2022	5/11/2023
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	146769	4/5/2022	4/5/2023
17	Omega thermometer	USB TC08	EQAH002615	4/5/2022	4/5/2023
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	700LSSTG48NB-LED927	NA

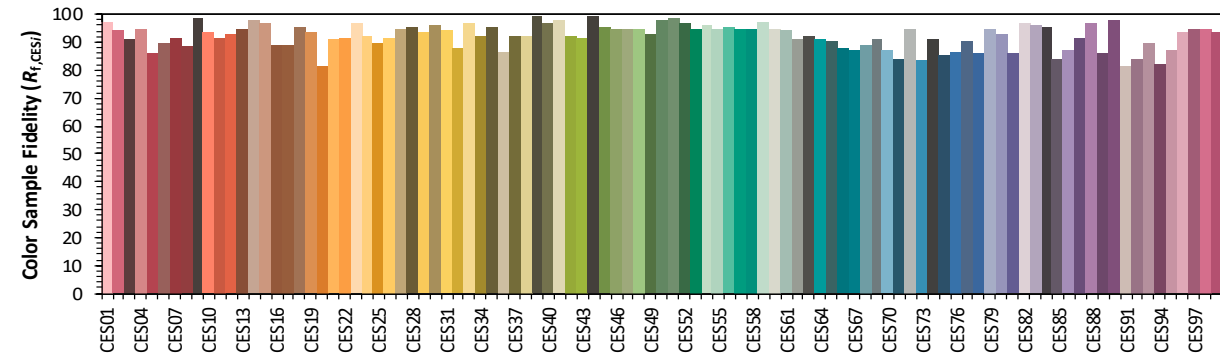
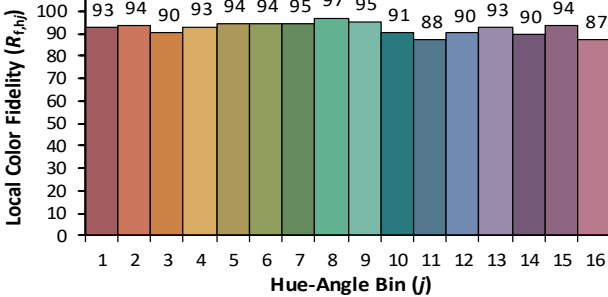
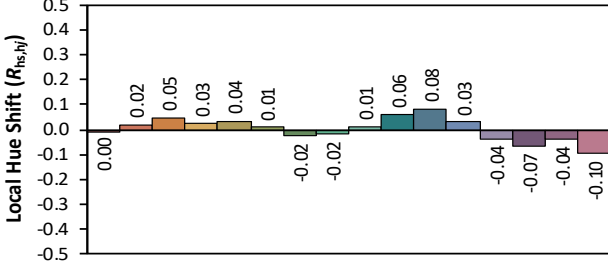
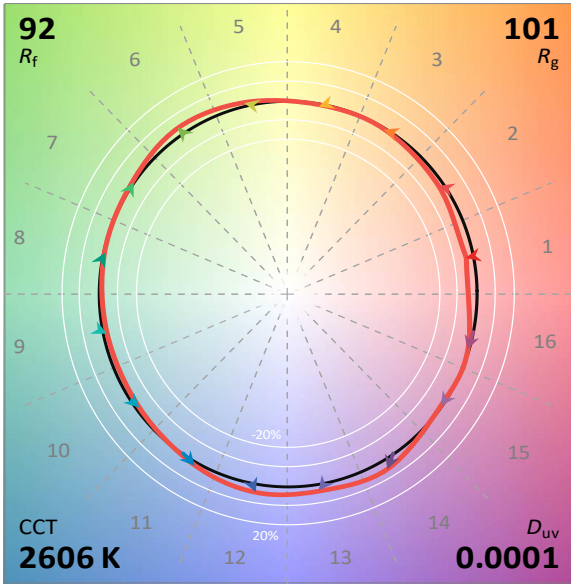
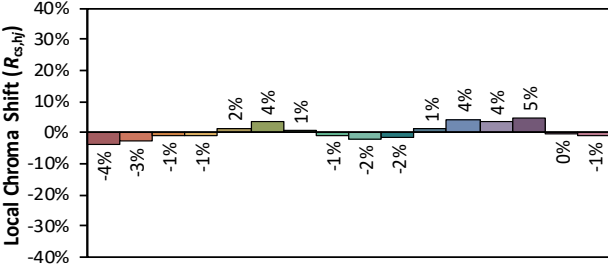
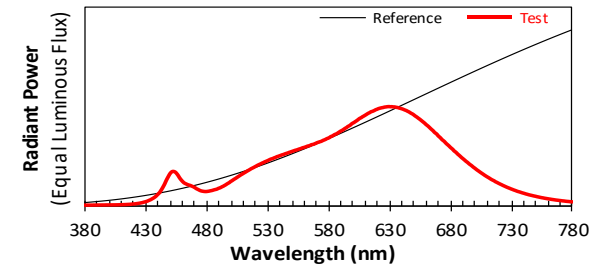
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 1/4/2023

Model: 700LSSTG48NB-LED927



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

x 0.4678
y 0.4124
u' 0.2668
v' 0.5292

CIE 13.3-1995 (CRI)	
R _a	94
R ₉	70