

# VISUAL COMFORT AND COMPANY TEST REPORT

## SCOPE OF WORK

LED Performance Testing

## MODEL NUMBER

700OBT30NB-LED927

## PROJECT NUMBER

G104941221

## REPORT NUMBER

104941221CHI-004

## ISSUE DATE

2/3/2022

## REVISED DATE

None

## TEST DATES

2022-02-01 through 2022-02-03.

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104941221CHI-004

**MODEL NUMBER(s)**

700OBT30NB-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-01236637-1.

**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

ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

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

In Charge of Testing:



Maximilian Carvajal  
Engineer  
Lighting Division

Reviewer:



Jeff Davis  
N.A. Technical Lead  
Lighting Division

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## SAMPLE INFORMATION

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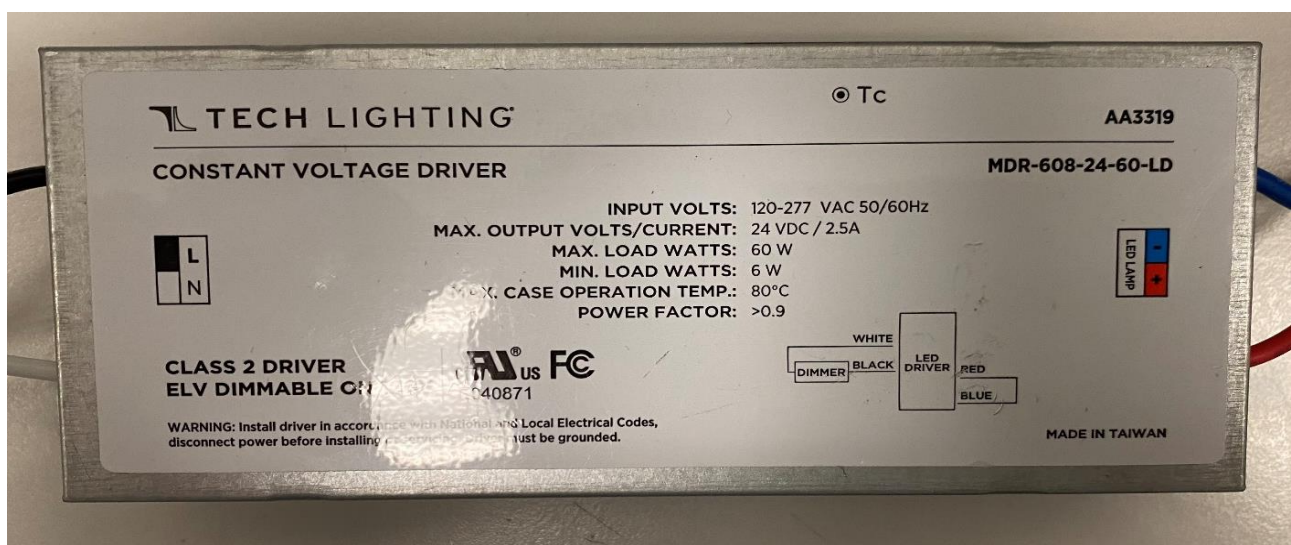
## ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH01282022111942	700OBT30NB-LED927	Orbet 30 Chandelier	Production	1/28/2022

## TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	700OBT30NB-LED927	1

## SAMPLE PHOTOS - TESTED CONFIGURATIONS



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700OBT30NB-LED927
Product Description:	Orbet 30 Chandelier
LED Model No.:	GL-24-F447N-A
Driver Model No.:	MDR-608-24-60-LD
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2382.8	2376.3
Input Power (W) @ 120VAC (Vac)	38.25	38.17
Lumen Efficacy (lm/W)	62.3	62.2
Input Power Factor ( ) @ 120VAC (Vac)	0.985	0.986

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	12.85
Correlated Color Temperature (K)	2654
Color Rendering Index - Ra ( )	92.4
Color Rendering Index - R9 ( )	58.7
Duv ( )	-0.0008
Chromaticity Coordinate (x)	0.462
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.265
Chromaticity Coordinate (v')	0.527
Input Power (W) @ 277 (Vac)	38.38
Input Power Factor ( ) @ 277 (Vac)	0.872
Input ATHD (%) @ 277 (Vac)	22.15

## 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	700OBT30NB-LED927	NA

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

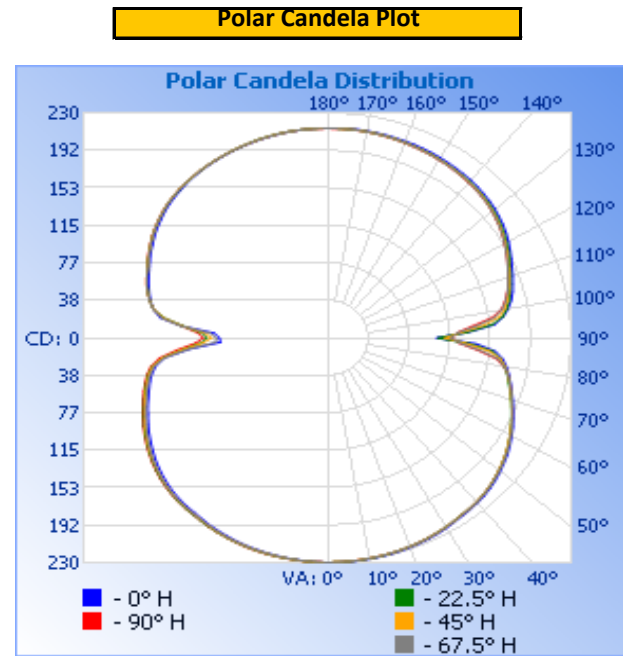
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Horizontal	120.01	323.6	38.25	0.985

Light Output (lm)	Lumen Efficacy (lm/W)
2382.8	62.3

**INTENSITY SUMMARY - CANDELA**

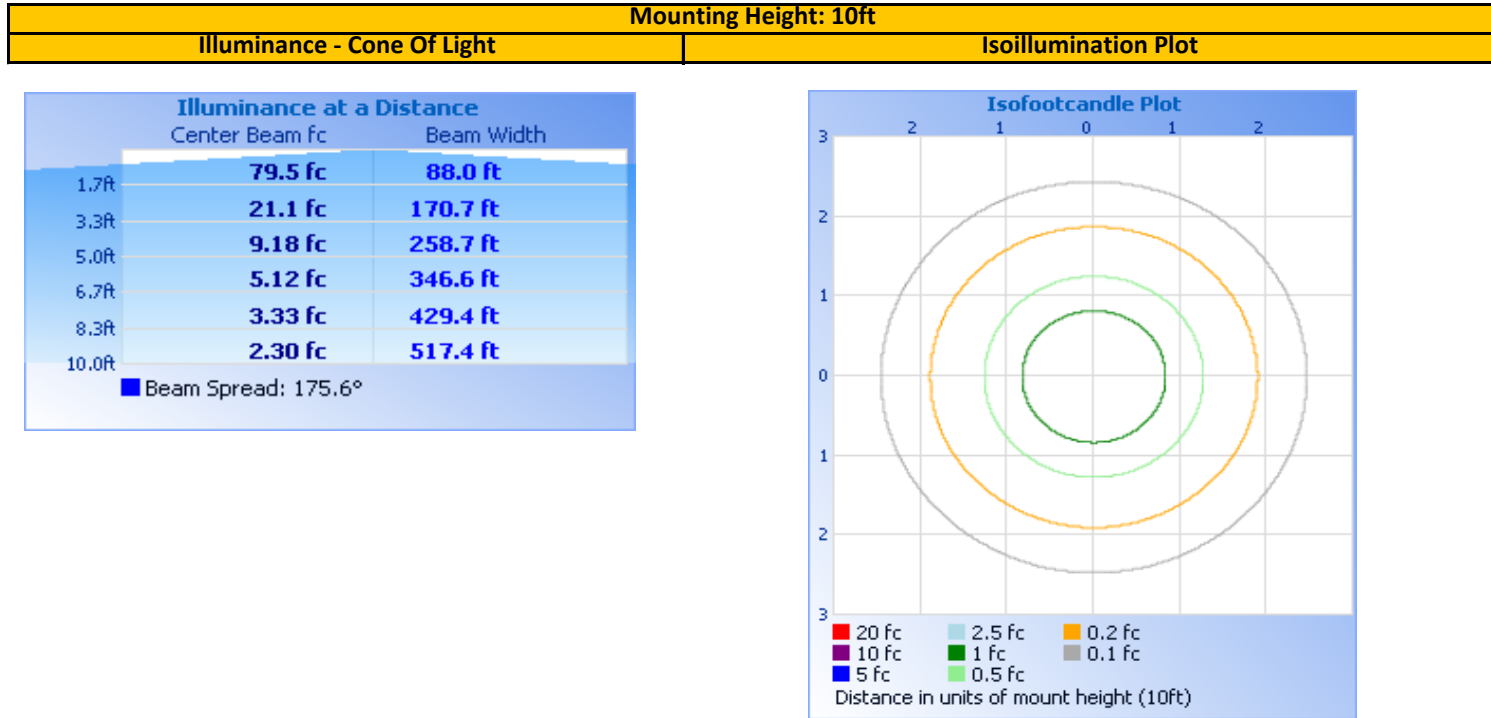
Angle	0	22.5	45	67.5	90
0	229.6	229.6	229.6	229.6	229.6
5	229.8	229.5	229.4	229.5	229.5
10	229.5	229.1	228.9	229.0	228.9
15	229.0	228.4	228.3	228.2	228.2
20	228.1	227.2	227.2	227.1	227.2
25	226.6	225.6	225.7	225.7	225.4
30	224.6	223.4	223.6	223.6	223.4
35	222.0	220.8	221.0	220.9	220.9
40	220.2	218.9	219.0	219.2	218.9
45	217.2	215.8	215.7	216.0	215.7
50	212.7	211.1	211.1	211.6	211.2
55	207.5	205.6	205.5	206.2	205.7
60	200.7	199.0	199.0	199.8	199.3
65	193.4	191.8	192.0	192.7	192.3
70	186.0	184.4	184.7	185.4	185.1
75	178.8	177.2	177.9	178.3	178.2
80	171.5	169.8	170.5	169.8	169.3
85	159.1	156.2	153.2	144.3	142.3
90	103.4	104.5	110.8	116.8	117.3
95	158.3	156.1	148.2	141.5	137.6
100	173.1	171.8	169.7	167.3	166.7
105	180.8	178.4	177.0	175.7	175.5
110	186.0	183.8	182.4	181.4	181.6
115	191.4	189.5	188.2	187.2	187.3
120	197.2	195.1	193.8	192.9	192.9
125	202.1	200.1	198.9	198.2	198.2
130	205.9	203.9	202.8	202.3	202.3
135	208.5	206.7	206.0	205.2	205.3
140	210.5	208.6	208.0	207.4	207.3
145	211.6	209.9	209.5	209.0	208.9
150	212.8	211.0	210.8	210.3	210.2
155	213.5	212.0	211.7	211.5	211.3
160	214.0	212.8	212.7	212.6	212.3
165	214.5	213.6	213.6	213.5	213.2
170	214.8	214.1	214.3	214.1	213.9
175	214.9	214.4	214.5	214.4	214.2
180	214.3	214.3	214.3	214.3	214.3

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	190.7	8.0%	0-10	21.9	0.9%
0-40	329.3	13.8%	10-20	64.6	2.7%
0-60	679.4	28.5%	20-30	104.2	4.4%
60-90	530.9	22.3%	30-40	138.6	5.8%
70-100	494.6	20.8%	40-50	166.4	7.0%
90-120	525.6	22.1%	50-60	183.7	7.7%
0-90	1,210.2	50.8%	60-70	189.7	8.0%
90-180	1,172.6	49.2%	70-80	187.0	7.8%
0-180	2,382.8	100.0%	80-90	154.1	6.5%
			90-100	153.5	6.4%
			100-110	186.0	7.8%
			110-120	186.1	7.8%
			120-130	177.8	7.5%
			130-140	159.0	6.7%
			140-150	131.4	5.5%
			150-160	97.9	4.1%
			160-170	60.5	2.5%
			170-180	20.4	0.9%



**INTEGRATING SPHERE TESTING**

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	700OBT30NB-LED927	NA

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

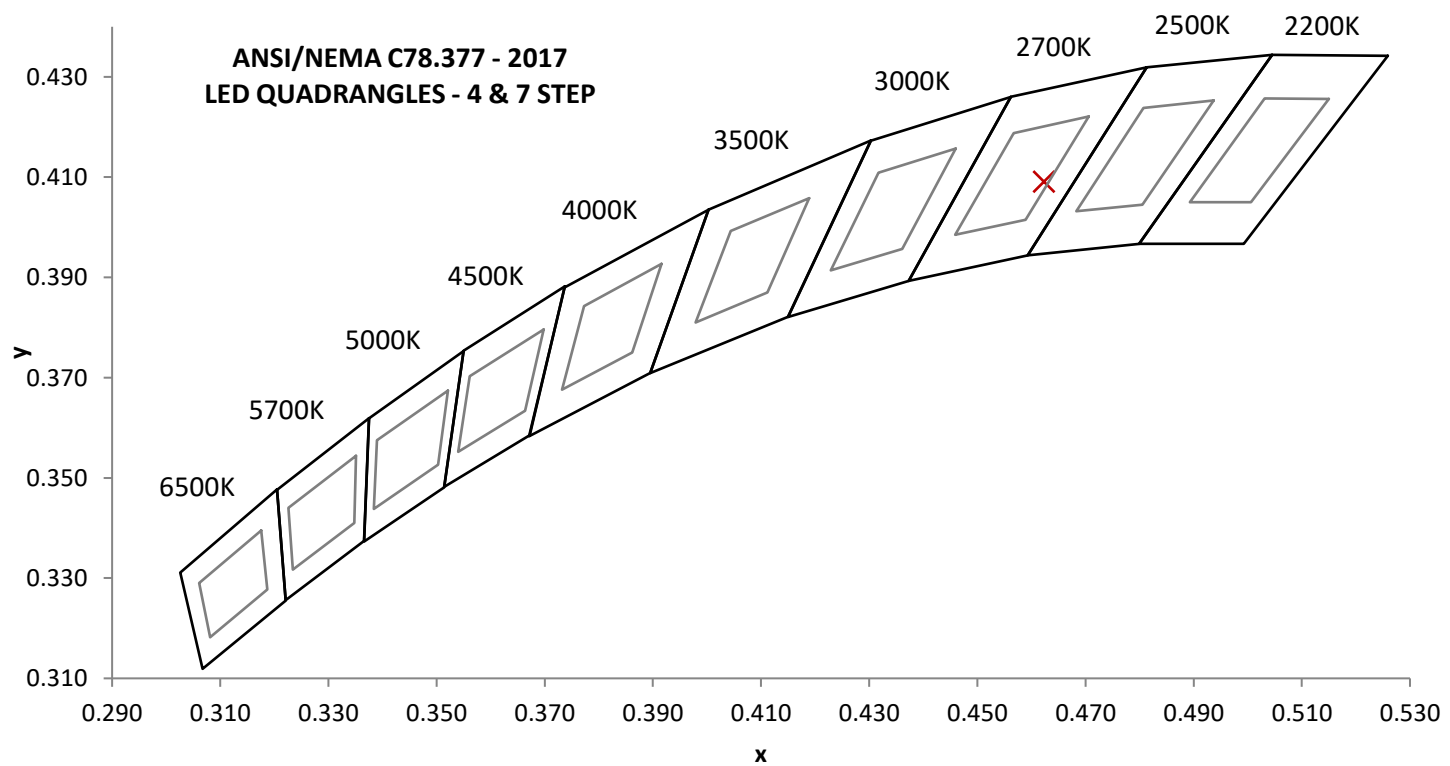
Base Orientation
Horizontal

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)	Input ATHD (%)
120.00	322.5	38.17	0.986	12.85
277.00	158.8	38.38	0.872	22.15

**Measured at 120(Vac)**

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (I)	CRI - R9 (I)
2376.3	62.2	2654	92.4	58.7

Duv (I)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0008	0.462	0.409	0.265	0.527

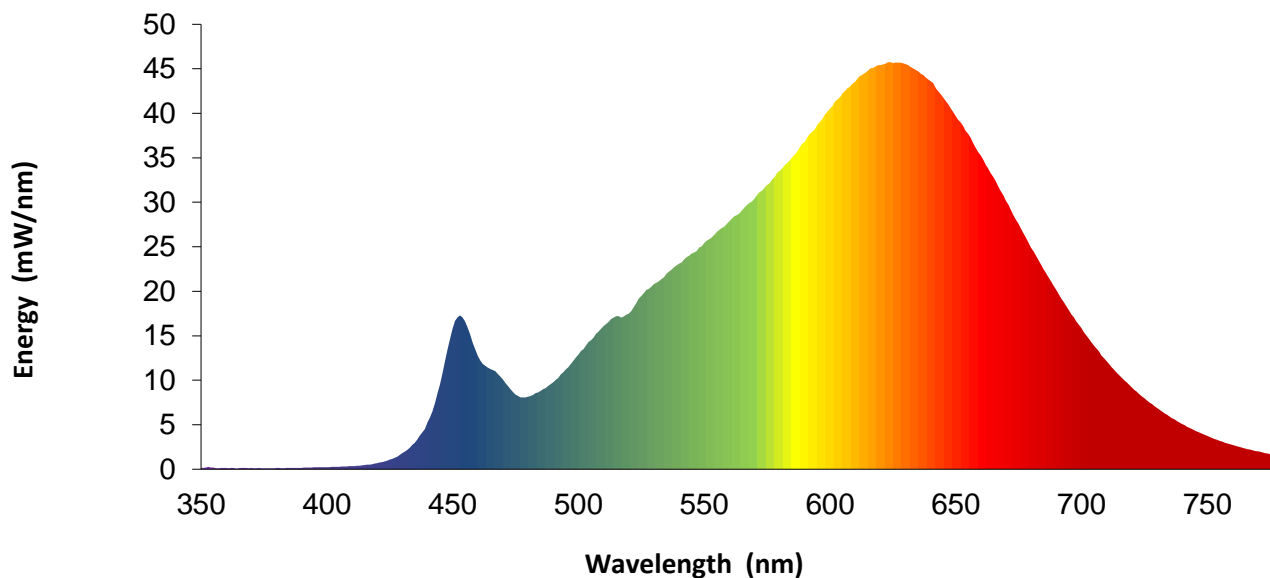


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	12.8		570	30.4		680	24.9
355	0.2		465	11.3		575	31.9		685	22.5
360	0.1		470	10.1		580	33.5		690	20.1
365	0.1		475	8.4		585	35.1		695	17.9
370	0.1		480	8.1		590	36.8		700	15.9
375	0.1		485	8.8		595	38.8		705	13.9
380	0.1		490	9.8		600	40.5		710	12.2
385	0.1		495	11.2		605	42.3		715	10.6
390	0.2		500	12.9		610	43.6		720	9.2
395	0.2		505	14.5		615	44.8		725	8.0
400	0.2		510	16.1		620	45.4		730	6.9
405	0.3		515	17.2		625	45.7		735	5.9
410	0.4		520	17.5		630	45.5		740	5.1
415	0.5		525	19.5		635	44.7		745	4.4
420	0.7		530	20.8		640	43.6		750	3.8
425	1.1		535	22.0		645	41.8		755	3.2
430	1.8		540	23.1		650	39.7		760	2.7
435	3.0		545	24.2		655	37.7		765	2.3
440	5.2		550	25.4		660	35.3		770	2.0
445	9.5		555	26.7		665	32.8		775	1.7
450	15.8		560	27.9		670	30.2		780	1.5
455	16.6		565	29.1		675	27.6		---	---

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	WT210	146919	7/1/2021	7/1/2022
2	Omega Thermometer	DPI8-C24	146920	10/4/2021	10/4/2022
3	LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
4	Newport Thermohygrometer	iServer	146379	4/13/2021	4/13/2022
5	Chroma Power Supply	61604	CHI0371	VBV	VBV
8	Newport Humidity Recorder	iServer	146961	9/21/2021	9/21/2022
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	146767	4/8/2021	4/8/2022
17	Omega thermometer	USB TC08	EQAH002615	4/6/2021	4/6/2022
26	Xitron Power Analyzer	XT-2640	CHI0611	6/9/2021	6/9/2022

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	700OBT30NB-LED927	NA

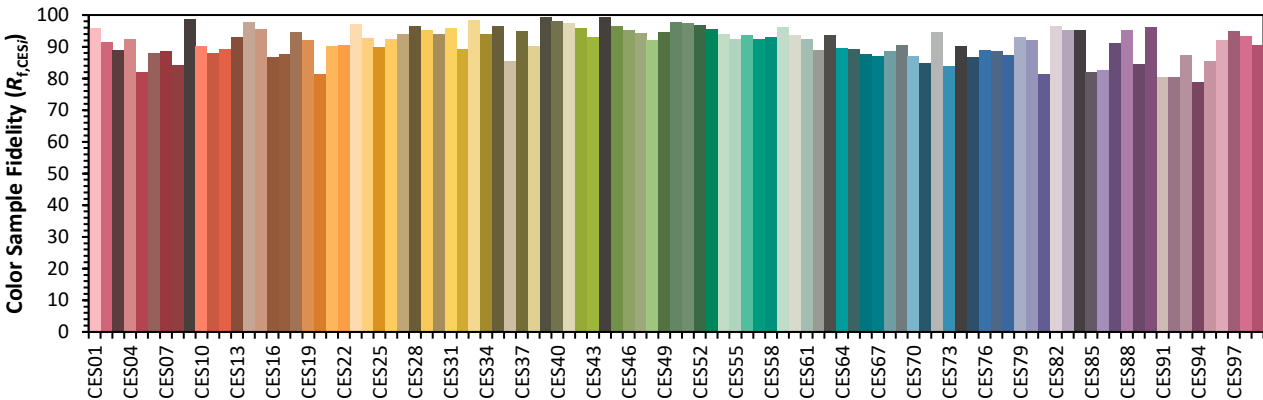
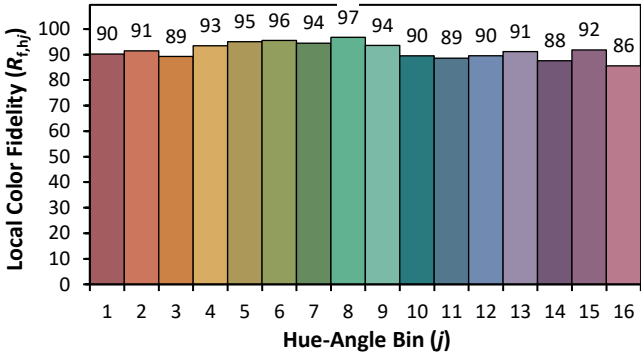
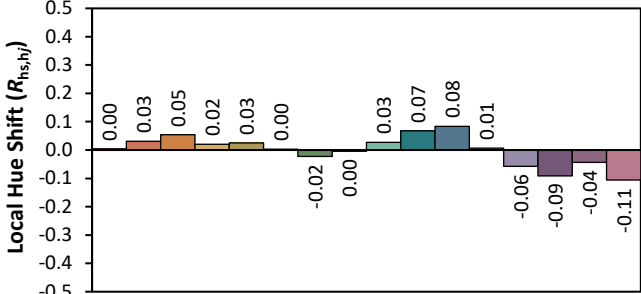
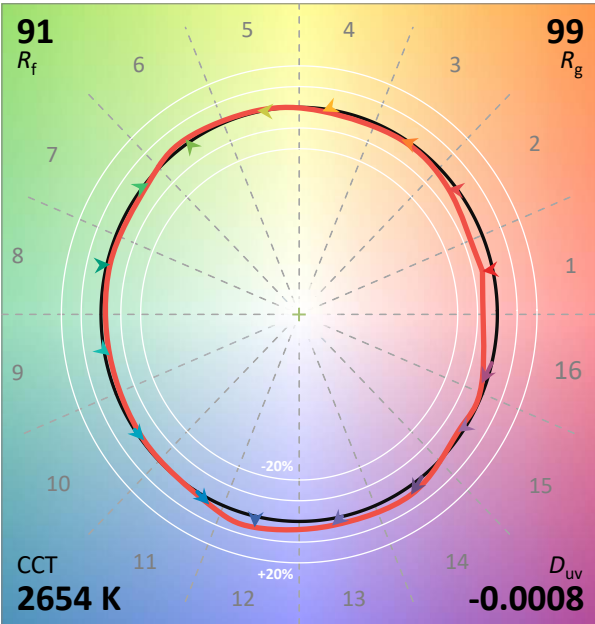
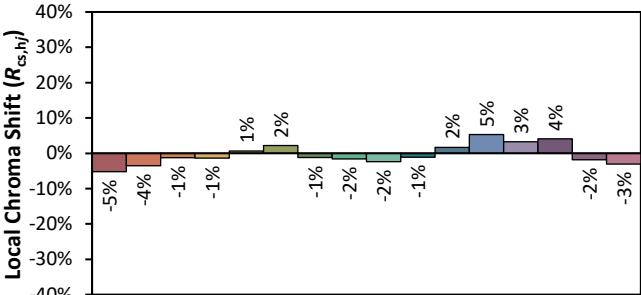
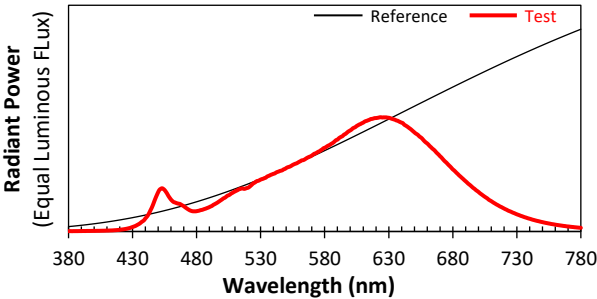
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 2/1/2022

Model: 700OBT30NB-LED927



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

x 0.4623  
y 0.4090  
u' 0.2648  
v' 0.5271