

# VISUAL COMFORT AND COMPANY TEST REPORT

## SCOPE OF WORK

LED Performance Testing

## MODEL NUMBER

700BT42NB-LED927

## PROJECT NUMBER

G104941221

## REPORT NUMBER

104941221CHI-022

## ISSUE DATE

4/29/2022

## REVISED DATE

None

## TEST DATES

2022-04-28 through 2022-04-29.

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104941221CHI-022

**MODEL NUMBER(s)**

700OBT42NB-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	AH04222022103506	700OBT42NB-LED927	Orbet 42 Chandelier	Production	4/22/2022

### TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	700OBT42NB-LED927	1

### SAMPLE PHOTOS - TESTED CONFIGURATIONS



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	7000BT42NB-LED927
Product Description:	Orbet 42 Chandelier
LED Model No.:	GL-24-F447N-A
Driver Model No.:	GBLD001
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	3046.5	3158.7
Input Power (W) @ 120VAC (Vac)	50.05	49.96
Lumen Efficacy (lm/W)	60.9	63.2
Input Power Factor ( ) @ 120VAC (Vac)	0.991	0.992

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	9.88
Correlated Color Temperature (K)	2641
Color Rendering Index - Ra ( )	93.5
Color Rendering Index - R9 ( )	63.0
Duv ( )	-0.0018
Chromaticity Coordinate (x)	0.462
Chromaticity Coordinate (y)	0.406
Chromaticity Coordinate (u')	0.266
Chromaticity Coordinate (v')	0.526
Input Power (W) @ 277VAC (Vac)	49.72
Input Power Factor ( ) @ 277VAC (Vac)	0.911
Input ATHD (%) @ 277VAC (Vac)	17.53

## 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**

**REPORT NO. 104941221CHI-022**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	7000BT42NB-LED927	NA

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

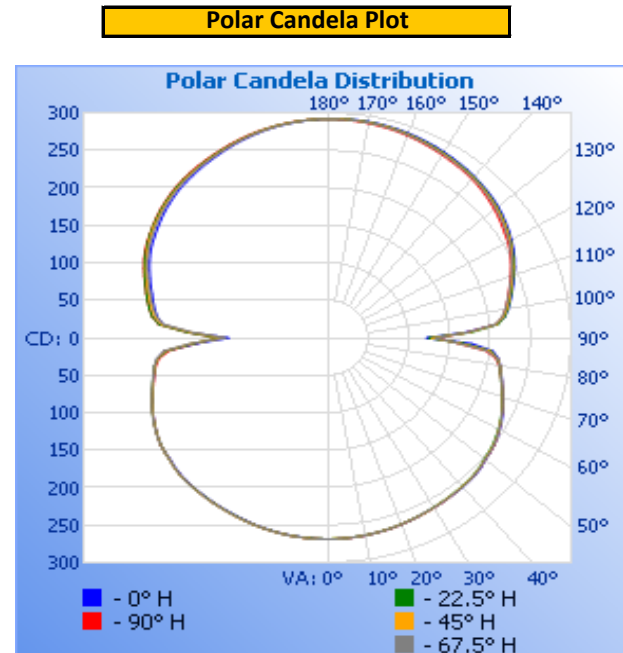
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	120.00	420.7	50.05	0.991

Light Output (lm)	Lumen Efficacy (lm/W)
3046.5	60.9

**INTENSITY SUMMARY - CANDELA**

Angle	0	22.5	45	67.5	90
0	268.3	268.3	268.3	268.3	268.3
5	268.1	268.1	268.0	268.2	268.3
10	267.5	267.3	267.3	267.3	267.6
15	266.3	266.2	266.2	266.3	266.6
20	264.8	264.6	264.6	264.7	265.1
25	263.1	262.9	263.1	262.9	263.3
30	261.4	261.1	261.5	261.6	261.8
35	260.3	259.4	259.9	260.1	260.5
40	259.4	258.1	258.6	259.0	258.8
45	257.8	256.2	256.9	257.0	257.4
50	253.5	251.9	252.6	252.9	253.2
55	249.9	248.5	249.4	249.9	250.3
60	244.6	243.2	243.7	244.0	244.2
65	238.1	236.5	237.1	237.0	237.1
70	230.1	228.7	229.4	229.3	229.2
75	222.5	221.3	222.1	221.9	221.4
80	216.0	215.3	215.9	215.5	214.6
85	204.6	202.2	200.6	197.2	195.4
90	120.5	125.9	136.0	144.6	147.7
95	203.0	204.9	202.4	200.3	200.0
100	219.2	219.5	218.8	217.9	218.4
105	228.0	227.1	226.9	226.3	226.8
110	236.6	235.7	236.0	235.6	235.5
115	244.3	243.7	244.5	244.0	243.1
120	249.8	250.7	250.2	250.0	250.2
125	256.3	255.2	256.0	255.0	254.6
130	247.7	245.2	246.0	246.0	245.6
135	243.8	244.1	245.3	245.1	243.0
140	243.6	240.4	238.9	241.4	242.2
145	233.4	233.4	230.6	229.7	233.8
150	228.0	228.5	229.6	228.3	226.5
155	228.0	231.2	231.0	230.1	230.8
160	249.8	251.9	250.5	251.4	249.2
165	254.2	259.6	257.4	259.1	257.7
170	261.9	265.1	263.3	263.4	263.5
175	262.4	265.3	263.6	263.7	264.8
180	265.2	265.2	265.2	265.2	265.2

Entire luminous intensity matrix found in .IES file

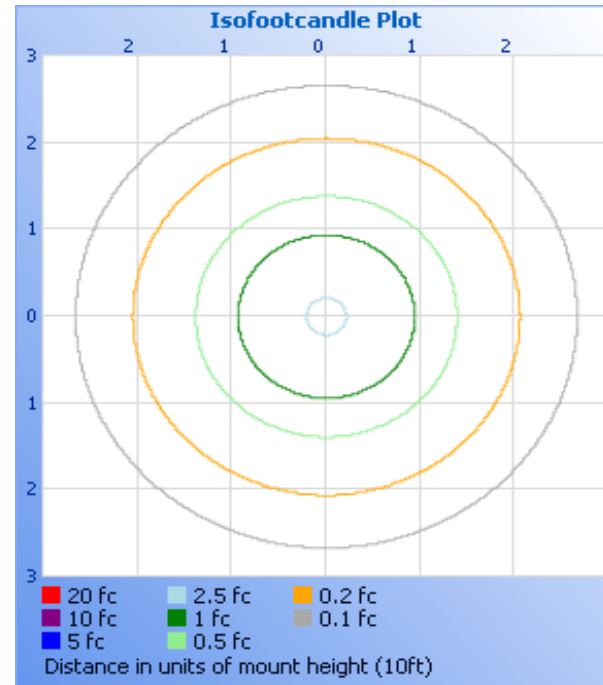


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ILLUMINANCE SUMMARY

Mounting Height: 10ft	
Illuminance - Cone Of Light	Isoillumination Plot

Illuminance at a Distance		
	Center Beam fc	Beam Width
1.7ft	<b>92.8 fc</b>	
3.3ft	<b>24.6 fc</b>	
5.0ft	<b>10.7 fc</b>	
6.7ft	<b>5.98 fc</b>	
8.3ft	<b>3.90 fc</b>	
10.0ft	<b>2.68 fc</b>	



ZONAL LUMENS

Zonal Lumen Summary					
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Zone	Lumens	Luminaire
0-30	222.8	7.3%
0-40	386.3	12.7%
0-60	808.5	26.5%
60-90	674.2	22.1%
70-100	649.2	21.3%
90-120	700.5	23.0%
0-90	1,482.8	48.7%
90-180	1,563.8	51.3%
0-180	3,046.5	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	25.6	0.8%	90-100	210.2	6.9%
10-20	75.4	2.5%	100-110	243.8	8.0%
20-30	121.8	4.0%	110-120	246.5	8.1%
30-40	163.5	5.4%	120-130	235.4	7.7%
40-50	198.7	6.5%	130-140	211.0	6.9%
50-60	223.6	7.3%	140-150	175.4	5.8%
60-70	235.2	7.7%	150-160	131.7	4.3%
70-80	235.1	7.7%	160-170	82.0	2.7%
80-90	203.9	6.7%	170-180	27.8	0.9%

**INTEGRATING SPHERE TESTING**

**REPORT NO. 104941221CHI-022**

Test Configuration	Tested Model No.	Pass/Fail/NA
1	700OBT42NB-LED927	NA

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

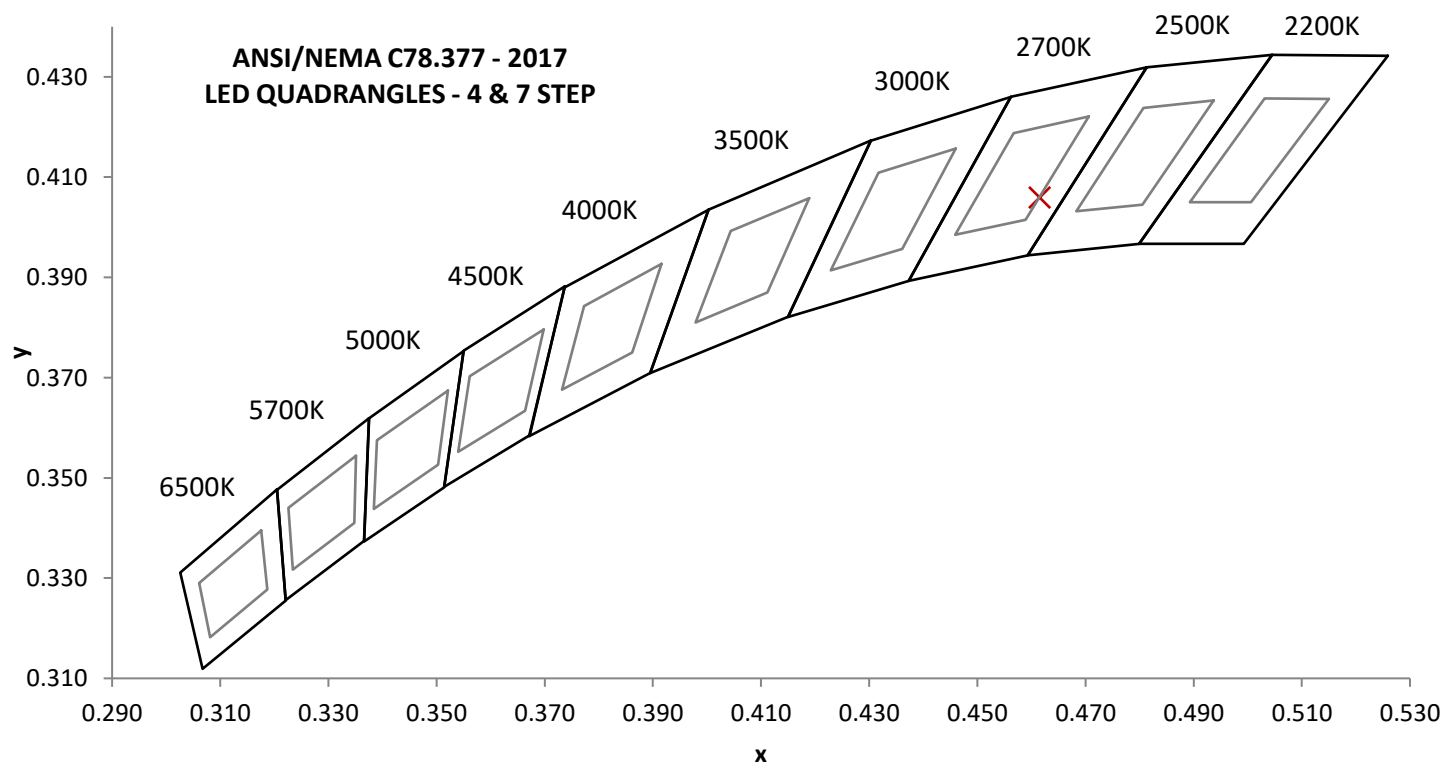
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)	Input ATHD (%)
120.04	419.5	49.96	0.992	9.88
277.03	197.0	49.72	0.911	17.53

**Measured at 120.04(Vac)**

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (I)	CRI - R9 (I)
3158.7	63.2	2641	93.5	63.0

Duv (I)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0018	0.462	0.406	0.266	0.526

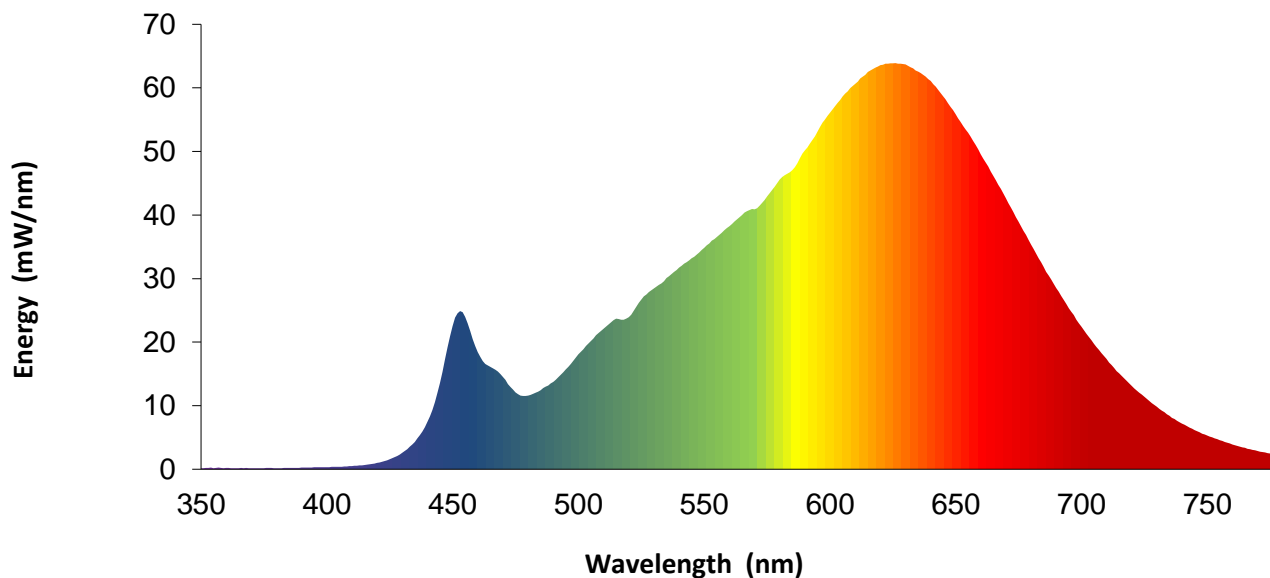


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.2		460	18.4		570	40.9		680	35.4
355	0.2		465	16.1		575	43.0		685	31.8
360	0.2		470	14.5		580	45.6		690	28.5
365	0.1		475	12.1		585	47.1		695	25.4
370	0.2		480	11.6		590	50.2		700	22.4
375	0.2		485	12.5		595	53.1		705	19.7
380	0.2		490	13.7		600	56.1		710	17.4
385	0.2		495	15.7		605	58.7		715	15.1
390	0.2		500	18.1		610	60.7		720	13.1
395	0.3		505	20.2		615	62.5		725	11.4
400	0.3		510	22.1		620	63.6		730	9.8
405	0.4		515	23.7		625	63.9		735	8.4
410	0.5		520	23.9		630	63.7		740	7.2
415	0.7		525	26.7		635	62.6		745	6.2
420	1.0		530	28.5		640	61.1		750	5.3
425	1.6		535	30.1		645	58.7		755	4.6
430	2.6		540	31.7		650	55.9		760	3.9
435	4.3		545	33.2		655	52.9		765	3.4
440	7.4		550	34.8		660	49.6		770	2.9
445	13.6		555	36.6		665	46.2		775	2.4
450	22.5		560	38.2		670	42.6		780	2.1
455	24.0		565	40.0		675	39.0		---	---

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	3/30/2022	3/30/2023
2	Omega Thermometer	DPI8-C24	146920	10/4/2021	10/4/2022
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
8	Newport Humidity Recorder	iServer	146961	9/21/2021	9/21/2022
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	4/4/2022	4/4/2023
17	Omega thermometer	USB TC08	EQA002615	4/5/2022	4/5/2023
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	700OBT42NB-LED927	NA

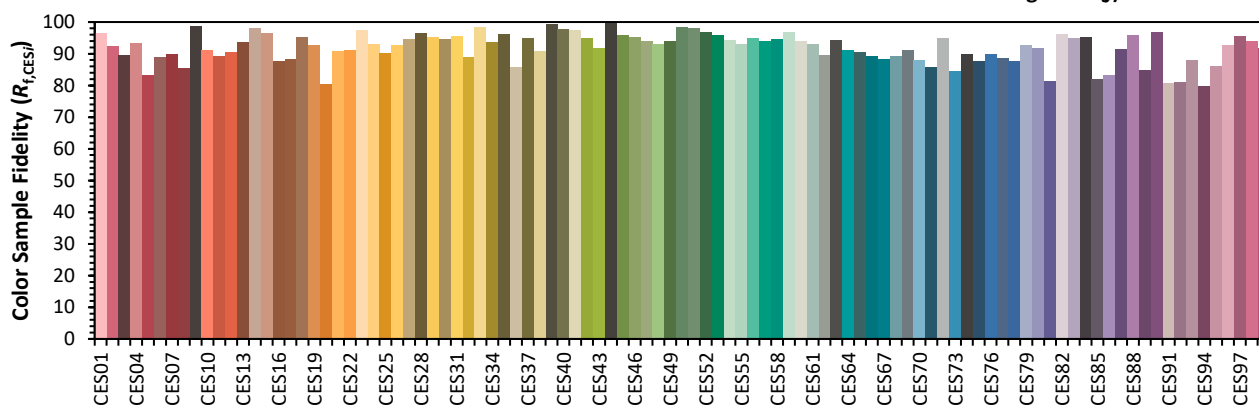
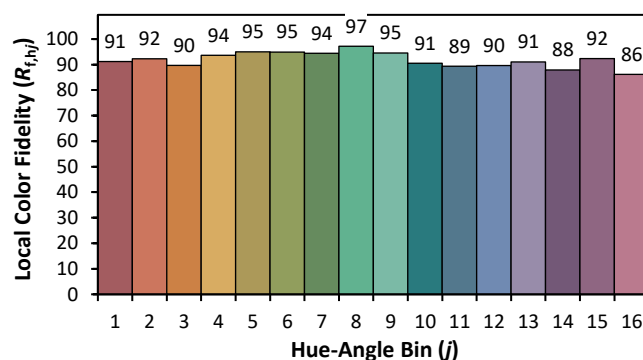
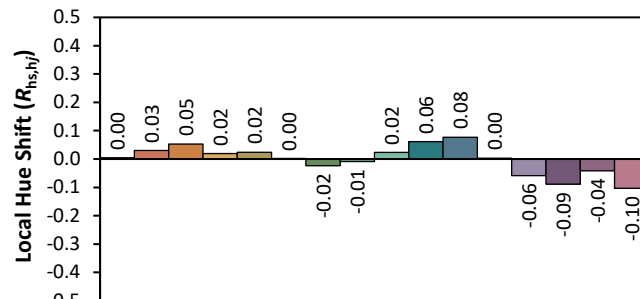
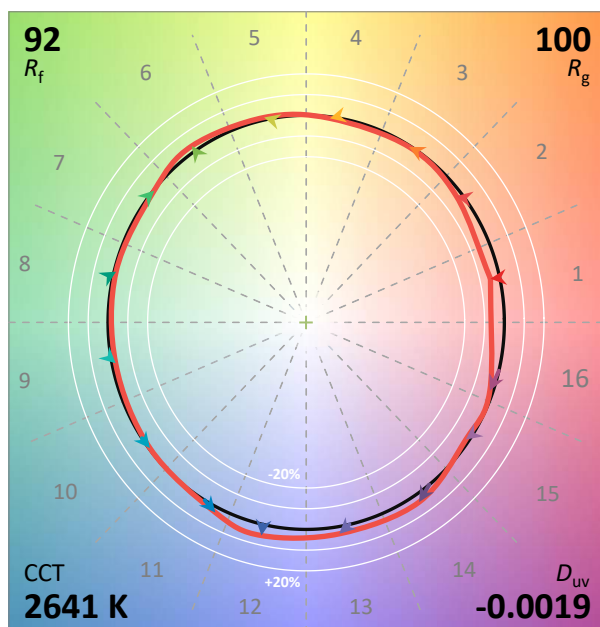
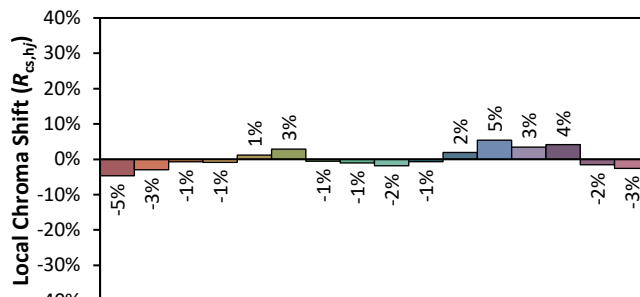
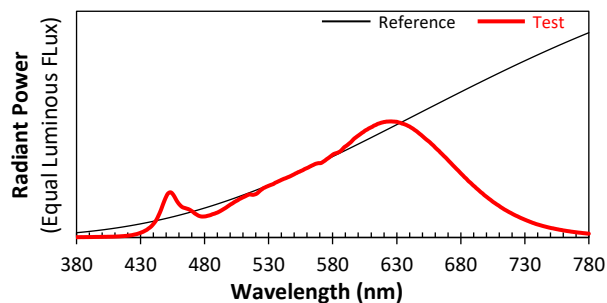
## ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 4/28/2022

Model: 700OBT42NB-LED927



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

x 0.4615

y 0.4059

u' 0.2657

v' 0.5258