

# VISUAL COMFORT & COMPANY TEST REPORT

## SCOPE OF WORK

LED Performance Testing

## MODEL NUMBER

700FJLAY\*\*\*-LED930

## PROJECT NUMBER

G104349704

## REPORT NUMBER

104349704CHI-058

## ISSUE DATE

12/17/2020

## REVISED DATE

None

## TEST DATES

12/14/2020 through 12/17/2020.

## DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104349704CHI-058

**MODEL NUMBER(s)**

700FJLAY\*\*\*-LED930

**REPORT RENDERED TO:**

VISUAL COMFORT & COMPANY  
7400 LINDER AVE  
SKOKIE, IL 60068  
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-01080748-3.

**TEST STANDARDS**

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

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:



Ian Smith  
Engineer  
Lighting Division

Reviewer:



Jeff Davis  
NA 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	AH12092020090029	700FJLAY***-LED930	Layla Pendant	Production	12/9/2020

## TESTED SAMPLE CONFIGURATIONS

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

## SAMPLE PHOTOS - TESTED CONFIGURATIONS



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700FJLAY***-LED930
Product Description:	Layla Pendant
LED Model No.:	Luminous CXM-6-30-90-36-AC40-F5-3
Driver Model No.:	LTF DL18W200C40R-000
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	204.9	219.3
Input Power (W) @ 12 (Vac)	6.55	6.60
Lumen Efficacy (lm/W)	31.3	33.2
Input Power Factor (I) @ 12 (Vac)	0.911	0.906

Criteria	Results
Input ATHD (%) @ 12 (Vac)	44.80
Correlated Color Temperature (K)	2996
Color Rendering Index - Ra (I)	93.3
Color Rendering Index - R9 (I)	66.7
Duv (I)	0.0013
Chromaticity Coordinate (x)	0.439
Chromaticity Coordinate (y)	0.408
Chromaticity Coordinate (u')	0.250
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.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

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

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

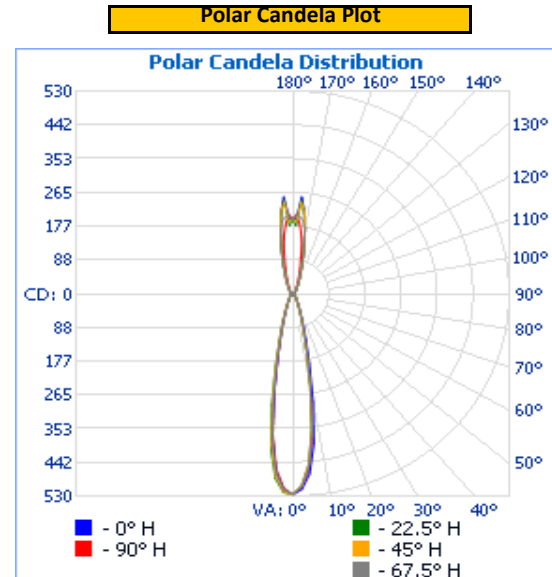
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	12.0	598.7	6.55	0.911

Light Output (lm)	Lumen Efficacy (lm/W)
204.9	31.3

**INTENSITY SUMMARY - CANDELA**

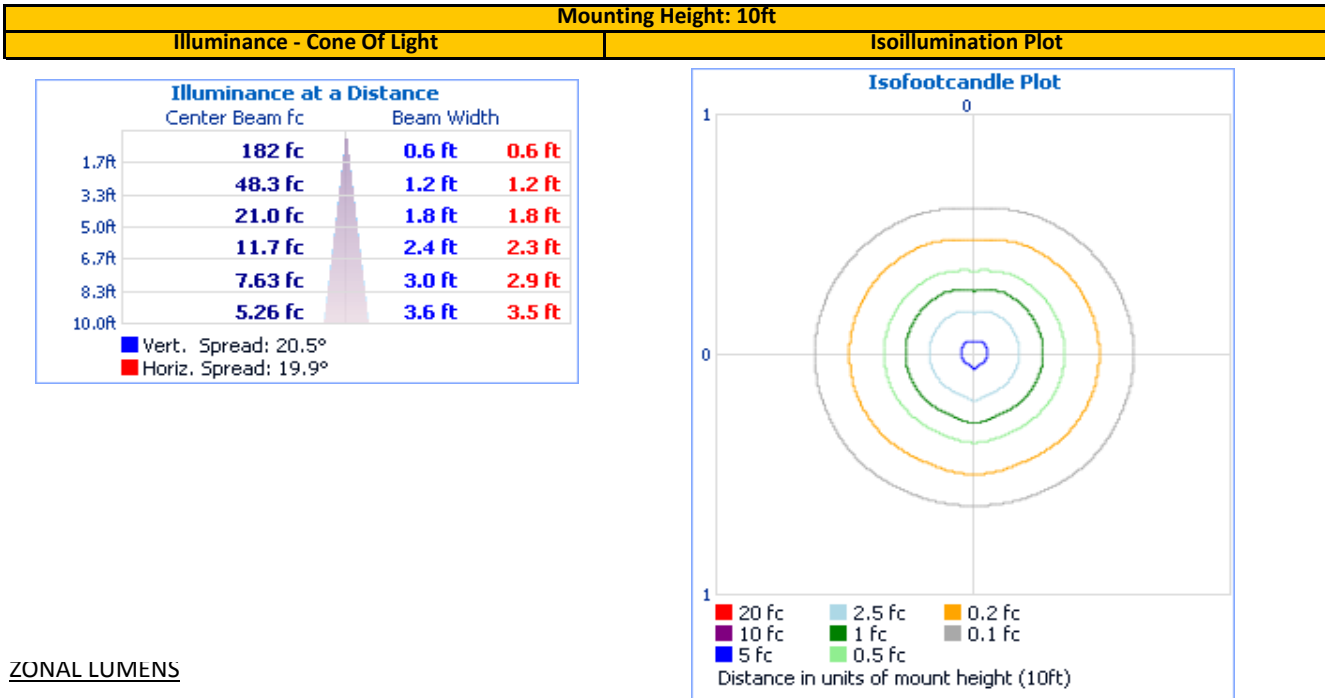
Angle	0	22.5	45	67.5	90
0	526	526	526	526	526
5	473	448	449	454	461
10	287	244	244	249	260
15	124	106	106	107	110
20	60	53	53	53	54
25	32	29	30	30	30
30	19	19	19	19	19
35	14	14	14	13	13
40	11	12	12	11	10
45	9	10	10	9	8
50	7	7	8	6	6
55	5	5	6	5	5
60	4	4	4	4	4
65	3	3	3	3	3
70	2	2	2	2	2
75	2	2	2	2	2
80	2	2	1	1	1
85	1	1	1	1	1
90	1	1	1	1	1
95	1	1	1	1	1
100	2	2	2	2	1
105	2	2	2	2	2
110	3	3	3	3	2
115	4	4	4	4	3
120	5	5	5	5	4
125	6	6	6	6	5
130	8	8	8	8	6
135	10	10	10	11	8
140	13	13	13	13	10
145	17	17	17	18	13
150	24	24	24	24	18
155	35	35	35	35	26
160	56	57	56	56	41
165	98	99	98	98	70
170	172	173	173	169	126
175	254	245	240	202	187
180	196	196	196	196	196

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	86.3	42.1%	90-100	1.4	0.7%
0-40	95.0	46.3%	100-110	2.4	1.2%
0-60	106.0	51.7%	110-120	3.7	1.8%
60-90	5.7	2.8%	120-130	5.4	2.7%
70-100	4.4	2.2%	130-140	7.8	3.8%
90-120	7.5	3.7%	140-150	10.7	5.2%
0-90	111.7	54.5%	150-160	16.0	7.8%
90-180	93.2	45.5%	160-170	26.7	13.1%
0-180	204.9	100.0%	170-180	19.0	9.3%

**INTEGRATING SPHERE TESTING**

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

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

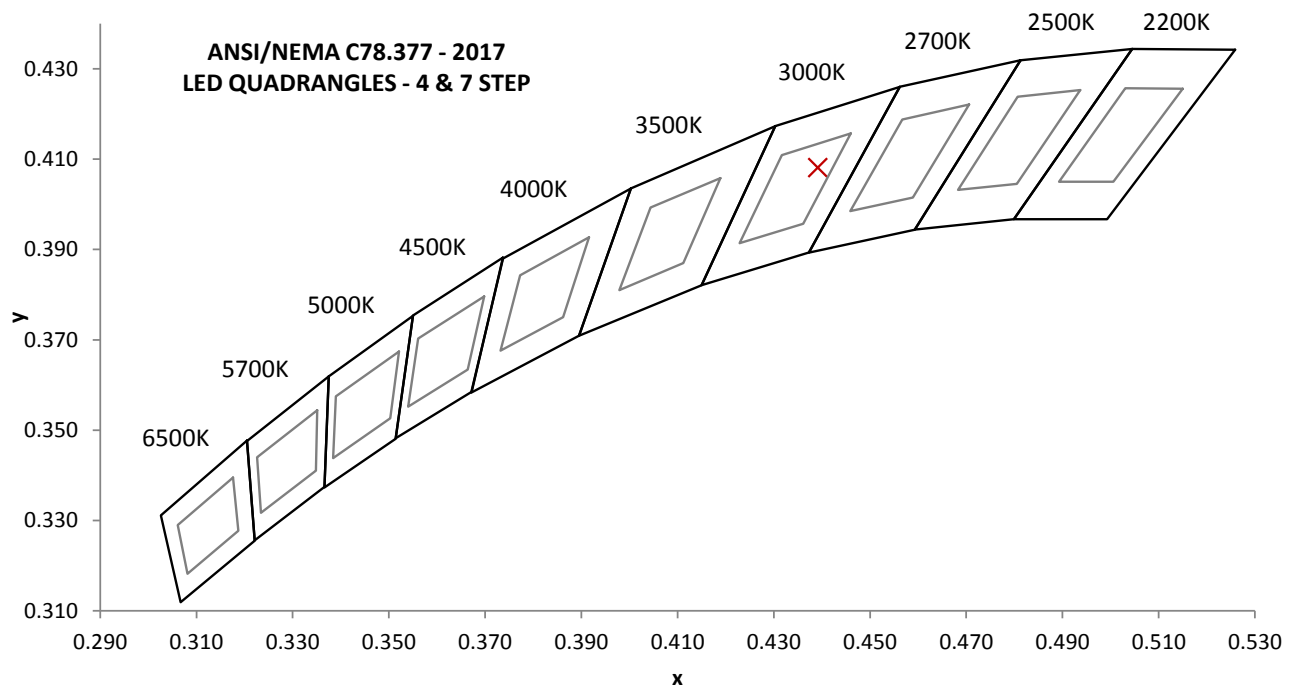
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
12.03	606.1	6.60	0.906	44.80

Measured at 12.03(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
219.3	33.2	2996	93.3	66.7

Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0013	0.439	0.408	0.250	0.523

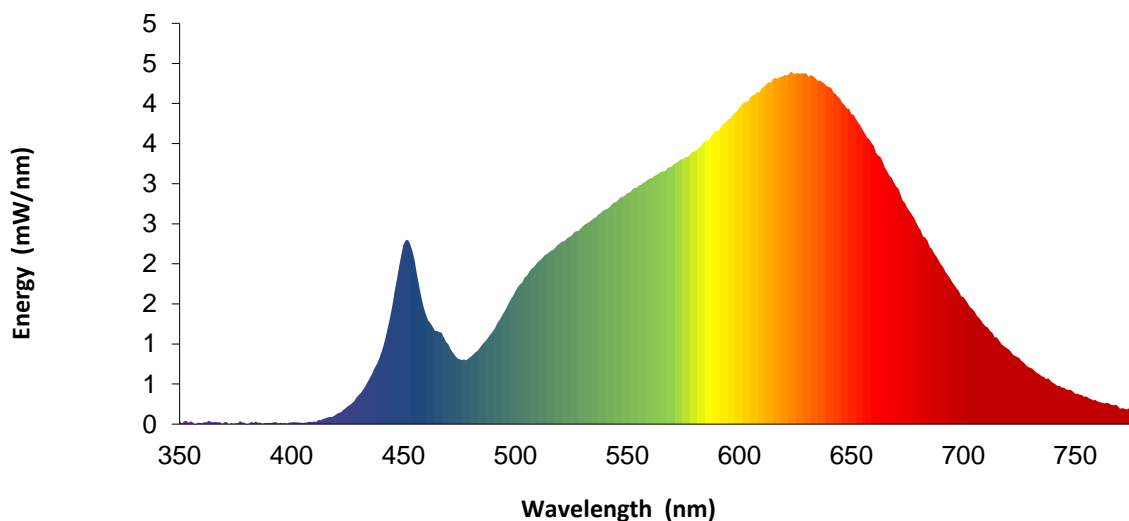


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	1.4		570	3.2		680	2.5
355	0.0		465	1.2		575	3.3		685	2.2
360	0.0		470	1.0		580	3.4		690	2.0
365	0.0		475	0.8		585	3.5		695	1.8
370	0.0		480	0.8		590	3.7		700	1.6
375	0.0		485	1.0		595	3.8		705	1.4
380	0.0		490	1.2		600	3.9		710	1.2
385	0.0		495	1.4		605	4.1		715	1.1
390	0.0		500	1.7		610	4.2		720	0.9
395	0.0		505	1.8		615	4.3		725	0.8
400	0.0		510	2.0		620	4.4		730	0.7
405	0.0		515	2.1		625	4.4		735	0.6
410	0.0		520	2.3		630	4.4		740	0.5
415	0.1		525	2.3		635	4.3		745	0.5
420	0.1		530	2.5		640	4.2		750	0.4
425	0.2		535	2.6		645	4.1		755	0.3
430	0.4		540	2.7		650	3.9		760	0.3
435	0.6		545	2.8		655	3.7		765	0.3
440	0.9		550	2.9		660	3.5		770	0.2
445	1.5		555	3.0		665	3.2		775	0.2
450	2.2		560	3.1		670	3.0		780	0.1
455	2.0		565	3.1		675	2.7		---	---

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	WT210	146919	7/1/2020	7/1/2021
2	Omega Thermometer	DPI8-C24	146920	10/1/2020	10/1/2021
3	LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
4	Newport Thermohygrometer	iServer	146958	9/30/2020	9/30/2021
5	Pacific AC Power Supply	118-ACX	CHI0153	VBU	VBU
6	Newport Humidity Recorder	iServer	146961	9/3/2020	9/3/2021
7	Labsphere Spectroradiometer	CDS-600	146923	VBU	VBU
8	2M Rotating Sphere	7660-ROT	146923	VBU	VBU
9	Omega thermometer	USB TC08	EQAH002615	4/7/2020	4/7/2021
10	Ametek DC Power Supply	XFR150-8	1468464	VBU	VBU
11	Yokogawa Power Meter	WT210	146880	10/1/2020	10/1/2021
12	Chroma Power Supply	61604	CHI0371	VBU	VBU
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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	700FJLAY***-LED930	NA

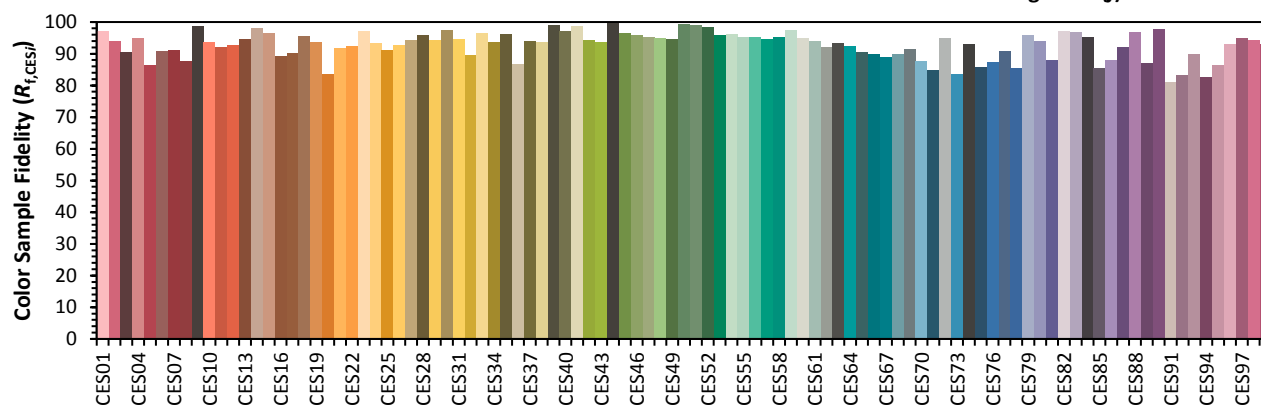
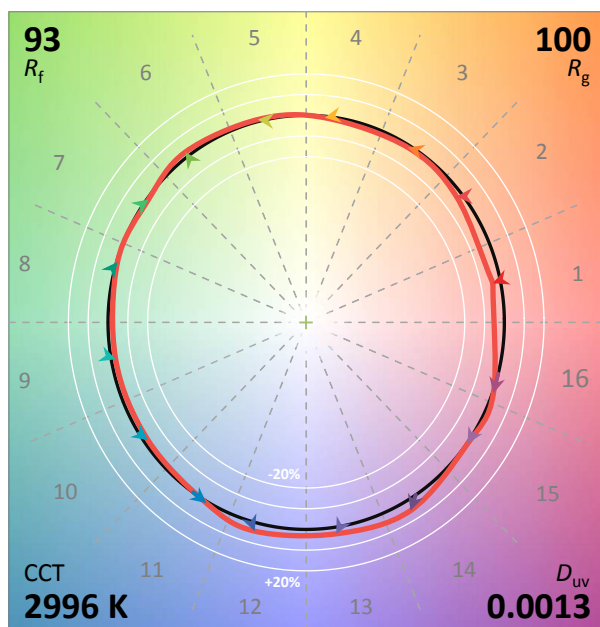
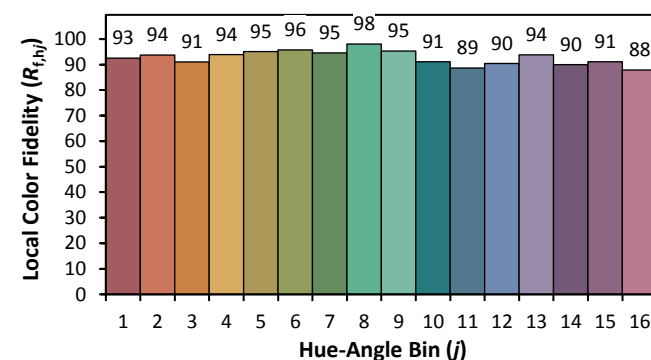
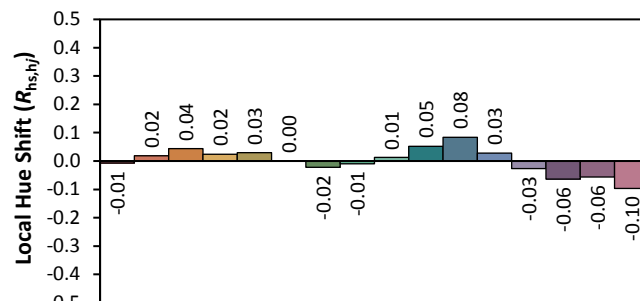
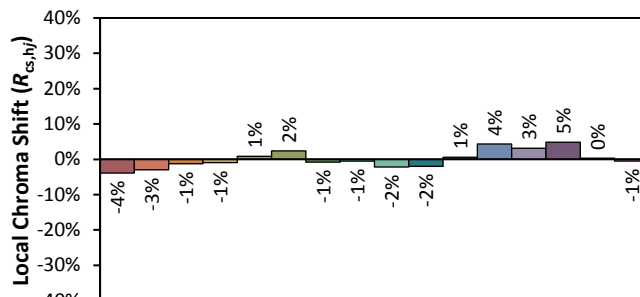
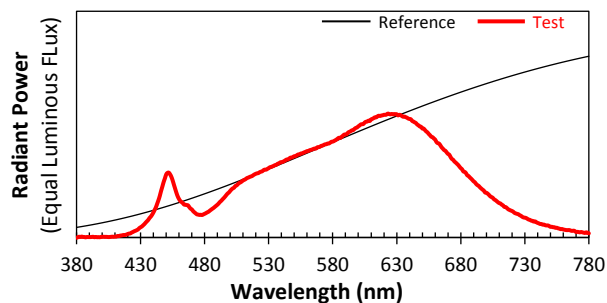
## ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort &amp; Company

Date: 12/14/2020

Model: 700FJLAY\*\*\*-LED930



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

x 0.4392

y 0.4081

u' 0.2503

v' 0.5233