

VISUAL COMFORT & COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700FJPSP***-LED930

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-057

ISSUE DATE

12/16/2020

REVISED DATE

None

TEST DATES

12/14/2020 through 12/15/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104349704CHI-057

MODEL NUMBER(s)

700FJPSP***-LED930

REPORT RENDERED TO:

VISUAL COMFORT & COMPANY
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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

REPORT NO. 104349704CHI-057

ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH12092020090029	700FJPSP***-LED930	Mni Powell Street Pendant	Production	12/9/2020

TESTED SAMPLE CONFIGURATIONS

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

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

REPORT NO. 104349704CHI-057

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700FJPSP***-LED930
Product Description:	Mni Powell Street Pendant
LED Model No.:	Citizen CLU028-1203C4-303H5M3-F1
Driver Model No.:	LTF/DL16W150C3337-3001
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	285.1	300.2
Input Power (W) @ 12 (Vac)	6.74	6.63
Lumen Efficacy (lm/W)	42.3	45.3
Input Power Factor (I) @ 12 (Vac)	0.966	0.964

Criteria	Results
Input ATHD (%) @ 12 (Vac)	25.83
Correlated Color Temperature (K)	2912
Color Rendering Index - Ra (I)	92.4
Color Rendering Index - R9 (I)	57.0
Duv (I)	0.0008
Chromaticity Coordinate (x)	0.445
Chromaticity Coordinate (y)	0.409
Chromaticity Coordinate (u')	0.254
Chromaticity Coordinate (v')	0.524

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. 104349704CHI-057

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

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

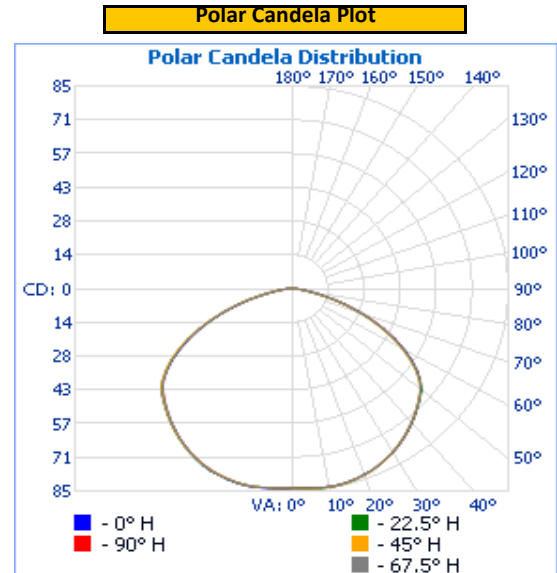
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	12.0	580.6	6.74	0.966

Light Output (lm)	Lumen Efficacy (lm/W)
285.1	42.3

INTENSITY SUMMARY - CANDELA

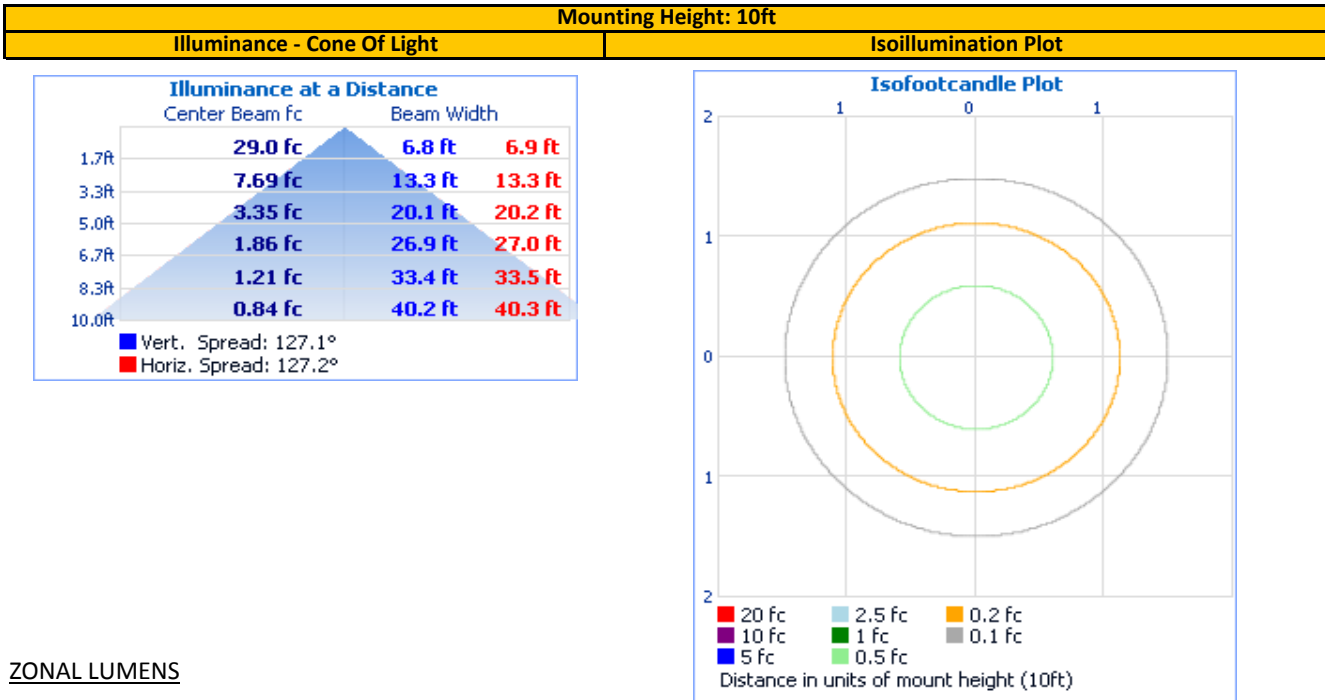
Angle	0	22.5	45	67.5	90
0	84	84	84	84	84
5	84	84	84	84	84
10	84	85	85	84	84
15	84	84	84	84	84
20	83	83	83	83	83
25	81	82	82	81	82
30	79	79	79	79	79
35	76	76	76	76	77
40	73	73	73	73	73
45	70	70	70	70	70
50	66	66	66	66	66
55	60	60	59	60	60
60	51	50	50	50	51
65	40	39	39	39	40
70	28	27	27	28	28
75	16	16	16	16	16
80	7	7	7	7	7
85	4	3	3	3	3
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



REPORT NO. 104349704CHI-057

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	69.5	24.4%	90-100	0.0	0.0%
0-40	117.5	41.2%	100-110	0.0	0.0%
0-60	224.6	78.8%	110-120	0.0	0.0%
60-90	60.5	21.2%	120-130	0.0	0.0%
70-100	21.4	7.5%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	285.1	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	285.1	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104349704CHI-057

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

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

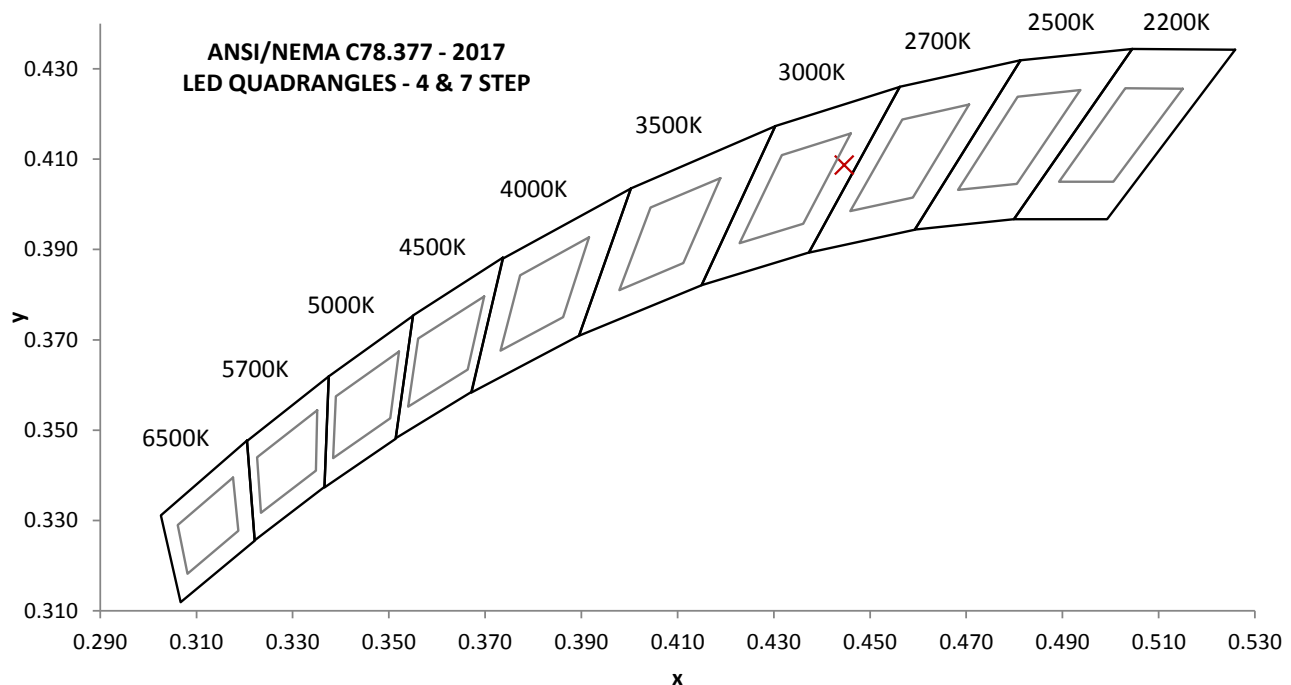
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
12.01	572.6	6.63	0.964	25.83

Measured at 12.01(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
300.2	45.3	2912	92.4	57.0

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0008	0.445	0.409	0.254	0.524

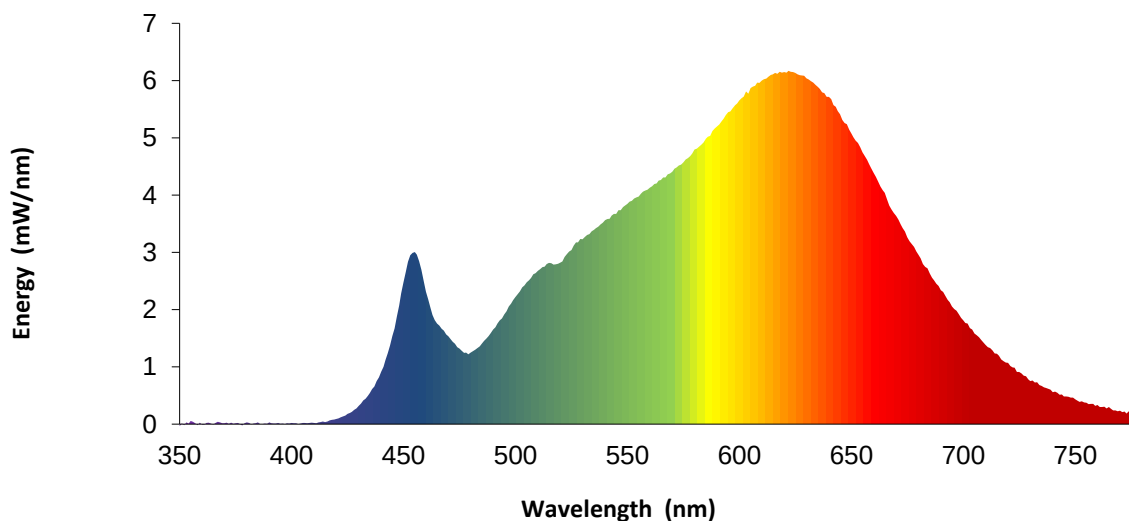


REPORT NO. 104349704CHI-057

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.0		460	2.3		570	4.4		680	3.0
355	0.1		465	1.8		575	4.6		685	2.6
360	0.0		470	1.5		580	4.8		690	2.3
365	0.0		475	1.3		585	5.0		695	2.1
370	0.0		480	1.3		590	5.2		700	1.8
375	0.0		485	1.4		595	5.4		705	1.6
380	0.0		490	1.7		600	5.6		710	1.4
385	0.0		495	1.9		605	5.9		715	1.2
390	0.0		500	2.2		610	6.0		720	1.1
395	0.0		505	2.5		615	6.1		725	0.9
400	0.0		510	2.7		620	6.1		730	0.8
405	0.0		515	2.8		625	6.1		735	0.7
410	0.0		520	2.8		630	6.0		740	0.6
415	0.0		525	3.0		635	5.9		745	0.5
420	0.1		530	3.2		640	5.7		750	0.4
425	0.2		535	3.4		645	5.4		755	0.4
430	0.3		540	3.6		650	5.1		760	0.3
435	0.5		545	3.7		655	4.7		765	0.3
440	0.9		550	3.8		660	4.4		770	0.2
445	1.5		555	4.0		665	4.0		775	0.2
450	2.5		560	4.1		670	3.6		780	0.2
455	3.0		565	4.3		675	3.3		---	---

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. 104349704CHI-057

#	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
13	Hammond Step Down Transformer	1182T12	CHI0558	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	700FJPSP***-LED930	NA

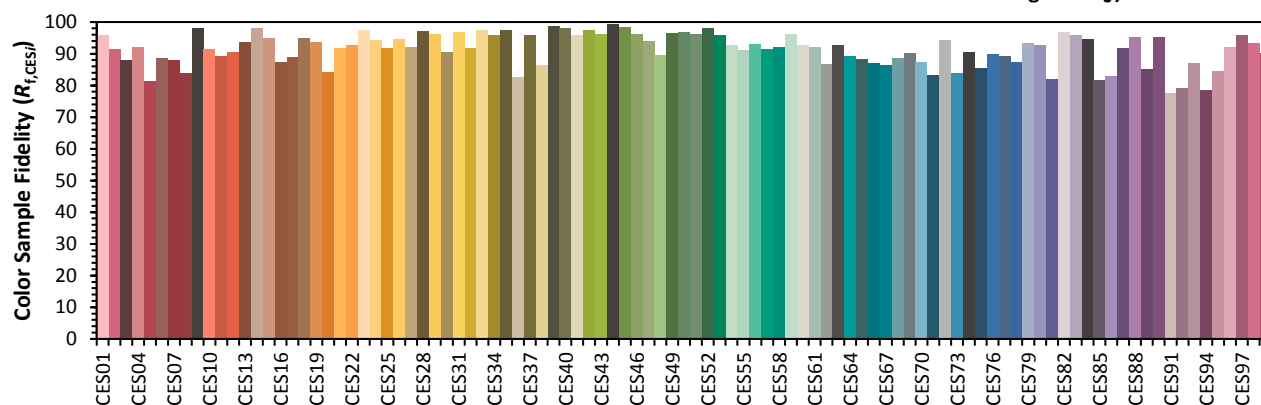
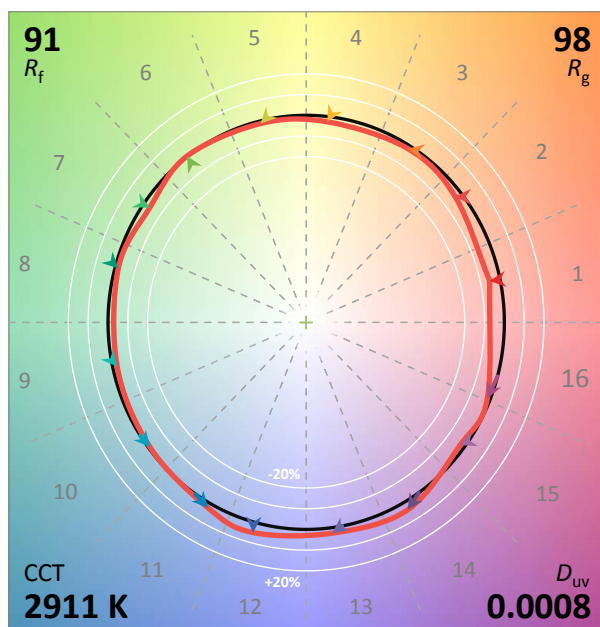
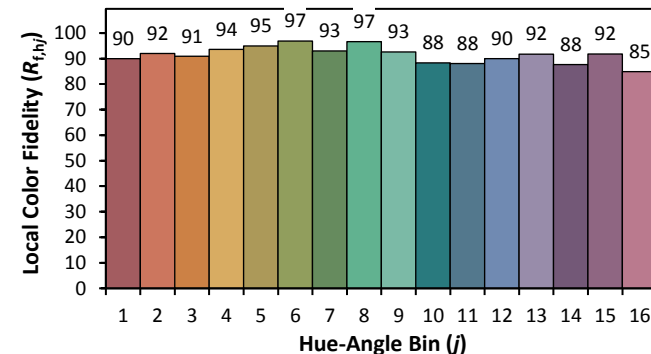
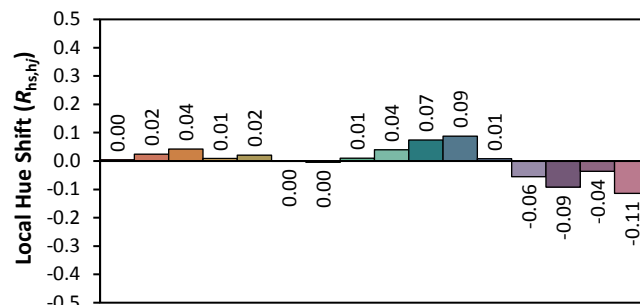
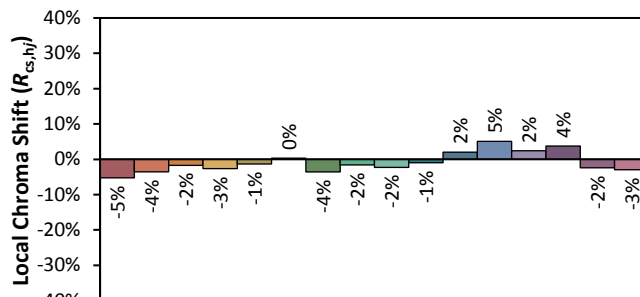
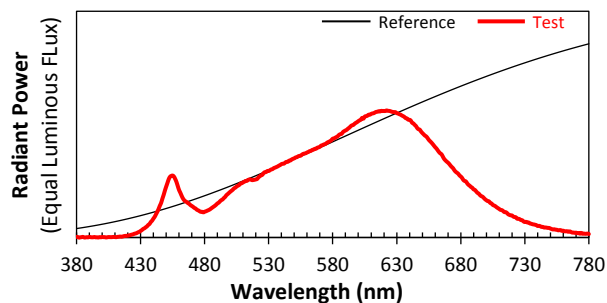
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort & Company

Date: 12/14/2020

Model: 700FJPSP***-LED930



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

x 0.4446

y 0.4087

u' 0.2536

v' 0.5243