

VISUAL COMFORT AND COMPANY TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

700FMKAI15BR-LED930

PROJECT NUMBER

G104941221

REPORT NUMBER

104941221CHI-008

ISSUE DATE

3/4/2022

REVISED DATE

None

TEST DATES

2022-03-03.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104941221CHI-008

MODEL NUMBER(s)

700FMKAI15BR-LED930

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
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Reviewer:



Jeff Davis
N.A. Technical Lead
Lighting Division

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SAMPLE INFORMATION

REPORT NO. 104941221CHI-008

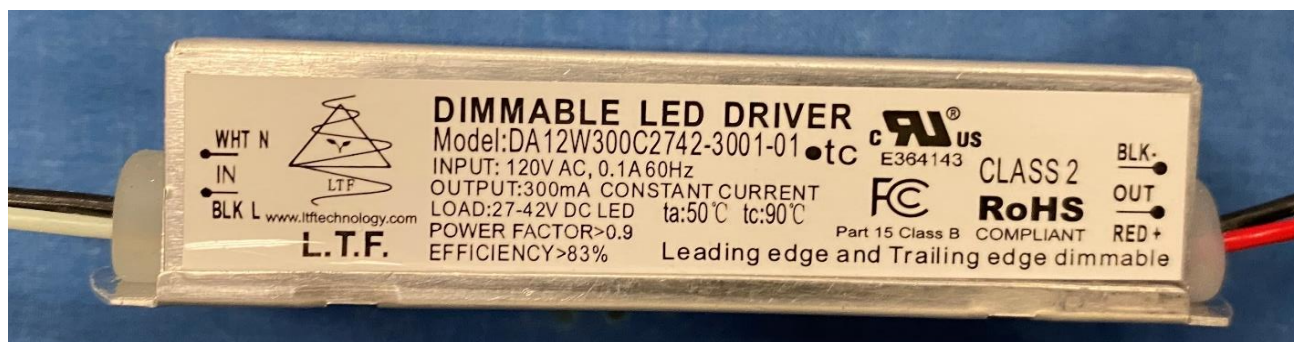
ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH03012022084300	700FMKAI15BR-LED930	Kai 15 Flush Mount	Production	3/1/2022

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	700FMKAI15BR-LED930	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS



SUMMARY

REPORT NO. 104941221CHI-008

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	700FMKAI15BR-LED930
Product Description:	Kai 15 Flush Mount
LED Model No.:	BXRE-30G1000-C-82
Driver Model No.:	DA12W300C2742-3001
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	757.3	756.3
Input Power (W) @ 120VAC (Vac)	11.28	11.36
Lumen Efficacy (lm/W)	67.1	66.6
Input Power Factor () @ 120VAC (Vac)	0.998	0.997

Criteria	Results
Input ATHD (%) @ 120VAC (Vac)	5.85
Correlated Color Temperature (K)	2942
Color Rendering Index - Ra ()	91.2
Color Rendering Index - R9 ()	68.2
Duv ()	0.0008
Chromaticity Coordinate (x)	0.442
Chromaticity Coordinate (y)	0.408
Chromaticity Coordinate (u')	0.252
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. 104941221CHI-008

Test Configuration	Tested Model No.	Pass/Fail/NA
1	700FMKAI15BR-LED930	NA

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

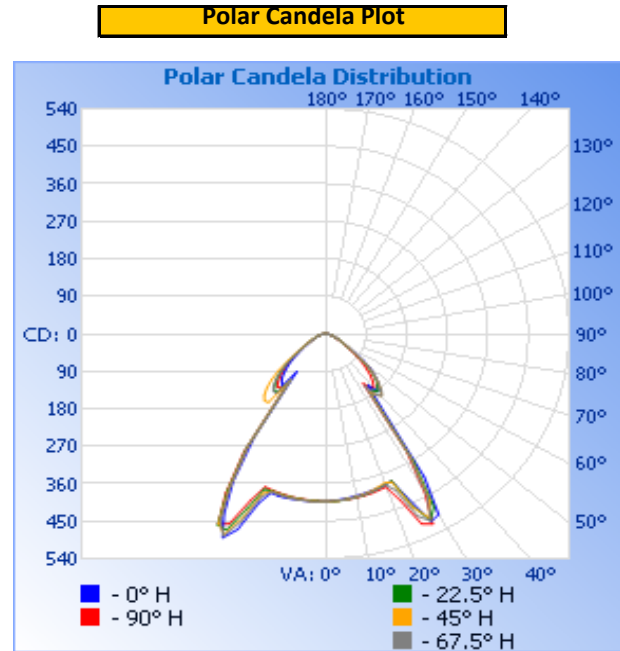
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)
Up	119.98	94.2	11.28	0.998

Light Output (lm)	Lumen Efficacy (lm/W)
757.3	67.1

INTENSITY SUMMARY - CANDELA

Angle	0	22.5	45	67.5	90
0	403.0	403.0	403.0	403.0	403.0
5	399.2	401.2	400.7	400.8	401.0
10	394.7	397.6	396.9	397.7	399.1
15	390.5	392.8	391.0	392.9	395.7
20	385.3	384.9	381.4	385.8	390.9
25	439.9	456.5	459.0	482.4	502.7
30	500.9	480.0	461.7	450.3	441.2
35	211.5	174.5	168.4	151.9	145.8
40	180.4	180.8	193.5	194.2	166.6
45	164.2	160.1	165.0	166.0	140.8
50	130.2	122.8	125.3	124.8	105.3
55	81.8	76.0	78.1	76.3	67.5
60	49.5	47.1	47.8	46.6	43.7
65	32.7	31.7	31.6	30.9	29.8
70	22.4	21.6	21.4	21.1	20.5
75	15.4	14.8	14.4	14.3	14.2
80	9.8	9.5	9.2	9.0	9.1
85	5.1	5.1	4.9	4.9	4.9
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

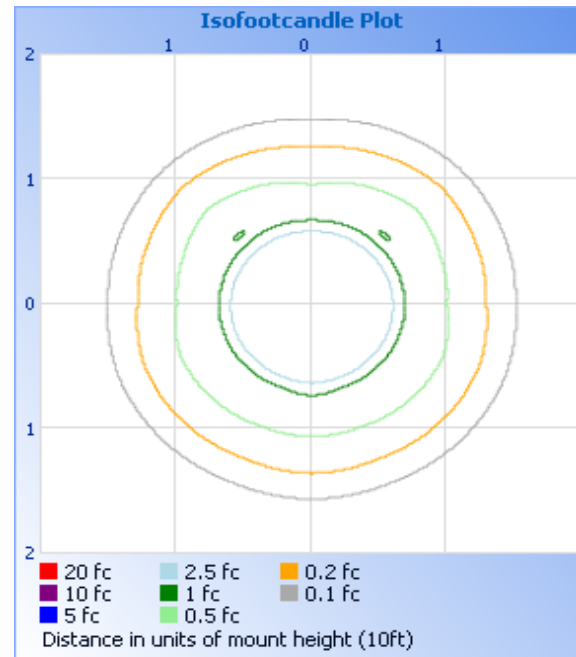
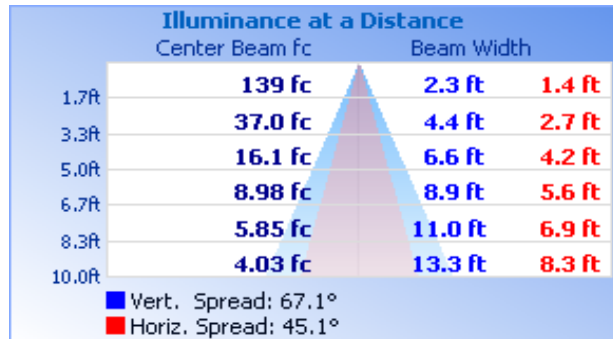
Entire luminous intensity matrix found in .IES file



REPORT NO. 104941221CHI-008

ILLUMINANCE SUMMARY

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



ZONAL LUMENS

Zonal Lumen Summary					
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Zone	Lumens	Luminaire
0-30	366.7	48.4%
0-40	517.1	68.3%
0-60	705.4	93.2%
60-90	51.9	6.8%
70-100	20.7	2.7%
90-120	0.0	0.0%
0-90	757.3	100.0%
90-180	0.0	0.0%
0-180	757.3	100.0%

Zone	Lumens	Total	Zone	Lumens	Total
0-10	38.2	5.0%	90-100	0.0	0.0%
10-20	112.1	14.8%	100-110	0.0	0.0%
20-30	216.4	28.6%	110-120	0.0	0.0%
30-40	150.3	19.9%	120-130	0.0	0.0%
40-50	120.0	15.8%	130-140	0.0	0.0%
50-60	68.4	9.0%	140-150	0.0	0.0%
60-70	31.2	4.1%	150-160	0.0	0.0%
70-80	15.3	2.0%	160-170	0.0	0.0%
80-90	5.4	0.7%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104941221CHI-008

Test Configuration	Tested Model No.	Pass/Fail/NA
1	700FMKA15BR-LED930	NA

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

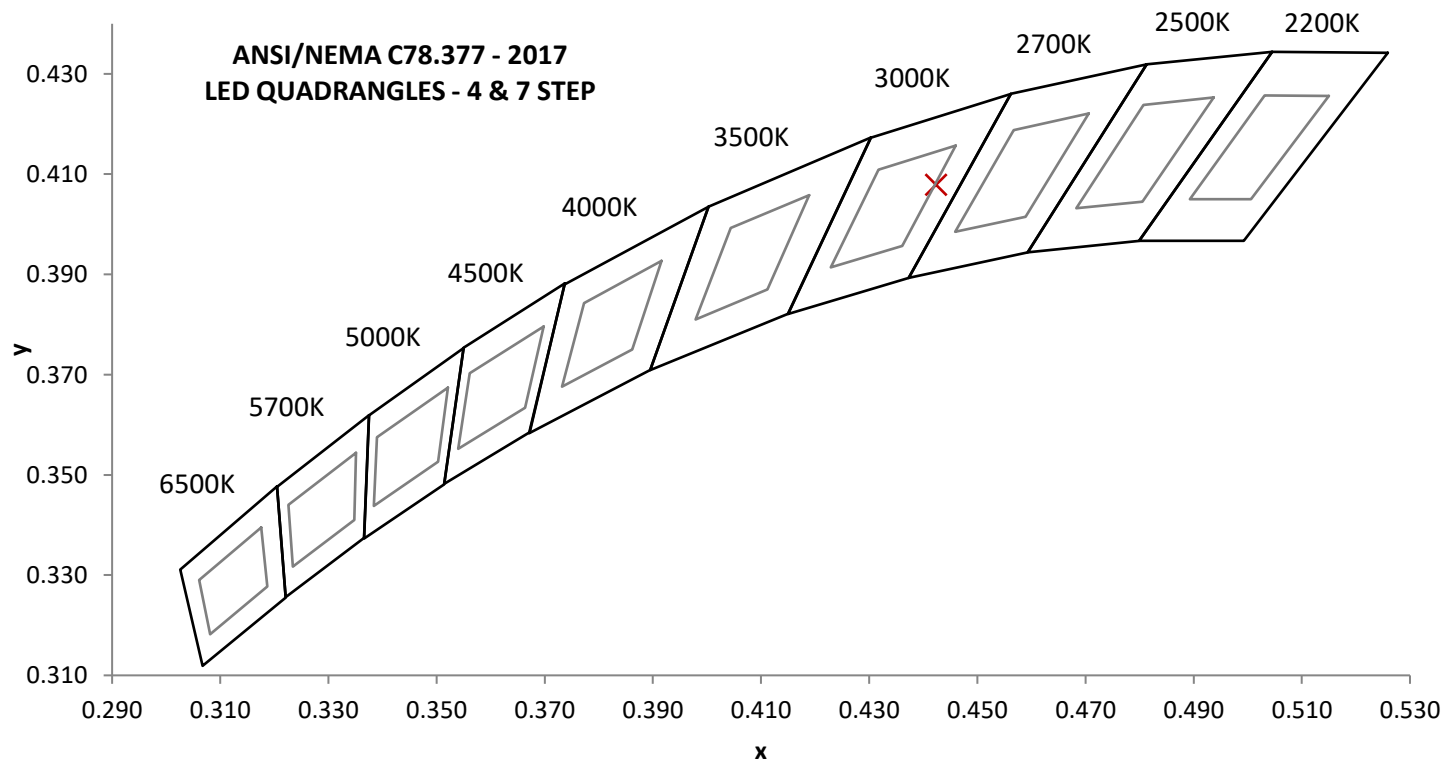
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor (I)	Input ATHD (%)
120.03	94.9	11.36	0.997	5.85

Measured at 120.03(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (I)	CRI - R9 (I)
756.3	66.6	2942	91.2	68.2

Duv (I)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0008	0.442	0.408	0.252	0.524

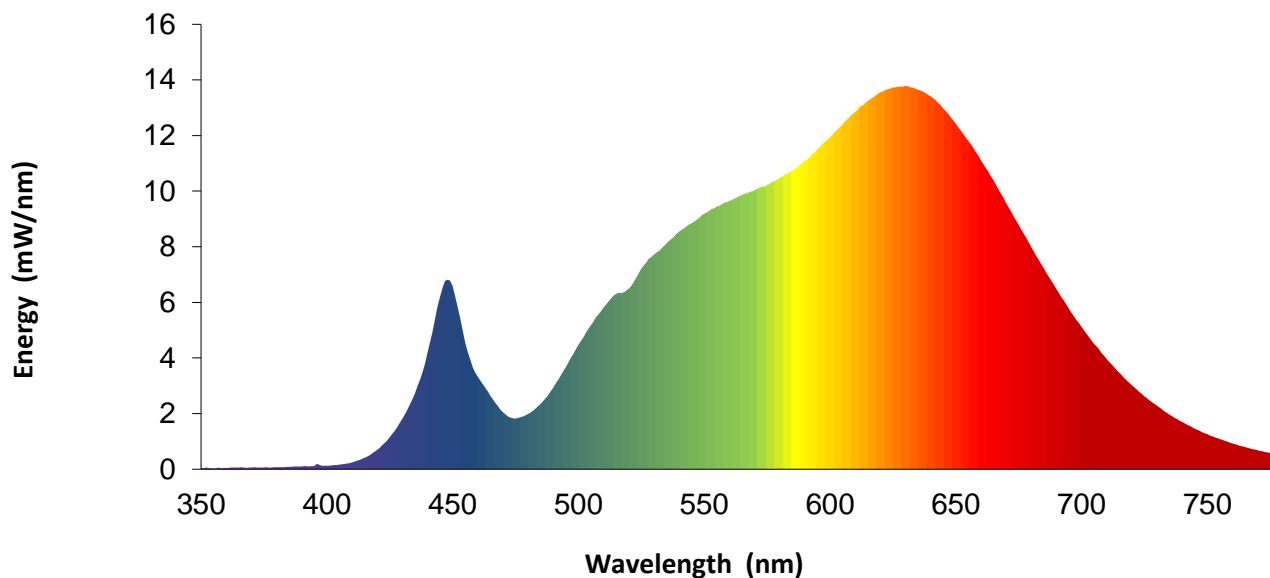


REPORT NO. 104941221CHI-008

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	3.3		570	10.0		680	8.0
355	0.0		465	2.6		575	10.2		685	7.2
360	0.1		470	2.0		580	10.5		690	6.5
365	0.1		475	1.8		585	10.7		695	5.8
370	0.1		480	2.0		590	11.1		700	5.1
375	0.1		485	2.3		595	11.5		705	4.5
380	0.1		490	2.9		600	11.9		710	4.0
385	0.1		495	3.7		605	12.4		715	3.5
390	0.1		500	4.5		610	12.9		720	3.0
395	0.1		505	5.2		615	13.2		725	2.6
400	0.1		510	5.8		620	13.5		730	2.3
405	0.2		515	6.3		625	13.7		735	2.0
410	0.2		520	6.5		630	13.8		740	1.7
415	0.4		525	7.2		635	13.6		745	1.5
420	0.7		530	7.7		640	13.4		750	1.3
425	1.1		535	8.1		645	13.0		755	1.1
430	1.8		540	8.5		650	12.4		760	0.9
435	2.7		545	8.8		655	11.8		765	0.8
440	4.2		550	9.2		660	11.1		770	0.7
445	6.2		555	9.5		665	10.4		775	0.6
450	6.6		560	9.6		670	9.6		780	0.5
455	4.6		565	9.9		675	8.8		---	---

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. 104941221CHI-008

#	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	VBUE	VBUE
4	Newport Thermohygrometer	iServer	146379	4/13/2021	4/13/2022
5	Chroma Power Supply	61604	CHI0371	VBUE	VBUE
8	Newport Humidity Recorder	iServer	146961	9/21/2021	9/21/2022
9	Labsphere Spectroradiometer	CDS2600	CHI0539	VBUE	VBUE
10	3 Meter Sphere	SPR600	CHI0088	VBUE	VBUE
11	Elgar AC Power Supply	CW1251	146112	VBUE	VBUE
12	Sorenson DC Power Supply	XFR150-8	146846	VBUE	VBUE
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	700FMKAI15BR-LED930	NA

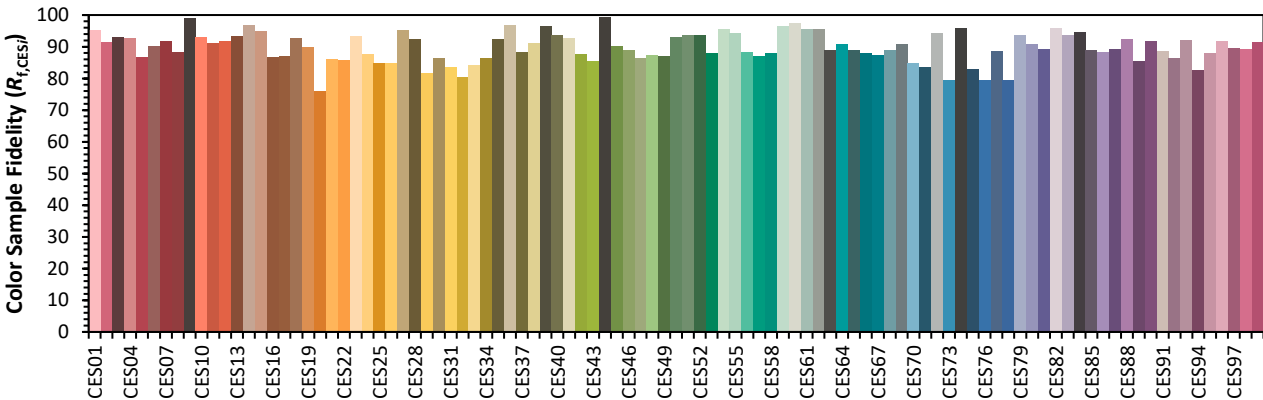
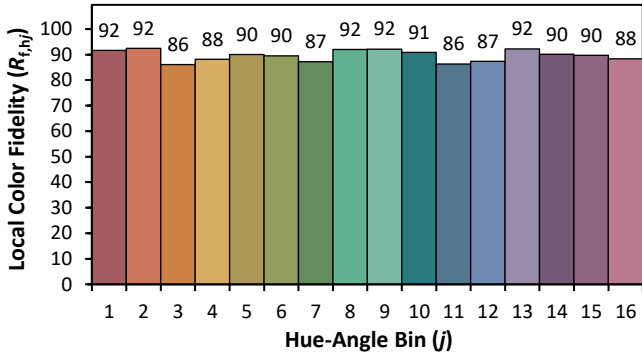
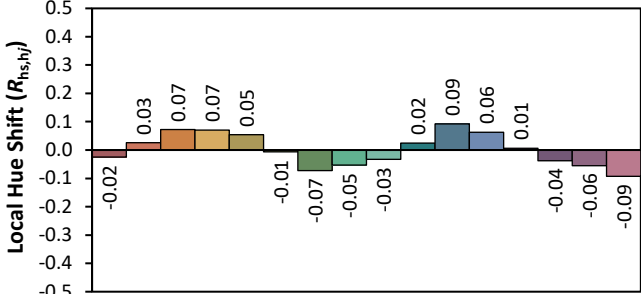
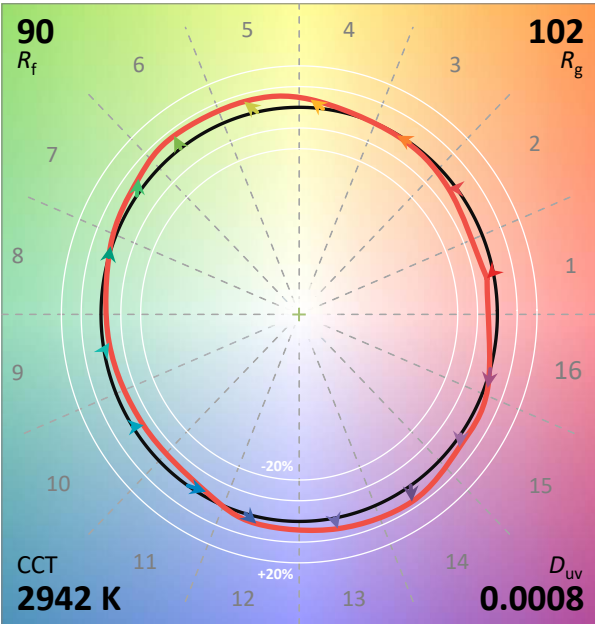
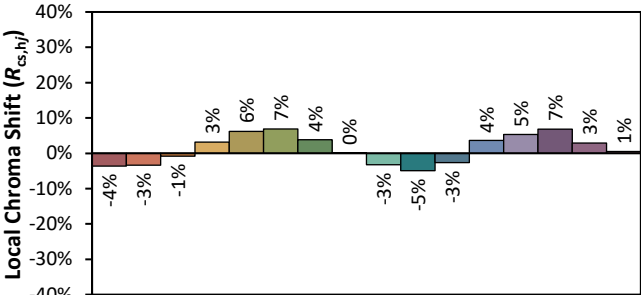
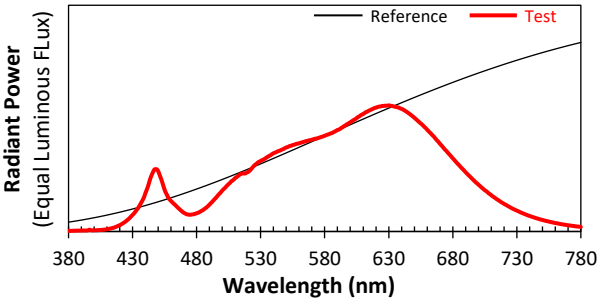
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: VISUAL COMFORT AND COMPANY

Date: 3/3/2022

Model: 700FMKAI15BR-LED930



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

x 0.4423
y 0.4078
u' 0.2524
v' 0.5237