

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0606U48600930FW1

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-051

ISSUE DATE

11/16/2020

REVISED DATE

None

TEST DATES

11/05/2020 through 11/06/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104349704CHI-051

MODEL NUMBER(s)

ESSF0606U48600930FW1

REPORT RENDERED TO:

GENERATION BRANDS, LLC
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-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

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	AH10292020032135	ESSF0606U48600930FW 1	ESSENCE 0606 U 800 930 FW	Production	10/29/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0606U48600930FW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0606U48600930FW1
Product Description:	ESSENCE 0606 U 800 930 FW
LED Model No.:	U Series 800lm/ft
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2452.0	2460.7
Input Power (W) @ 24 (Vdc)	29.33	29.96
Lumen Efficacy (lm/W)	83.6	82.1

Criteria	Results
Input ATHD (%) @ 24 (Vdc)	NA
Correlated Color Temperature (K)	2991
Color Rendering Index - Ra (l)	97.4
Color Rendering Index - R9 (l)	96.8
Duv (l)	-0.0017
Chromaticity Coordinate (x)	0.435
Chromaticity Coordinate (y)	0.399
Chromaticity Coordinate (u')	0.251
Chromaticity Coordinate (v')	0.519

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	ESSF0606U48600930FW1	NA

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

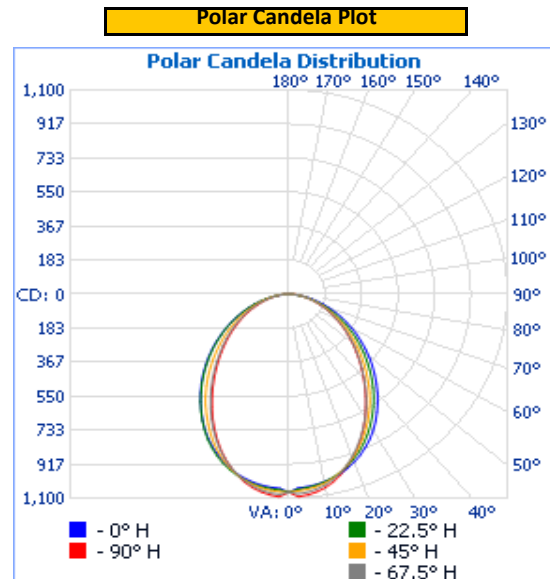
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	1223.2	29.33	NA

Light Output (lm)	Lumen Efficacy (lm/W)
2452.0	83.6

INTENSITY SUMMARY - CANDELA

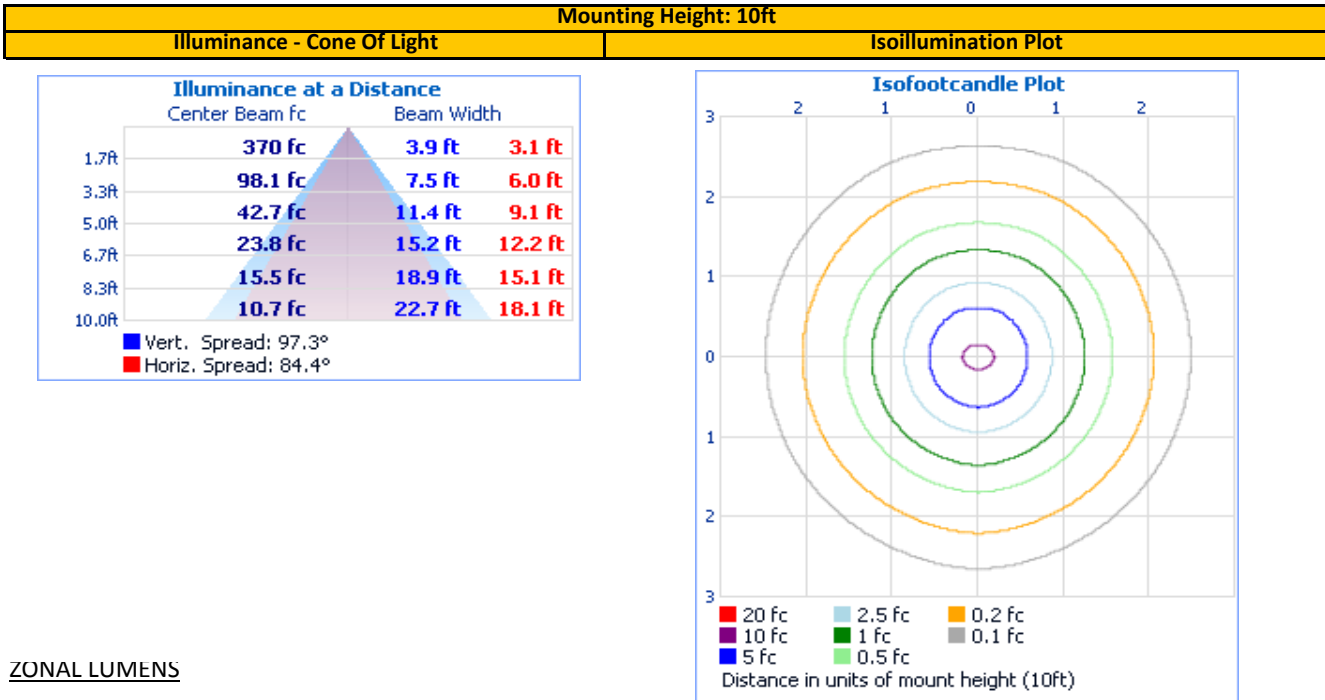
Angle	0	22.5	45	67.5	90
0	1068	1068	1068	1068	1068
5	1042	1047	1056	1071	1086
10	1027	1028	1035	1046	1058
15	1001	995	994	999	1008
20	963	948	938	932	941
25	911	889	870	854	858
30	848	818	792	768	768
35	774	741	711	678	675
40	693	660	623	588	584
45	611	575	536	503	500
50	528	492	455	426	423
55	445	412	378	354	352
60	366	335	307	287	285
65	290	263	241	226	225
70	217	195	181	171	169
75	149	132	127	120	120
80	87	78	79	78	77
85	36	33	40	42	43
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



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ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	787.4	32.1%	90-100	0.0	0.0%
0-40	1,237.7	50.5%	100-110	0.0	0.0%
0-60	2,014.0	82.1%	110-120	0.0	0.0%
60-90	438.0	17.9%	120-130	0.0	0.0%
70-100	187.2	7.6%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	2,452.0	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	2,452.0	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0606U48600930FW1	NA

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

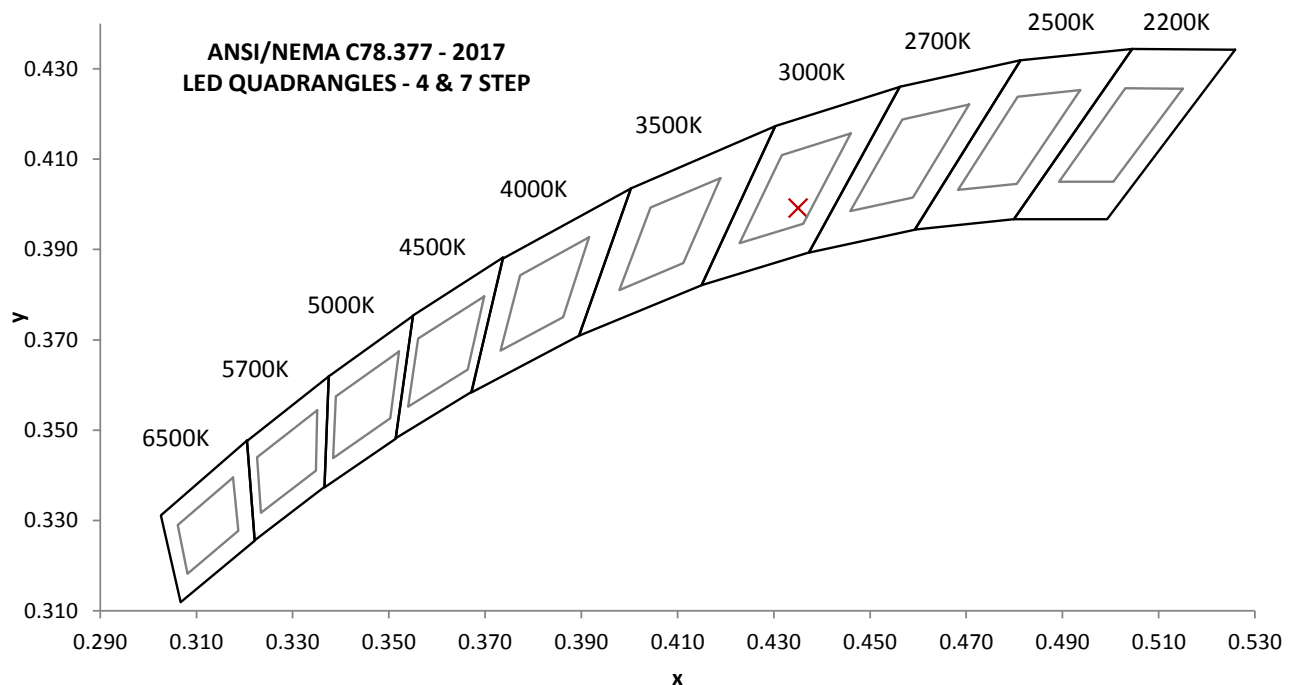
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
24.00	1248.3	29.96	NA	NA

Measured at 24(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
2460.7	82.1	2991	97.4	96.8

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0017	0.435	0.399	0.251	0.519

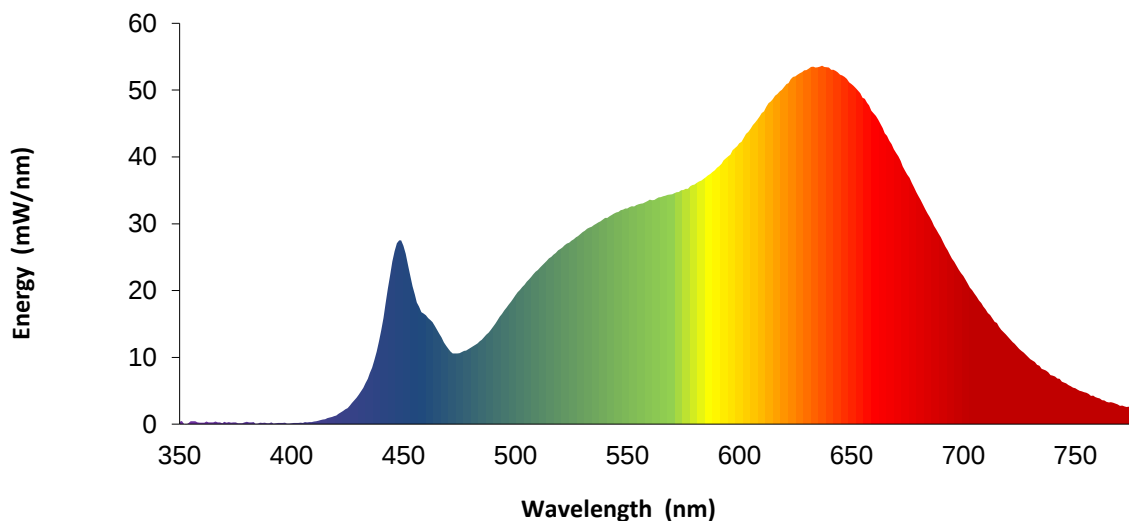


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.3		460	16.3		570	34.4		680	34.1
355	0.5		465	14.1		575	35.1		685	31.0
360	0.2		470	11.2		580	35.9		690	28.0
365	0.2		475	10.6		585	37.0		695	24.8
370	0.3		480	11.4		590	38.4		700	22.2
375	0.3		485	12.6		595	40.1		705	19.5
380	0.3		490	14.6		600	42.0		710	17.2
385	0.1		495	17.0		605	44.2		715	15.1
390	0.1		500	19.3		610	46.5		720	13.1
395	0.2		505	21.3		615	48.7		725	11.3
400	0.1		510	23.1		620	50.5		730	9.7
405	0.2		515	24.8		625	52.1		735	8.3
410	0.4		520	26.2		630	53.0		740	7.3
415	0.8		525	27.5		635	53.4		745	6.2
420	1.3		530	28.7		640	53.4		750	5.4
425	2.4		535	29.8		645	52.3		755	4.7
430	4.4		540	30.9		650	50.9		760	3.9
435	7.7		545	31.7		655	48.9		765	3.3
440	14.0		550	32.3		660	46.5		770	2.7
445	24.4		555	32.9		665	43.5		775	2.3
450	26.7		560	33.6		670	40.6		780	2.0
455	19.4		565	34.0		675	37.3		---	---

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

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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	VBV	VBV
4	Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
5	Sorenson DC Power Supply	XHR 150-7	146922	VBV	VBV
6	Labsphere Spectroradiometer	CDS-600	146923	VBV	VBV
7	2M Rotating Sphere	7660-ROT	146923	VBV	VBV
8	Omega thermometer	USB TC08	EQA002615	4/7/2020	4/7/2021
9	Ametek DC Power Supply	XFR150-8	1468464	VBV	VBV
10	Yokogawa Power Meter	WT210	146880	10/1/2020	10/1/2021
11	Chroma Power Supply	61604	CHI0371	VBV	VBV
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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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ANNEX A - TM-30 CALCULATIONS

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0606U48600930FW1	NA

TM-30 REPORT

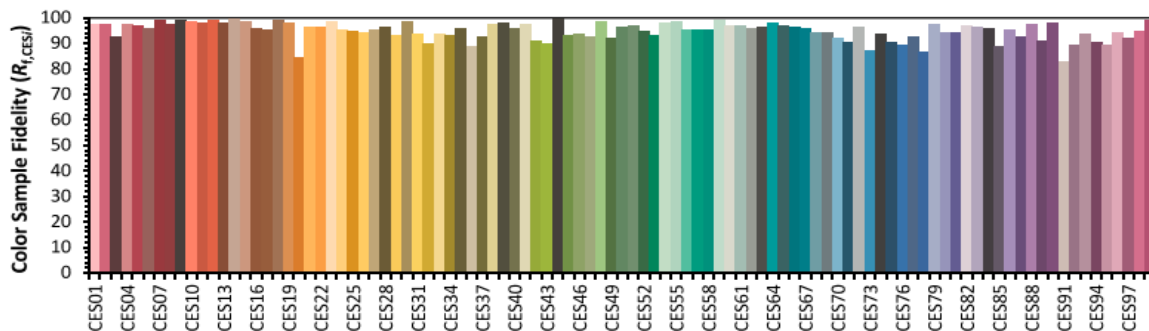
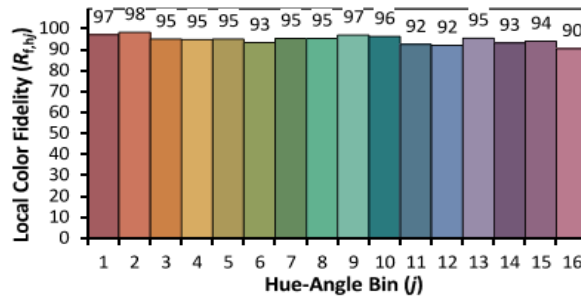
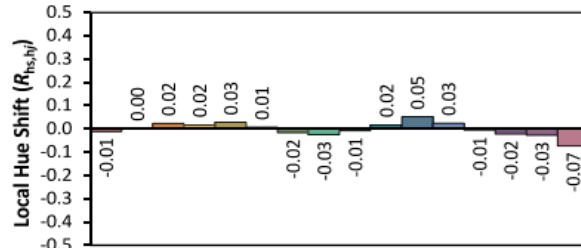
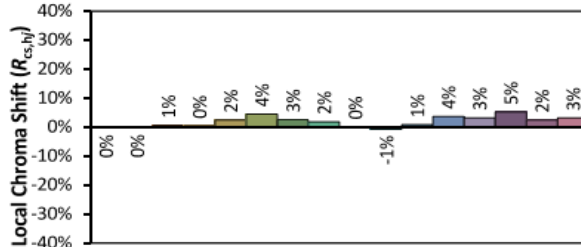
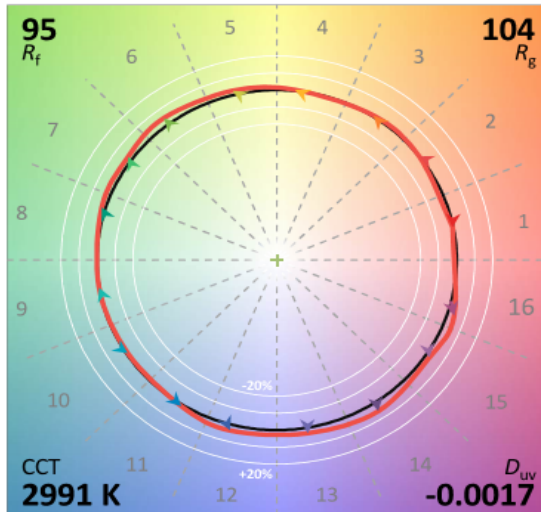
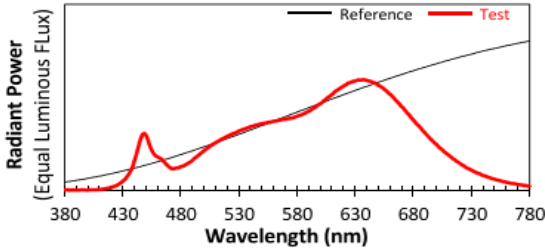
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Generation Brands, LLC

Date: 11/5/2020

Model: ESSF0606U48600930FW1



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

x 0.4351
y 0.3991
u' 0.2515
v' 0.5191

Colors are for visual orientation purposes only. Created with the IES TM-30-18 Calculator Version 2.00.