

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0606U48600930AW1

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-052

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-052

MODEL NUMBER(s)

ESSF0606U48600930AW1

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	ESSF0606U48600930AW 1	ESSENCE 0606 U 800 930 WW	Production	10/29/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0606U48600930AW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0606U48600930AW1
Product Description:	ESSENCE 0606 U 800 930 WW
LED Model No.:	U Series 800lm/ft
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1954.2	1926.0
Input Power (W) @ 24 (Vdc)	29.30	29.96
Lumen Efficacy (lm/W)	66.7	64.3

Criteria	Results
Input ATHD (%) @ 24 (Vdc)	NA
Correlated Color Temperature (K)	2898
Color Rendering Index - Ra (l)	97.5
Color Rendering Index - R9 (l)	96.3
Duv (l)	-0.0019
Chromaticity Coordinate (x)	0.441
Chromaticity Coordinate (y)	0.401
Chromaticity Coordinate (u')	0.255
Chromaticity Coordinate (v')	0.521

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	ESSF0606U48600930AW1	NA

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

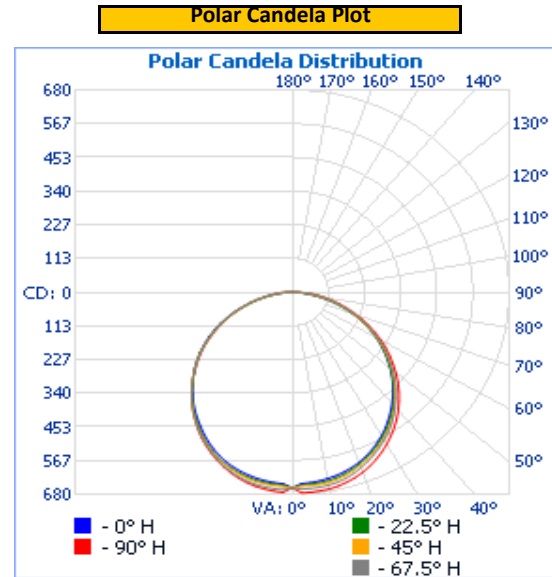
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	1221.9	29.30	NA

Light Output (lm)	Lumen Efficacy (lm/W)
1954.2	66.7

INTENSITY SUMMARY - CANDELA

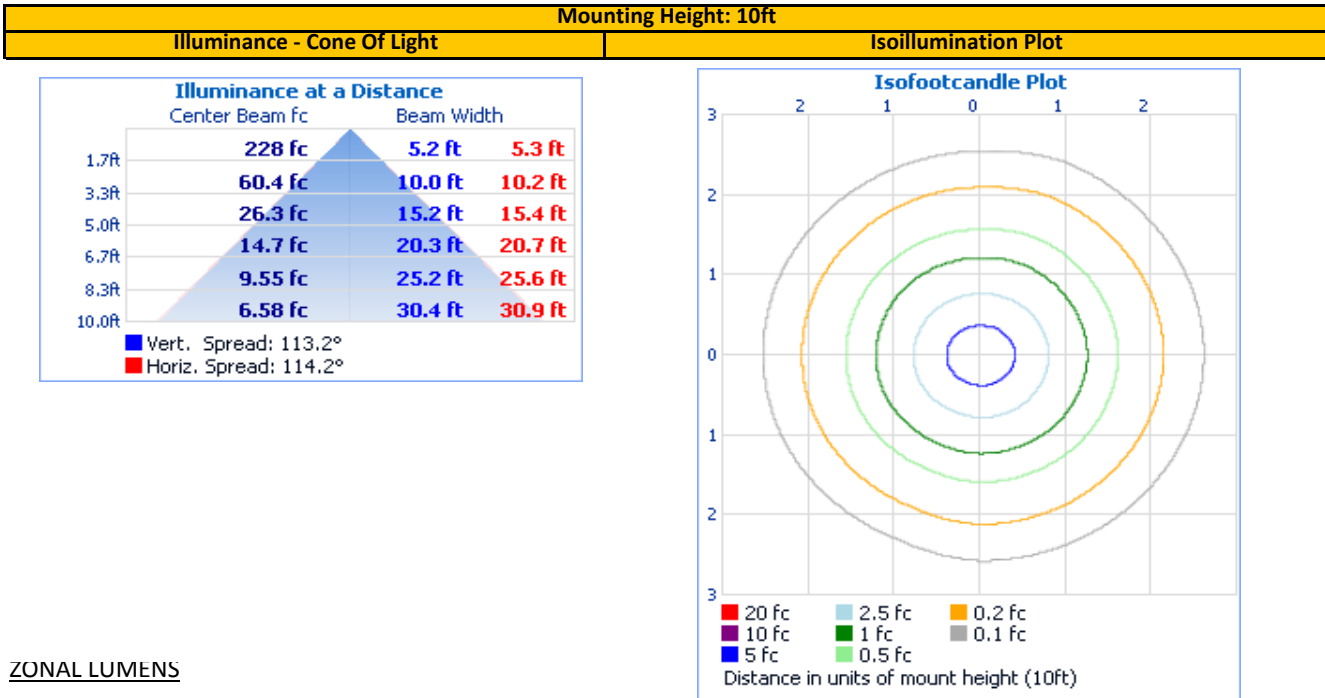
Angle	0	22.5	45	67.5	90
0	658	658	658	658	658
5	643	649	653	662	675
10	637	644	650	659	672
15	626	633	640	648	662
20	610	615	621	629	645
25	587	592	598	604	621
30	559	564	570	575	591
35	525	530	538	542	557
40	487	493	498	501	517
45	446	449	455	458	472
50	402	402	409	412	424
55	354	354	360	363	373
60	304	304	307	311	320
65	251	250	252	257	264
70	194	194	197	204	209
75	137	138	142	149	154
80	82	85	92	100	103
85	33	38	48	58	61
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	517.0	26.5%	90-100	0.0	0.0%
0-40	849.5	43.5%	100-110	0.0	0.0%
0-60	1,512.7	77.4%	110-120	0.0	0.0%
60-90	441.4	22.6%	120-130	0.0	0.0%
70-100	195.9	10.0%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	1,954.2	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	1,954.2	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0606U48600930AW1	NA

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

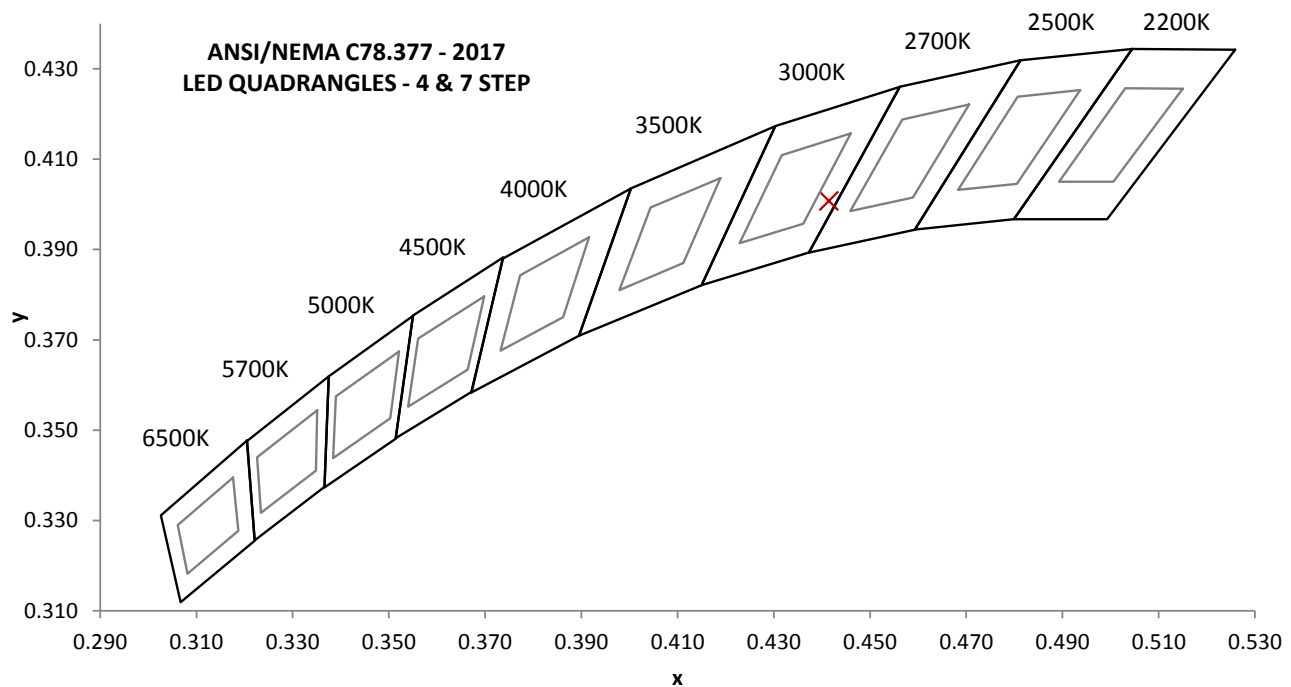
Base Orientation
Up

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 ()
1926.0	64.3	2898	97.5	96.3

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0019	0.441	0.401	0.255	0.521

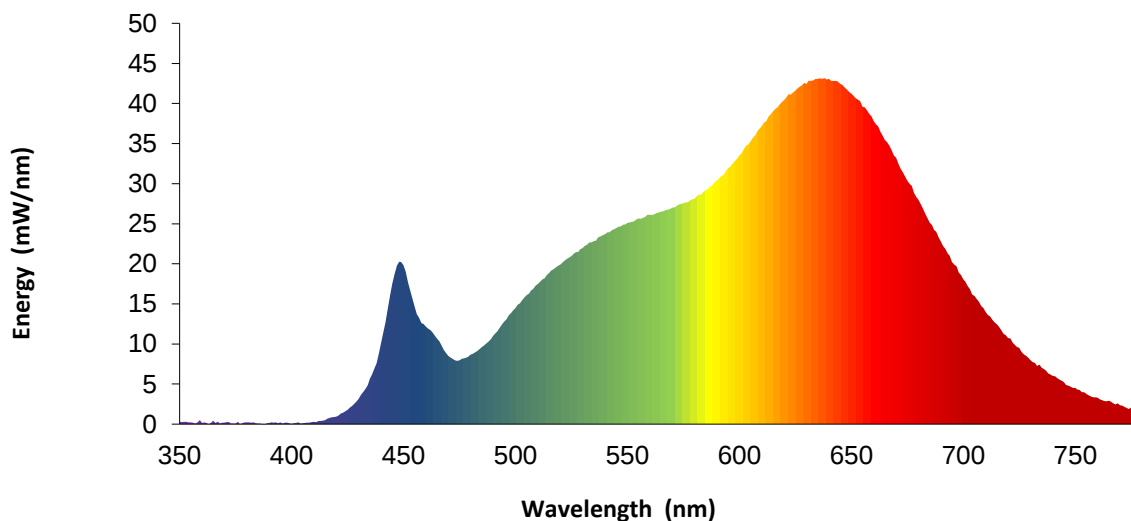


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.3		460	12.2		570	27.0		680	28.0
355	0.2		465	10.7		575	27.6		685	25.1
360	0.2		470	8.5		580	28.1		690	22.8
365	0.4		475	8.0		585	29.2		695	20.2
370	0.2		480	8.7		590	30.4		700	18.1
375	0.1		485	9.6		595	32.0		705	16.0
380	0.2		490	11.0		600	33.5		710	14.0
385	0.1		495	12.8		605	35.3		715	12.4
390	0.2		500	14.5		610	37.2		720	10.7
395	0.2		505	16.1		615	39.0		725	9.5
400	0.0		510	17.5		620	40.5		730	8.0
405	0.1		515	18.8		625	41.6		735	7.0
410	0.3		520	19.9		630	42.4		740	6.0
415	0.5		525	21.0		635	43.1		745	5.2
420	0.9		530	22.0		640	43.1		750	4.5
425	1.8		535	22.9		645	42.5		755	3.8
430	3.2		540	23.7		650	41.2		760	3.3
435	5.6		545	24.4		655	39.6		765	2.9
440	10.2		550	25.1		660	37.8		770	2.4
445	17.6		555	25.7		665	35.5		775	2.1
450	19.8		560	26.1		670	33.2		780	1.7
455	14.6		565	26.5		675	30.4		---	---

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	ESSF0606U48600930AW1	NA

TM-30 REPORT

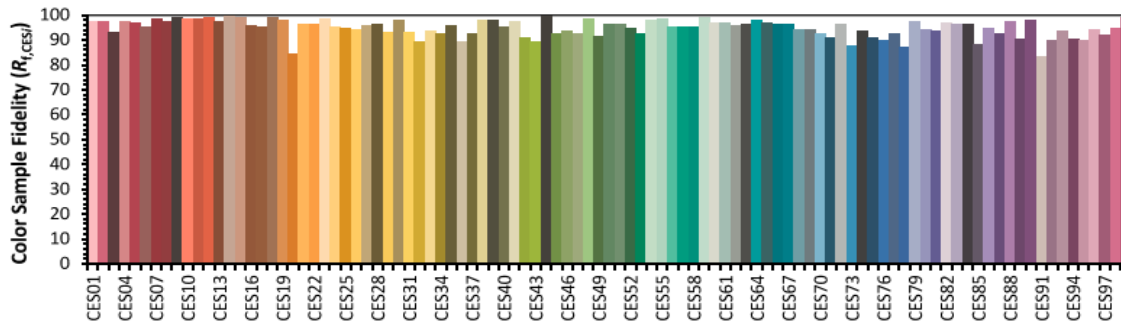
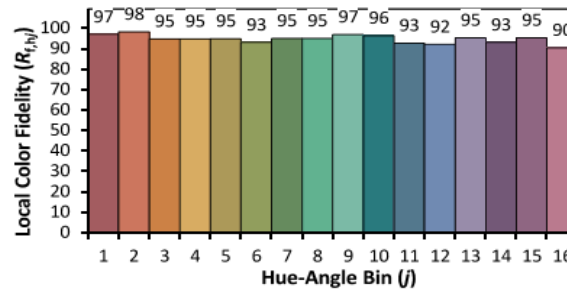
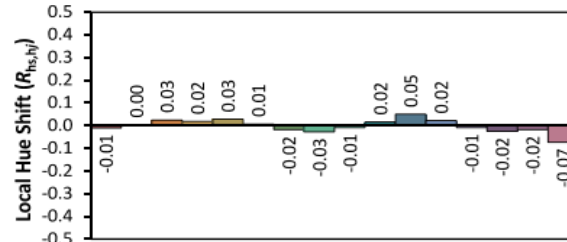
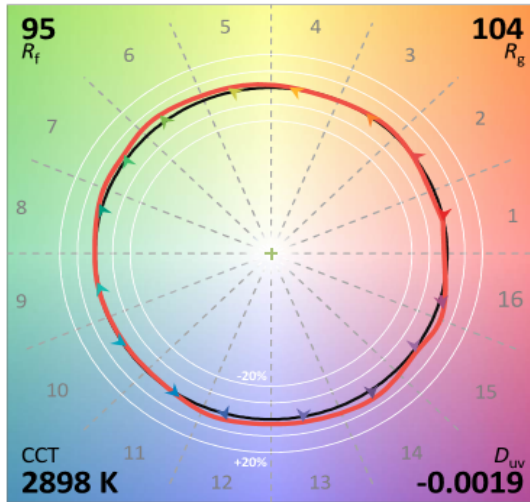
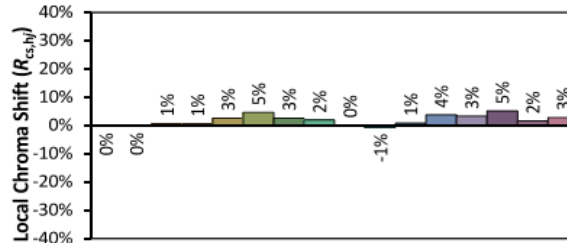
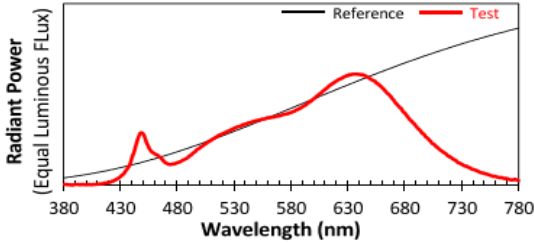
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Generation Brands, LLC

Date: 11/5/2020

Model: ESSF0606U48600930AW1



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

x 0.4414

y 0.4007

u' 0.2549

v' 0.5207

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