

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604U48720930FW1

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-053

ISSUE DATE

11/16/2020

REVISED DATE

None

TEST DATES

11/05/2020 through 11/12/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104349704CHI-053

MODEL NUMBER(s)

ESSF0604U48720930FW1

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	ESSF0604U48720930FW 1	ESSENCE 0604 U 800 930 FW	Production	10/29/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0604U48720930FW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604U48720930FW1
Product Description:	ESSENCE 0604 U 800 930 FW
LED Model No.:	U Series 800lm/ft
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2796.6	2899.8
Input Power (W) @ 24 (Vdc)	28.48	29.94
Lumen Efficacy (lm/W)	98.2	96.8

Criteria	Results
Input ATHD (%) @ 24 (Vdc)	NA
Correlated Color Temperature (K)	3026
Color Rendering Index - Ra (l)	97.5
Color Rendering Index - R9 (l)	96.3
Duv (l)	-0.0015
Chromaticity Coordinate (x)	0.433
Chromaticity Coordinate (y)	0.399
Chromaticity Coordinate (u')	0.250
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	ESSF0604U48720930FW1	NA

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

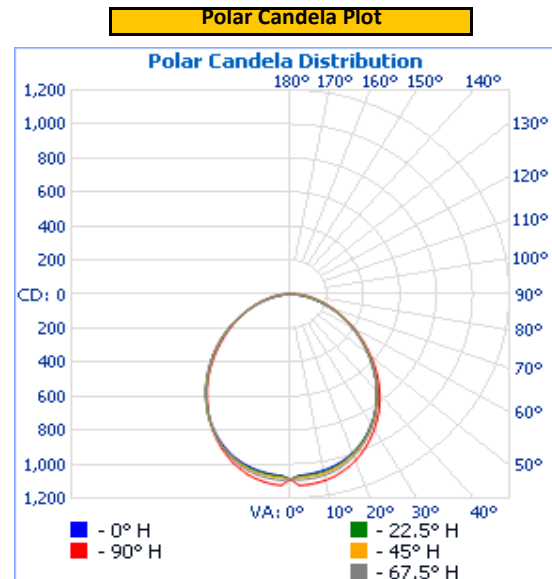
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	1186.8	28.48	NA

Light Output (lm)	Lumen Efficacy (lm/W)
2796.6	98.2

INTENSITY SUMMARY - CANDELA

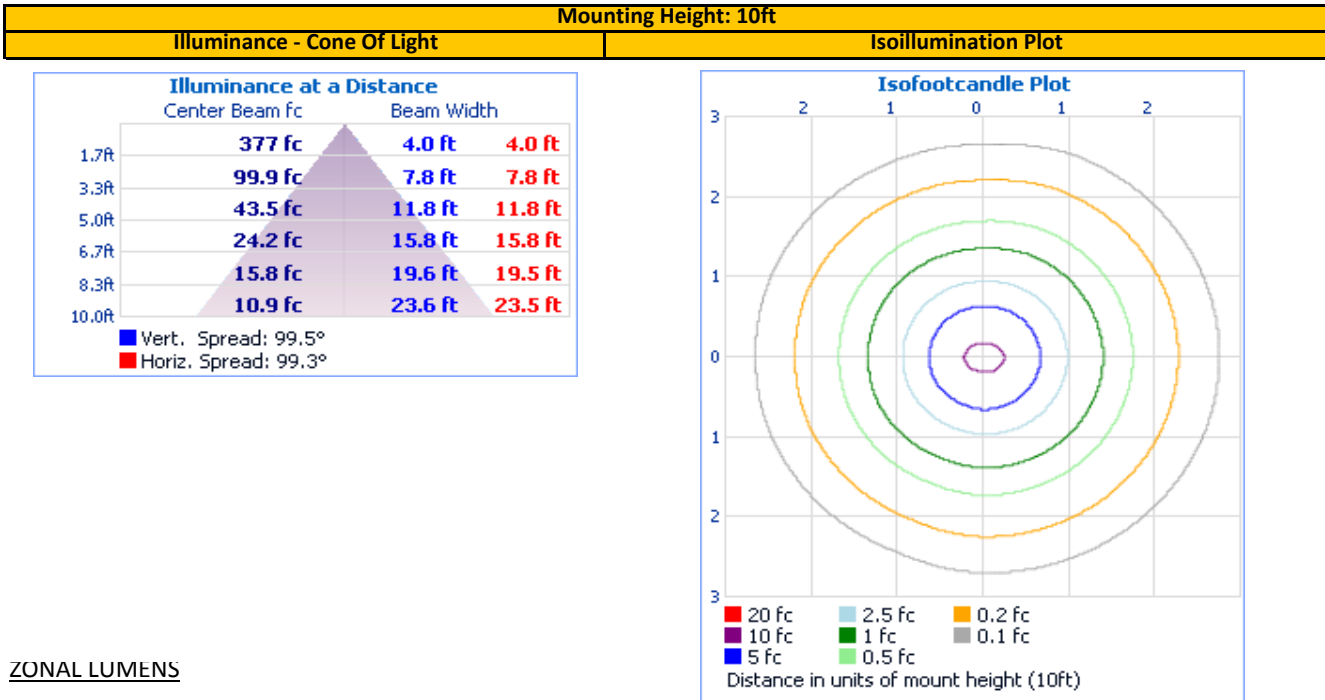
Angle	0	22.5	45	67.5	90
0	1088	1088	1088	1088	1088
5	1064	1069	1076	1091	1124
10	1051	1059	1068	1081	1111
15	1028	1036	1044	1056	1083
20	994	997	1005	1014	1042
25	947	948	954	960	985
30	886	888	894	896	919
35	816	817	822	822	845
40	736	737	740	740	762
45	652	651	655	653	673
50	565	562	568	566	580
55	477	476	481	478	491
60	394	392	397	395	404
65	312	313	315	316	323
70	232	235	241	246	249
75	158	163	173	179	183
80	92	98	112	123	125
85	37	43	62	74	78
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	833.1	29.8%	90-100	0.0	0.0%
0-40	1,338.9	47.9%	100-110	0.0	0.0%
0-60	2,255.3	80.6%	110-120	0.0	0.0%
60-90	541.3	19.4%	120-130	0.0	0.0%
70-100	236.6	8.5%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	2,796.6	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	2,796.6	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604U48720930FW1	NA

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

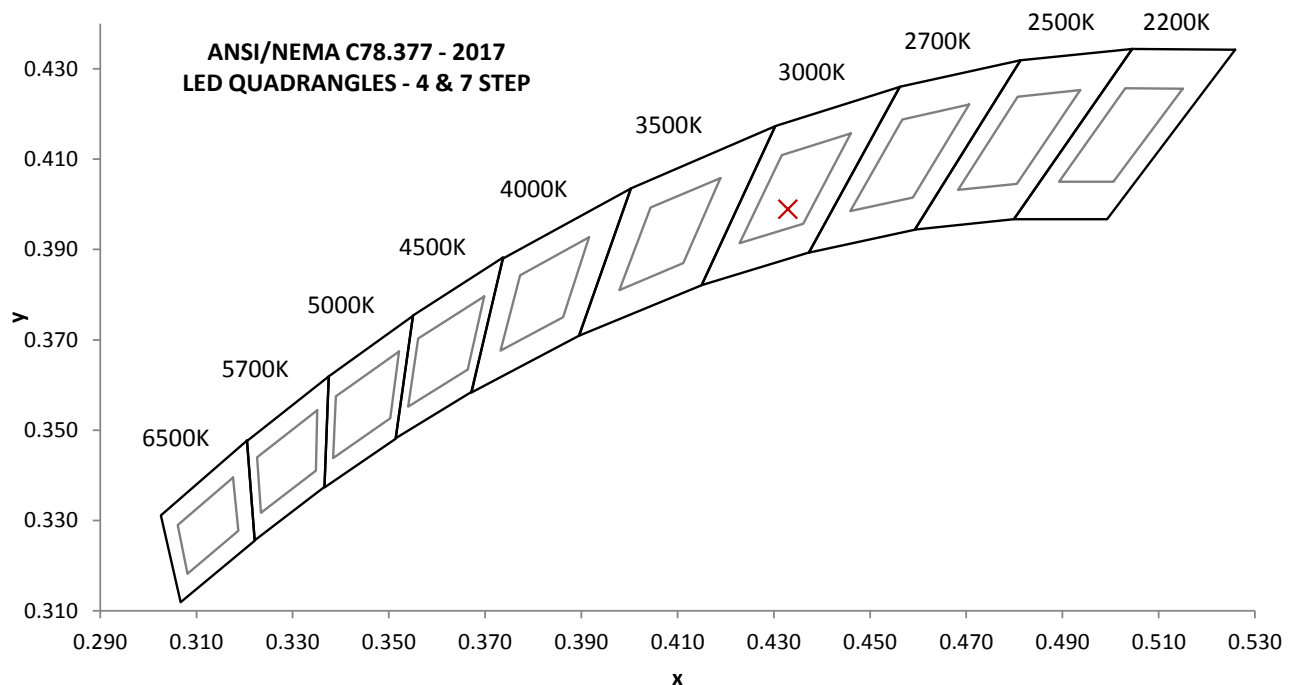
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
23.99	1248.3	29.94	NA	NA

Measured at 23.99(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
2899.8	96.8	3026	97.5	96.3

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0015	0.433	0.399	0.250	0.519

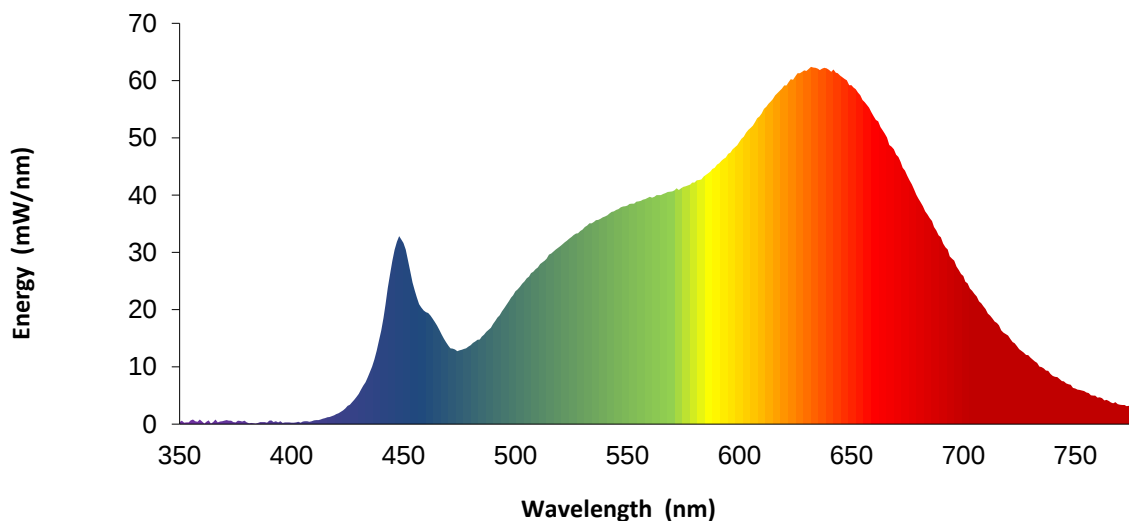


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.3		460	19.6		570	40.7		680	39.4
355	0.7		465	17.2		575	41.5		685	36.0
360	0.5		470	13.7		580	42.2		690	32.6
365	0.4		475	12.9		585	43.5		695	28.9
370	0.6		480	13.8		590	45.3		700	25.9
375	0.3		485	15.3		595	47.2		705	22.8
380	0.3		490	17.5		600	49.3		710	20.1
385	0.2		495	20.2		605	51.7		715	17.7
390	0.6		500	23.2		610	54.3		720	15.5
395	0.5		505	25.5		615	56.8		725	13.1
400	0.3		510	27.4		620	59.1		730	11.6
405	0.5		515	29.6		625	60.8		735	10.0
410	0.6		520	31.1		630	61.7		740	8.4
415	1.1		525	32.7		635	62.1		745	7.5
420	1.8		530	34.0		640	61.9		750	6.3
425	3.2		535	35.3		645	60.9		755	5.5
430	5.3		540	36.3		650	59.2		760	4.6
435	9.1		545	37.4		655	56.6		765	4.0
440	16.3		550	38.1		660	53.8		770	3.4
445	28.5		555	38.9		665	50.8		775	2.8
450	31.7		560	39.7		670	47.1		780	2.5
455	23.3		565	40.0		675	43.4		---	---

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	ESSF0604U48720930FW1	NA

TM-30 REPORT

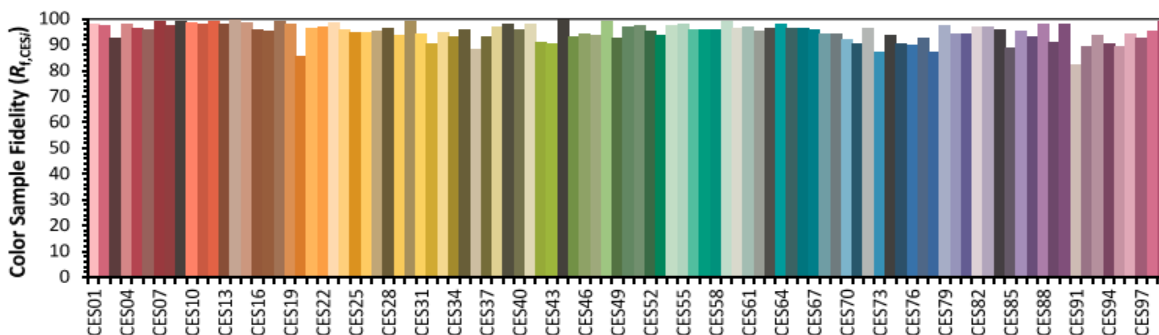
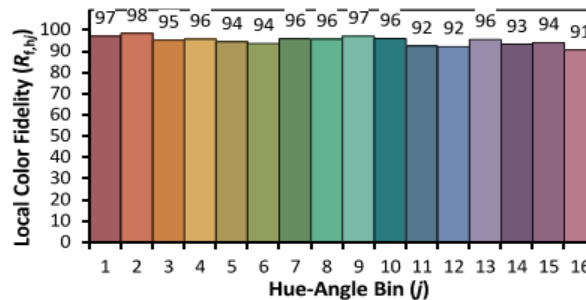
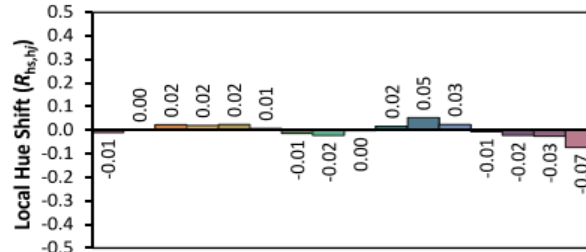
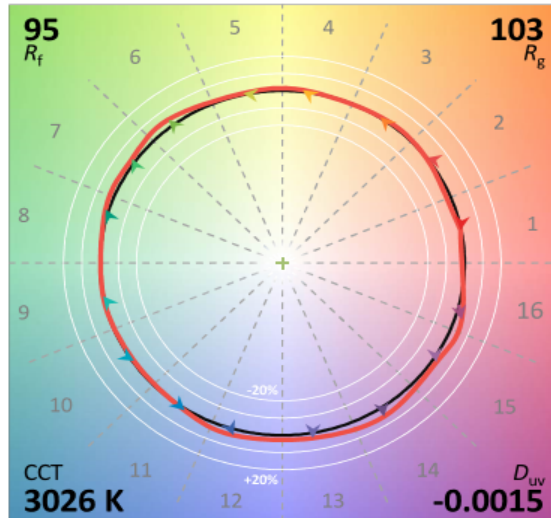
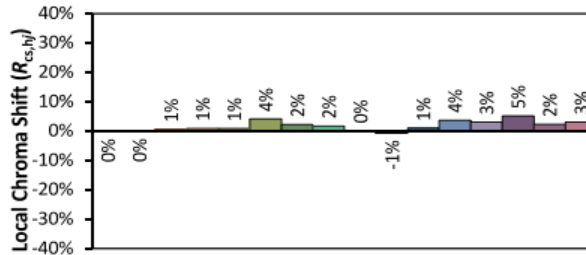
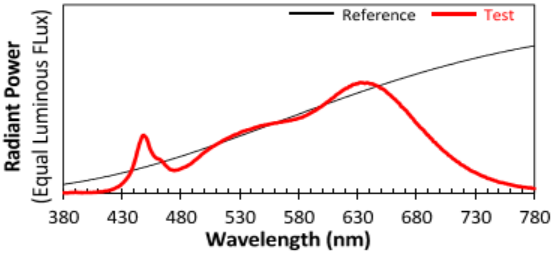
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Generation Brands, LLC

Date: 11/5/2020

Model: ESSF0604U48720930FW1



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

x 0.4329
 y 0.3989
 u' 0.2502
 v' 0.5187

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