

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604U48300930FW1

PROJECT NUMBER

G104349704

REPORT NUMBER

10434974CHI-025

ISSUE DATE

8/17/2020

REVISED DATE

8/26/2020

TEST DATES

08/13/2020 through 08/14/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

10434974CHI-025

MODEL NUMBER(s)

ESSF0604U48300930FW1

REPORT RENDERED TO:

GENERATION BRANDS, LLC
7400 LINDER AVE
SKOKIE, IL 60077
COUNTRY

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:

Reviewer:

Signature on file

Signature on file

Ian Smith
Engineer
Lighting Division

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	AH08122020025613-025	ESSF0604U48300930FW 1	ESSENCE 0604 U 300 930 F W	Production	8/12/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0604U48300930FW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604U48300930FW1
Product Description:	ESSENCE 0604 U 300 930 F W
LED Model No.:	U Series
Driver Model No.:	NA
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1778.5	1798.2
Input Power (W) @ 24VDC (Vdc)	17.53	17.62
Lumen Efficacy (lm/W)	101.5	102.1
Input Power Factor (I) @ 24VDC (Vdc)	NA	NA

Criteria	Results
Input ATHD (%) @ 24VDC (Vdc)	NA
Correlated Color Temperature (K)	3035
Color Rendering Index - Ra (I)	97.5
Color Rendering Index - R9 (I)	97.6
Duv (I)	-0.0014
Chromaticity Coordinate (x)	0.432
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	ESSF0604U48300930FW1	NA

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

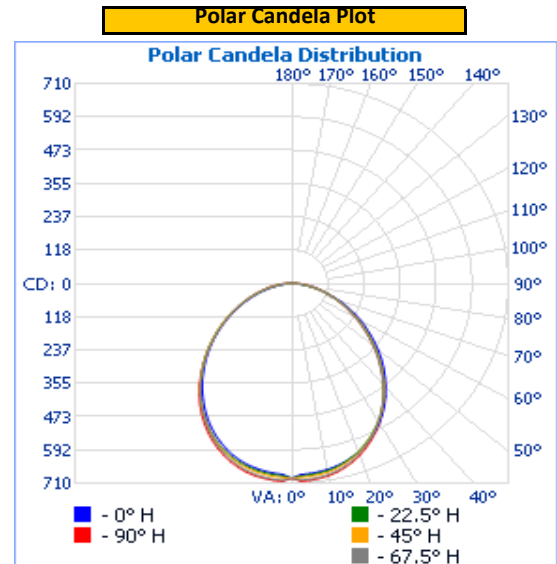
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	730.7	17.53	NA

Light Output (lm)	Lumen Efficacy (lm/W)
1778.5	101.5

INTENSITY SUMMARY - CANDELA

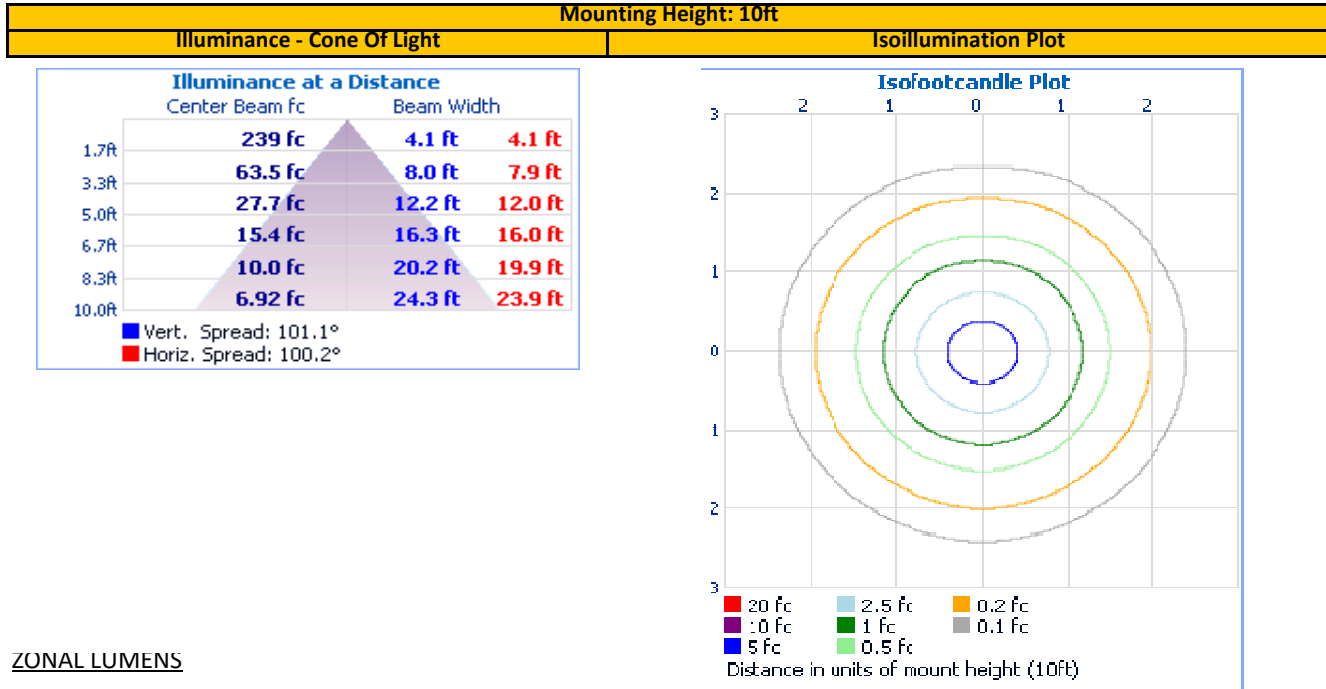
Angle	0	22.5	45	67.5	90
0	692	692	692	692	692
5	678	683	688	698	702
10	671	675	681	690	694
15	658	660	665	673	677
20	638	636	640	645	650
25	609	605	608	610	615
30	573	566	568	568	573
35	530	521	522	520	524
40	479	469	469	466	470
45	426	414	413	409	412
50	371	358	355	351	353
55	313	301	299	294	296
60	259	247	245	241	242
65	205	195	193	191	192
70	152	145	146	146	146
75	105	99	104	105	105
80	62	59	66	70	70
85	26	26	35	40	41
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	532.3	29.9%	90-100	0.0	0.0%
0-40	856.9	48.2%	100-110	0.0	0.0%
0-60	1,441.1	81.0%	110-120	0.0	0.0%
60-90	337.4	19.0%	120-130	0.0	0.0%
70-100	145.8	8.2%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	1,778.5	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	1,778.5	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604U48300930FW1	NA

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

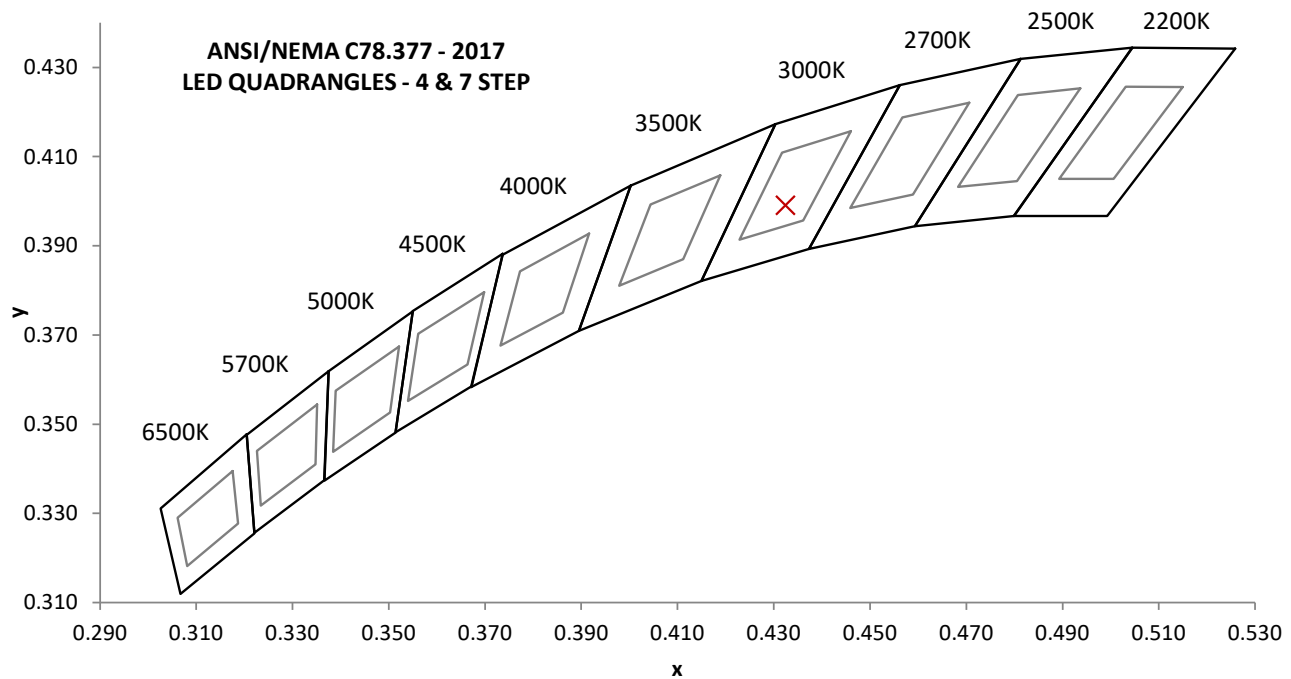
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
23.99	734.6	17.62	NA	NA

Measured at 23.99(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
1798.2	102.1	3035	97.5	97.6

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0014	0.432	0.399	0.250	0.519

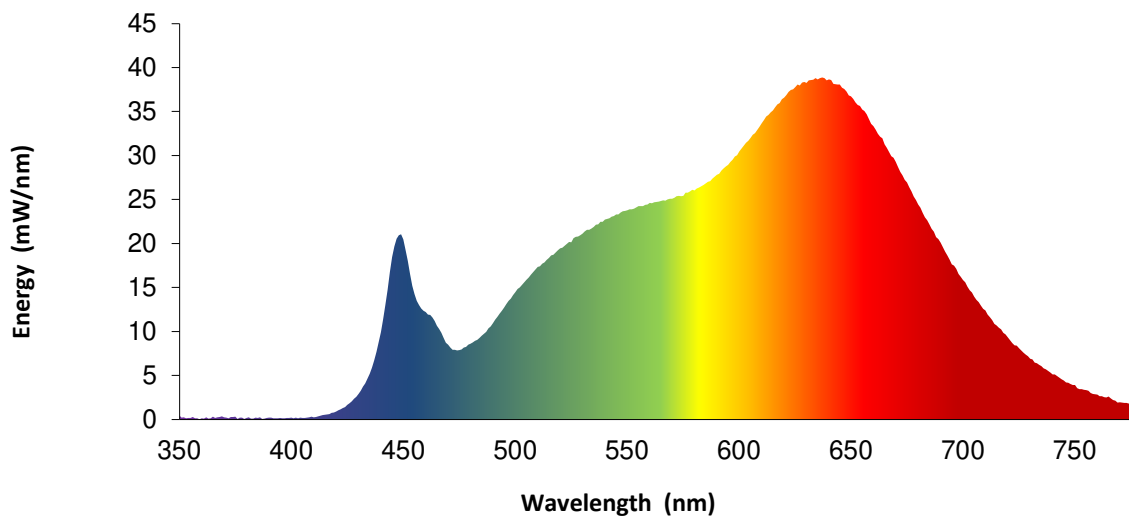


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.4		460	12.2		570	25.1		680	24.4
355	0.2		465	10.7		575	25.4		685	22.2
360	0.1		470	8.5		580	26.0		690	20.1
365	0.3		475	7.9		585	26.8		695	17.6
370	0.3		480	8.6		590	27.8		700	15.8
375	0.3		485	9.5		595	29.0		705	13.9
380	0.2		490	10.9		600	30.5		710	12.4
385	0.2		495	12.7		605	32.0		715	10.7
390	0.2		500	14.5		610	33.7		720	9.3
395	0.2		505	15.9		615	35.1		725	8.1
400	0.2		510	17.3		620	36.6		730	6.9
405	0.2		515	18.4		625	37.8		735	6.1
410	0.2		520	19.5		630	38.3		740	5.1
415	0.5		525	20.1		635	38.6		745	4.4
420	0.9		530	21.1		640	38.7		750	3.9
425	1.7		535	21.9		645	38.1		755	3.3
430	2.9		540	22.7		650	36.7		760	2.8
435	5.2		545	23.3		655	35.2		765	2.6
440	9.9		550	23.8		660	33.3		770	2.0
445	18.5		555	24.2		665	31.3		775	1.8
450	20.5		560	24.6		670	29.3		780	1.5
455	14.3		565	24.8		675	26.9		---	---

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	10/3/2019	10/3/2020
3	LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
4	Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
5	Sorenson DC Power Supply	XHR 150-7	146922	VBU	VBU
6	Newport Humidity Recorder	iServer	CHI0456	10/11/2019	10/11/2020
7	Labsphere Spectroradiometer	CDS-600	146923	VBU	VBU
8	2M Rotating Sphere	7660-ROT	146923	VBU	VBU
9	Omega thermometer	USB TC08	EQA002615	4/7/2020	4/7/2021
10	Ametek DC Power Supply	XFR150-8	1468464	VBU	VBU
11	Yokogawa Power Meter	WT210	146880	10/2/2019	10/2/2020
12	Chroma Power Supply	61604	CHI0371	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	<i>IS</i> Ian Smith	Jeff Davis <i>JD</i>	Corrected Product Name, Description, LED Model
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