

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604U48300930WW1

PROJECT NUMBER

G104349704

REPORT NUMBER

10434974CHI-026

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-026

MODEL NUMBER(s)

ESSF0604U48300930WW1

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
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SAMPLE INFORMATION

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ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH08122020025613-026	ESSF0604U48300930W W1	ESSENCE 0604 U 300 930 W W	Production	8/12/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0604U48300930WW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604U48300930WW1
Product Description:	ESSENCE 0604 U 300 930 W W
LED Model No.:	U Series
Driver Model No.:	NA
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1475.3	1485.3
Input Power (W) @ 24VDC (Vdc)	17.76	17.79
Lumen Efficacy (lm/W)	83.1	83.5
Input Power Factor (I) @ 24VDC (Vdc)	NA	NA

Criteria	Results
Input ATHD (%) @ 24VDC (Vdc)	NA
Correlated Color Temperature (K)	2946
Color Rendering Index - Ra (I)	97.5
Color Rendering Index - R9 (I)	97.6
Duv (I)	-0.0014
Chromaticity Coordinate (x)	0.439
Chromaticity Coordinate (y)	0.401
Chromaticity Coordinate (u')	0.253
Chromaticity Coordinate (v')	0.520

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	ESSF0604U48300930WW1	NA

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

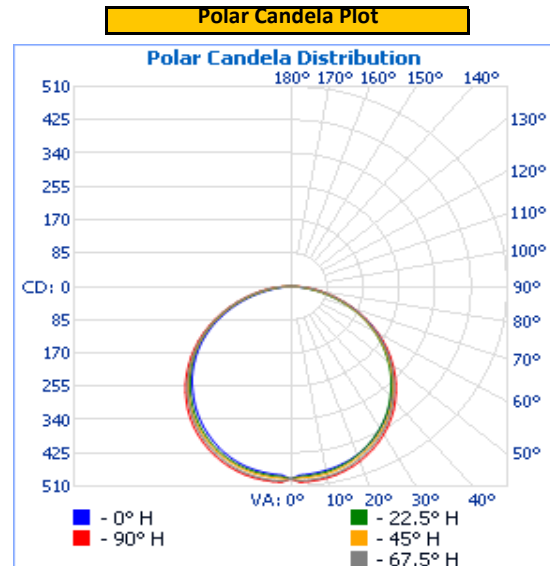
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	739.9	17.76	NA

Light Output (lm)	Lumen Efficacy (lm/W)
1475.3	83.1

INTENSITY SUMMARY - CANDELA

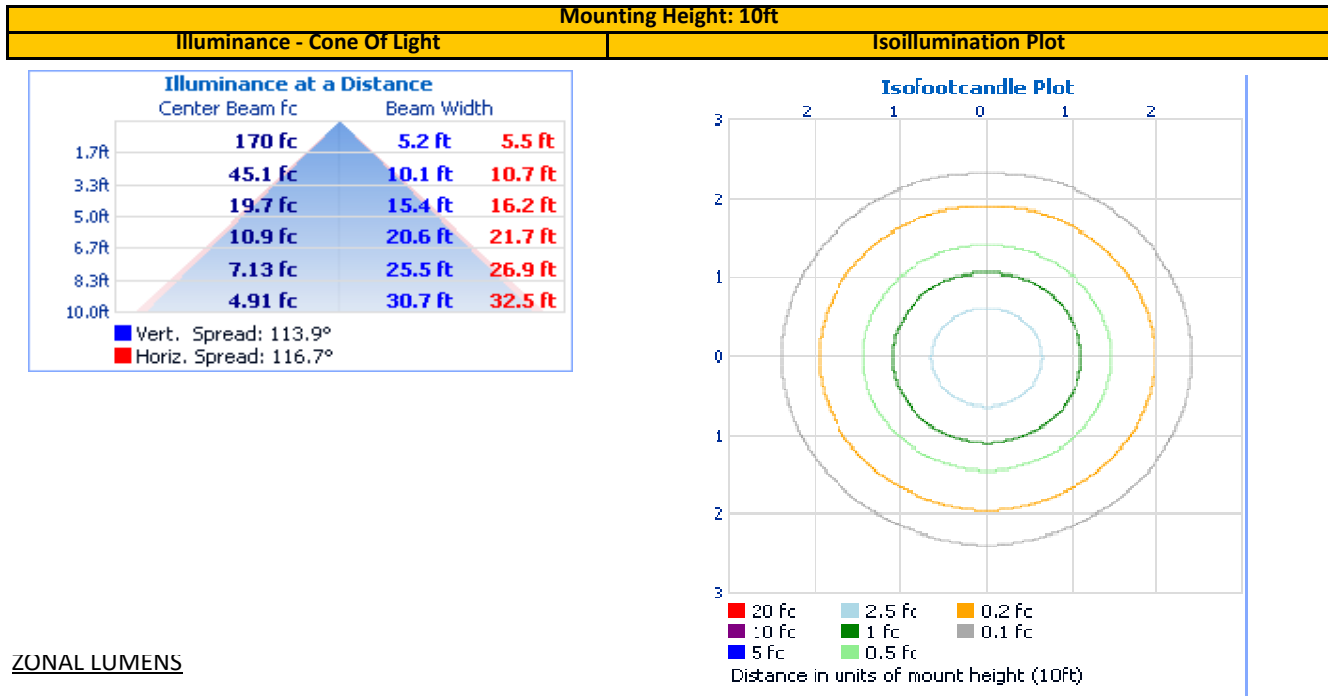
Angle	0	22.5	45	67.5	90
0	491	491	491	491	491
5	481	485	489	496	500
10	477	481	486	493	496
15	469	472	477	484	488
20	457	458	463	470	475
25	441	440	446	452	458
30	420	419	425	431	437
35	396	394	401	406	412
40	368	365	372	376	382
45	338	334	340	343	350
50	306	300	305	309	314
55	270	264	268	271	277
60	232	226	229	232	237
65	192	185	187	191	195
70	148	142	145	150	153
75	105	99	104	109	112
80	63	59	65	71	74
85	26	25	33	40	42
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 1			Zone 2					
Zone	Lumens	Luminaire	Zone	Lumens	Total	Zone	Lumens	Total
0-30	387.3	26.3%	0-10	46.7	3.2%	90-100	0.0	0.0%
0-40	637.8	43.2%	10-20	134.8	9.1%	100-110	0.0	0.0%
0-60	1,140.5	77.3%	20-30	205.9	14.0%	110-120	0.0	0.0%
60-90	334.8	22.7%	30-40	250.5	17.0%	120-130	0.0	0.0%
70-100	147.8	10.0%	40-50	262.3	17.8%	130-140	0.0	0.0%
90-120	0.0	0.0%	50-60	240.4	16.3%	140-150	0.0	0.0%
0-90	1,475.3	100.0%	60-70	186.9	12.7%	150-160	0.0	0.0%
90-180	0.0	0.0%	70-80	111.4	7.6%	160-170	0.0	0.0%
0-180	1,475.3	100.0%	80-90	36.4	2.5%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604U48300930WW1	NA

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

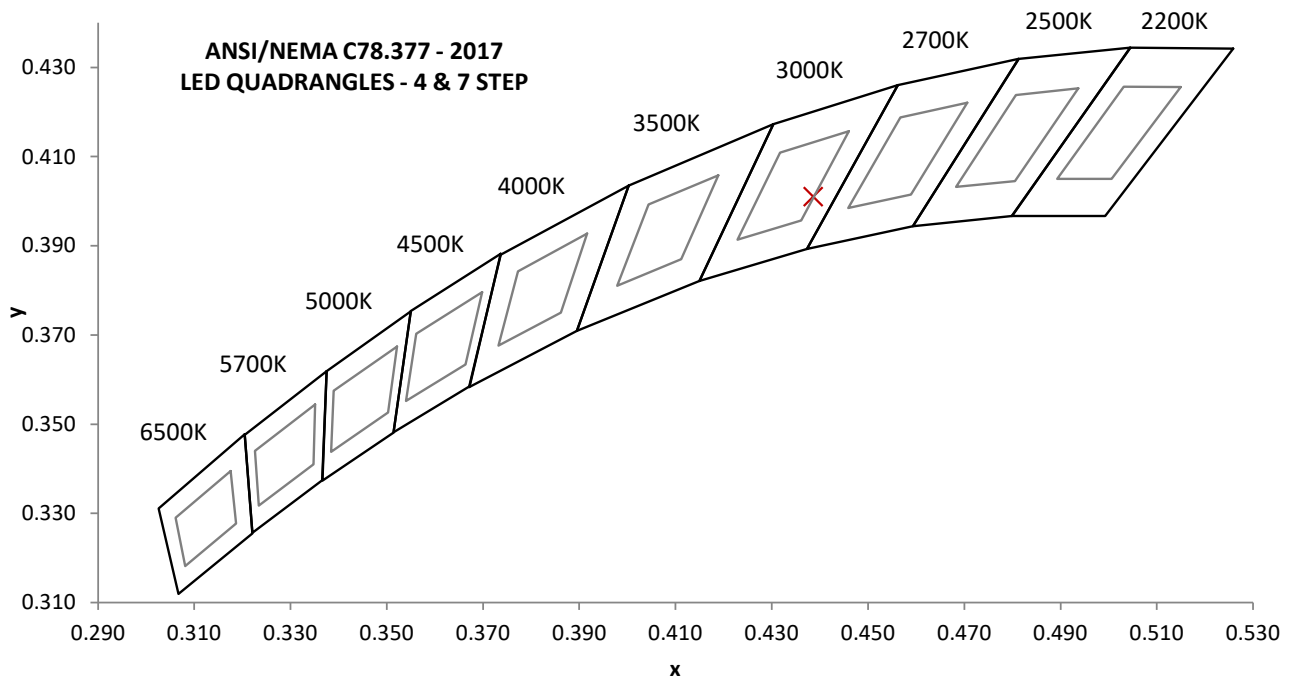
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor (l)	Input ATHD (%)
24.00	741.4	17.79	NA	NA

Measured at 24(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra (l)	CRI - R9 (l)
1485.3	83.5	2946	97.5	97.6

Duv (l)	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0014	0.439	0.401	0.253	0.520

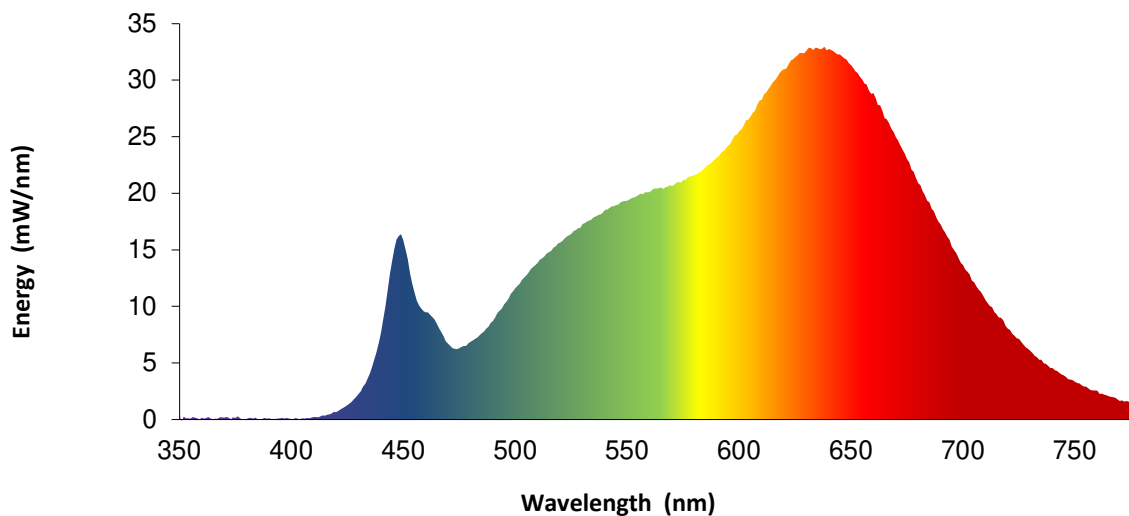


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.3		460	9.5		570	20.6		680	20.9
355	0.1		465	8.5		575	21.2		685	19.2
360	0.2		470	6.7		580	21.6		690	17.2
365	0.0		475	6.3		585	22.3		695	15.3
370	0.2		480	6.9		590	23.2		700	13.6
375	0.1		485	7.6		595	24.2		705	12.1
380	0.0		490	8.7		600	25.5		710	10.6
385	0.0		495	10.2		605	26.8		715	9.3
390	0.1		500	11.6		610	28.3		720	8.0
395	0.1		505	12.8		615	29.8		725	7.1
400	0.1		510	13.9		620	31.0		730	6.1
405	0.1		515	14.8		625	32.0		735	5.3
410	0.2		520	15.6		630	32.6		740	4.6
415	0.3		525	16.4		635	32.8		745	3.9
420	0.7		530	17.3		640	32.7		750	3.3
425	1.3		535	17.9		645	32.3		755	2.9
430	2.3		540	18.5		650	31.3		760	2.5
435	4.0		545	19.0		655	30.1		765	2.1
440	7.6		550	19.3		660	28.9		770	1.6
445	14.0		555	19.9		665	26.6		775	1.4
450	15.8		560	20.1		670	25.0		780	1.4
455	11.2		565	20.5		675	23.0		---	---

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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