

GENERATION BRANDS, LLC TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

ESSF0604P48720930AW1

PROJECT NUMBER

G104349704

REPORT NUMBER

104349704CHI-046

ISSUE DATE

11/16/2020

REVISED DATE

None

TEST DATES

11/05/2020 through 11/10/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104349704CHI-046

MODEL NUMBER(s)

ESSF0604P48720930AW1

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	ESSF0604P48720930AW 1	ESSENCE 0604 P 800 930 WW	Production	10/29/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	ESSF0604P48720930AW1	1

SUMMARY

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PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	ESSF0604P48720930AW1
Product Description:	ESSENCE 0604 P 800 930 WW
LED Model No.:	P Series 800lm/ft
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2288.3	2376.3
Input Power (W) @ 24 (Vdc)	27.79	29.03
Lumen Efficacy (lm/W)	82.3	81.9

Criteria	Results
Input ATHD (%) @ 24 (Vdc)	NA
Correlated Color Temperature (K)	2941
Color Rendering Index - Ra (l)	97.4
Color Rendering Index - R9 (l)	96.8
Duv (l)	-0.0018
Chromaticity Coordinate (x)	0.439
Chromaticity Coordinate (y)	0.400
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	ESSF0604P48720930AW1	NA

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

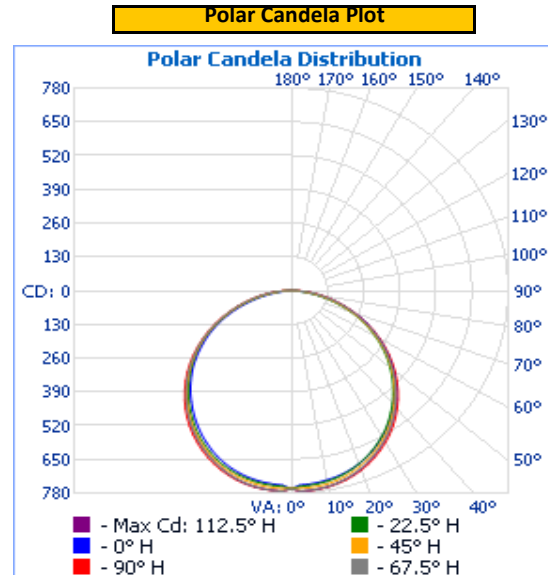
Base Orientation	Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	24.0	1159.1	27.79	NA

Light Output (lm)	Lumen Efficacy (lm/W)
2288.3	82.3

INTENSITY SUMMARY - CANDELA

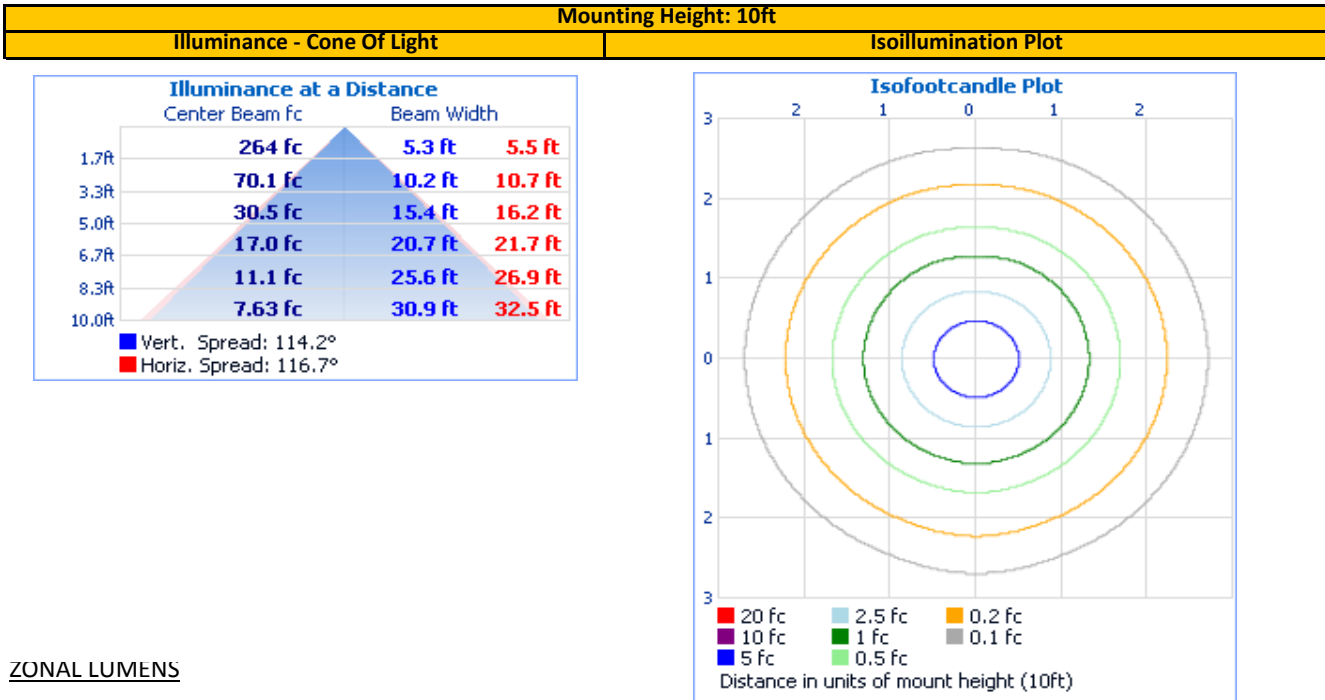
Angle	0	22.5	45	67.5	90
0	763	763	763	763	763
5	748	752	761	771	773
10	740	745	755	766	768
15	729	732	742	752	755
20	710	710	720	730	736
25	685	682	692	701	709
30	652	650	659	668	676
35	615	610	620	628	637
40	571	566	575	581	592
45	524	517	524	531	542
50	475	465	471	477	487
55	420	408	414	419	428
60	359	348	353	358	366
65	298	284	289	295	302
70	230	218	224	231	236
75	161	151	159	168	173
80	96	89	99	110	114
85	39	37	49	60	65
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	601.6	26.3%	90-100	0.0	0.0%
0-40	990.1	43.3%	100-110	0.0	0.0%
0-60	1,769.7	77.3%	110-120	0.0	0.0%
60-90	518.6	22.7%	120-130	0.0	0.0%
70-100	228.8	10.0%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	2,288.3	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	2,288.3	100.0%	170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	ESSF0604P48720930AW1	NA

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

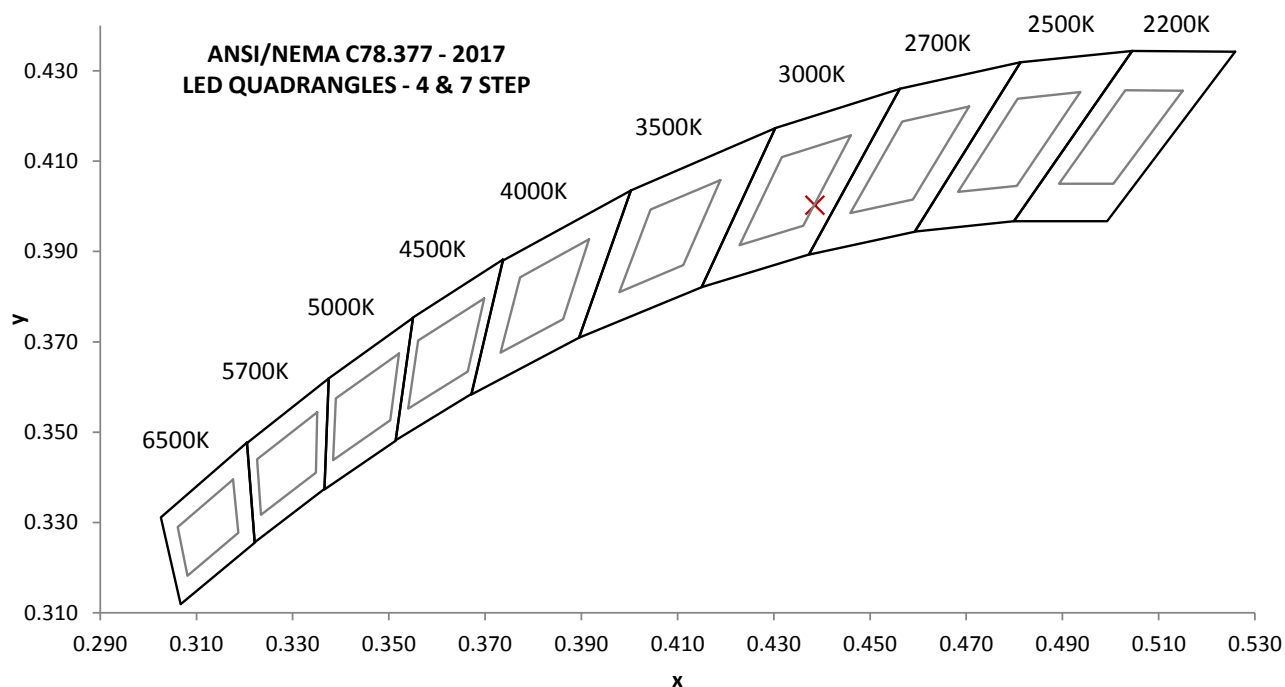
Base Orientation
Up

Input Voltage (Vdc)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
23.98	1210.3	29.03	NA	NA

Measured at 23.98(Vdc)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
2376.3	81.9	2941	97.4	96.8

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
-0.0018	0.439	0.400	0.253	0.520

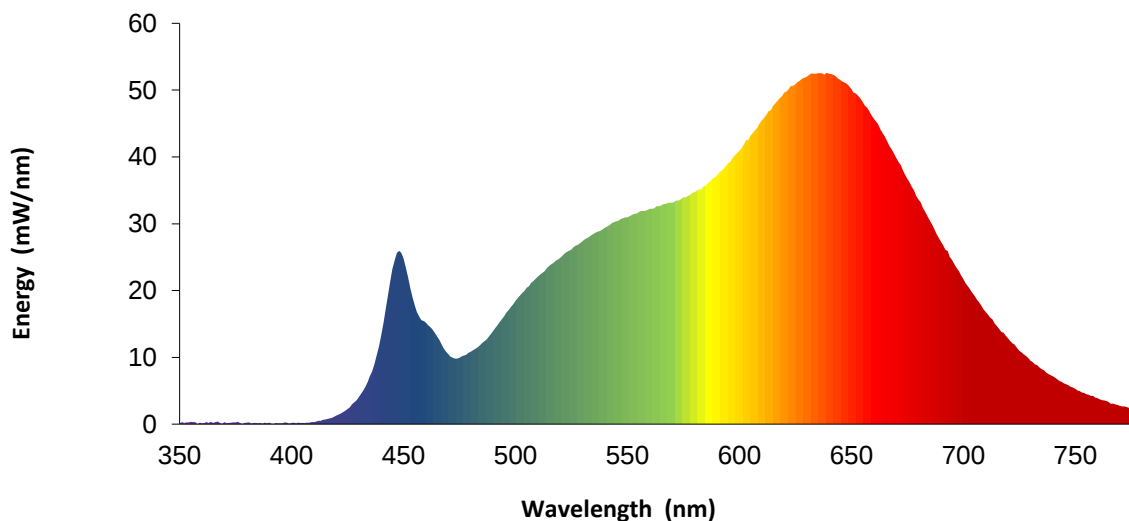


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	15.2		570	33.1		680	33.6
355	0.3		465	13.2		575	34.0		685	30.5
360	0.2		470	10.4		580	34.7		690	27.3
365	0.2		475	10.0		585	35.7		695	24.6
370	0.3		480	10.8		590	37.2		700	21.7
375	0.2		485	12.1		595	39.0		705	19.2
380	0.2		490	13.9		600	40.9		710	16.8
385	0.1		495	16.2		605	43.2		715	14.7
390	0.2		500	18.4		610	45.5		720	12.8
395	0.2		505	20.4		615	47.6		725	11.0
400	0.2		510	22.1		620	49.6		730	9.5
405	0.2		515	23.7		625	50.9		735	8.3
410	0.3		520	24.9		630	52.0		740	7.2
415	0.7		525	26.1		635	52.5		745	6.1
420	1.3		530	27.4		640	52.5		750	5.3
425	2.3		535	28.5		645	51.5		755	4.5
430	4.0		540	29.4		650	50.1		760	3.9
435	7.2		545	30.4		655	48.3		765	3.3
440	13.3		550	31.0		660	45.8		770	2.8
445	23.2		555	31.7		665	43.1		775	2.4
450	24.9		560	32.2		670	39.9		780	2.0
455	17.8		565	32.7		675	36.8		---	---

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	ESSF0604P48720930AW1	NA

TM-30 REPORT

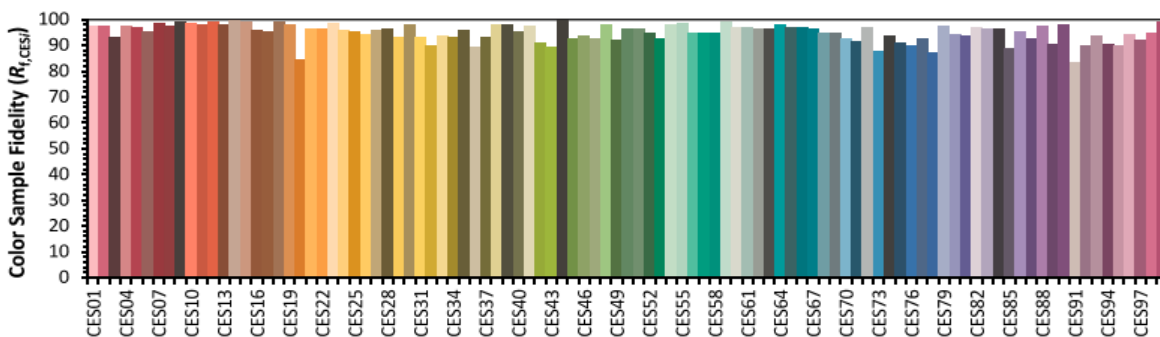
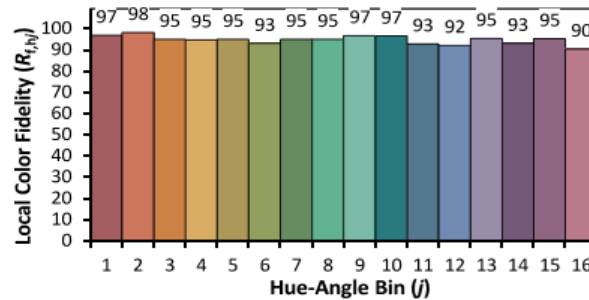
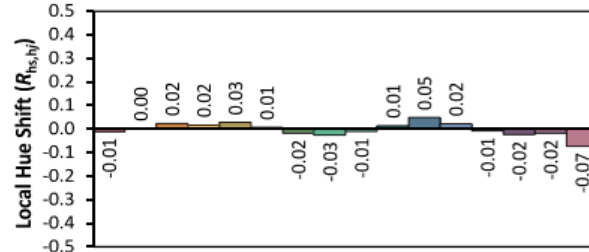
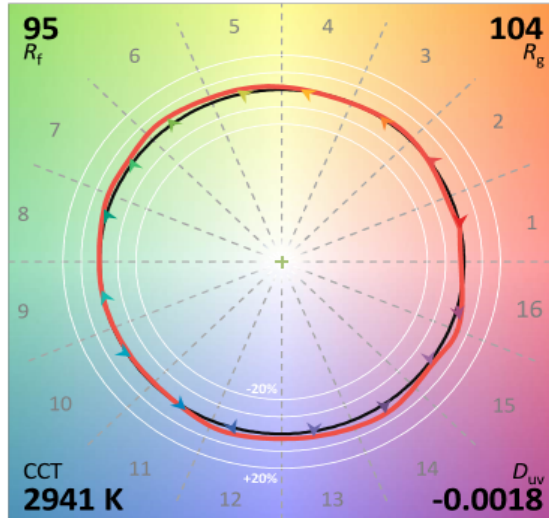
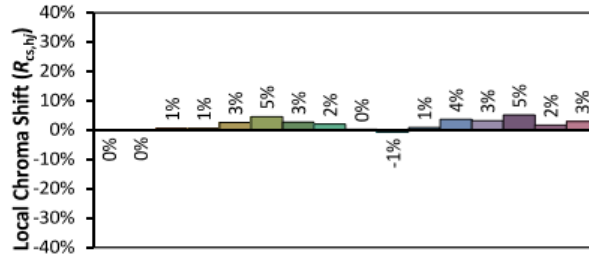
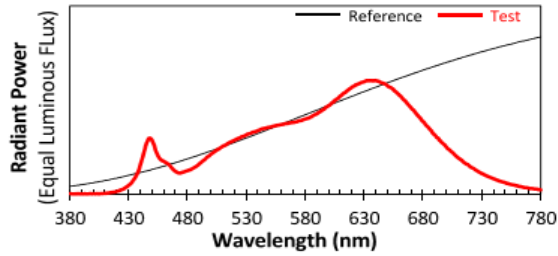
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Generation Brands, LLC

Date: 11/5/2020

Model: ESSF0604P48720930AW1



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

x 0.4385
 y 0.4002
 u' 0.2533
 v' 0.5201

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