LIGHT LABORATORY INC.
8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: L062013902P **Issue Date: 7/2/2020**

Report Prepared For: Growers House
3635E 34th ST, Tucson, AZ 85713

Manufacturer: Growers Choice

Model Number: TSL ROI-E420

Test: Photosynthetically active radiation (PAR) & Electrical measurement

Standards Used: Appropriate part or all test guidelines were used for test performed:

IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products

ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products

ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Received in working and undamaged condition. No modifications were necessary.

Special Test Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 6/30/20

Date of Tests: 7/1/20 - 7/2/20

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S4	1/9/21
BK PRECISION	1747	PS-DC04	1/10/21
Fluke Digital Thermometer	52K/J	MT-TP05	1/10/21
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

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General Information	
Manufacturer:	Growers House
Model Number:	TSL ROI-E420
Driver Model Number:	SOSEN SS-100L-54B(4 DRIVERS)

Photometric, PPF & Electrical Test Results		
Total PPF (µmol/s):	950.45	* 380 - 780nm range
Total PPF (µmol/s):	926.76	* 400 - 700nm range
Total Radiant Flux(W):	199.13	* 380 - 780nm range
Total Lumens (lm):	60311.25	* 380 - 780nm range
PPF Efficacy (µmol/Joule):	2.37	* 380 - 780nm range
PPF Efficacy (µmol/Joule):	2.32	* 400 - 700nm range
Luminous Efficacy (lm/W):	150.70	
Input Voltage (VAC/60Hz):	120.02	
Input Current (Amp):	3.3461	
Input Power (W):	400.20	
Input Power Factor:	0.9966	
Current ATHD (%):	6.4%	

Test Condition	
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:50

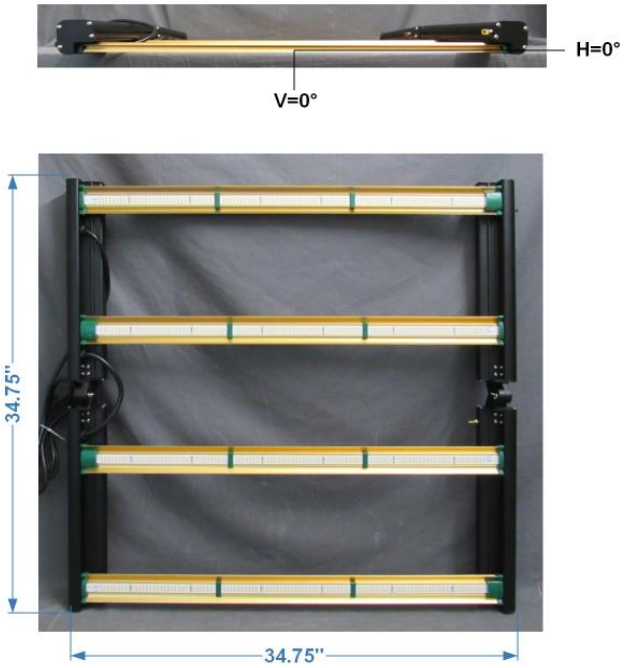

FIG. 1 LUMINAIRE

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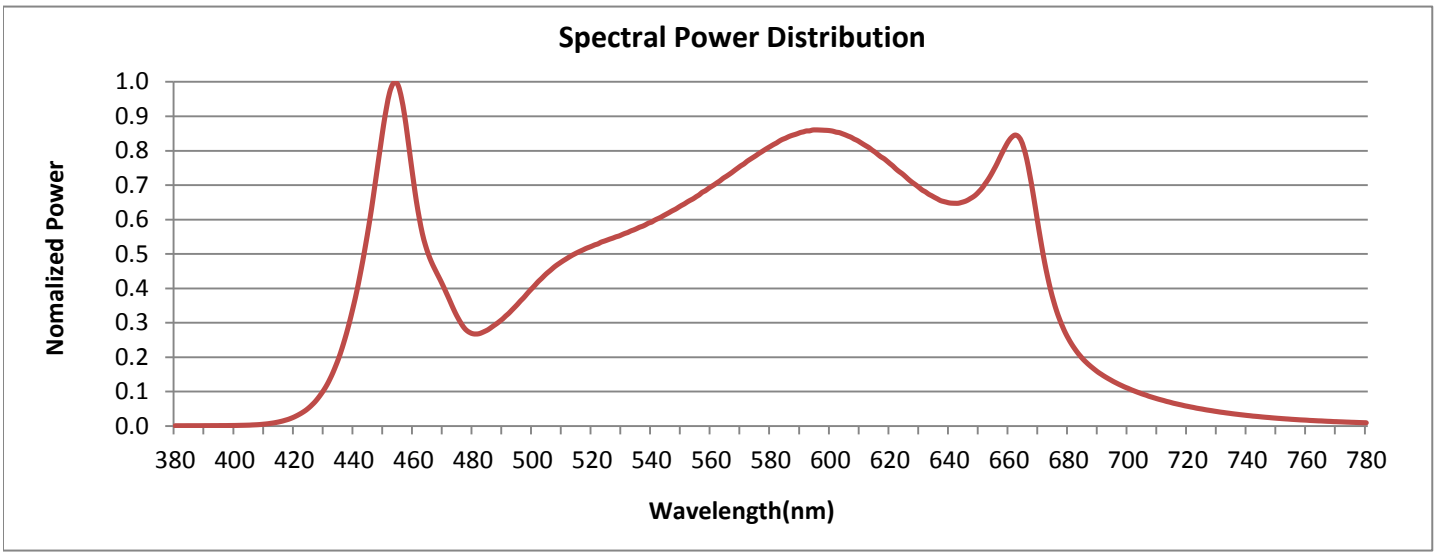
Colorimetry Test Results

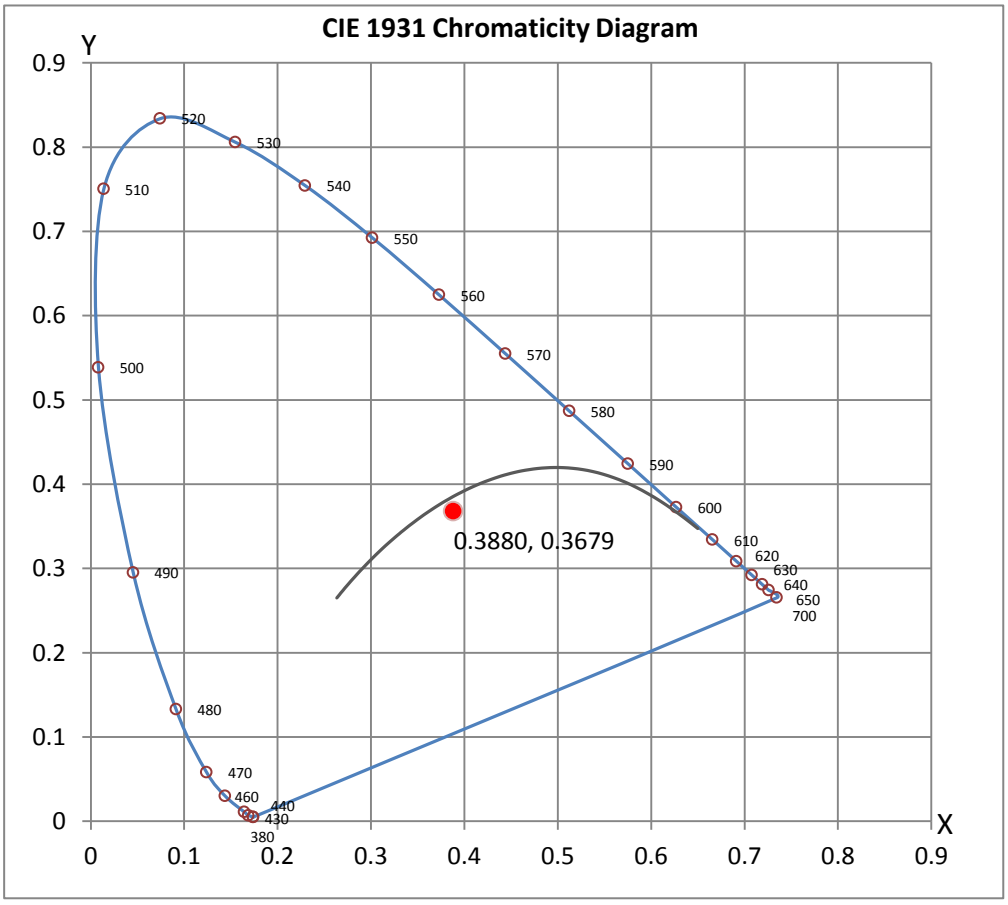


CRI & CCT

x	0.3880
y	0.3679
u'	0.2338
v'	0.4987
CRI	89.20
CCT	3726
Duv	-0.00629

R Values

R1	88.99
R2	94.98
R3	96.16
R4	87.27
R5	89.29
R6	91.30
R7	88.74
R8	77.27
R9	48.55
R10	87.79
R11	86.86
R12	72.48
R13	90.89
R14	98.30
R15	87.00



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Test Methods

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25^{o}C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25^{o}C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Reviewed by:

Steve Kang
Quality Assurance