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Report No: L052311701



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**Issue Date:** 5/12/2023

**Report Prepared For:** Horticulture Lighting Group  
3505 Maynardville Hwy, Maynardville TN 37807

**Reference:**N/A

**Amendment:**N/A

**Model Number:** HLG Tomahawk 650

**Test:** Photosynthetically active radiation (PAR) & Electrical measurement

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

*IESNA LM79: 2019* Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products

*ANSI NEMA ANSLG C78.377: 2017* Specification of the Chromaticity of Solid State Lighting Products

*ANSI C82.77-10:2014:* 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.

**Date of Tests:** 5/12/23

**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	4/7/23
HP Power Supply	6032A	PS-DC05-S2	--
Fluke Digital Thermometer	52K/J	MT-TP05	1/11/24
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

**General Information**

<b>Manufacturer:</b>	Horticulture Lighting Group
<b>Model Number:</b>	HLG Tomahawk 650
<b>Driver Model Number:</b>	MEANWELL HLG-600H-C5200AB

**Photometric, PPF & Electrical Test Results**

<b>Total PPF (μmol/s):</b>	1858.59	* 380 - 780nm range
<b>Total PPF (μmol/s):</b>	1836.01	* 400 - 700nm range
<b>Total Radiant Flux(W):</b>	393.52	* 380 - 780nm range
<b>Total Lumens (lm):</b>	103812.00	* 380 - 780nm range
<b>PPF Efficacy (μmol/Joule):</b>	2.81	* 380 - 780nm range
<b>PPF Efficacy (μmol/Joule):</b>	2.78	* 400 - 700nm range
<b>Luminous Efficacy (lm/W):</b>	157.20	
<b>Input Voltage (VAC/60Hz):</b>	240.00	
<b>Input Current (Amp):</b>	2.8233	
<b>Input Power (W):</b>	660.40	
<b>Input Power Factor:</b>	0.9746	
<b>Current ATHD (%):</b>	8.4%	

**Test Condition**

<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	0:30
<b>Total Operating Time (Hours):</b>	1:15

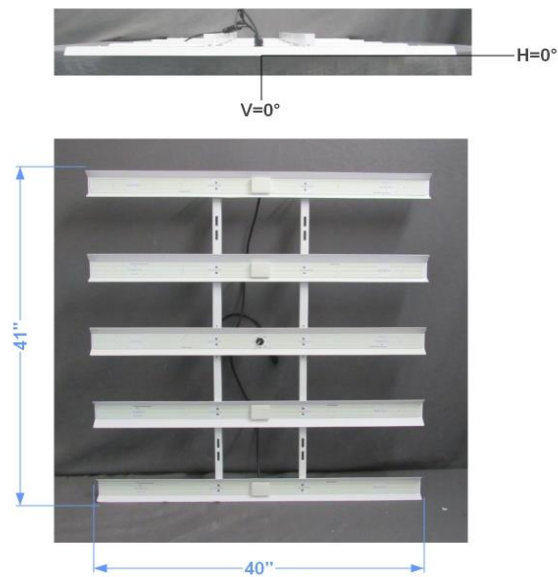
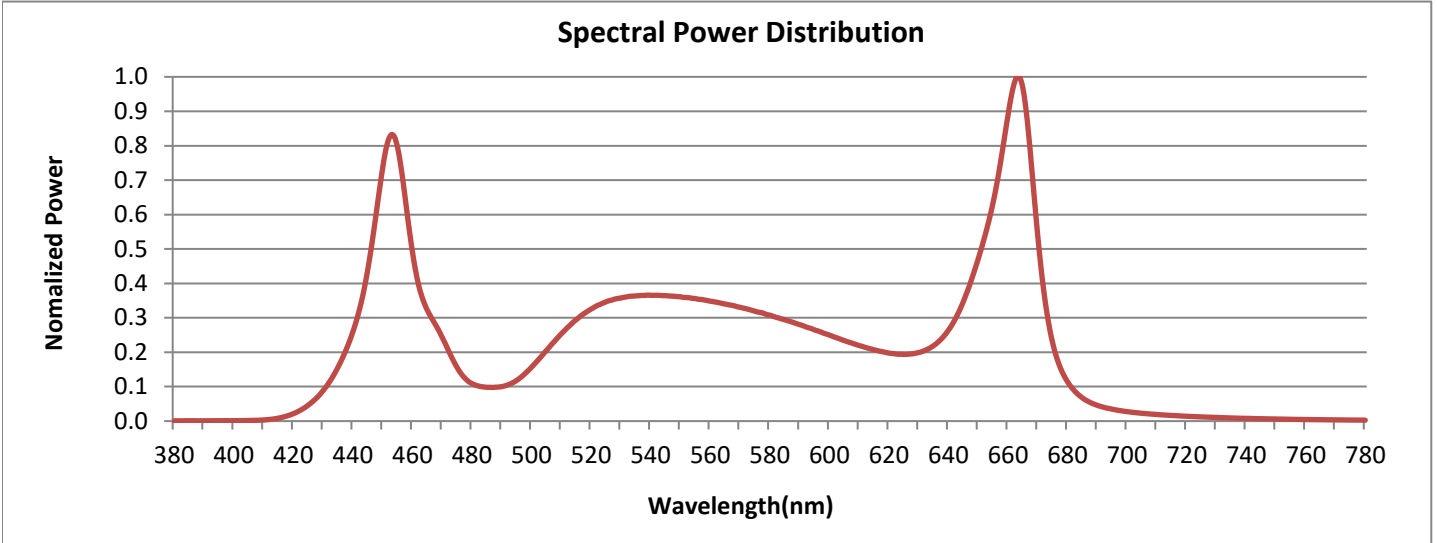


FIG. 1 LUMINAIRE

**Colorimetry Test Results**

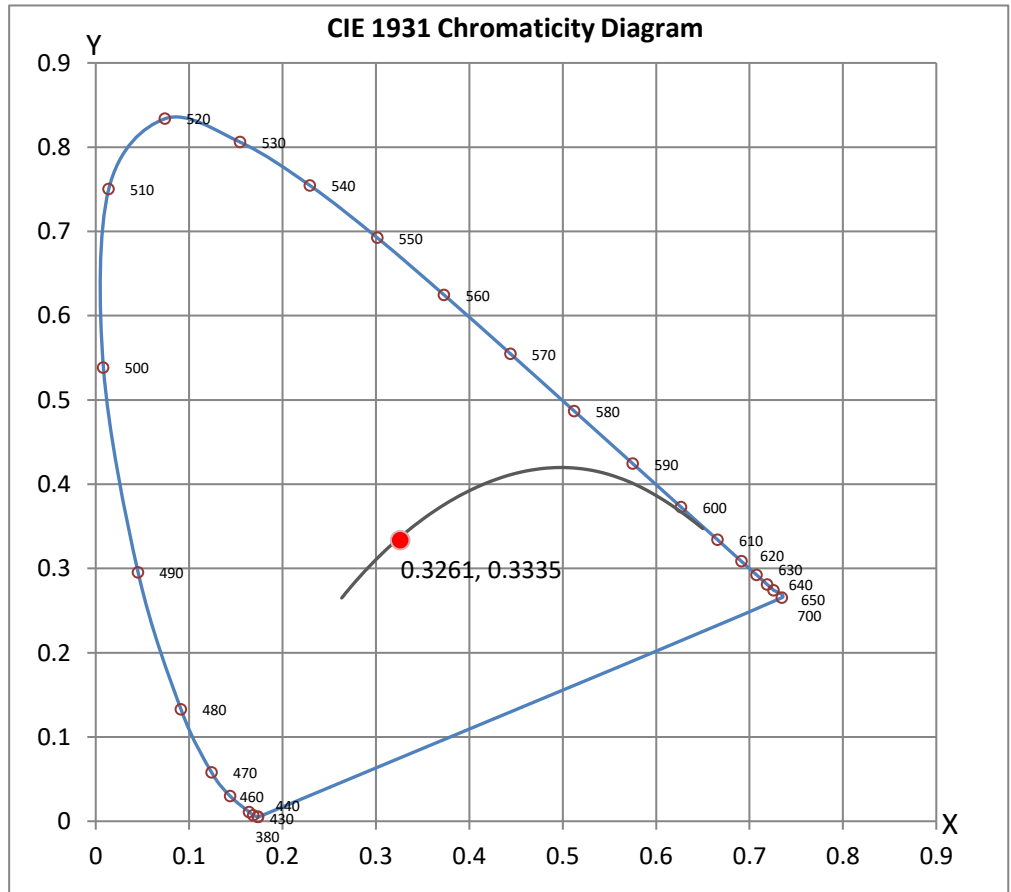


**CRI & CCT**

x	0.3261
y	0.3335
u'	0.2054
v'	0.4727
CRI	86.20
CCT	5798
Duv	-0.00100

**R Values**

R1	93.51
R2	88.20
R3	77.47
R4	89.86
R5	90.28
R6	77.61
R7	87.41
R8	85.13
R9	70.57
R10	69.22
R11	87.42
R12	52.76
R13	91.84
R14	86.82
R15	96.14



## 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°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°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:

The results related only to the samples as received and tested. This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government.

Report Prepared by :           Kunjan Modi          

Test Report Reviewed by:



Steve Kang  
Quality Assurance