



Shenzhen Belling Efficiency Testing Lab Co.,Ltd



Report No.:BL210127001-9

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Version 1.0

Total pages 10

Test report of Horticultural Lighting

Applicant:

Shenzhen Phlizon Technology Co.,Ltd.

Address:

Bldg 2-4, TongFuYu Industrial Park, AiQun Road, Shiyan Town, Bao'an District,
SHENZHEN Guangdong, China

For Product:

640W FOLDABLE LED GROW LIGHT

Model No.:

PH-FD8-E

Test laboratory: Shenzhen Belling Efficiency Testing Lab Co.,Ltd, 1Floor, No.1 Building, Meibaohu
Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov.518101 China.

Complied by: Jarvis zhang

Review by: Jason zhou

Project Engineer

Technical Manager

Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Belling Efficiency Testing Lab Co.,Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the U.S. Government.



1 General

1.1 Product Information

Manufacturer	Shenzhen Phlizon Technology Co.,Ltd.
Manufacturer Address	Bldg 2-4, TongFuYu Industrial Park, AiQun Road, Shiyan Town, Bao'an District, SHENZHEN Guangdong, China
Brand Name	640W FOLDABLE LED GROW LIGHT
Luminaire Type	PHLIZON
Model Number	PH-FD8-E
Rated Inputs	AC 120-277V 50/60Hz
Rated Power	640 W
Dimming Capability	Yes
Date of Receipt Samples	2021-01-06
Date of test	2021-01-07 to 2021-01-18
Burning Time Before Test	0hour(For New Products)

1.2 Standards or methods

- ANSI C78.377-2017: Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-10:2014: Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment - Solid State
- CIE Publication No.13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products



1.3 Equipment list

Device	Manufacture	Model No.	Serial No.	Calibration due date
Goniophotometric System	SENSING	GMS-3000	N.A	2021-04-02
AC Power Source	ALL POWER	APW-110N	992257	2021-04-02
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S1510065	2021-04-08
Total Spectral Radiant Flux Standard Lamp	SENSING	12V/20W	LSD12201731	2021-04-08
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2021-04-02
Integral Sphere	SENSING	SPR-600M	N.A	2021-04-02
Digital Power Meter	YOKOGAWA	WT210	91L929742	2021-04-02
Optical Color and Electrical Measurement System	SENSING	SPR-3000	S1101108	2021-04-02
Environment Mesurer	XUYAO	HS-1	N/A	2021-04-08
Environment Mesurer	XUYAO	HS-1	N/A	2021-04-08
Stop watch	KISLO	K610	N/A	2021-04-26
Digital Anemometer	TECMAN	TD8901	026141	2021-09-09

Statement of Traceability: Shenzhen Belling Efficiency Testing Lab Co.,Ltd attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).



2 Test conducted and method

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within ± 0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards. 4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

Integrating Sphere Uncertainty: The uncertainty of the light output (luminous flux) measurements is $U=1.8\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=20\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=1.8(K=2)$, at the 95% confidence level. The uncertainty of power meter AC current $U=0.18\%$ of rdg, AC Voltage $U=0.16\%$ of rdg, Power $U=0.20\%$ ($K=2$), at the 95% confidence level.



2.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.

Goniophotometer Uncertainty :The uncertainty of the luminous intensity is $U=1.6\%$ ($K=2$), at the 95% confidence level.



3 Test Result Summary

3.1 Integrating Sphere System (Total operating time for integrating sphere test: 1.0 hour)

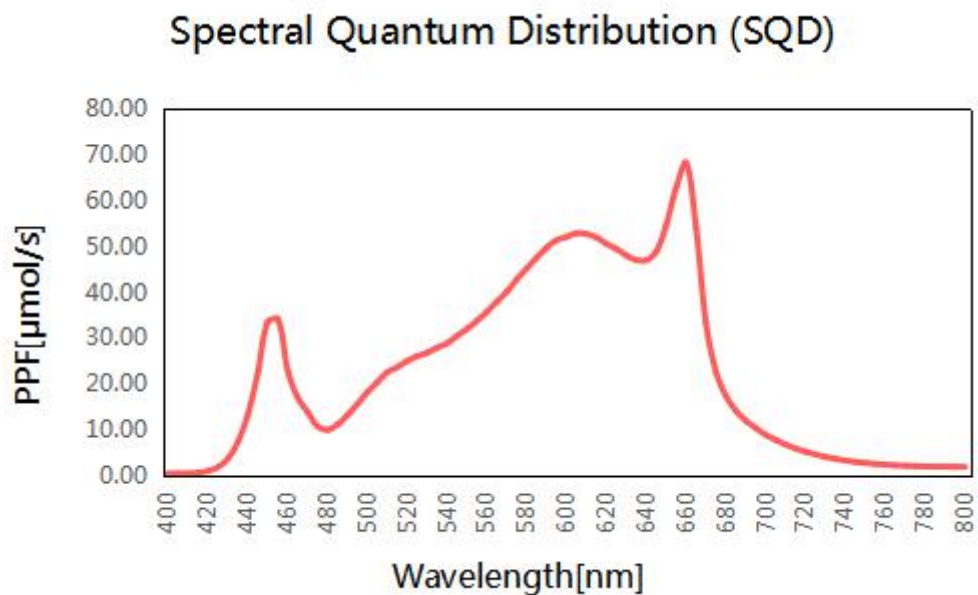
Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.02	60	5.372	644.15	0.999

Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
96815.75	150.3	3242	91.1	57

Duv	x	y	u'	v'
-0.00693	0.4123	0.3783	0.2456	0.507

PPF (400-700nm) ($\mu\text{mol/s}$)	PPF Efficacy ($\mu\text{mol/J}$)	PPF (400-500nm) ($\mu\text{mol/s}$)	PPF (500-600nm) ($\mu\text{mol/s}$)	PPF (600-700nm) ($\mu\text{mol/s}$)	PF _{FR} (700-800nm) ($\mu\text{mol/s}$)
1760.06	2.73	252.54	700.35	807.17	68.10

Spectral Quantum Distribution (SQD)



**Photo Flux Summary vs Wavelength Bands**

Wavelength [nm]	PPF [μmol/s]	Wavelength [nm]	PPF [μmol/s]	Wavelength [nm]	PPF [μmol/s]	Wavelength [nm]	PPF [μmol/s]
400	0.496066	500	18.204286	600	52.103350	700	8.875517
405	0.444907	505	20.397421	605	52.892173	705	7.782860
410	0.473110	510	22.565953	610	52.720347	710	6.760085
415	0.599688	515	23.649715	615	51.973022	715	5.909465
420	1.013310	520	25.002158	620	50.581640	720	5.206600
425	1.869113	525	26.084719	625	49.466768	725	4.617852
430	3.727549	530	26.805963	630	48.082948	730	4.070715
435	7.416637	535	27.922520	635	47.061561	735	3.643715
440	13.400943	540	28.876607	640	47.012874	740	3.282751
445	22.515646	545	30.484935	645	48.923379	745	2.982709
450	33.639272	550	32.003169	650	54.694420	750	2.754080
455	34.201993	555	33.784418	655	62.841074	755	2.543246
460	22.932674	560	35.745940	660	68.299238	760	2.384603
465	17.005104	565	37.970204	665	54.025264	765	2.233235
470	13.872478	570	40.158085	670	33.218595	770	2.142702
475	10.737837	575	42.851811	675	22.653445	775	2.063869
480	10.002086	580	45.244131	680	17.368629	780	2.013074
485	11.153035	585	47.554802	685	14.150605	785	1.953144
490	13.210221	590	49.772754	690	11.983944	790	1.940199
495	15.623172	595	51.375798	695	10.346593	795	1.907606
500	18.204286	600	52.103350	700	8.875517	800	1.905063

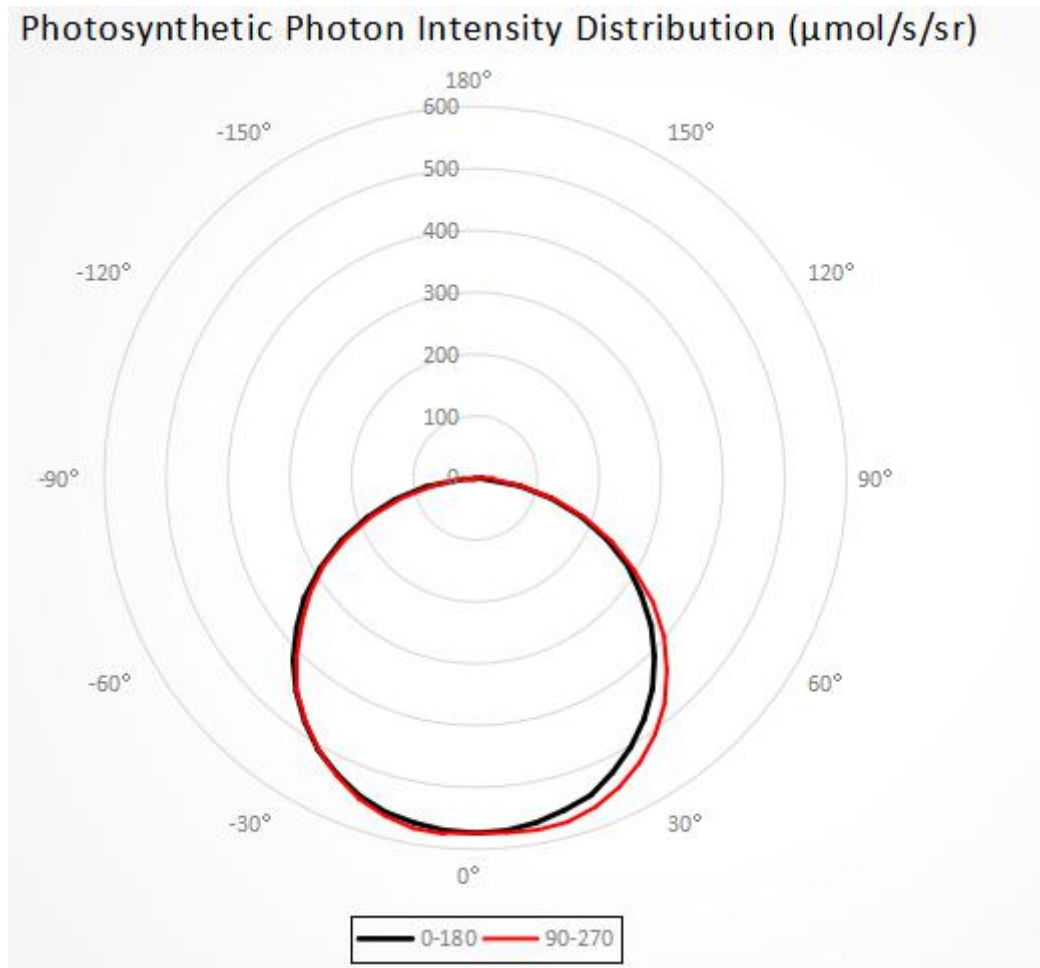


3.2 Goniophotometer System (Total operating time for luminous intensity distribution: 1.0 hour)

Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
119.95	60	5.312	636.75	0.9994

Luminous Flux (lm)	Efficacy (lm/W)
96052.84	150.85

Photosynthetic Photon Intensity Distribution (PPID)



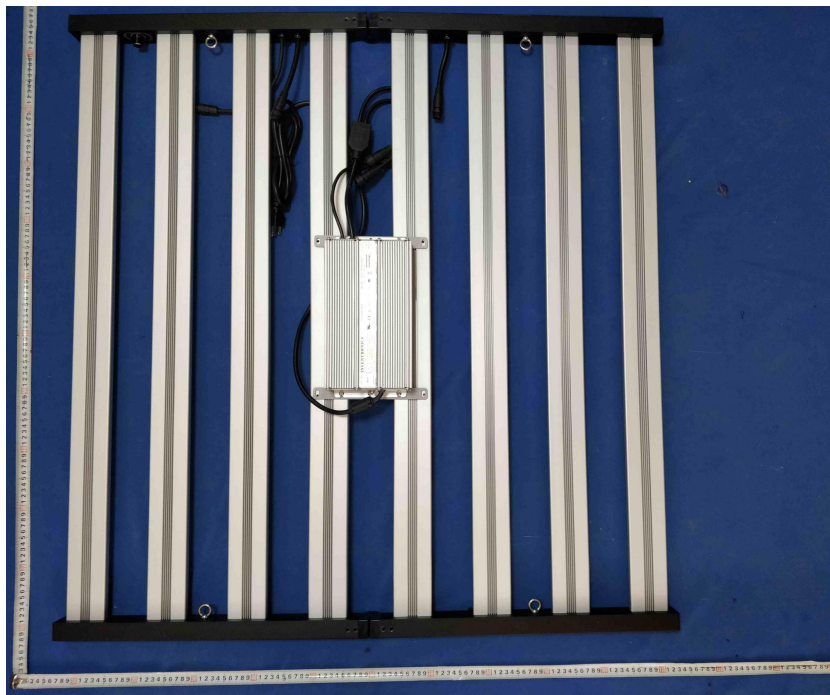
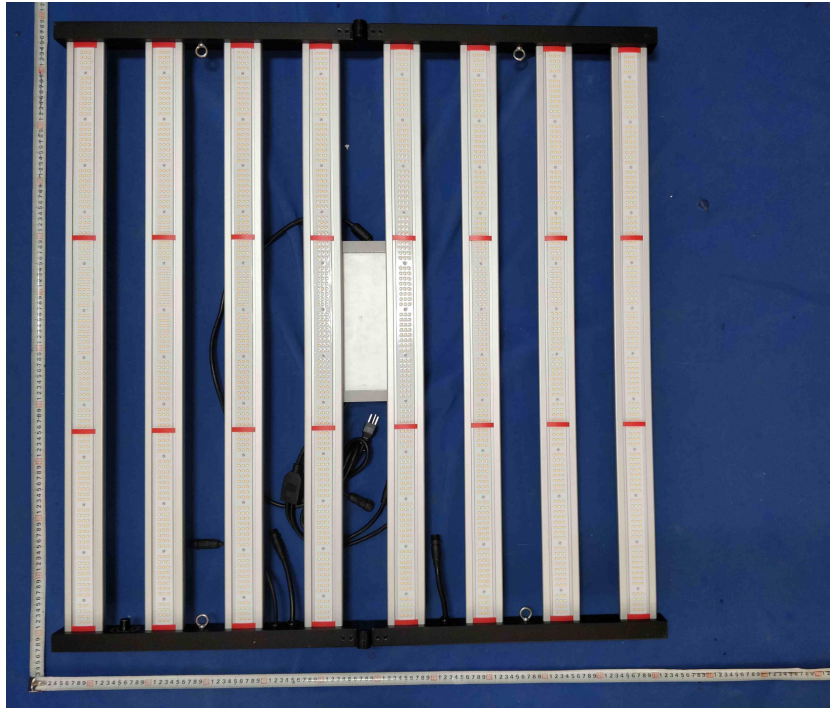


3.3 Additional Test

Model Number	Test Item	Test Voltage (V)	Frequency(Hz)	Test Result
PH-FD8-E	Power Factor	120	60	0.999
	THD	120	60	3.4%
	Power Factor	277	60	0.986
	THD	277	60	8.8%



Photo Document



****End of test report****



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Project No.: BLTMT210127-01

ISTMT Test report

640W FOLDABLE LED GROW LIGHT

PH-FD8-E

Tested under

Luminaires - ANSI/UL 1598:2008 (Secs. 19.7, 19.10-16)

Applicant:

Shenzhen Phlizon Technology Co.,Ltd.

Bldg 2-4, TongFuYu Industrial Park, AiQun Road, Shiyan Town, Bao'an District, SHENZHEN
Guangdong, China

Prepared By:

Shenzhen Belling Efficiency Testing Lab Co.,Ltd

1 Floor, No. 1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District,
Shenzhen, Guangdong Prov. 518101, China

Complied by: Jovan zhi

Review by: Jason zhou

Project Engineer

Technical Manager

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Project No.: BLTMT210127-01

Test description: Only conduct temperature for LED according to UL1598.

Test Lab:	Shenzhen Belling Efficiency Testing Lab Co.,Ltd
Address:	1 Floor, No. 1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov. 518101, China.

Environment:	
Accommodations and Environmental conditions, including proper power source meet the requirements of the test standard or UL default criteria (ISO/IEC 17025 Clause 5.3.1, 5.3.2, 5.3.3, 5.3.4)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Personnel:	
Lab Management shall authorize personnel to operate particular types of equipment used in testing. (ISO/IEC 17025 5.2.5)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Equipment:	
Testing is being conducted within the test equipment calibration dates. (See Test Instrument Information Page and ISO/IEC 17025 5.5.1, 5.5.2, 5.5.4, 5.5.5, 5.5.8,)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Calibrations for testing equipment are traceable to SI Units. Refer to 00-OP-C0032 (Calibration Certificate Analysis). (ISO/IEC 17025 5.6.2.2)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Critical Consumables:	
Critical consumables are compliant with test standard requirements. (ISO/IEC 17025 Clause 4.6)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Sample Identification:	
Identification of items to be tested has been made (e.g. model no., Serial No., etc.) (See Test Sample Identification page and ISO/IEC 17025 Clause 5.8.2)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Summary:	
The test facility was deemed to have the environment and capabilities necessary to perform the tests included in this data package.	



Project No.: BLTMT210127-01

TEST EQUIPMENT INFORMATION

	BELL #	Equipment Description	Model No.	Manufacturer	Serial No.	Last Cal	Cal Due	Cal Freq
1	BL802	Power meter	PF9811	Everfine	G185824 CM13711 40	2020-04-30	2021-04-29	1 year
2	BL804	Hybrid Recorder	34970A	AGILEN T	MY41027 391	2020-04-27	2021-04-26	1 year
3	BL819	Environment Measurer	TA218B	KTJ	N/A	2020-05-06	2021-05-05	1 year
4	BL861	Hybrid Recorder	34970A	KEYSIG HT	MY44095 108	2020-04-27	2021-04-26	1 year
5	BL834- 1	Thermocouple K	Type K	OMEGA	23736-1	2020-05-06	2021-05-05	1 year
6	BL826	Stop watch	K610	KISLO	N/A	2020-04-28	2021-04-27	1 year



Project No.: BLTMT210127-01

TEST SAMPLE IDENTIFICATION:

The table below is provided to provide correlation of sample numbers to specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Model No.	Test No.+	Sample No.	Ratings
PH-FD8-E	1	S1	AC 120-277V, 50/60Hz, 640W

Manufacturer:	Shenzhen Phlizon Technology Co.,Ltd.
Manufacturer Address:	Bldg 2-4, TongFuYu Industrial Park, AiQun Road, Shiyan Town, Bao'an District, SHENZHEN Guangdong, China
Brand Name:	PHLIZON
Product Description:	640W FOLDABLE LED GROW LIGHT
Date Received:	2021-01-06
Date of Test:	2021-01-19
Date of Issue:	2021-01-27



NORMAL TEMPERATURE MEASUREMENT

UL 1598; Cl. 19

METHOD

GENERAL REQUIREMENTS PERTAINING TO SURFACE MOUNTED LUMINAIRES

Unless otherwise noted under METHOD, General requirements are applied.

The test was conducted in a draft-free room as specified in clause 19.10.3 or 19.11.3.

The rated wattage of any lamp used for the temperature test was the highest wattage rating marked on the luminaire.

INSTALLATION AND SUPPORT (Clause 19.1)

The luminaire was installed or supported to simulate intended usage, in accordance with the manufacturer's instructions. Where more than one installation methods are specified the luminaire was installed to result in the maximum operating temperatures.

A luminaire part designed to be adjustable by the user was positioned or adjusted to cause maximum heating of the luminaire, mounting surface, or both.

A luminaire part that was marked in accordance with Table 20.1.1, Item 2.31, was positioned for the temperature test in accordance with the marking.

TEMPERATURE TEST STABILIZATION (Clause 19.2)

Temperatures were measured after they stabilized, when:

The test was run for a minimum of 7.5 h. or the test was run for a minimum of 3 h, and then three successive readings taken at 15 min intervals were within 1°C of one another and not rising. (Temperature shall be measured **after** the test has been running for a minimum of 3 h)



Project No.: BLTMT210127-01

FREQUENCY (Clause 19.4)

Frequency-sensitive equipment was tested at rated frequency, and equipment marked with more than one frequency was tested at the frequency that produced the maximum temperature rise.

AMBIENT TEMPERATURE (Clause 19.5)

The tests were conducted in an ambient temperature of $25 \pm 5^\circ\text{C}$. Ambient temperature variations above or below 25°C were respectively subtracted from or added to temperatures recorded at points on the luminaire.

The ambient temperature was measured by means of a thermocouple or thermometer.

The thermocouple intended to measure ambient temperature was immersed in 0.5 oz (15 ml) of mineral oil in a glass container or attached to a metal mass of approximately 1 oz (30 g) that was within a cylindrical metal shield open at the top and bottom. The glass container or cylindrical metal shield was placed in the horizontal plane passing through the midpoint of the luminaire's vertical axis at a horizontal distance from the luminaire equal to at least 3 times the luminaire diameter.

[] Tests were conducted in an elevated ambient temperature with a source of heated air providing the elevated temperature for which the luminaire was marked. The maximum airflow past the luminaire was less than 9.1 m/min (30 ft/min). Maximum variations of 5°C from the intended ambient temperature was added to or subtracted from the observed temperature readings.

THERMOCOUPLES:

Reference Section 19.7 of UL 1598.

THERMOCOUPLES CONTACT:

Thermocouples were in contact with the TMP LED location described in LM-80 test report. In order to gain the maximum temperature, if appropriate, more than one thermocouple were contact in these locations. For details information, please refer to clause 3.3 for the photo of thermocouple contact.



Project No.: BLTMT210127-01

TEST RESULTS

Input Voltage (V):	120
Input Power (W):	631.8
Temperature:	23.8
Total operated period(hours):	4

Red LED		
LED Package/Module No.:	GH CSSPM1.24-4T2U-1-1-L	
Rating of LED Package/Module:	800mA	
Manufacturer of LED Package/ Module:	OSRAM Opto Semiconductors (Malaysia) Sdn.Bhd.	
LED Location:	Location 1	Location 2
LED Ts/°C (Temperature at soldering board):	46.90	48.10
Corrected at 40°C:	63.10	64.30
Single LED Input Current (mA):	261	

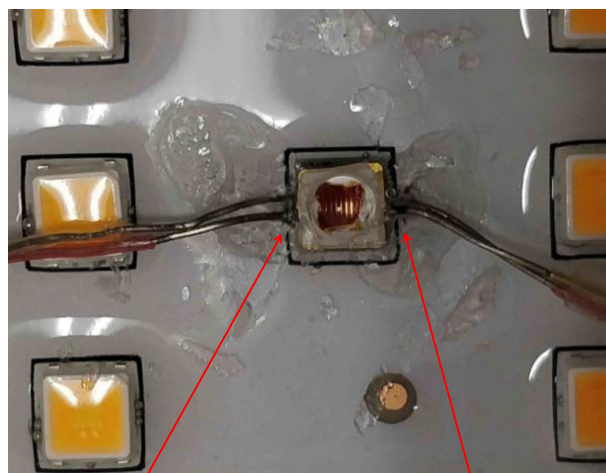
White LED	
LED Package/Module No.:	SPMWHD32AMD5XAV0S0
Rating of LED Package/Module:	200mA
Manufacturer of LED Package/ Module:	SAMSUNG ELECTRONICS LED BUSINESS
LED Ts/°C (Temperature at soldering board):	44.72
Corrected at 40°C:	60.92
Single LED Input Current (mA):	87

Driver	
LED Driver Model No.:	EUD-600S12ADT
LED Driver/°C (Temperature at Tc):	56.81
Corrected at 40°C:	73.01



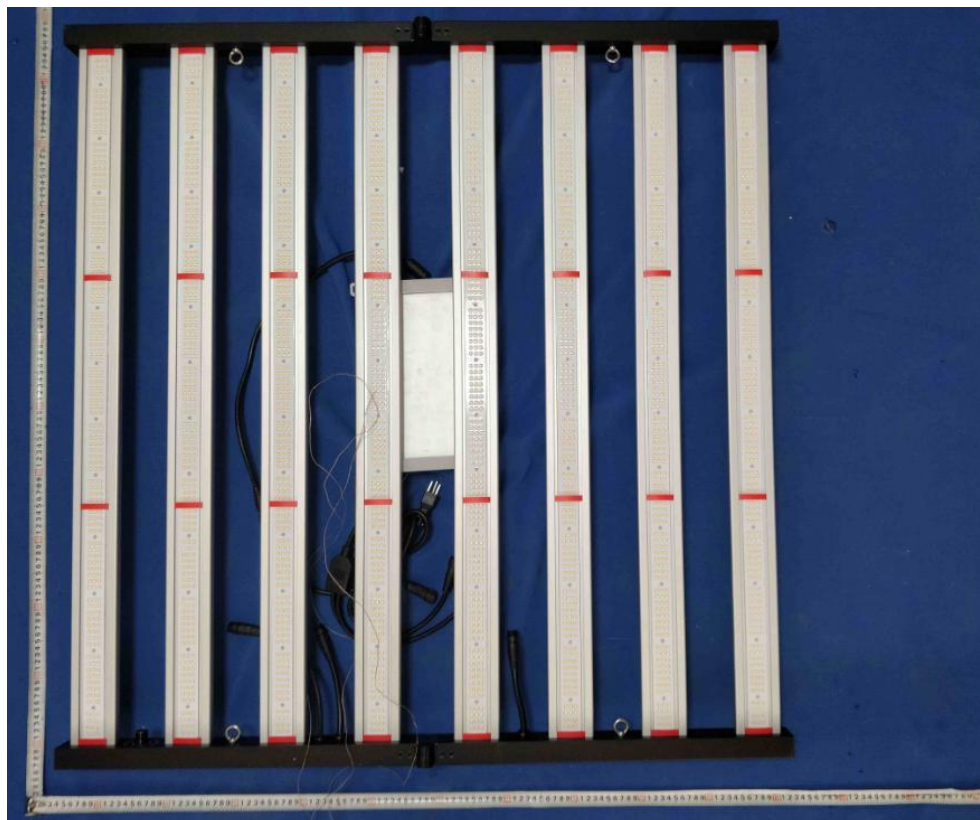
Project No.: BLTMT210127-01

Test Photos for LEDs:



Red LED Location 1

Red LED Location 2





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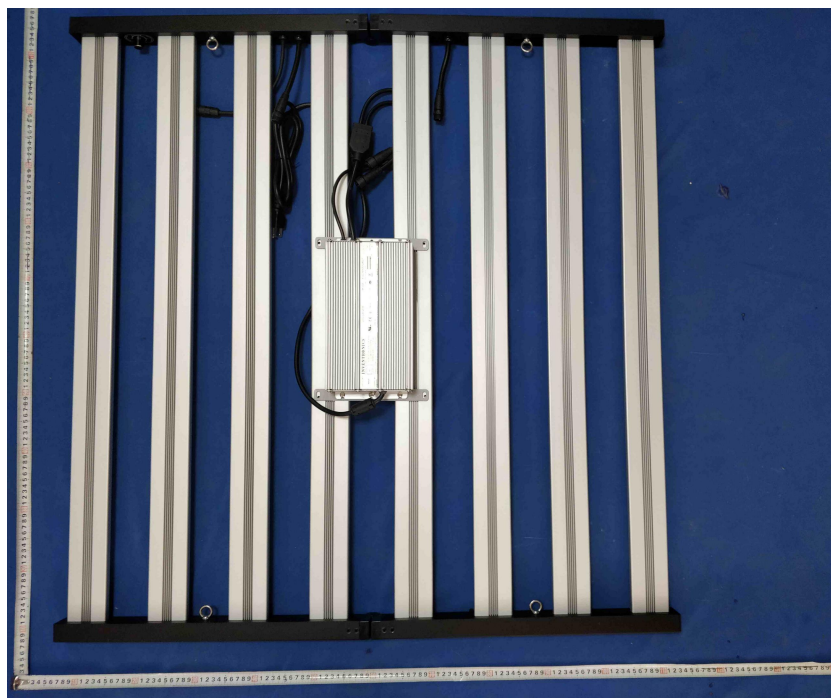
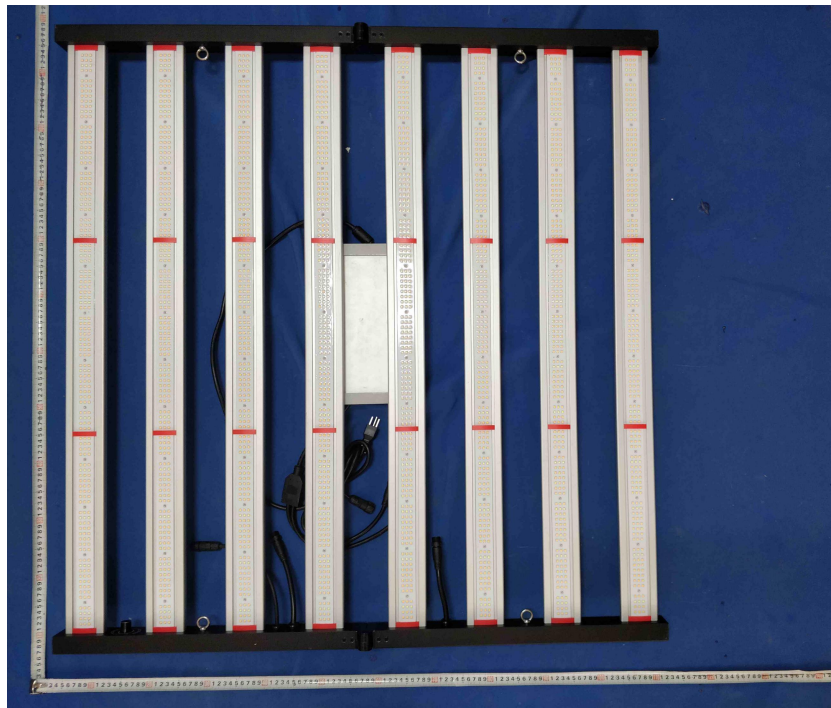
Test Photos for LED Drivers:





Project No.: BLTMT210127-01

EUT Photos:



End of Report

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