

# Welcome to the Future of Enhanced Growth, Quality and Clean Produce

“  
EVERYTHING WENT  
HIGHER ACROSS THE  
BOARD: YIELD,  
TERPS...EXCEPT  
MICROBIALS BECAME  
UNDETECTABLE...A GAME  
CHANGER!

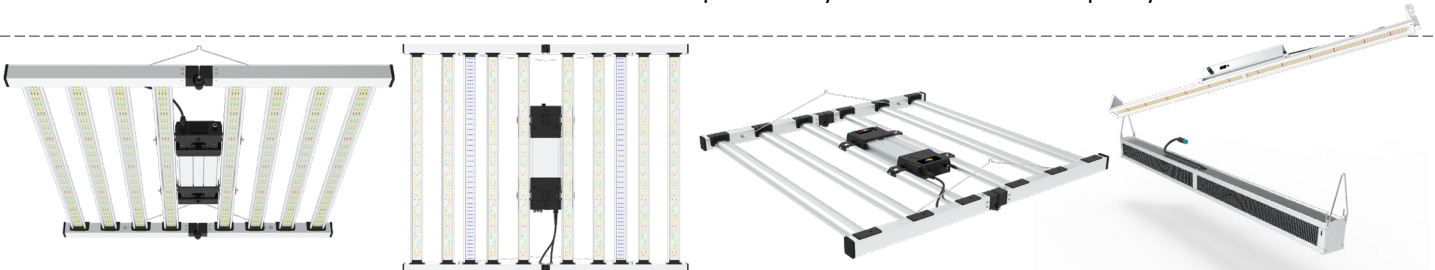
Nak Chung, COO, Headyco  
Massachusetts

## NEW “Mint White” Series Utilizing Samsung’s Newest Plant-Centric Chip

Samsung's latest EVO chip, in partnership with Mammoth, represents a significant leap in plant lighting technology. Through a unique spectrum design, Samsung + Mammoth trials have demonstrated remarkable growth, even under identical PPFD conditions.

For the very first time, we present an LED chip meticulously crafted for plant lighting. With a peak wavelength at 437nm and an increased blue spectrum, it not only fuels plant growth but also curbs microbial development while boosting terpenes and oil production – a true game-changer!

The **green spectrum**, renowned as the most photosynthetic color above 500 PPFD, offers an unprecedented advantage. With the added green boost, you can anticipate unparalleled yields and unmatched quality.



### Legal Disclosure:

Mammoth Lighting LLC's lighting products are designed and intended for use in the production of goods for Urban Farms and cultivation under the U.S. Domestic Hemp Production Program (Cannabis sativa L.). Please be aware that our products are not intended for use in the cultivation of medical or recreational marijuana.

It is important to note that marijuana remains classified as a Federally controlled substance, and under Federal law, its cultivation is illegal.

Tel: 855-662-6668 E-Mail: [sales@mammothlighting.com](mailto:sales@mammothlighting.com), Saratoga Springs NY

## Mastering Light: The Key to Hemp Growth

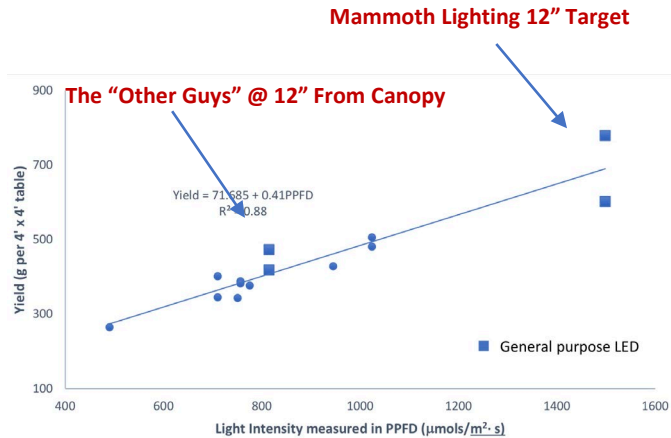
Before diving into hemp cultivation, understanding your PPFD (Photosynthetic Photon Flux Density) is essential. Light, both in terms of quality and intensity, is a critical factor in hemp cultivation. Academic studies have demonstrated a direct relationship between light intensity and hemp yield, with significant benefits observed up to approximately 1800 PPFD. Discover the pivotal role of light in optimizing your hemp growth.

### The Profitability of Growing Hemp Under High Intensity Light by James Eaves 2019 Université, Québec, 2020

"Our results provide evidence that hemp growers could substantially increase profits by using light intensity levels that are much higher than is the convention today.

The positive, apparently linear relationship between intensity and yields continues to **at least 1500  $\mu\text{mol}/\text{m}^2 \cdot \text{s}$** , which is over twice the level provided by an HPS fixture in a grow configuration, which is currently the industry standard.

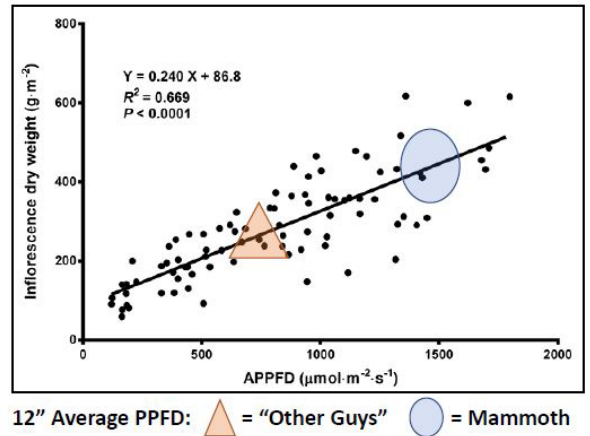
It took less time for the LED treatments to reach peak ripeness, and the resulting morphology of plants grown under high-intensity LEDs is more desirable from a profitability perspective."



### Hemp yield, potency, and leaf photosynthesis respond differently to increasing light levels in an indoor environment (Victoria Rodriguez Morrison, University of Guelph, Guelph, Ontario, 2021

"This may be especially evident given that dry inflorescence yield increased linearly with increasing canopy-level PPFD up to **1800  $\mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$** , while leaf-level photosynthesis saturated well below 1800  $\mu\text{mol} \cdot \text{m}^{-2} \cdot \text{s}^{-1}$ .

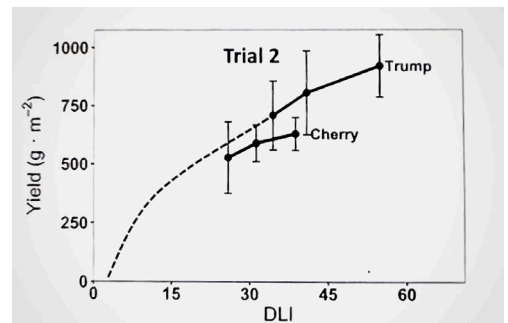
The density of the apical inflorescence and harvest index also increased linearly with increasing LI, resulting in higher-quality marketable tissues and less superfluous tissue to dispose of." Even under ambient CO<sub>2</sub>



### Dr Bruce Bugbee - Utah State Hemp Studies

Bugbee stands as the foremost authority on the crucial science of photobiology for hemp cultivation. His role includes overseeing a university research laboratory in partnership with NASA.

As a distinguished Fellow of both the American Society of Agronomy and the American Society of Horticultural Science, Bugbee has an illustrious career, with a portfolio boasting over 137 peer-reviewed studies in his specialized field.



## Unlocking the Mammoth Advantage: Maximizing Yields + Quality



### 1. Optimal Light Intensity of over 2500ppf for Maximum Yields

- Academic studies reveal a compelling correlation between light intensity and hemp yields (R2 of .88).
- Every 10% increase in PPF results in an impressive 8.8% boost in yield!



### 2. Premium Quality Components + IP65 Durability

- Powered by Samsung and Inventronic Power Drivers.
- Featuring a watertight power box with IP65 certification, ensuring resilience in harsh environments.



### 3. Achieving Uniformity and Deep Light Penetration

- Harness the power of Green and Far Red, the two colors that penetrate leaves and canopies the most.
- Our new smart diode and bar spacing technology guarantee flawless canopy light uniformity.



### 4. Reducing Microbial Counts, Elevating Terpene + Oil Levels

- Benefit from the shorter wavelength (437nm) EVO chip and consider our optional UV upgrade kit for microbial growth suppression.
- Academic research supports heightened terpene + oil production.



### 5. A Spectrum Revolution for Superior Cannabis Quality

- Experience a groundbreaking spectrum blend with Samsung Mint White EVO (blue), Deep and Far Red, and a Green Photon Boost.
- Our proprietary spectrum is reminiscent of the classic MH + HPS checkered pattern days.

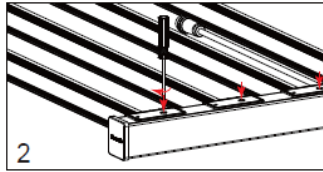
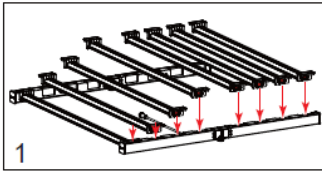
ONLINE LOW PRICE: MULTIBAR LED GROW LIGHTS										
Brand	Model	Watts	PPF	PPE	Online Low \$ Cost	\$/PPF	Deep + Far Red	Spectrum Tuning	\$/Watt	Source
Mammoth	8 Bar Mint White Emerald Green	860	2537	2.95	\$849.00	\$0.33	Yes	No	\$0.99	Direct or Authorized Retailer
Mammoth	6 Bar Mint White Emerald Green	670	1970	2.94	\$699.00	\$0.35	Yes	No	\$1.04	Direct or Authorized Retailer
Growers Choice	ROI - E720	781	2086	2.67	\$720.00	\$0.35	No	No	\$0.92	LedGrowLight Depot
Photobio/Hydrofarm	<a href="#">680W</a> MX	673	1819	2.70	\$658.00	\$0.36	No	No	\$0.98	Hydro Builder
Growers Choice	ROI - E900	1018	2718	2.67	\$999.00	\$0.37	No	No	\$0.98	LedGrowLight Depot
Fluence/Signify	SPYDER 2i	657	1741	2.65	\$661.00	\$0.38	No	No	\$1.01	GrowGen
Optic LED	750S	775	2320	2.99	\$899.00	\$0.39	Yes	Yes	\$1.16	Trimleaf
AC Infinity	IonFrame EVO8	730	2013	2.76	\$799.00	\$0.40	Yes	No	\$1.09	LedGrowLight Depot
HLG	Tomahawk 720	752	2161	2.87	\$899.00	\$0.42	No	No	\$1.20	Direct 10% off
Fohse	Pisces 9	903	2494	2.76	\$1,049.00	\$0.42	No	No	\$1.16	Hydro builder
GrandMaster	Tent Ultimate	1000	2850	2.85	\$1,200.00	\$0.42	Yes	No	\$1.20	Direct
HLG	750 Diablo	715	2056	2.88	\$899.00	\$0.44	No	No	\$1.26	Direct 10% off
Fohse	Pisces 7	694	1842	2.65	\$849.00	\$0.46	No	No	\$1.22	Hydro builder
Gavita/Scotts Miracle-Gro	Pro RS 2400e	810	2459	3.04	\$1,135.00	\$0.46	No	No	\$1.40	GrowersHouse
GrandMaster	Borg	1500	4158	2.77	\$2,100.00	\$0.51	Yes	Yes	\$1.40	Direct
Gavita/Scotts Miracle-Gro	1930e	793	1928	2.43	\$1,049.00	\$0.54	No	No	\$1.32	LedGrowLight Depot
Fluence/Signify	SPYDER 2h	795	2240	2.82	\$1,299.00	\$0.58	No	No	\$1.63	Hydro builder
PhotonTek	C02 Pro	1004	2824	2.81	\$1,700.00	\$0.60	No	No	\$1.69	LedGrowLight Depot
Thinkgrow	Model W	649	1780	2.74	\$1,100.00	\$0.62	Yes	Just FR	\$1.69	LedGrowLight Depot
Thinkgrow	Model H	648	1787	2.76	\$1,215.00	\$0.68	No	Yes	\$1.88	LedGrowLight Depot 10% off
Scynce	Raging Kush 2.0	666	1579	2.37	\$1,345.00	\$0.85	Yes	Yes	\$2.02	LedGrowLight Depot

Photometric and Electrical data obtained from DLC website or Company website as of 09/25/23. Source data obtained from company website or authorized reseller. Reasonable efforts have been made by Mammoth Lighting LLC to present accurate information. Some firms can measure PPF from 380 - 800 or less. Review each firm's site for the updated information.



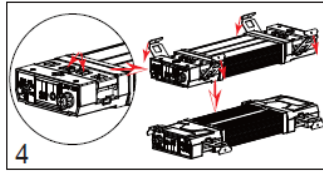
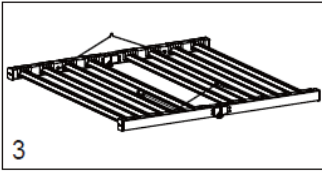


**MAMMOTH LIGHTING**  
BRIGHT AF



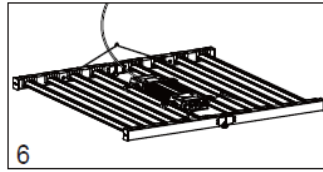
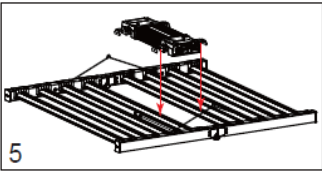
#### Step 1-2: Snap On Rails and Secure

- 1.Align the pin connections on the rails.
- 2.Snap the rails securely in place.
- 3.Tighten with screws for added stability.



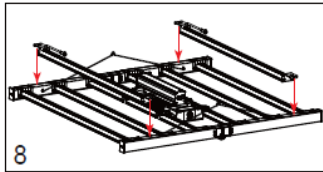
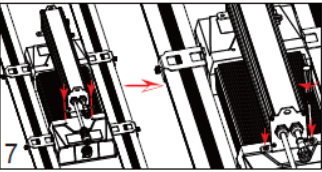
#### Step 3: Hang the Fixture

- 1.Install the V hanger.
- 2.Hang the fixture in the desired location.



#### Step 4-5: Attach Power Driver

- 1.Open the wings on the power driver.
- 2.Place the power driver onto the light fixture.
- 3.Use the small knob screws to securely fasten the power driver to the light fixture.



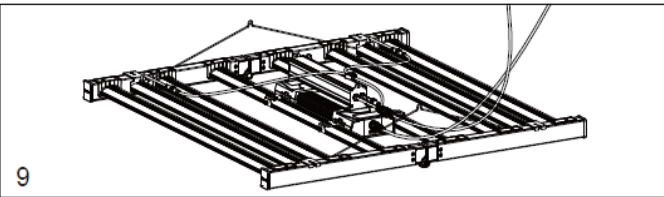
#### Step 6: Connect Power Cords

- 1.Connect the power cords to the appropriate outlets.
- 2.Your installation is complete! Enjoy the benefits of record-quality yields.

#### For UV Upgrade Kit ONLY:

##### Step 7: Attach UV Power Driver

- 1.Securely attach the UV power driver to the Mint White Driver using screws.



##### Step 8: Position UV Bars

- 1.Attach the UV bars in your desired location.

##### Step 9: Connect UV Power Cords

- 1.Connect the UV power cords.
- 2.Your UV upgrade is now ready for use.

#### Optional: Remote Mounting of Power Driver

- To reduce heat in tents or rooms, you can consider remote mounting the power driver.

#### Note: For Longer DC Cord

- If you require a longer DC cord, please contact [sales@mammothlighting.com](mailto:sales@mammothlighting.com) or make the purchase online.

#### DISCLOSURE NOTICE:

**Important Safety and Installation Instructions:** This fixture is intended for installation in strict accordance with the National Electric Code and local code specifications. Failure to adhere to these codes and instructions may result in severe injury and/or damage to the fixture, potentially voiding the warranty. These instructions may not cover all details or variations in equipment and do not address every possible contingency related to installation, operation, maintenance, or mounting. If you encounter specific problems not covered by these instructions, please promptly contact your local sales representative or distributor for expert assistance. Keep these instructions for future reference.

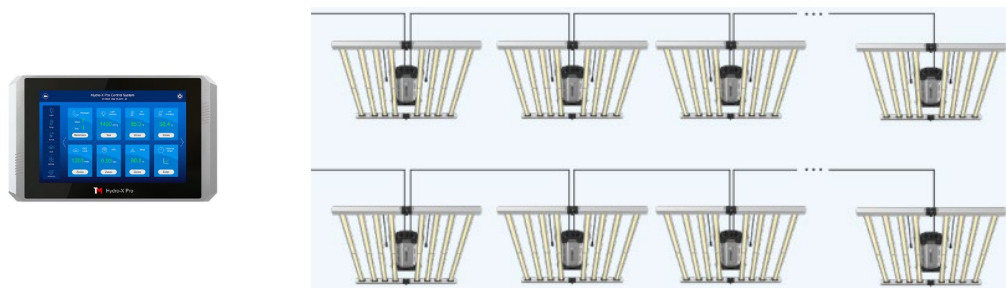
#### Safety Precautions:

- 1.Always prioritize safety:** When the light is in use, it is essential to wear appropriate eye and skin protection.
- 2.Risk of Burns:** The illuminated fixture may become hot during operation. To minimize the risk of injury, turn off or disconnect the fixture and allow it to cool before handling.
- 3.Proper Electrical Connection:** Ensure that the luminaire is plugged into a properly grounded 3-prong 120VAC outlet. If you plan to hardwire the fixture to power, we strongly recommend consulting a licensed electrician. Failure to do so may result in severe injury or even loss of life.

**Limitation of Liability:** Mammoth Lighting LLC assumes no liability for consequential damages under any circumstances. In no event shall Mammoth Lighting LLC be liable to the buyer, any other parties, or any person for any special, incidental, or consequential damages, including, but not limited to, damages related to lost goodwill, lost sales or profits, work stoppages, delays, whether arising from a breach of warranty, breach of contract, negligence, or any other cause. In all cases, Mammoth Lighting LLC's liability for any losses or damages incurred by the buyer or others, arising from or related to this contract, shall not exceed the original purchase price of the products, even if Mammoth Lighting LLC has been informed of the potential for such damages.

## Optimizing Group Control with Multiple Lights: Standard Dimmer Knob and RJ14 Ports (0-10V Dimmer)

A set of RJ14 ports has been strategically incorporated to facilitate effortless group control, compatible with any controller that supports 0-10V dimming. The process is straightforward: connect each light together using the provided RJ14 cords and ensure the final light is connected back to the controller. **The Spectrum Tuning 10 bar uses an Rj45 connection**



## Optimizing PPFD Targets: Illuminance Maps for Improved Results

The following measurements serve as recommended PPFD targets for your grow environment. All readings have been carefully taken within a 5' x 5' tent to minimize light reflection, a common occurrence in 4' x 4' tents often used by other manufacturers. When using multiple lights, please note that actual readings may register higher due to light overlap. Conversely, within a 4'x4' space, the edges are enhanced thanks to the reflective walls.

### Mammoth's Recommendations:

- Vegetative Stage: Aim for PPFD levels between 600 and 900.
- Flowering Stage: Target PPFD levels ranging from 1100 to 1800 and lower the intensity the last 2-3 weeks
  - For advanced CO2 users and professional growers, consider aiming even higher.
- **For UV users:** See the website for updated details and research – For Quality: Use last 2-3 weeks up to the full 12 on cycle. For Pest or PM: Use 30-1hr before the lights turn on as the PM defense mechanism is shut down at night.

These recommendations are grounded in extensive research, drawing from third-party academic studies and Mammoth Lighting's own trials. It's crucial to understand that achieving these targets also requires fine-tuning your environmental conditions. It's worth noting that academic studies have shown a linear relationship between light intensity and hemp yield, with significant benefits observed up to approximately 1800 PPFD.

### MAMMOTH LIGHTING PAR TEST

#### 8 BAR MINT WHITE SERIES WITH EMERALD GREEN CANNA SPECTRUM

12"	855	1129	1173	1150	1155	1152	1093	847
24"	779	850	901	944	948	935	872	785
12"	1248	1709	1795	1654	1695	1848	1741	1221
24"	897	1013	1099	1114	1123	1100	1025	892
12"	1312	1779	1888	1770	1829	1971	1825	1284
24"	962	1101	1194	1224	1234	1204	1109	961
12"	1268	1688	1813	1744	1793	1845	1720	1221
24"	976	1125	1223	1264	1269	1234	1138	980
12"	1222	1671	1776	1744	1761	1836	1675	1218
24"	960	1119	1213	1246	1251	1219	1119	969
12"	1246	1700	1793	1683	1728	1848	1701	1226
24"	919	1066	1150	1180	1182	1155	1070	938
12"	1195	1597	1663	1548	1606	1720	1603	1155
24"	821	948	1010	1045	1051	1029	958	848
12"	823	1053	1135	1113	1094	1195	1086	850
24"	633	752	813	845	838	827	771	689

AVERAGE: 12" 1476 PPFD 24" 1017 PPFD  
 TESTING: 5x5 TENT / APOGEE MQ-610

### MAMMOTH LIGHTING PAR TEST

#### 6 BAR MINT WHITE SERIES WITH EMERALD GREEN CANNA SPECTRUM

12"	674	813	857	882	875	870	853	657
24"	597	654	689	726	735	722	669	595
12"	942	1254	1349	1353	1372	1373	1271	968
24"	722	765	822	847	850	828	772	681
12"	978	1298	1408	1418	1444	1445	1321	959
24"	728	831	903	933	933	900	832	728
12"	949	1221	1331	1370	1393	1368	1244	948
24"	735	849	922	958	957	925	860	747
12"	952	1220	1308	1341	1361	1339	1222	927
24"	726	843	913	944	944	912	841	736
12"	961	1224	1319	1325	1346	1355	1250	977
24"	690	798	862	892	895	865	803	694
12"	908	1138	1218	1213	1236	1257	1168	913
24"	623	712	777	800	797	776	726	628
12"	603	739	801	814	838	831	796	628
24"	496	571	616	643	640	629	593	525

AVERAGE: 12" 1109 PPFD 24" 770 PPFD  
 TESTING: 5x5 TENT / APOGEE MQ-610

Specifications										
	Mint White					Single Bars				UV Series
Cycle	Clone/Veg/ Mom/Vertical	Full Cycle	Full Cycle	Full Cycle		Full Cycle / Greenhouse	Full Cycle	Full Cycle		End Cycle
Model	6 Bar Veg / Mom	6 Bar Mint White	8 Bar Mint White	10 Bar 3 Channel UV Mint White		Mint White Greenhouse	Single Bar Mint White	Clone / Inter- canopy Full Sun Spec		2 Bar UV
Power +/- 5%	680W	680W	880W	930W		680W	100W	50W		100W
Diodes	High Efficiency + LM301H EVO	High Efficiency + LM301H EVO	High Efficiency + LM301H EVO	High Efficiency + LM301H EVO + UV		High Efficiency + LM301H EVO	High Efficiency + LM301H EVO	High Efficiency		UVA + UVB
PPF μmol/s	1836	1970	2537	2511		1904	294	120		210
Efficacy μmol/J	2.7	2.94	2.95	2.7		2.8	2.94	2.4		2.1
Veg Coverage	5'x5'	6'x6'	7'x7'	7'x7'		7'x7'	2' x 4'	2' x 4'		na
Flowering Coverage	NA	4.5'x4.5'	5'x5'	5'x5'		5'x5'	2' x 4'	2' x 4'		5' x 5'
Power Voltage	100V-277V, 50/60 Hz	100V-277V, 50/60 Hz	100V-277V, 50/60 Hz	100V-277V, 50/60 Hz		100V-277V, 50/60 Hz	100V-277V, 50/60 Hz	100V-277V, 50/60 Hz		100V-277V, 50/60 Hz
Amperage/ Voltage	5.67A/120V	5.67A/120V	7.33A/120V	7.75A/120V		5.67A/120V	0.83A/120V	0.42A/120V		0.83A/120V
	2.83A/240V	2.83A/240V	3.67A/240V	3.88A/240V		2.83A/240V	0.42A/240V	0.21A/240V		0.42A/240V
CRI	>=90	>=90	>=90	>=90		>=90	>=90	>=90		>=90
Power Factor	>95%	>95%	>95%	>95%		>95%	>95%	>95%		>95%
THD	<6%	<6%	<6%	<6%		<6%	<6%	<6%		<6%
Beam Angle	120 degree	120 degree	120 degree	120 degree		120 degree	120 degree	120 degree		120 degree
Spectrum	5000k + EVO	Green + 3000K + 5000K + 660nm+ 730nm +EVO	Green + 3000K + 5000K + 660nm+ 730nm +EVO	Green + 3000K + 5000K + 660nm+ 730nm +EVO + 400nm +310nm		Green + 3000K + 5000K + 660nm+ 730nm +EVO	Green + 3000K + 5000K + 660nm+ 730nm +EVO	Sunlike Spectrum		400nm + 310nm
Primary Diode Life	>=50,000 hours	>=50,000 hours	>=50,000 hours	>=50,000 hours		>=50,000 hours	>=50,000 hours	>=50,000 hours		~10,000 hours
Fixture Dimension	44"x44"x2"	44"x44"x2"	44"x44"x2"	55"x44"x2"		44"x5"x5"	45"x3"x 4"	44"x3"x 3"		44"x3"x 4" x 2
Fixture Weight	30lbs	30 lbs	35 lbs	40 lbs		30lbs	8lbs	4lbs		10lbs
Dimming	Knob +rj14 port	Knob +rj14 port	Knob +rj14 port	Knob +rj14 port		rj14 port	Knob +rj14 port	None		Knob +rj14 port
Certifications	ETL, CE, RoHS	ETL, CE, RoHS	ETL, CE, RoHS	ETL, CE, RoHS		ETL, CE, RoHS	ETL, CE, RoHS	ETL, CE, RoHS		ETL, CE, RoHS
IP Rating	IP65	IP65	IP65	IP65		IP65	IP65	IP66		IP54
Warranty	5 years	5 years	5 years	5 years		5 years	5 years	1 year		1 year
Lower your Cost of Production AND Increase Quality + Yields										
www.mammothlighting.com										
Copyright 2024, Mammoth Lighting LLC, Saratoga Springs NY					Contact: sales@mammothlighting.com 855-6mammoth or 855-662-6668					