

420 LED Board

Scalable grow light
technology with PAR+UV

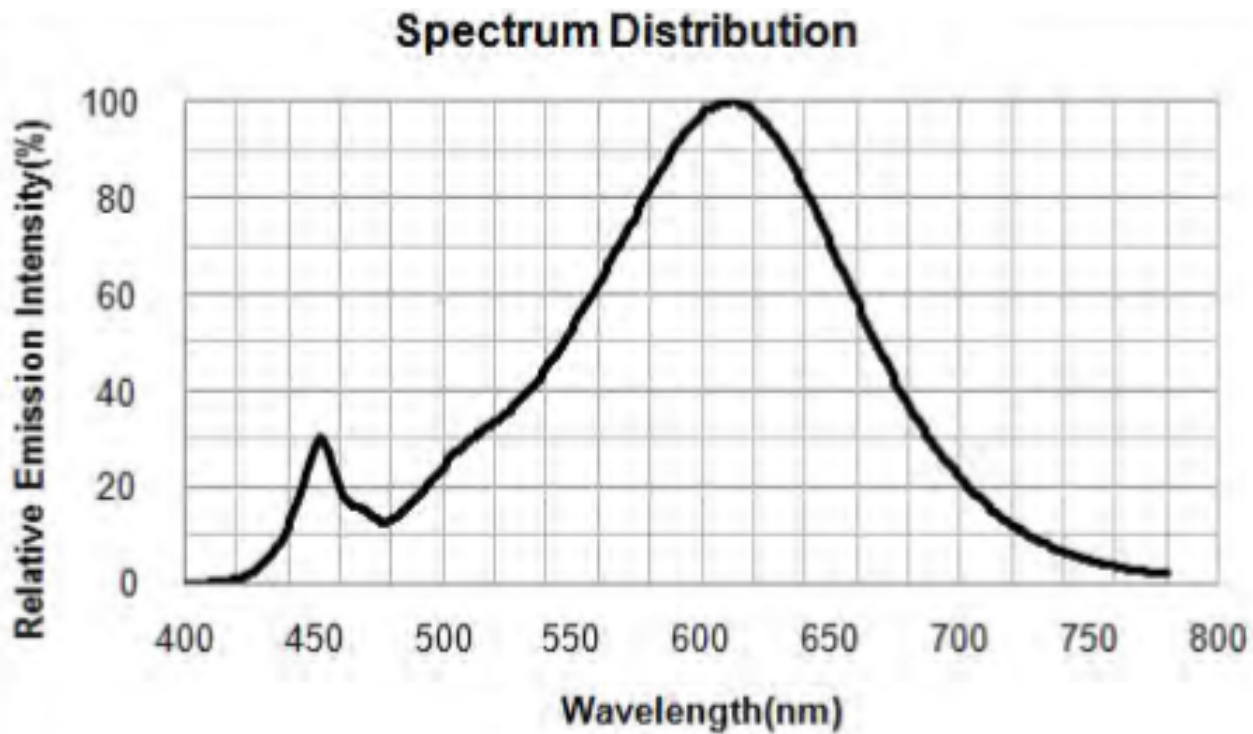
LED Source Selection

- Samsung 561 series (B or B+) chips were selected for the broad spectrum white light source:
 - Strong Blue and Red Peaks available
 - Wide operating temperature range
 - Best Cost Per Lumen
 - Established Quality (LM80)
 - Wide Lambertian Emissions



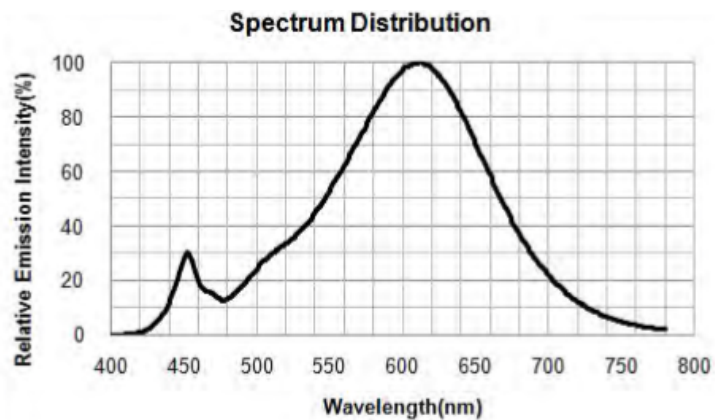
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561 B 3000K



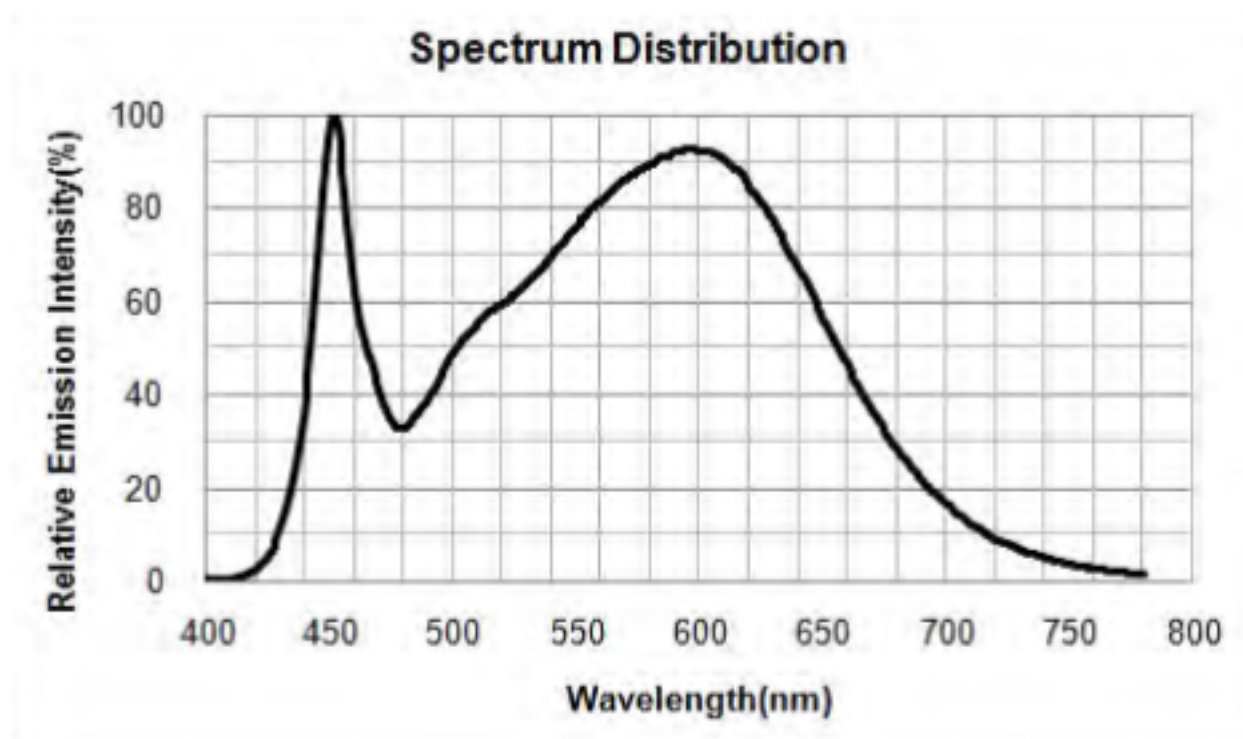
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561 B 3000K



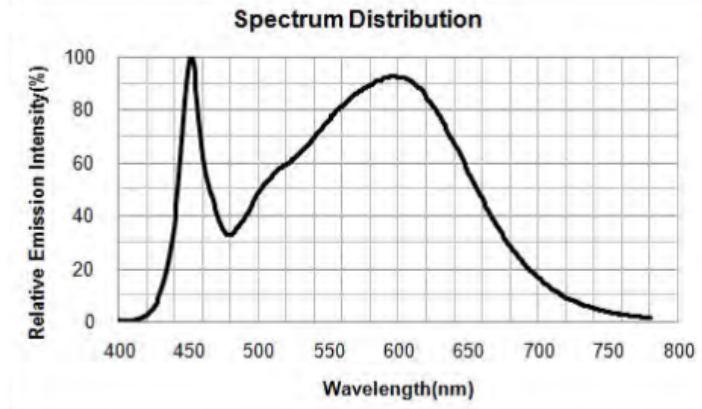
Strong Red Dominant
40% RI Green
80+ CRI for Visual Indicators
100% of Photonic Energy in
Expanded PAR range 400-800nm

561 B 5000K



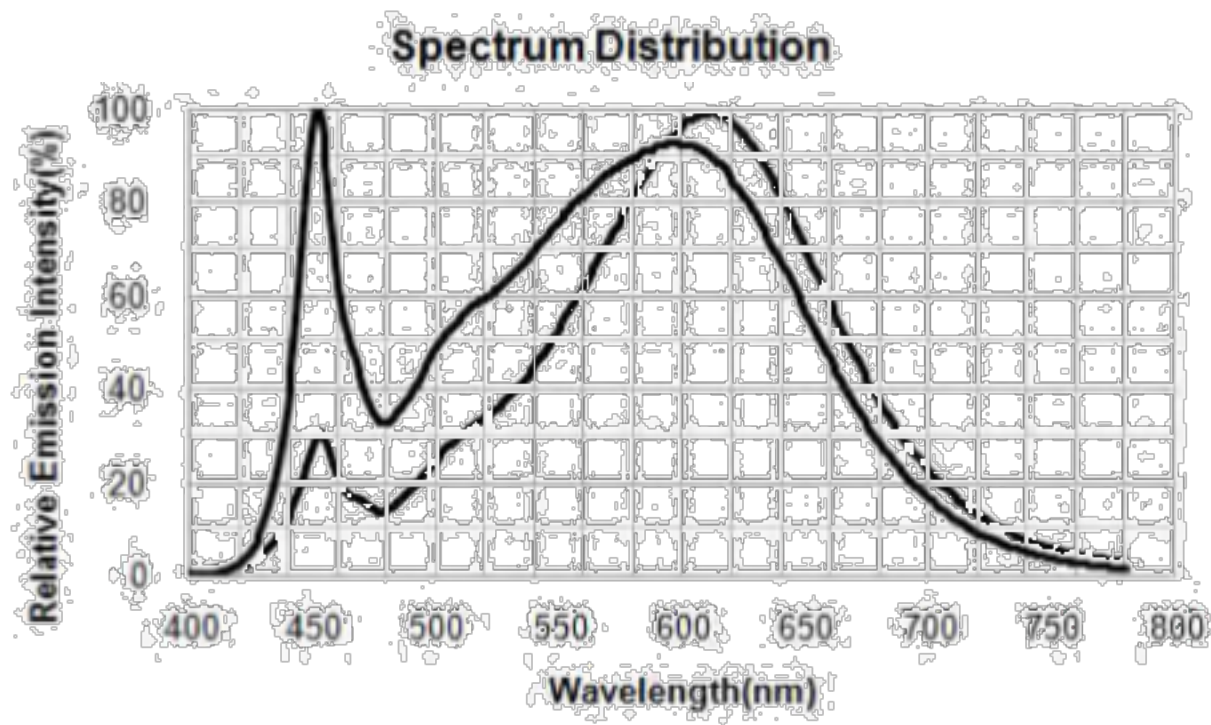
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561 B 5000K



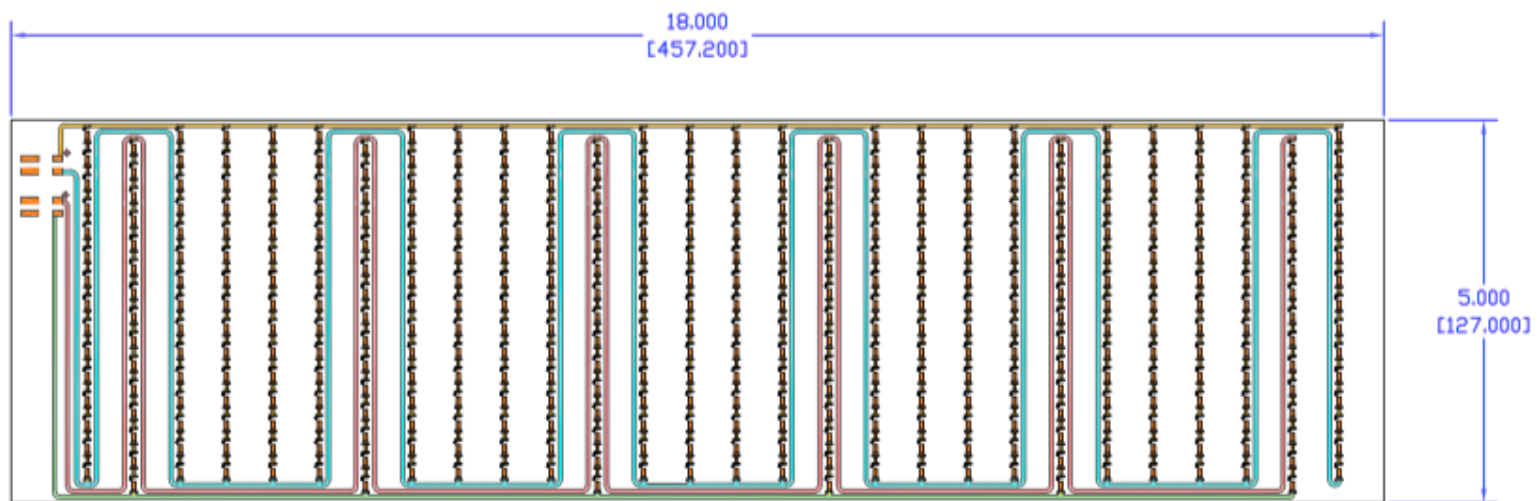
Strong Blue Dominant
60% RI Green
80+ CRI for Visual Indicators
100% of Photonic Energy in
Expanded PAR range 400-800nm

Combined Spectrum



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The 420 Board



330 5000K LEDs and 90 3000K LEDs

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Features

- Two Independent Circuits
 - 3000K
 - 5000K
- Designed for 85c Tsop
- Modular
 - Functional Grow Light from 1 panel to 10
 - 100W to 1000W scalable design
- Can be run as one Circuit

General Specifications

- 14,000 Lumens per module
 - @ 140 LPW
 - @ 80mA
 - @ 85Tsp
 - 28 Strings of 15 LEDs
- 70,000 Gross Lumens in a 5up Configuration
- Peaks at 450nm and 630nm

UV Accessory Light

Built in 385nm-390nm UV “Stress Light”

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UV Impact on THC

UV stress stimulates cannabis' production of chemicals via the phenylpropanoid pathway, specifically malonyl-CoA and phenylalanine. Why is this important? It's important because cannabis uses malonyl-CoA to make Olivitol, which it in turn uses to make THC. Now we can see the specific pathway which cannabis uses to increase potency when exposed to UV light.

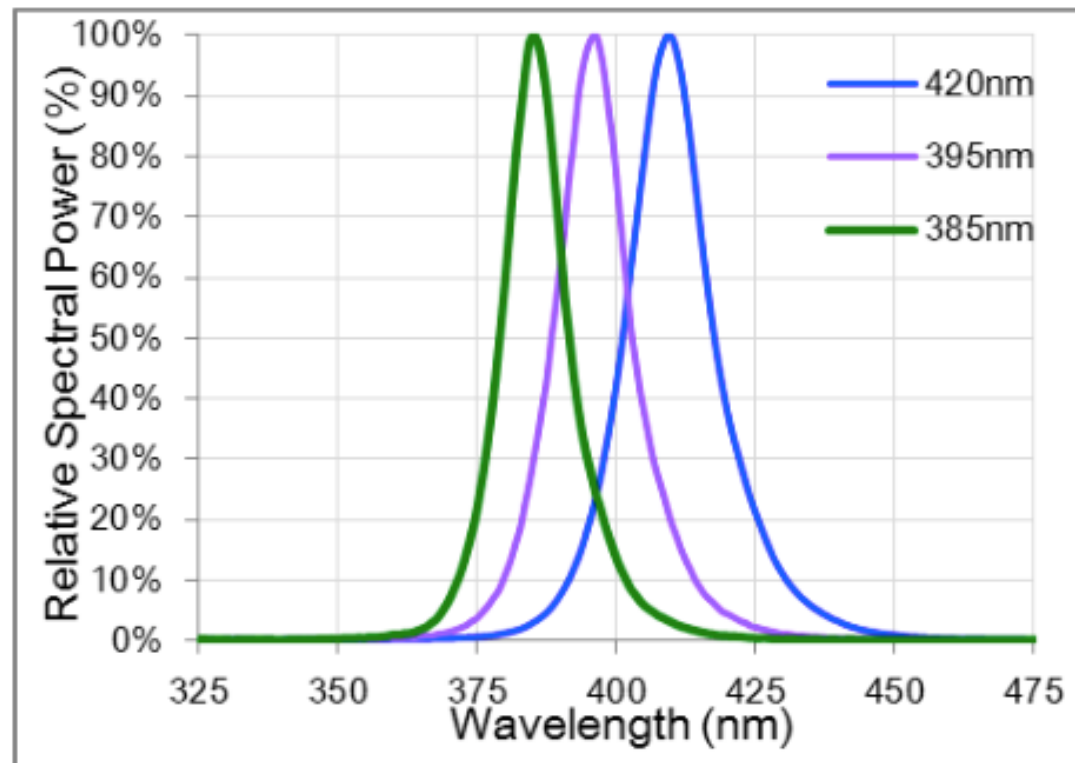
<http://bigbudsmag.com/grow/how/article/get-more-thc-your-medical-marijuana-plants-using-uv-light-august-2012>

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UVA Sub 400nm

- UVA does not fall into the radiant energy used to calculate a PAR value
- UVA should only be used intermittently per a grow profile
- UVA should not be looked at directly

UV LED Spectral Peak



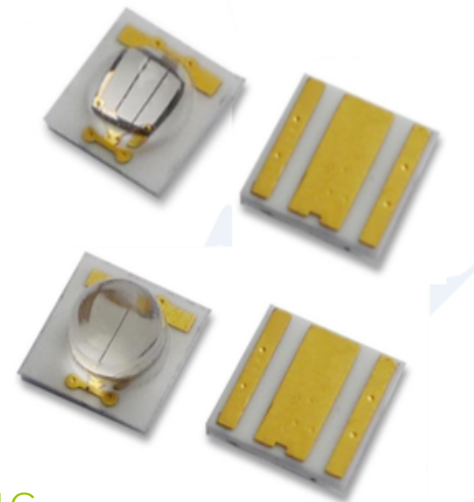
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UV Finishing Accessory

- Proposed to use two UV PCBAs spaced equidistant from edges and between the 420 Light Engines
- 10,000mW of UVA Radiation will be produced by two boards (5,000mW x 2)
- UV Light Engines will be in MCPCB for additional thermal management
- Additional UV PCBAs can be added
- UV Accessory will be switched independently

UV High Power Light Source

- Ceramic Package
- Driven at 1.5W (3VDC @ 500mA)
- 800+ mW of Radiant Power per chip
- 120 degree viewing angle
- Max Tj 120c



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Accessory Features

- Not Limited to UV
- Additional Wavelengths can be added per customer/crop requirements
 - If customer is growing spinach we can add 620nm Peaks etc.
- 25W Max Supply for accessory
- Can be controlled manually or with wireless controls and an automatic profile

Driver Topology

- Drivers are custom configured specifically for application
- 400W/120W/25W configuration for full independent control (may be used with UNIFI and a custom grow profile)
- 500W/25W configuration for 3000/5000K on full and UV Accessory
- IP67 Sealed and UL listed

Driver Options

- Each Driver can be manually switched
 - Fixture mounted rocker
 - Wireless Control/Timer
- Each Driver can be serviced independently
- Each Driver has a 5 year full replacement warranty
 - 10-year prorated warranties are available

Driver Specs

- 100-305VAC INPUT
- 50/60Hz
- IP67
- 70c Max Case Temp
- >90% efficient
- Thermal/Short/Over Voltage/Over Current protected
- MTBF per MIL-HDBK-217F 221K Hours