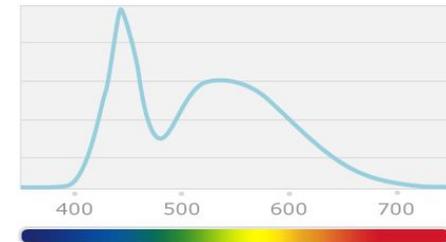
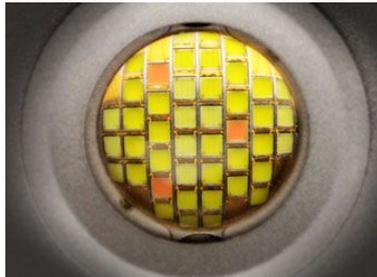


# Kessil®

Join The Spectral Revolution!



# Design Configuration



## Living Wall Dimensions:

42'-4" Wide x 17'-0" Tall

## Original Ceiling Height:

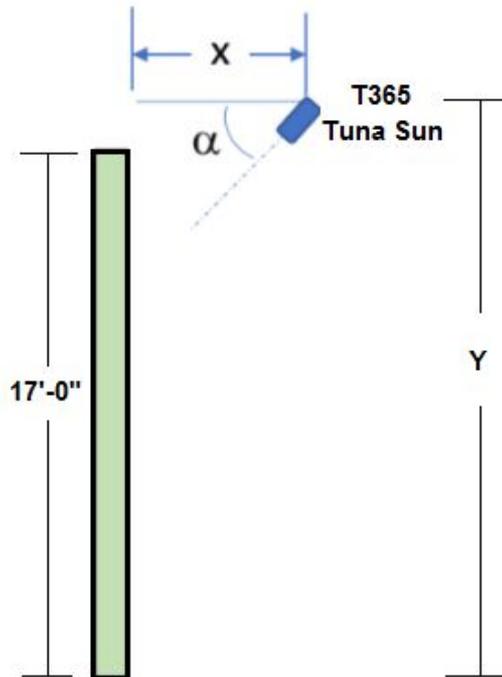
20'

## Plants:

Tropicals

## Lighting:

Kessil T365 Tuna Sun Track Lights



$X$  = Distance between T365TS and Living Wall

$Y$  = Hanging Height

$\alpha$  = Degree of T365 TS

# Proposed Number of Kessil Lights



24 x T365 Tuna Sun

\* T365 = T360 Tuna Sun + 5" Fresnel Accessory w/ Barndoors

# Layout Summary

## Recommended Layout

Kessil recommends this layout to **have an even light distribution across the whole living wall, while having sufficient lighting to maintain good plant growth and health.**

- 18'-0" Ceiling (Mounting Height)
- 8'-0" off the face of living wall
- All 24 lamps 50° angling downwards (vertical position)
- Left Side 2 lamps 10° angling inwards (horizontal position)
- Right Side 2 lamps 10° angling inwards (horizontal position)

# Recommended Layout - 18'-0" Ceiling

**24 x T365 Tuna Sun @ Flood @ 9,000K**

**Maximum footcandle:**  
~ 200 fc ;

**Average footcandle:**  
~ 100 fc

**X = 8'-0"**

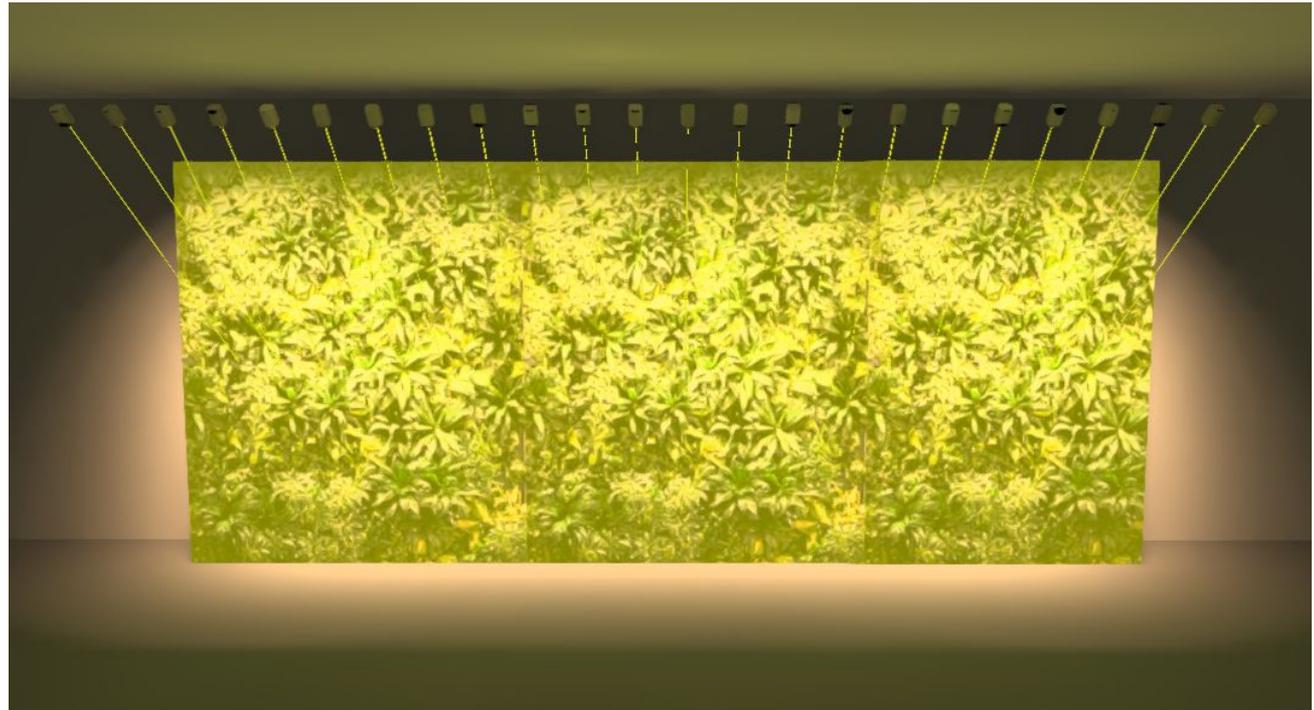
**Y = 18'-0"**

**Spacing: 1'-9"**

**All lamps  $\alpha = 50^\circ$**

**Left Side 2 lamps  
rotate inwards  $10^\circ$**

**Right Side 2 lamps  
rotate inwards  $10^\circ$**



Front View

# Recommended Layout - 18'-0" Ceiling

24 x T365 Tuna Sun @ Flood @ 9,000K

Maximum footcandle:  
~ 200 fc ;

Average footcandle:  
~ 100 fc

X = 8'-0"

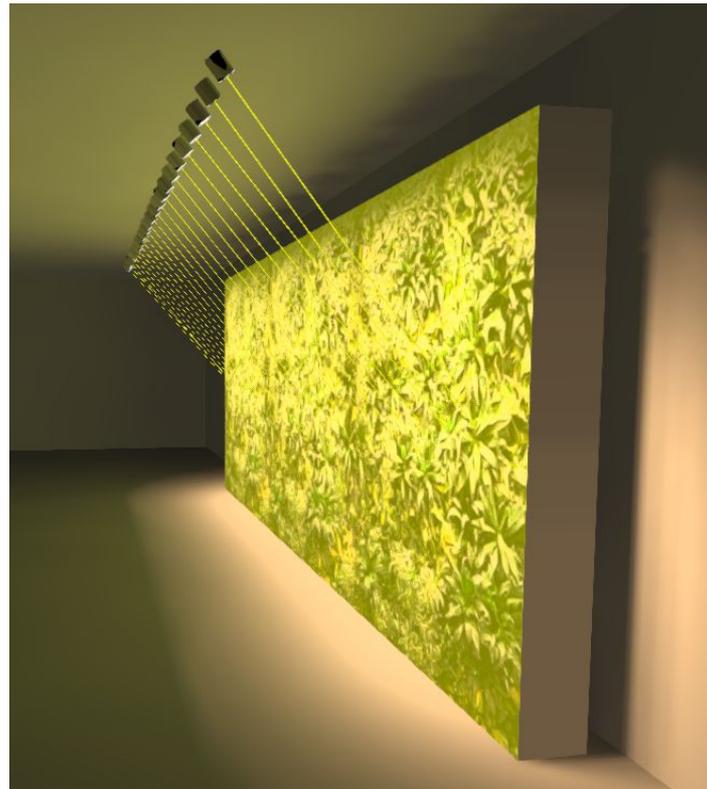
Y = 18'-0"

Spacing: 1'-9"

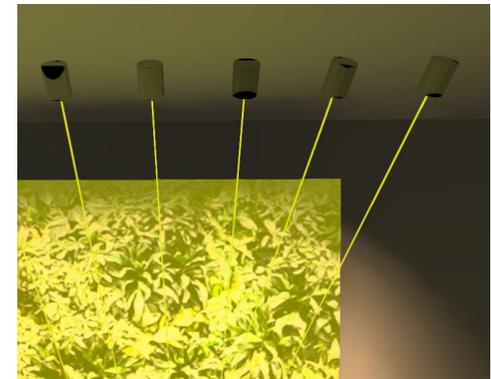
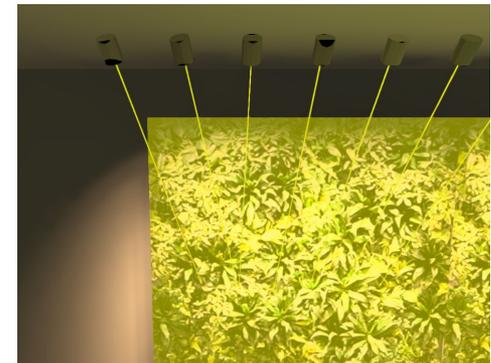
All lamps  $\alpha = 50^\circ$

Left Side 2 lamps  
rotate inwards  $10^\circ$

Right Side 2 lamps  
rotate inwards  $10^\circ$



Side View



Left & Right sides 2 lamps  
rotate inwards  $10^\circ$

# Recommended Layout - 18'-0" Ceiling

24 x T365 Tuna Sun @ Flood @ 9,000K

Maximum footcandle:  
~ 200 fc ;

Average footcandle:  
~ 100 fc

X = 8'-0"

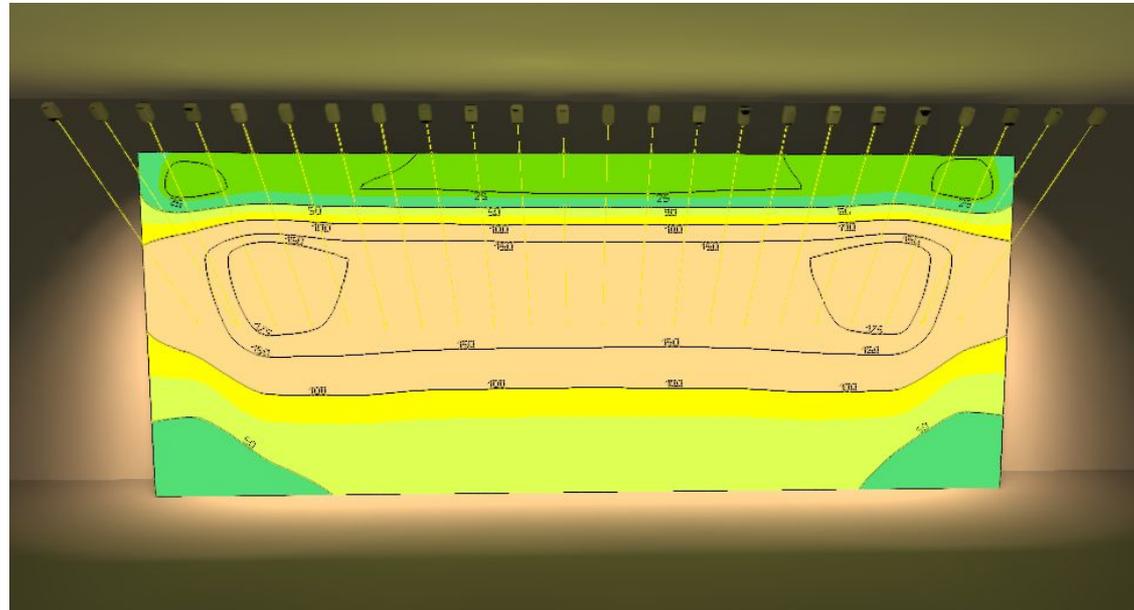
Y = 18'-0"

Spacing: 1'-9"

All lamps  $\alpha = 50^\circ$

Left Side 2 lamps  
rotate inwards  $10^\circ$

Right Side 2 lamps  
rotate inwards  $10^\circ$



Front View

# Recommended Layout - 18'-0" Ceiling

24 x T365 Tuna Sun @ Flood @ 9,000K

Maximum footcandle:  
~ 200 fc ;

Average footcandle:  
~ 100 fc

X = 8'-0"

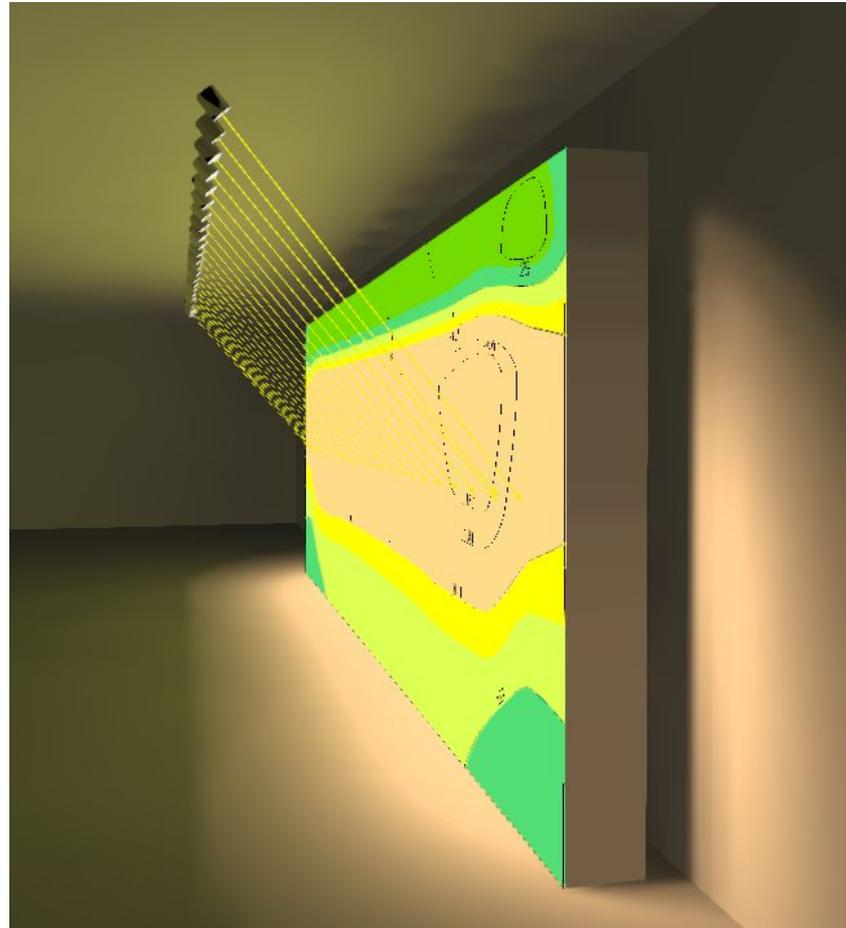
Y = 18'-0"

Spacing: 1'-9"

All lamps  $\alpha = 50^\circ$

Left Side 2 lamps  
rotate inwards  $10^\circ$

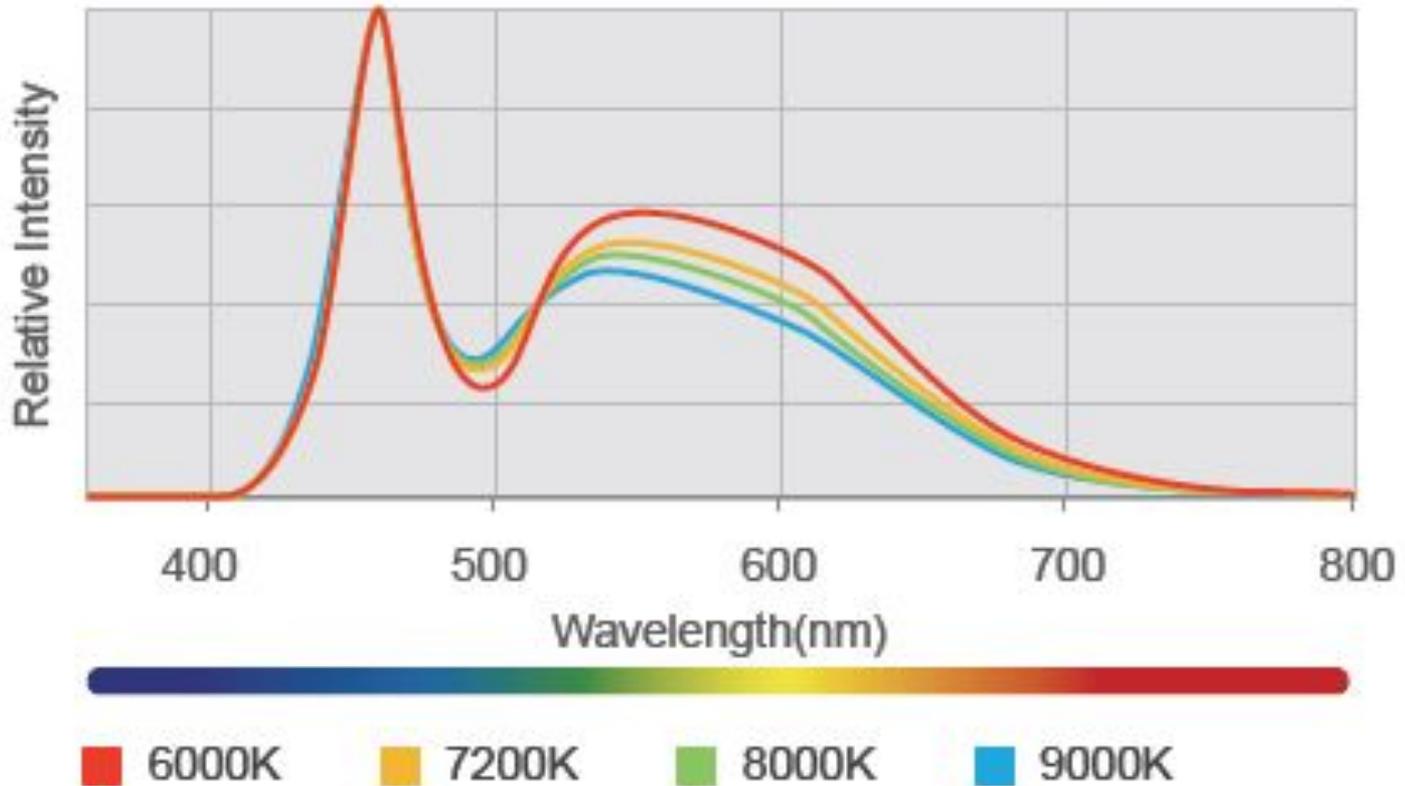
Right Side 2 lamps  
rotate inwards  $10^\circ$



Side View

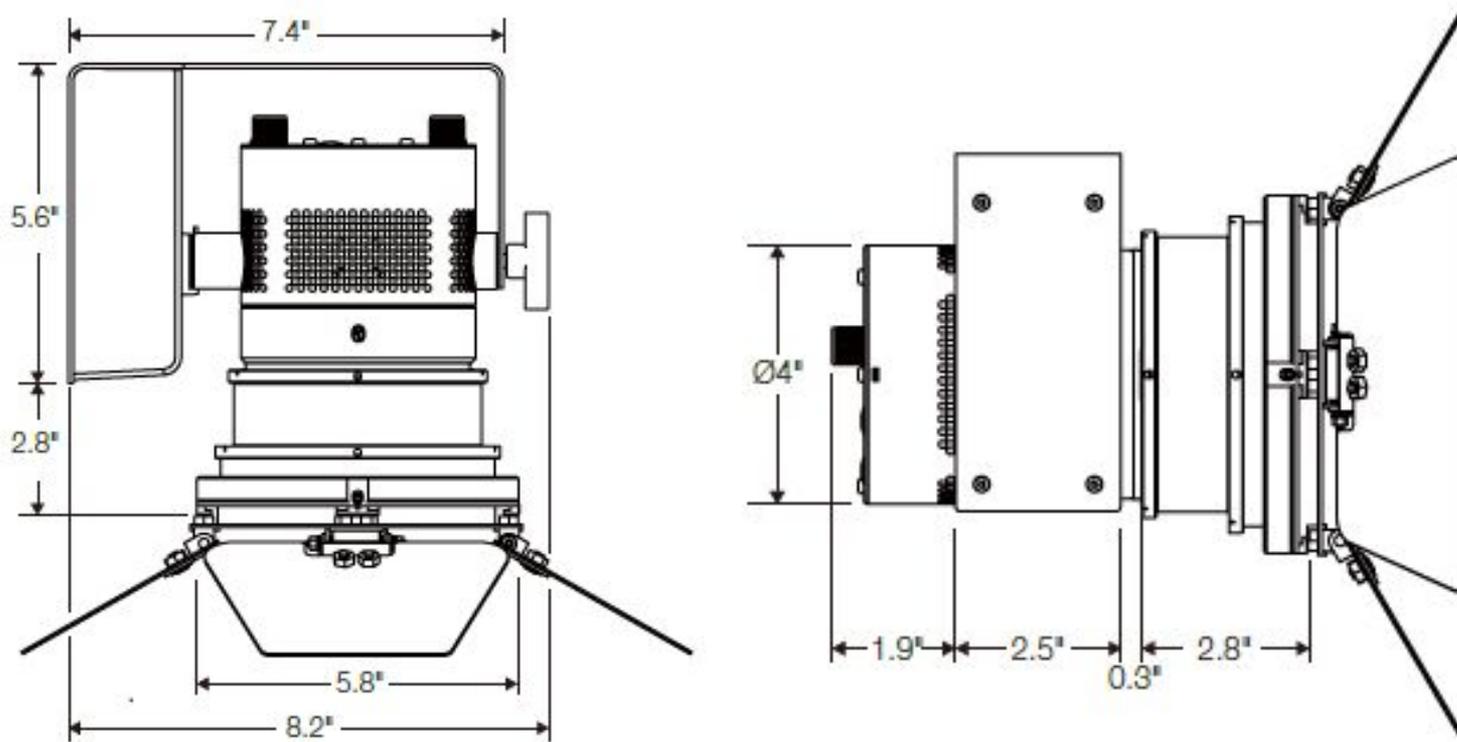
# Spectrums

## KESSIL T365 Tuna Sun



# Dimensions & Weight

## KESSIL T365 Tuna Sun



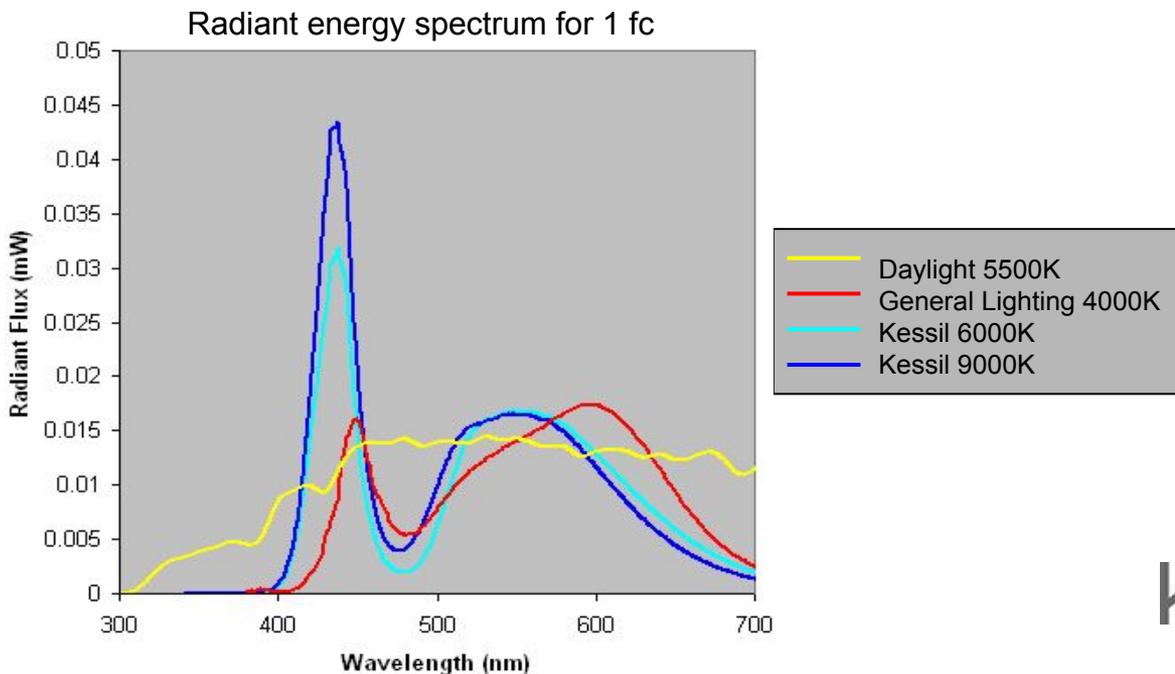
Weight: 4.08 lb / 1.85 kg

# Appendix - The Kessil Advantage

## Spectrum vs Brightness

**Abstract - Lumens/foot candle are still used as a common measurement of light. LED fixtures are often characterized in lumens/watt or foot candle/watt and efforts are progressing further in this direction without regard to photosynthesis**

- Lumens or foot candles are fundamentally based on the wavelength sensitivity of the human eye
- Photosynthesis occurs with wavelength sensitivity different than that of the human eye
- Kessil spectrums are fundamentally based on the wavelength sensitivity of photosynthesis and can provide up to 2x effective photosynthetic energy per foot candle



# Appendix - The Kessil Advantage

## Spectrum vs Brightness

- The photometrics (foot-candles, lumen, etc.) of Kessil lights are lower than most LED lighting fixtures because Kessil's focus is the spectrum.
- Most commercial LED chips are made for general illumination such as household lighting and not specifically made to grow plants
- The majority of Photosynthesis occurs in the blue and red ends of the spectrum where the eye is less sensitive
- The Kessil Horticulture fixtures- like the H80 and H1200, are extreme examples of spectrum specific lighting fixtures. Intensity changes of these fixtures are harder to detect visually. The Kessil Tuna Sun series has a good balance in spectrum and visual effects.
- Because Kessil manufactures LEDs in house, we can produce unique spectrums targeted for each individual application. These spectrums have been tested and proven effective for superior plant growth health.

**As stated in the first point, when comparing Kessil fixtures with other LED fixtures, spectrum should be the main focus, not photometrics.**

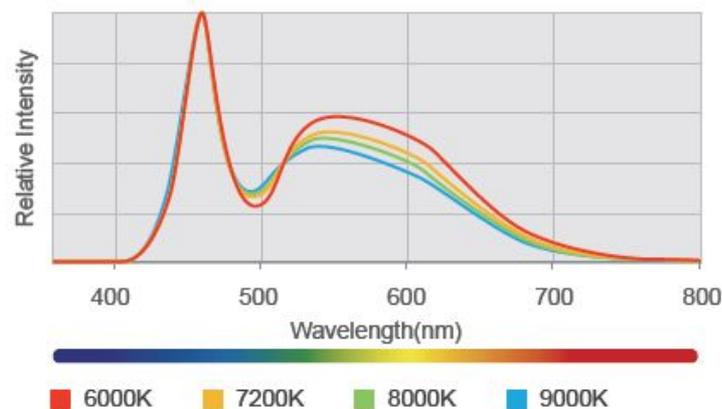
# Appendix - The Kessil Advantage

## Kessil Logic

### Kessil Logic: Kessil's way to simplify spectral tuning for users

Kessil Logic has two main functions

- 1) To balance the spectrum
  - Kessil Logic maintains a very **similar wavelength combination** across different colors (e.g. Tuna Sun color range). This allows the user to choose colors they like to see and not worry about balancing the wavelengths.
  
- 2) To balance the power
  - Kessil Logic maintains maximum output across each color, allowing highest output possible. This also means intensity is not directly tied to color tuning.



# Appendix - The Kessil Advantage

## Kessil Platform

### Kessil Platform

- A lot of grow light manufacturers tend to make light fixtures that have higher lux/foot candle value to boost sales but sacrifice the most efficient spectrum.
- LED chips manufacturers tend to make and sell chips that cater to general lighting, which is a much bigger market for them. Kessil produces LED chips which means we have control and access to a better and more suitable bin of LED chips for each application.
- Kessil uses the original Dense Matrix LED array (multiple LEDs on a single platform). This effective point source allows better blending of wavelengths without wasting energy/output and offers deeper penetration than many other LED fixtures.
- This effective point source can be paired with additional optics that can mimic any source. This can be seen with the T360 with 5" Fresnel Accessory with barndoors.

