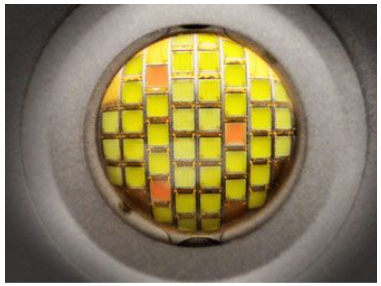
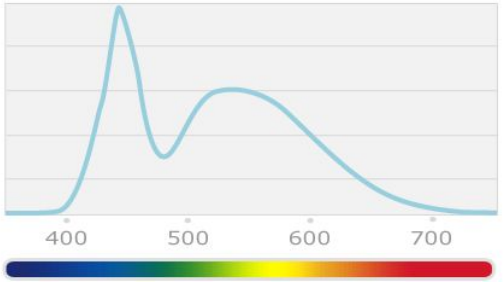
Kessil

Join The Spectral Revolution!

Project: Aramark Philadelphia PA

Prepared By: Franco Chan





DiCon Lighting

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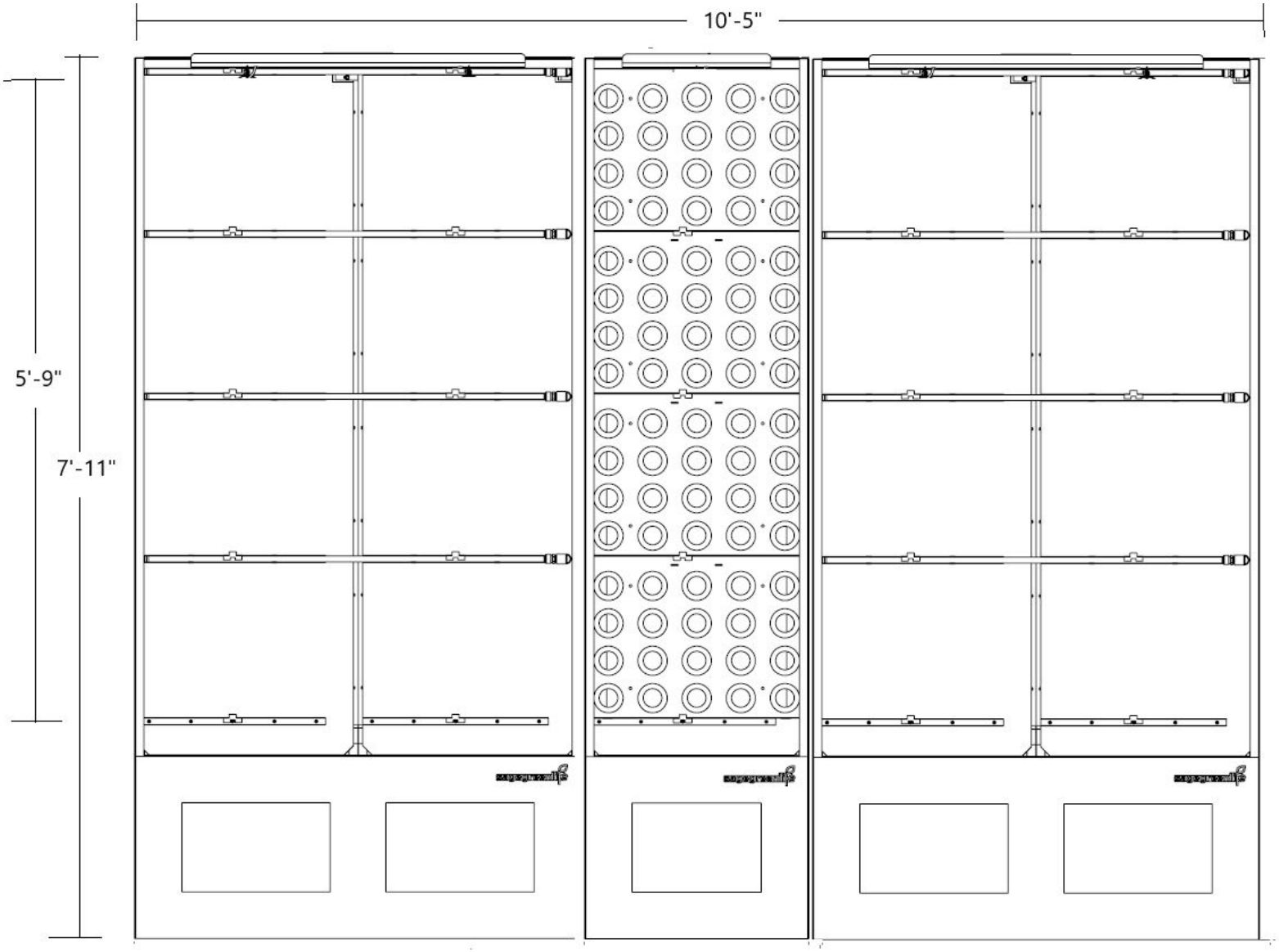
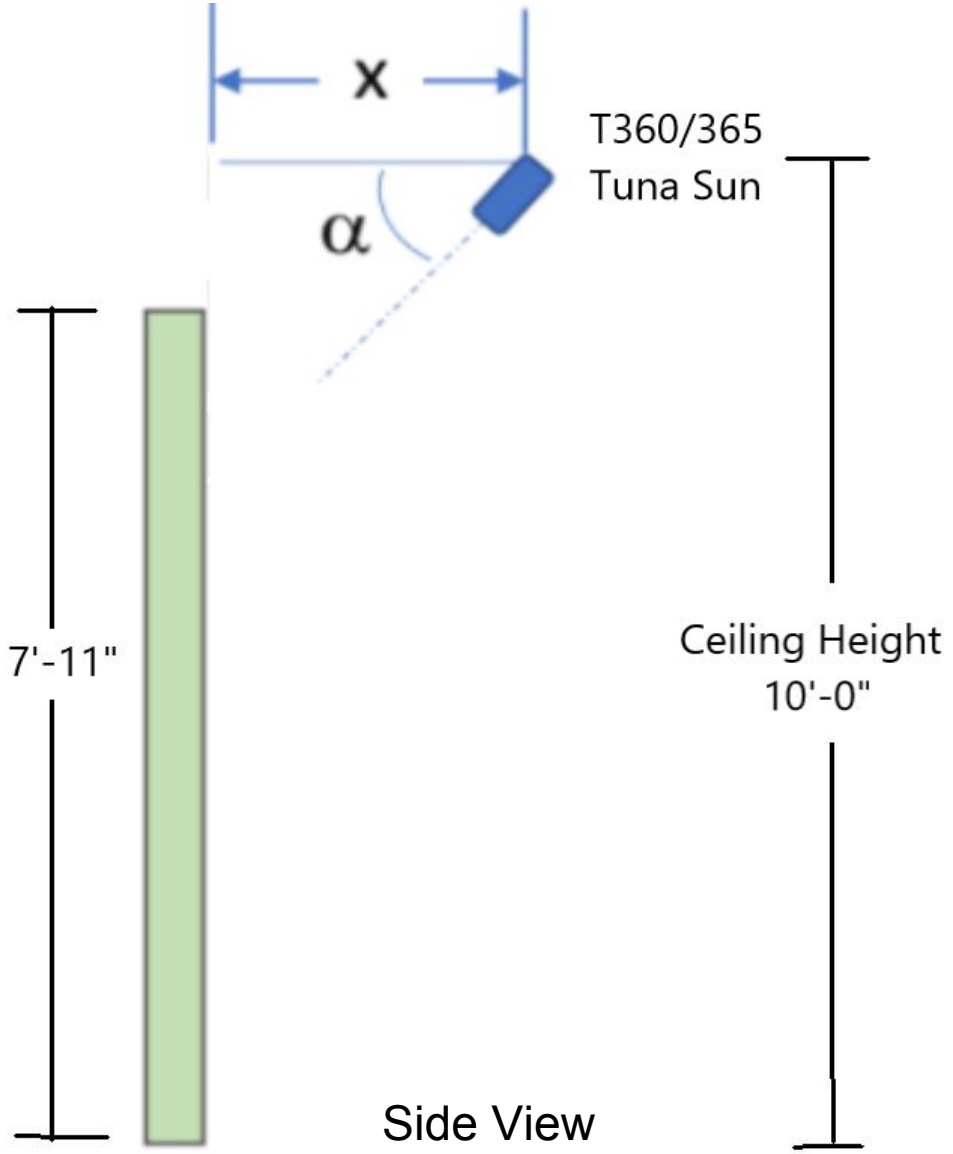
Design Configuration 1 for Room 05K21



Design Configuration 1 for Room 05K21



Side View

Total Verdanta Flourish Dimensions:

10’-5” W x 7’-11” H

Ceiling Height:

10’-0”

Purpose:

Maintain tropical foliage plants

Lighting:

Kessil Tuna Sun Track Lights

X = Distance between T360/ T365 TS and Verdanta Flourish

α = Degree of T360/T365 TS

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Layout Summary for Room 05K21

Recommended Layout (Room 05K21)

5 x T360 Tuna Sun on a 10 feet long track are needed for even light distribution across all 3 Verdanta Flourish units. This layout is sufficient for maintaining the plants, keeping them flourish, and also enhancing plants growth.

Our recommended distance from Flourish units is **4 feet** to have the **most even** light distribution, **barndoor** is included in each lamp to block lights from reaching the tables and chairs in the room. If this is still a concern, 3 feet away is the alternative.

- Track is 4'-0" away from the face of the plants, **mounted on ceiling**
- **All 5** lamps 60° angling downwards
- Barndoor should be used so that the bottom leaf of barndoor can block lights from reaching the tables and chairs right under the track lights

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Recommended Layout - Room 05K21

5 x T360 @ 9,000K
2 feet apart from each lamp

Maximum footcandle:
~ 230 fc ;

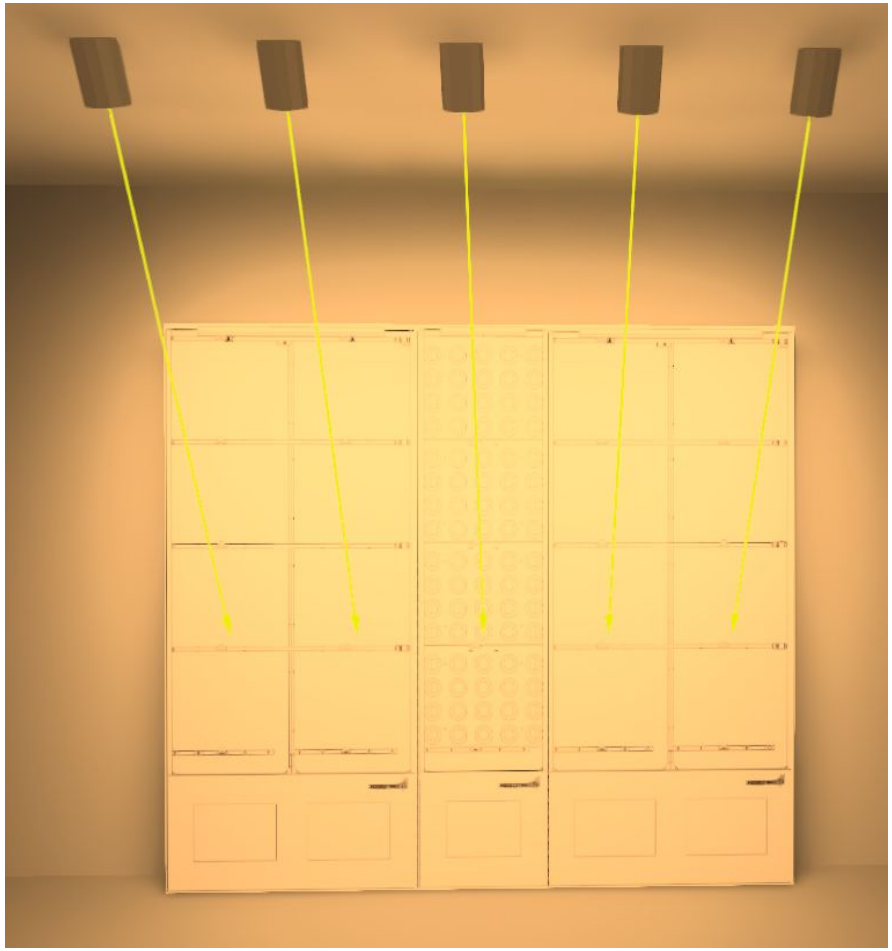
Average footcandle:
~ 155 fc

Min/Average:
~ 0.47

Parameter

X = 4'-0"
Ceiling Height = 10'-0"

All lamps α = 60°



Front View

DiCon Lighting

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Recommended Layout - Room 05K21

5 x T360 @ 9,000K
2 feet apart from each lamp

Maximum footcandle:
~ 230 fc ;

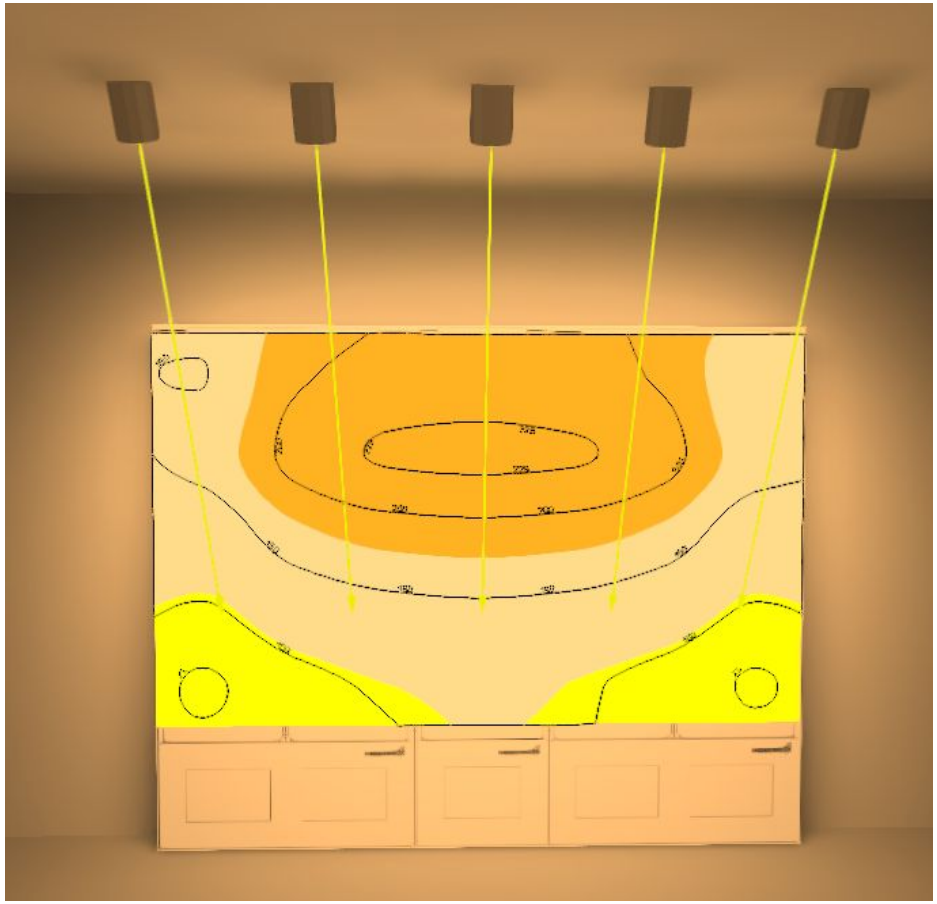
Average footcandle:
~ 155 fc

Min/Average:
~ 0.47

Parameter

X = 4'-0"
Ceiling Height = 10'-0"

All lamps α = 60°



Front View

DiCon Lighting

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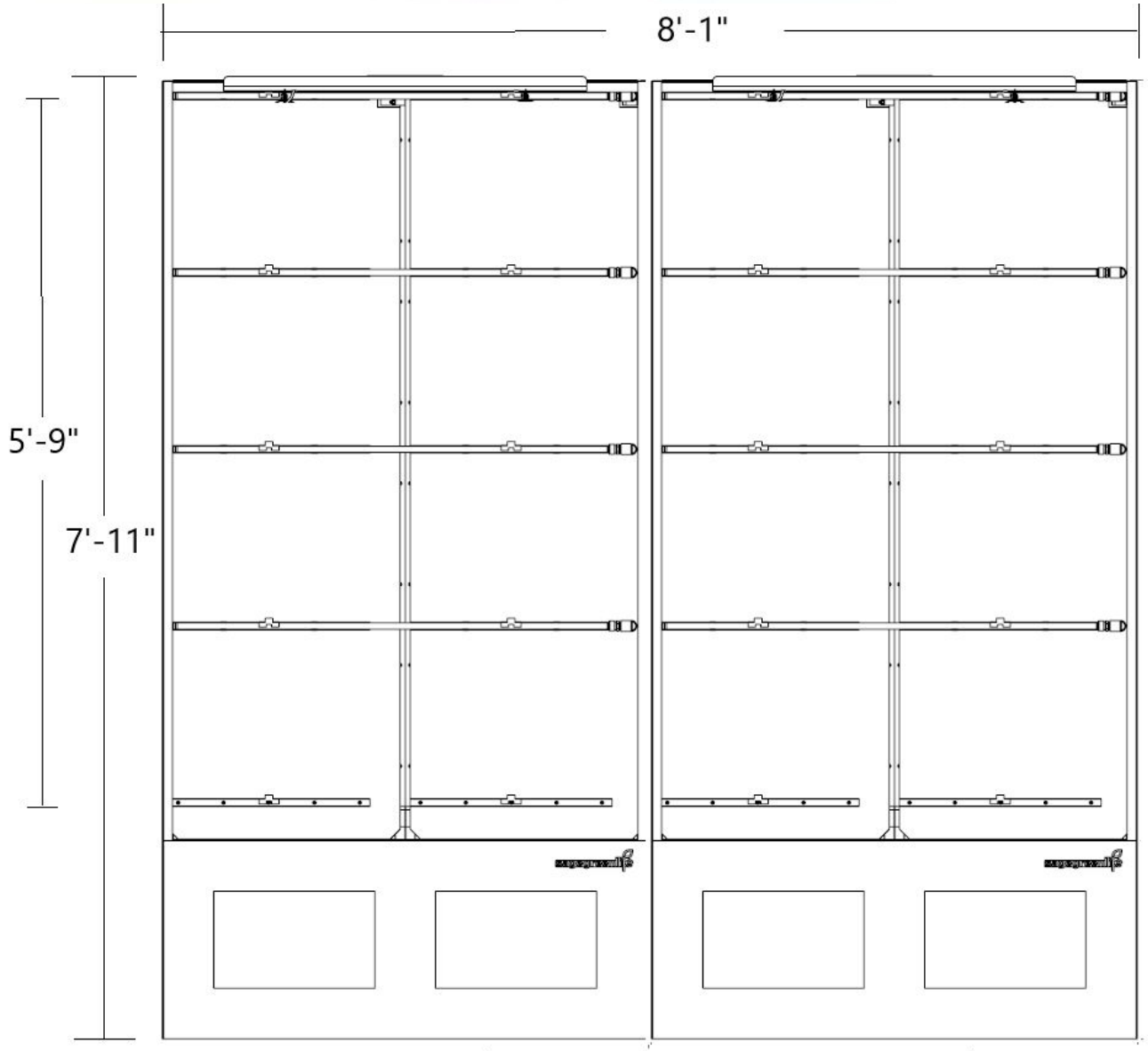
Design Configuration 2 for Room 06L21



DiCon Lighting

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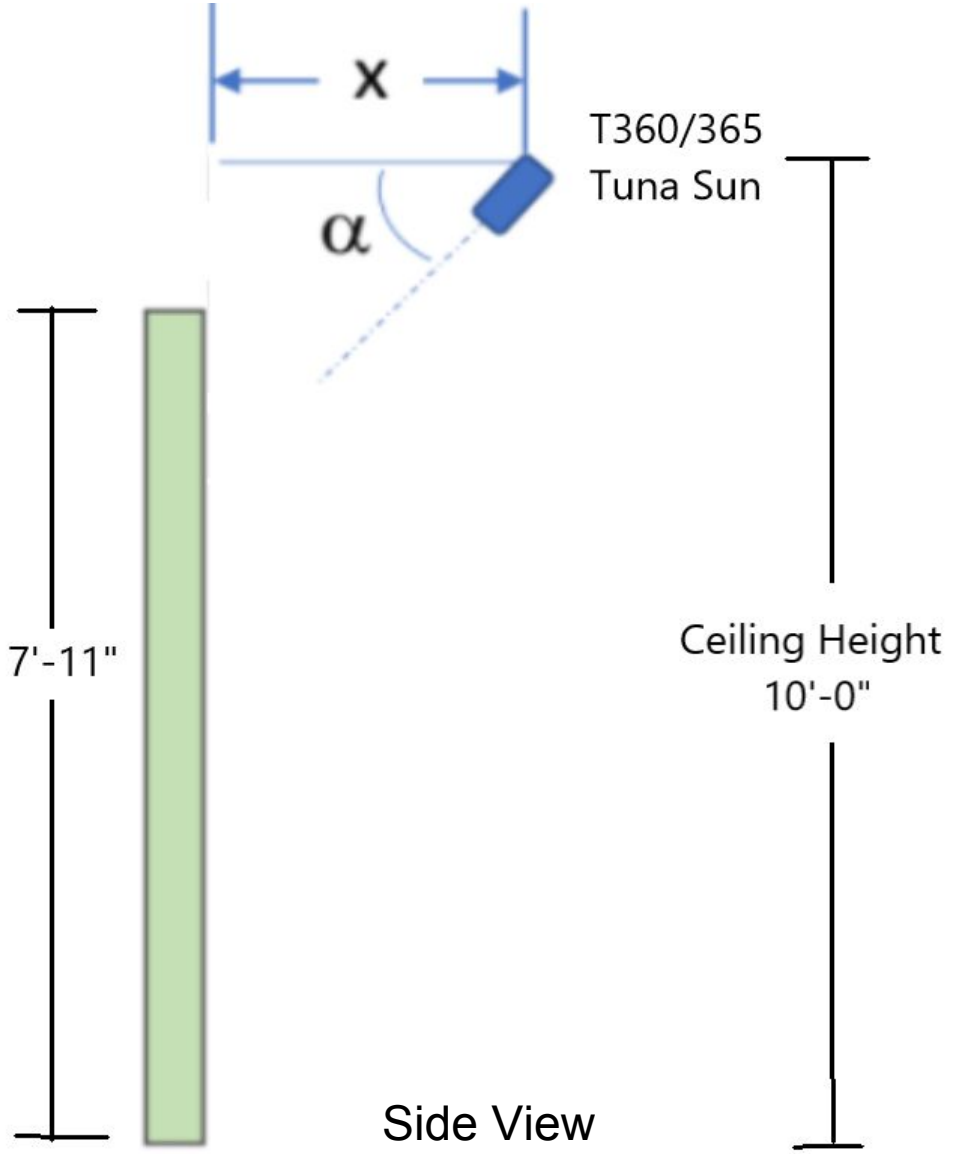
Design Configuration 2 for Room 06L21



Side View

Total Verdanta Flourish Dimensions:

8’-4” W x 7’-11” H

Ceiling Height:

10’-0”

Purpose:

Maintain tropical foliage plants

Lighting:

Kessil Tuna Sun Track Lights

X = Distance between T360/ T365 TS and Verdanta Flourish

α = Degree of T360/T365 TS

DiCon Lighting

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Layout Summary for Room 06L21

Recommended Layout (Room 06L21)

4 x T360 Tuna Sun on a 8 feet long track are needed for even light distribution across 2 Verdanta Flourish units. This layout is sufficient for maintaining the plants, keeping them flourish, and also enhancing plants growth.

Our recommended distance from Flourish units is **4 feet** to have the **most even** light distribution, **barndoor** is included in each lamp to block lights from reaching the tables and chairs in the room. If this is still a concern, 3 feet away is the alternative.

- Track is 4’-0” away from the face of the plants, **mounted on ceiling**
- **All 5** lamps 60° angling downwards
- Barndoor should be used so that the bottom leaf of barndoor can block lights from reaching the tables and chairs right under the track lights

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Recommended Layout - Room 06L21

4 x T360 @ 9,000K
2 feet apart from each lamp

Maximum footcandle:
~ 221 fc ;

Average footcandle:
~ 146 fc

Min/Average:
~ 0.47

Parameter

X = 4’-0”
Ceiling Height = 10’-0”

All lamps α = 60°

Front View

DiCon Lighting

Kessil

Recommended Layout - Room 06L21

4 x T360 @ 9,000K
2 feet apart from each lamp

Maximum footcandle:
~ 221 fc ;

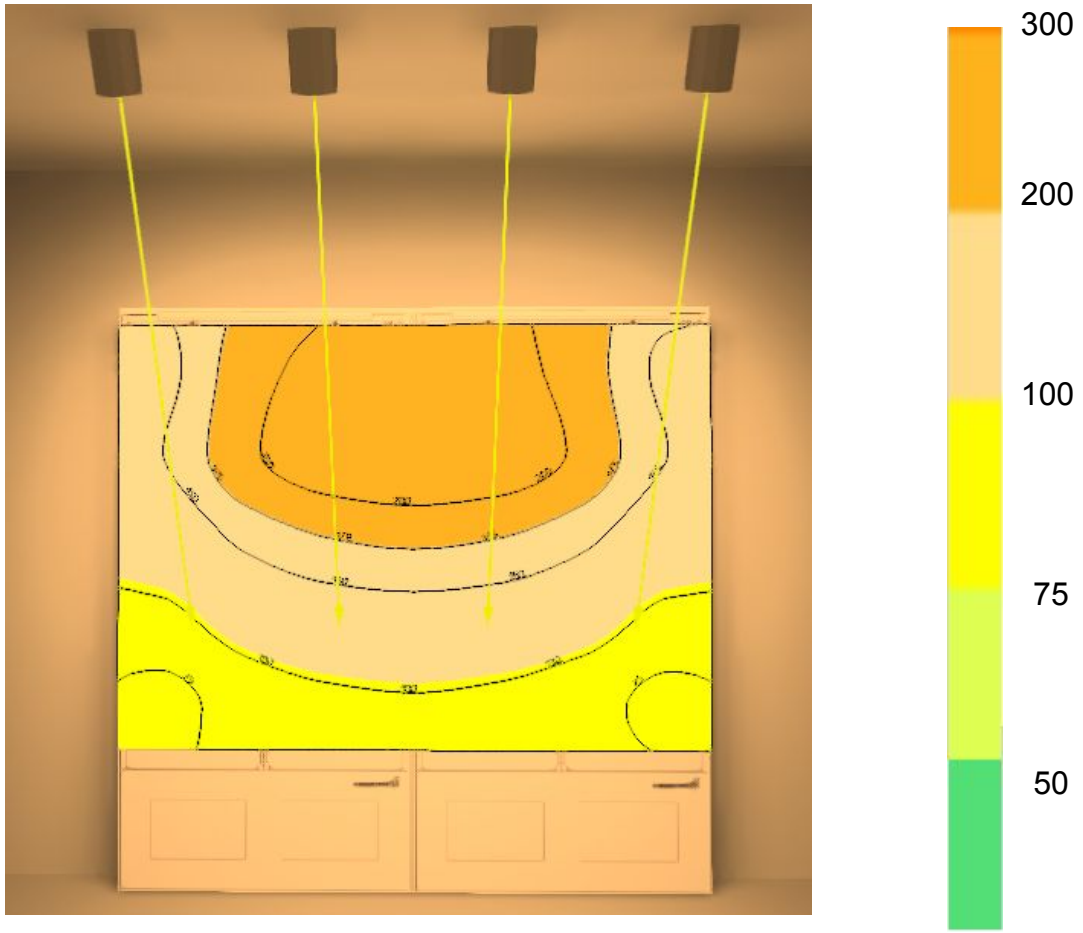
Average footcandle:
~ 146 fc

Min/Average:
~ 0.47

Parameter

X = 4'-0"
Ceiling Height = 10'-0"

All lamps α = 60°



Front View

DiCon Lighting

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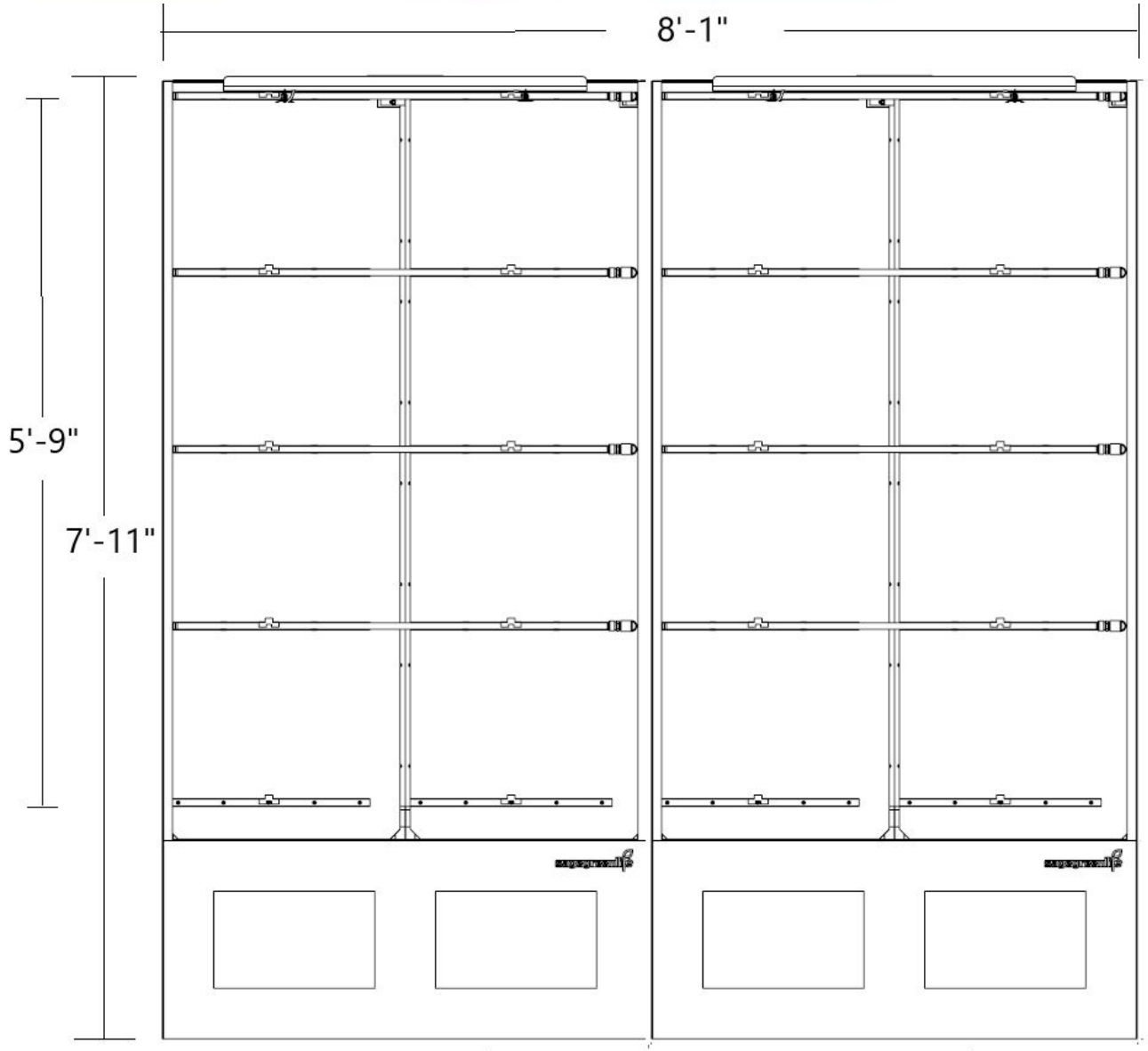
Design Configuration 3 for Room 08L21 (same as Room 06K21)



DiCon Lighting

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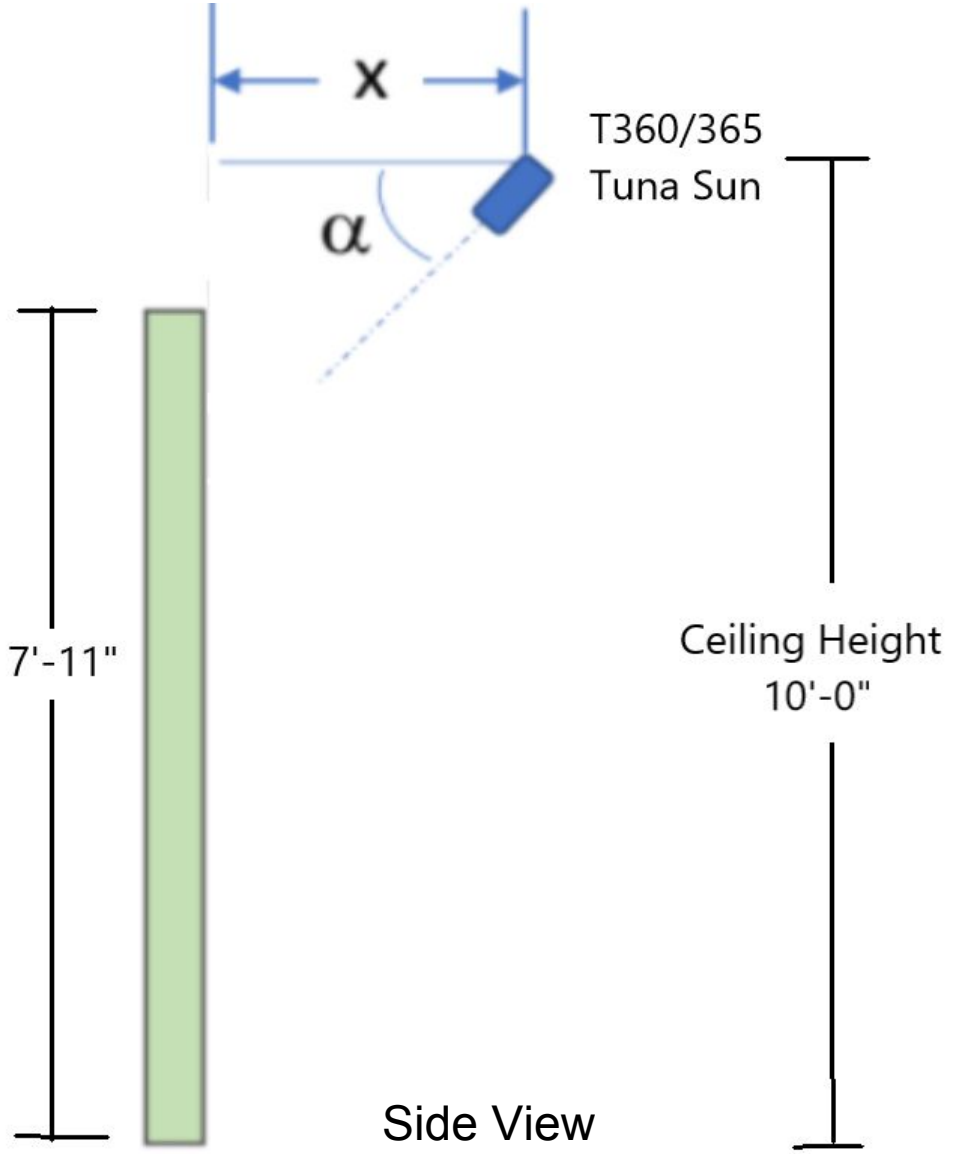
Design Configuration 3 for Room 08L21 (same as Room 06K21)



Side View

Total Verdanta Flourish Dimensions:

8’-4” W x 7’-11” H

Ceiling Height:

10’-0”

Purpose:

Maintain tropical foliage plants

Lighting:

Kessil Tuna Sun Track Lights

X = Distance between T360/ T365 TS and Verdanta Flourish

α = Degree of T360/T365 TS

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Layout Summary for Room 08L21 (same as Room 06K21)

Recommended Layout (Room 08L21)

4 x T360 Tuna Sun on a 8 feet long track are needed for even light distribution across 2 Verdanta Flourish units. This layout is sufficient for maintaining the plants, keeping them flourish, and also enhancing plants growth.

Our recommended distance from Flourish units is **4 feet** to have the **most even** light distribution, **barndoor** is included in each lamp to block lights from reaching the tables and chairs in the room. If this is still a concern, 3 feet away is the alternative.

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DiCon Lighting

Kessil

Recommended Layout - Room 08L21 (same as Room 06K21)

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2 feet apart from each lamp

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~ 146 fc

Min/Average:
~ 0.47

Parameter

X = 4'-0"
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Front View

DiCon Lighting

Kessil

Recommended Layout - Room 08L21 (same as Room 06K21)

4 x T360 @ 9,000K
2 feet apart from each lamp

Maximum footcandle:
~ 221 fc ;

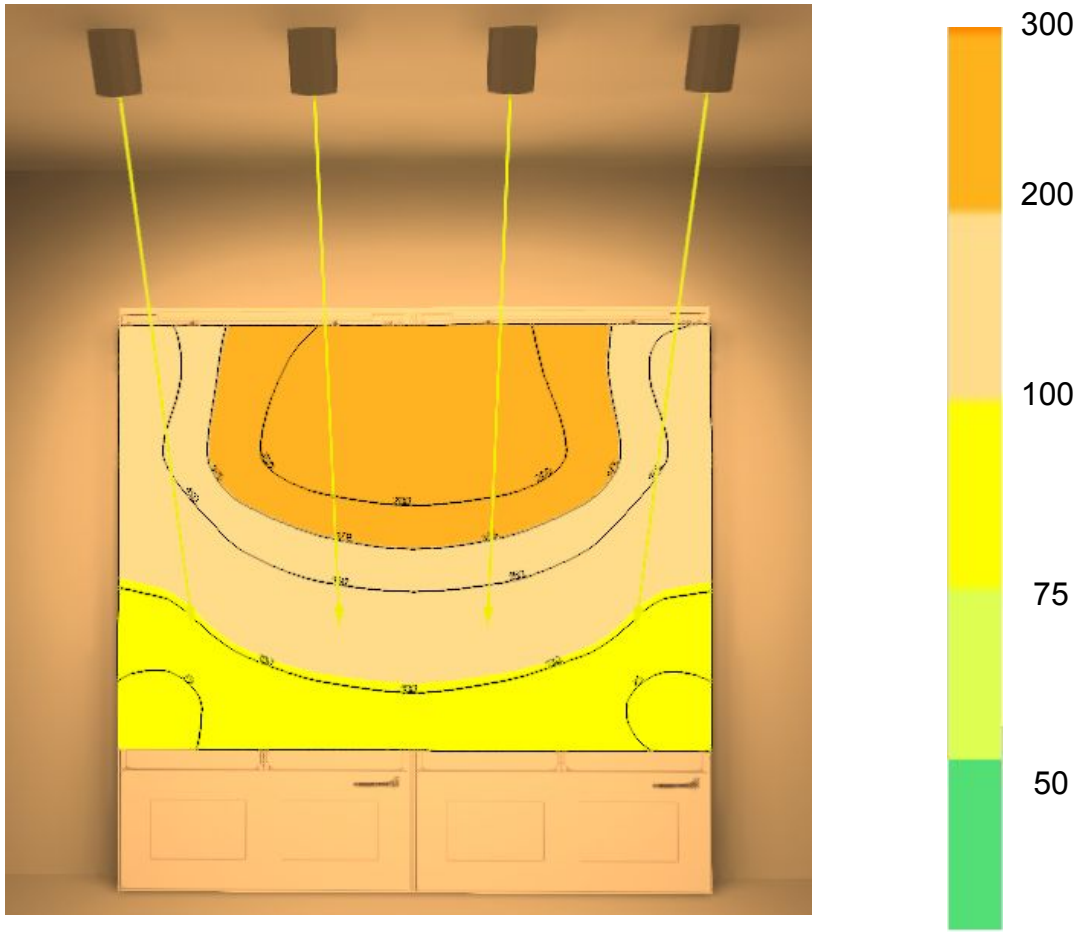
Average footcandle:
~ 146 fc

Min/Average:
~ 0.47

Parameter

X = 4'-0"
Ceiling Height = 10'-0"

All lamps α = 60°



Front View

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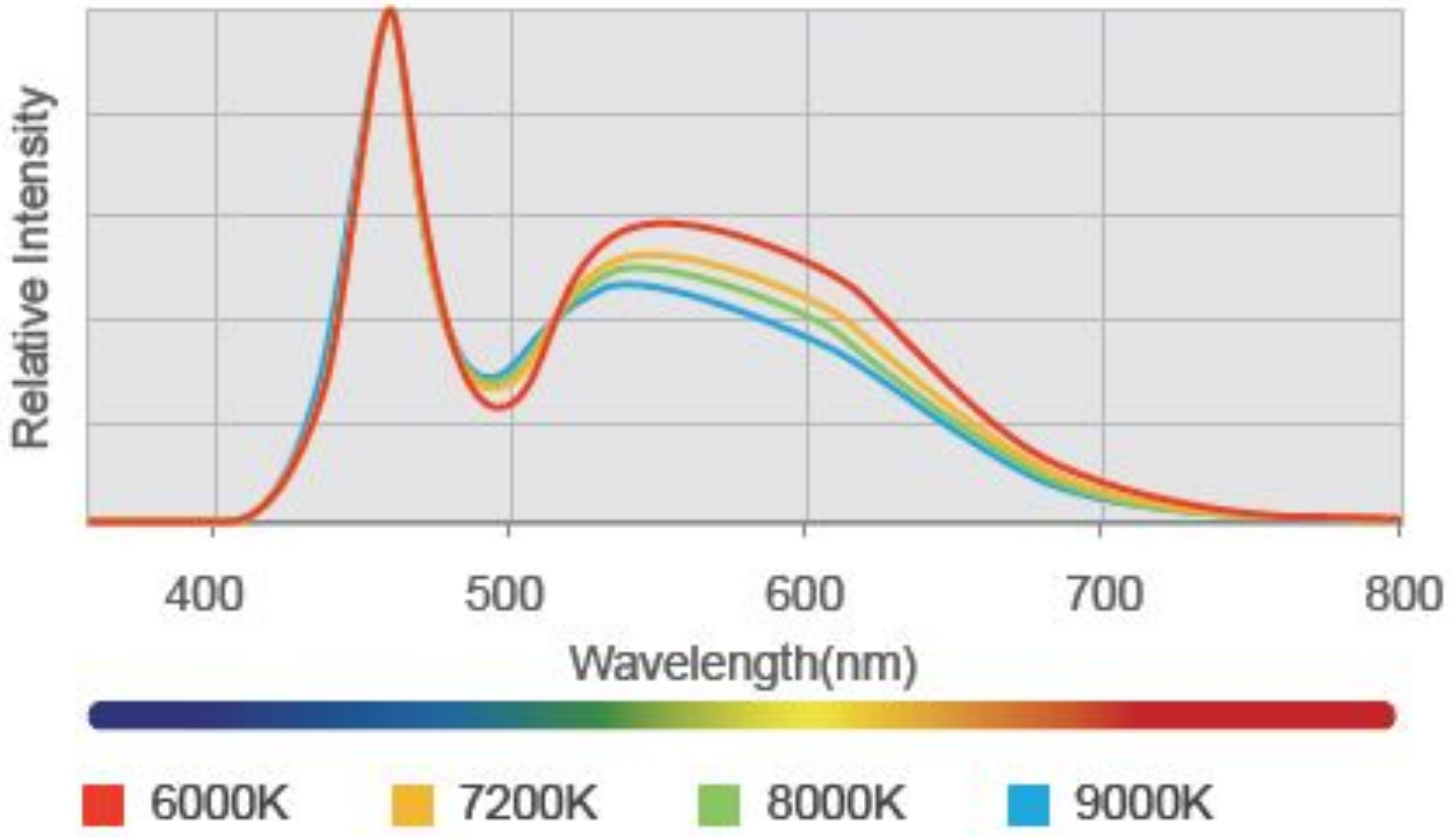
Spectrums

KESSIL T360 Tuna Sun



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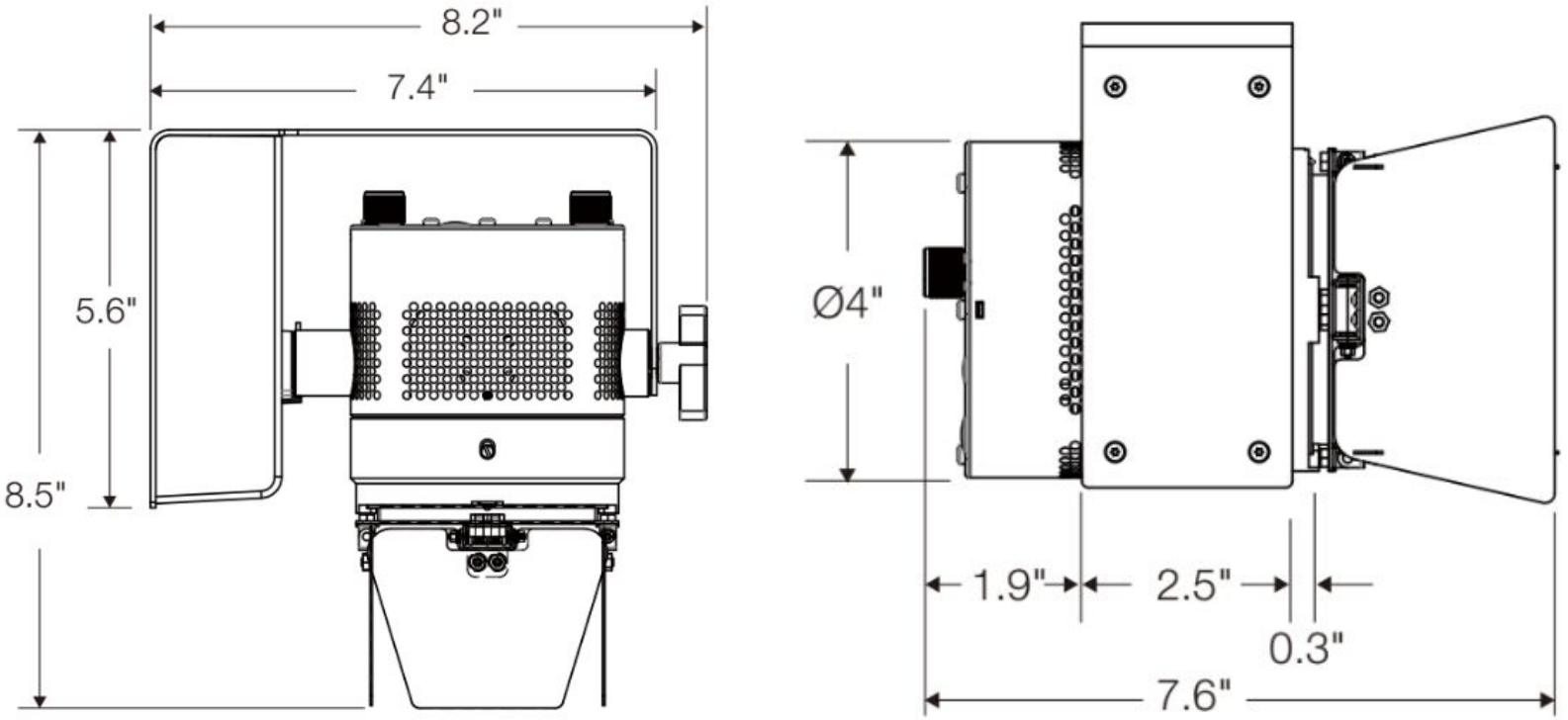
Dimensions & Weight

KESSIL T360 Tuna Sun



Weight: 2.98 lb / 1.35 kg

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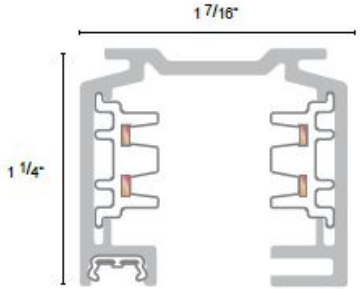
Track System

Custom Lengths

Available in lengths of 4FT, 8FT, and 12FT lengths that can be field cut to the desired length.

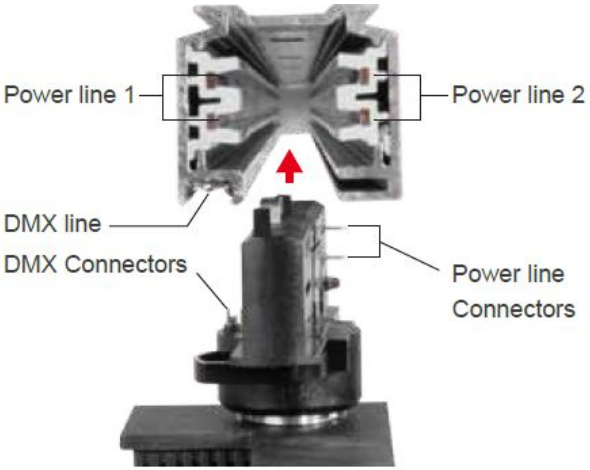


Data Bus Ready

Built in nickel plated Data Bus supports up to 30 devices per system.

Mounting Points

Pre-drilled ¼" (6mm) x 1" (25mm) slots spaced every 8" (203mm) for easy surface mounting.



The Track System Kessil offers is an architectural grade surface mounted track consisting of seven conductors allowing for two unique power circuits. Each track features a 22 gauge nickel plated copper Data Bus providing **DMX control signals** to any connected fixture along the track.

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Bill Of Material - Total (Room 05K21, Room 06L21, and Room 08L21)

Description	Qty.	
Kessil T360 Tuna Sun Track Light	13	Reference Pricing will be sent separately to General Contractor and Electrician
120V Track 8FT (1 of the 3 tracks combines with 4FT track for Room 05K21)	3	
120V Track 4FT (combines with 8FT track for Room 05K21)	1	
120V Track Endcap	3	
Straight Coupler (for Room 05K21)	1	
DMX Terminator [optional if you do not need DMX control]	[5]	
Track Powerfeed w/ Data - Right	3	

Note: The whole system can be in **BLACK** or **WHITE** color

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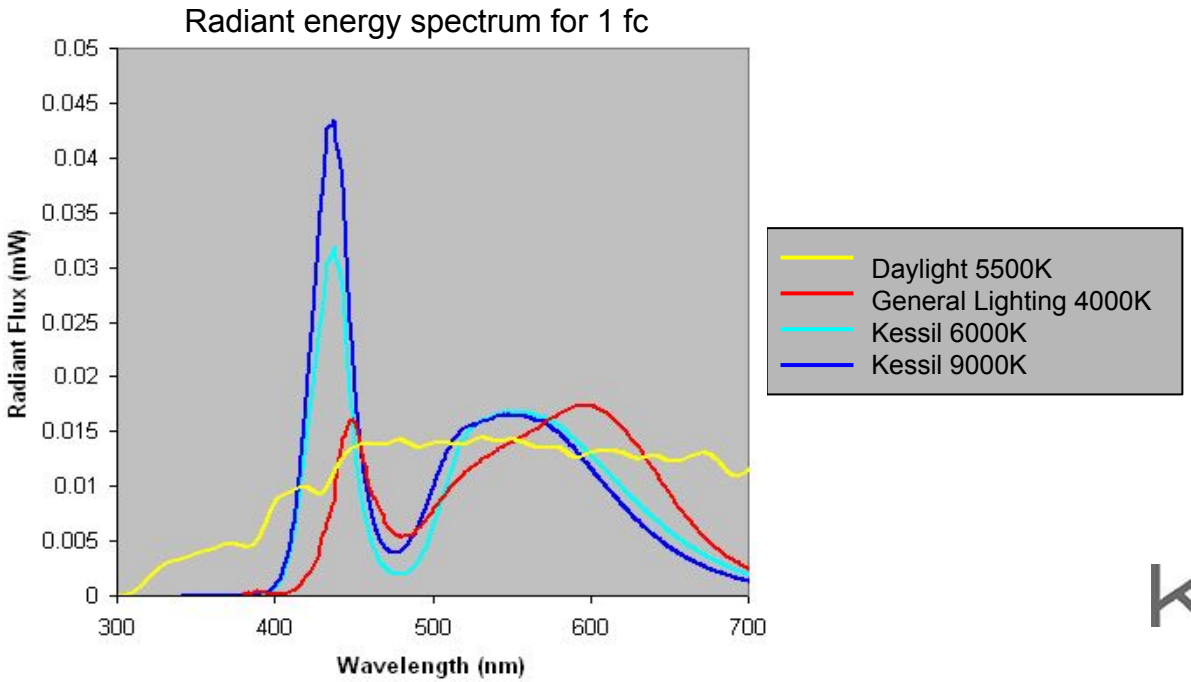
Appendix - The Kessil Advantage

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



DiCon Lighting

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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. The photometrics provided in this presentation is only for reference.

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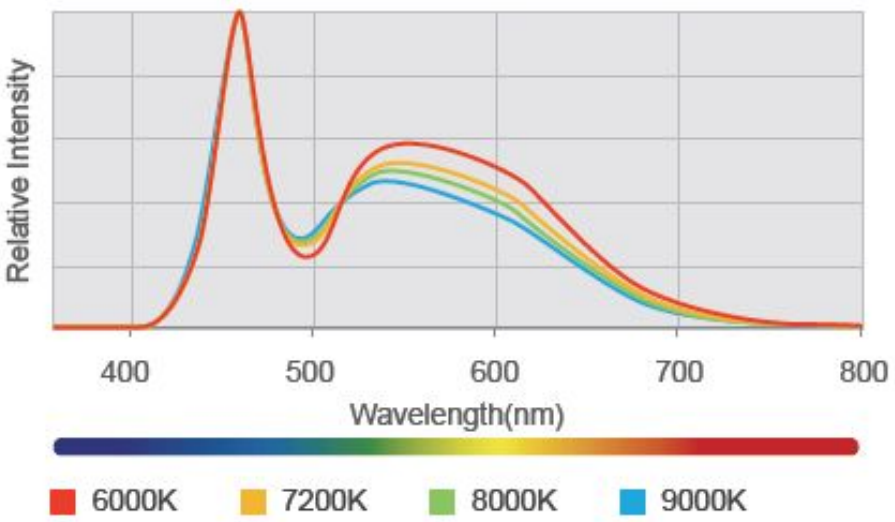
Appendix - The Kessil Advantage

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.

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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.

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