

Vertical Farming Lighting Designs



www.thriveagritech.com

info@thriveagritech.com

800-205-7216

Vertical Farming Lighting Designs

Overview

This guide describes lighting designs for vertical farming of microgreens, lettuces, herbs, and fruits & vegetables using Thrive Agritech's Strata and Infinity XE LED lights. Product specifications and applications are shown in the table below.

	STRATA	INFINITY XE
		
Input Power	30 Watts	60 Watts
Input Voltage	110-277V	110-277V
Light Output	up to 105 umols/sec	168 umols/sec
Efficiency	up to 3.5 umols/j	2.8 umols/joule
Dimensions	47.2" x 0.9" x 1.1"	44.9" x 3.1" x 2.2"
Driver	External	Internal
Weight	1 lb.	3.8 lbs.
Dimming	Yes	Yes
IP66	Yes	Yes
UL / DLC Listed	Yes	Yes
Warranty	5 Years	5 Years

	Light Intensity (ppfd)									
	150	200	250	300	350	400	450	500	550	600
Microgreens, Leafy Greens, Herbs	30W STRATA									
Vegetables, Fruits, Herbs				60W INFINITY XE						

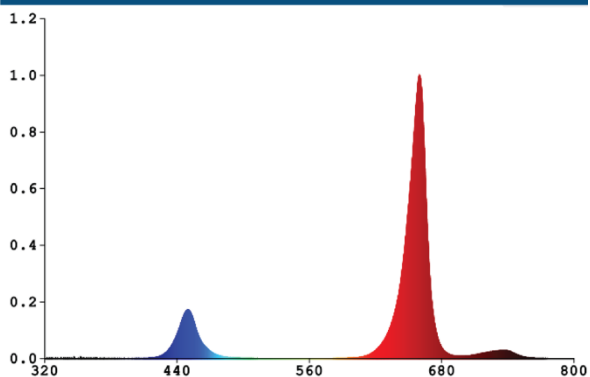
Design Summary

Choosing a lighting design:

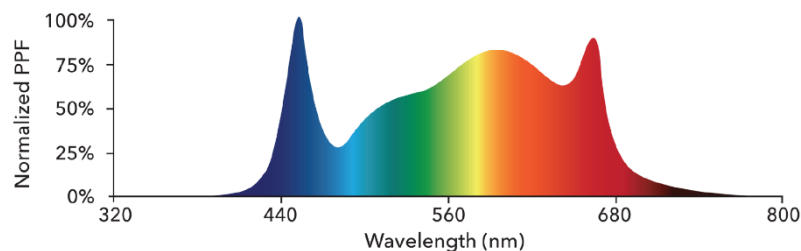
- 1) Select desired light intensity (ppfd) and spectrum.
- 2) Review detailed lighting designs on the page numbers listed in the right-hand columns.

<i>Product</i>	<i>Spectrum</i>	<i>PPFD ($\mu\text{mol}/\text{m}^2/\text{sec}$)</i>	<i>Mounting Height</i>	<i>Number of Lights (4'x8' canopy)</i>	<i>Page #</i>
Strata	BRFR (Blue, Red, Far Red)	175	14"	6	3
		200	12"	7	4
		250	9"	8	5
		300	8"	9	6
		325	8"	10	7
		350	7"	11	8
		400	6"	12	9
	White	150	13"	6	10
		175	11"	7	11
		200	9"	8	12
		225	9"	9	13
		250	8"	10	14
		280	7"	11	15
		320	6"	12	16
Infinity XE	White	300	12"	6	17
		360	10"	7	18
		400	9"	8	19
		475	8"	9	20
		550	7"	10	21
		600	7"	11	22

SPECTRUM: Blue, Red, Far Red



SPECTRUM: White

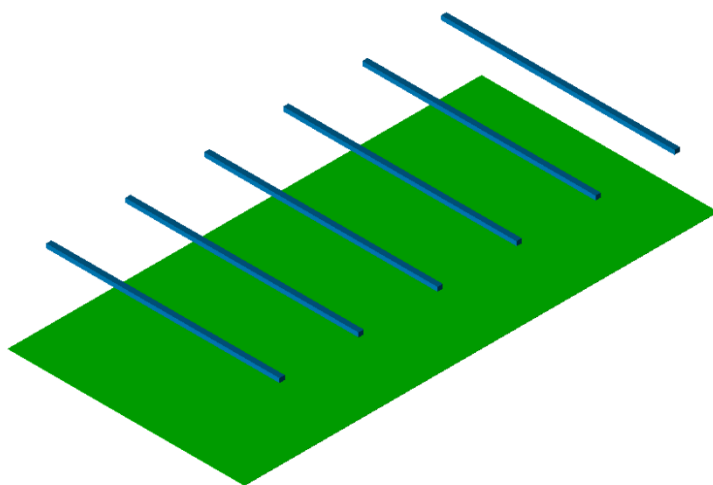


175 ppfd
Strata with BRFR Spectrum

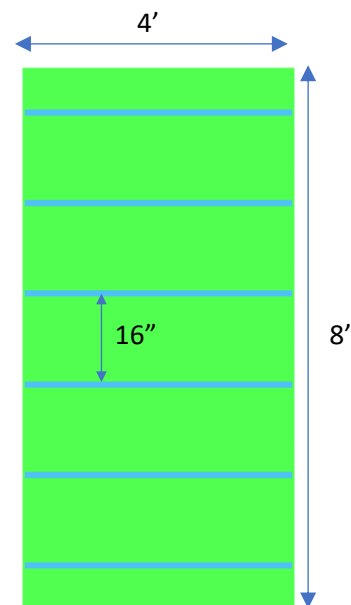
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 6
- Mounting Height: 14" above the canopy
- Light Bar Spacing: 16"

Isometric View



Top Down View

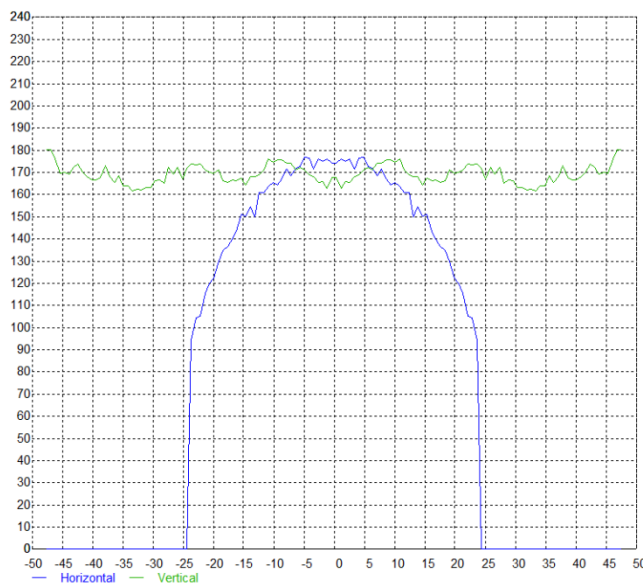
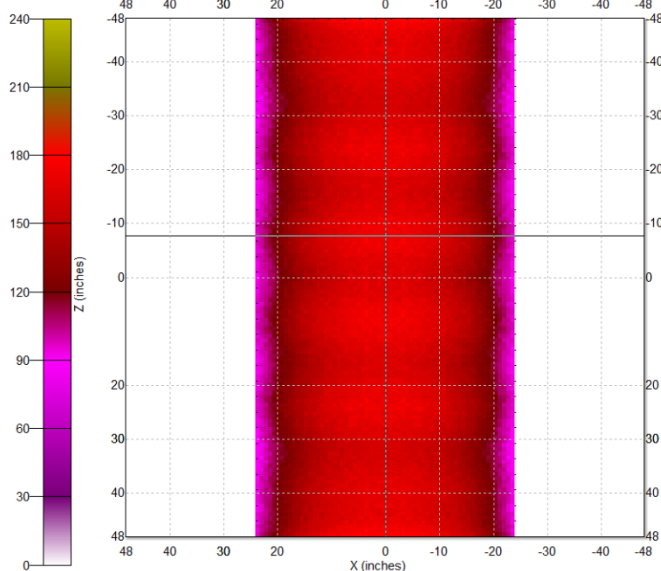


Light Intensity Map on 4' x 8' Canopy

PPFD = 175 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 9 mols with 14-hr photoperiod, DLI = 11 mols with 18-hr photoperiod, DLI = 12.5 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

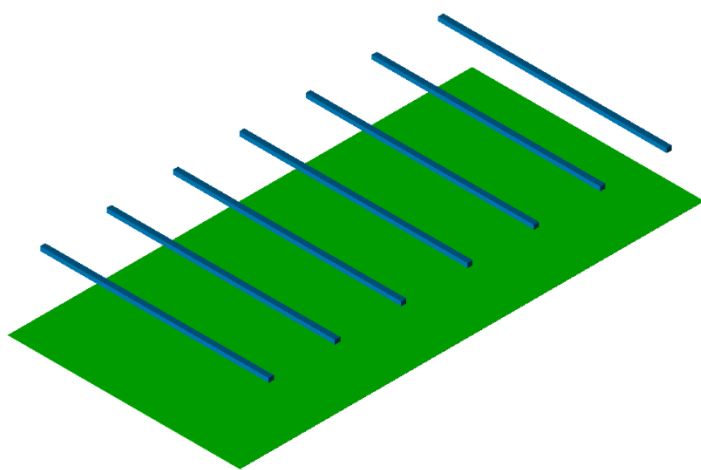
800-205-7216

200 ppfd
Strata with BRFR Spectrum

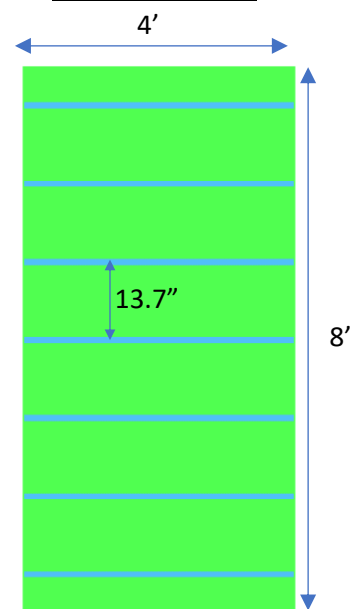
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 7
- Mounting Height: 12" above the canopy
- Light Bar Spacing: 13.7"

Isometric View



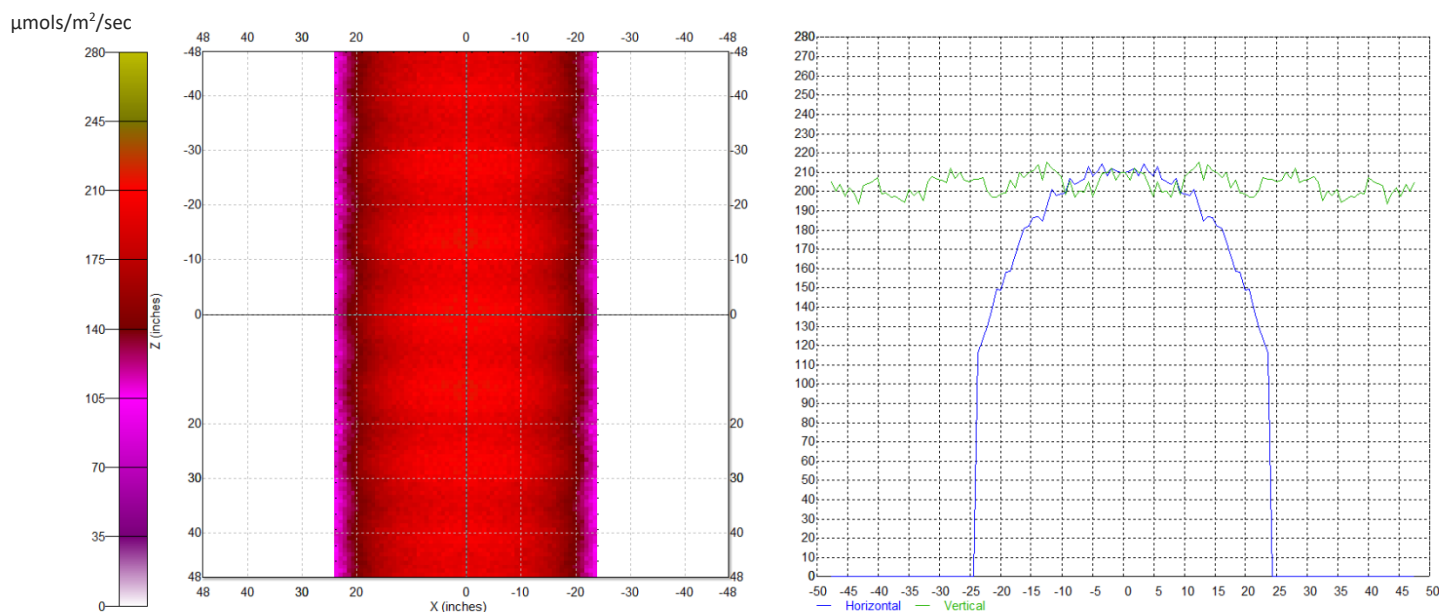
Top Down View



Light Intensity Map on 4' x 8' Canopy

PPFD = 200 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 10 mols with 14-hr photoperiod, DLI = 13 mols with 18-hr photoperiod, DLI = 14.5 mols with 20-hr photoperiod

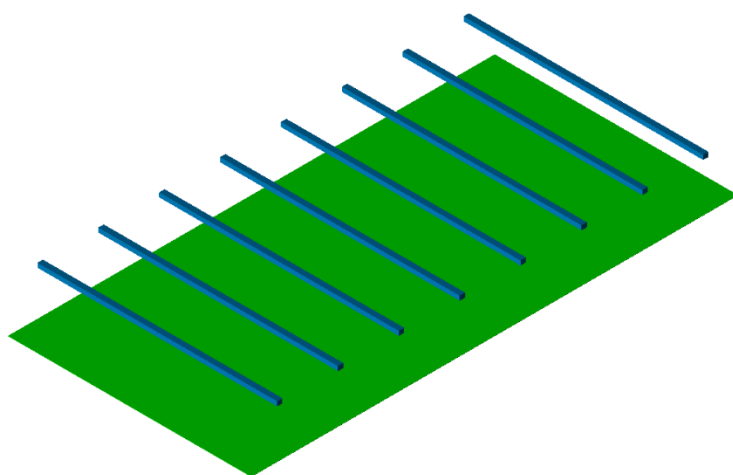


250 ppfd Strata with BRFR Spectrum

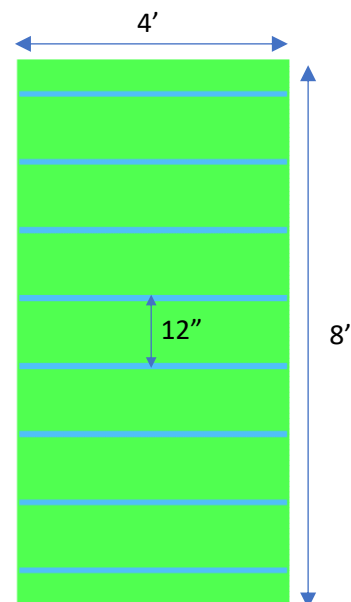
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 8
- Mounting Height: 9" above the canopy
- Light Bar Spacing: 12"

Isometric View



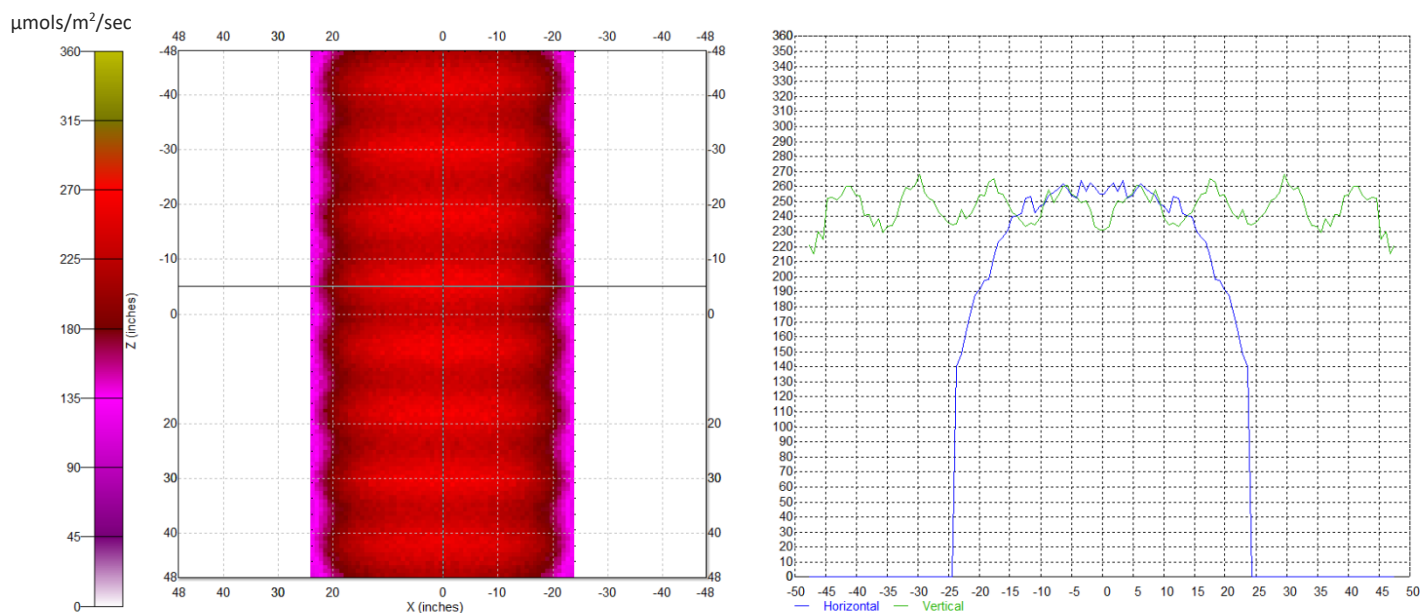
Top Down View



Light Intensity Map on 4' x 8' Canopy

PPFD = 250 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 12.5 mols with 14-hr photoperiod, DLI = 16 mols with 18-hr photoperiod, DLI = 18 mols with 20-hr photoperiod



www.thriveagritech.com

info@thriveagritech.com

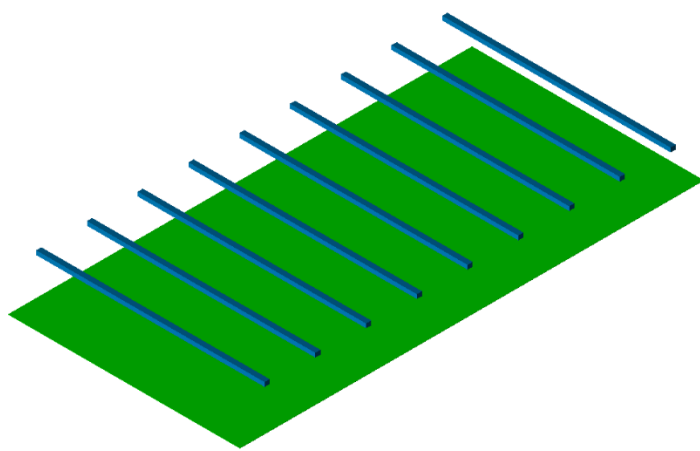
800-205-7216

300 ppfd
Strata with BRFR Spectrum

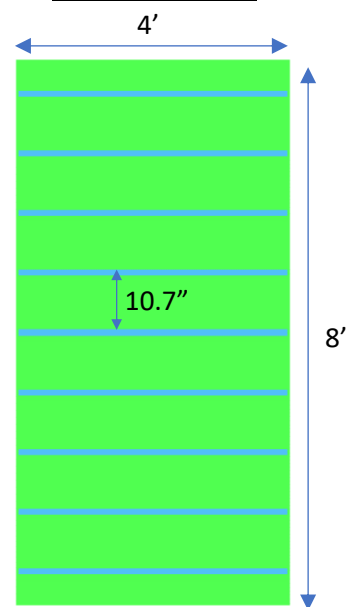
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 9
- Mounting Height: 8" above the canopy
- Light Bar Spacing: 10.7"

Isometric View



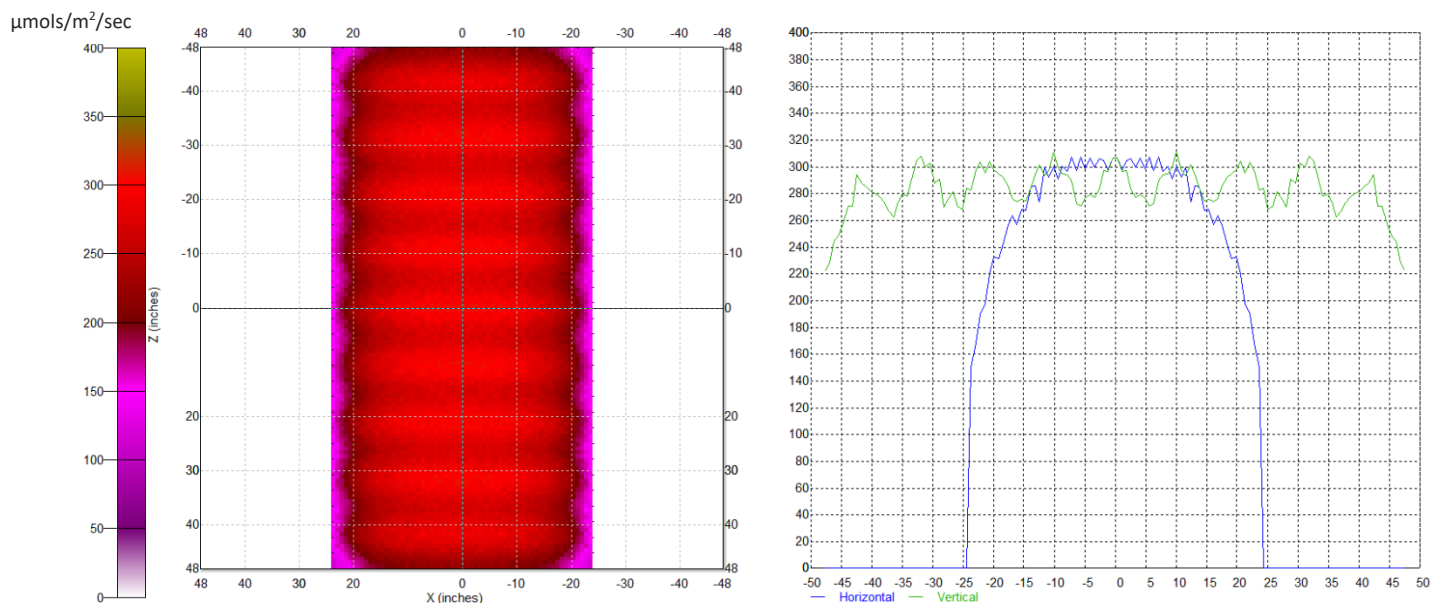
Top Down View



Light Intensity Map on 4' x 8' Canopy

PPFD = 300 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 15 mols with 14-hr photoperiod, DLI = 19.5 mols with 18-hr photoperiod, DLI = 21.5 mols with 20-hr photoperiod

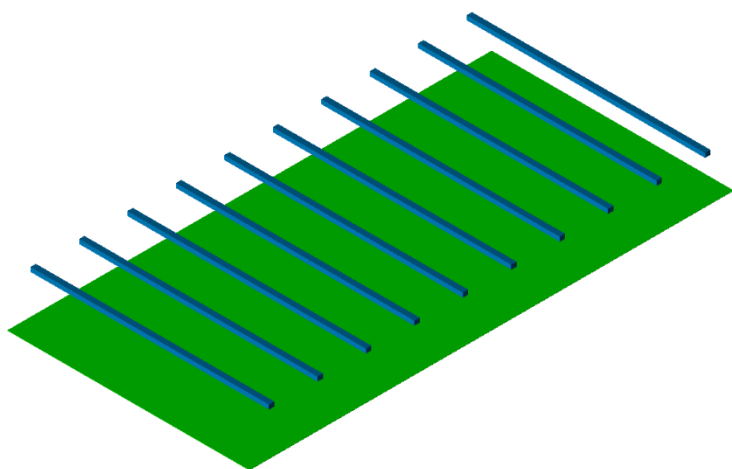


325 ppfd Strata with BRF Spectrum

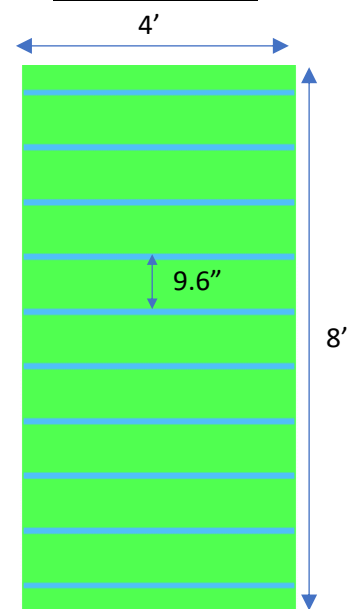
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 10
- Mounting Height: 8" above the canopy
- Light Bar Spacing: 9.6"

Isometric View



Top Down View

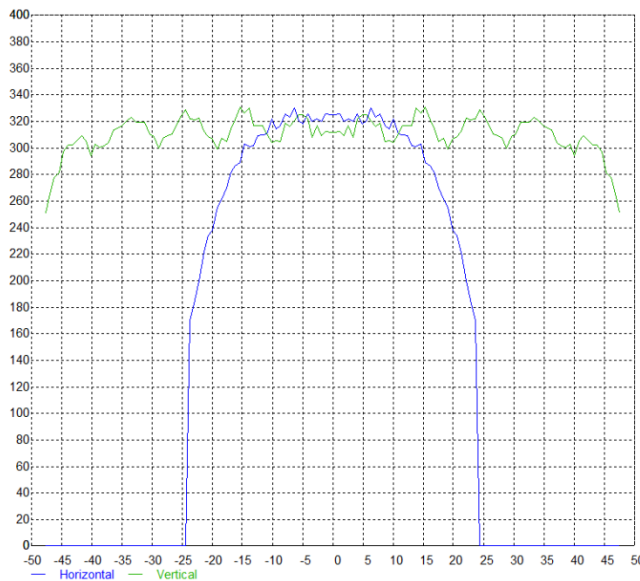
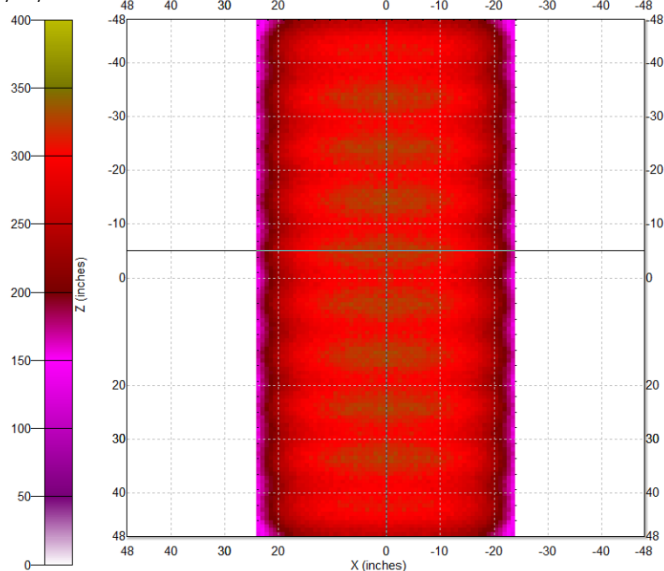


Light Intensity Map on 4' x 8' Canopy

PPFD = 325 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 16 mols with 14-hr photoperiod, DLI = 21 mols with 18-hr photoperiod, DLI = 23 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

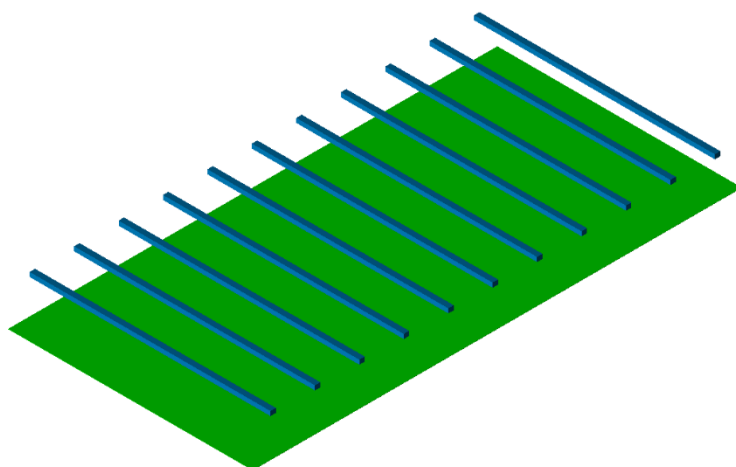
800-205-7216

350 ppfd Strata with BRFR Spectrum

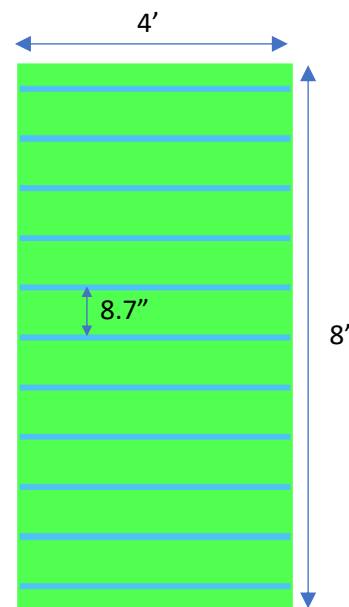
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 11
- Mounting Height: 7" above the canopy
- Light Bar Spacing: 8.7"

Isometric View



Top Down View

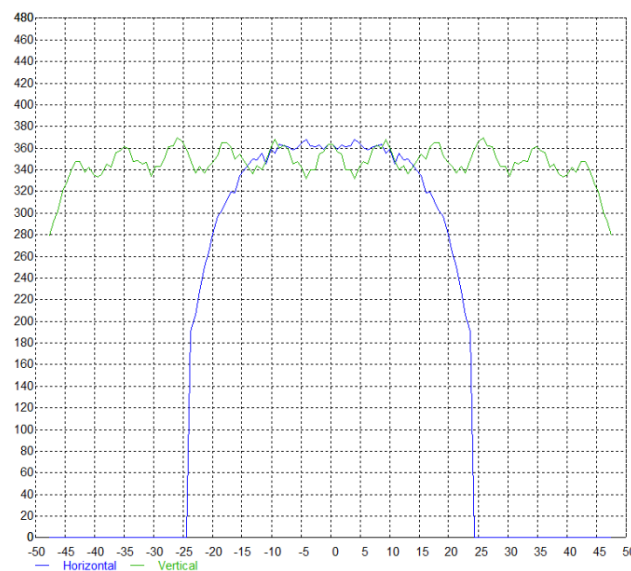
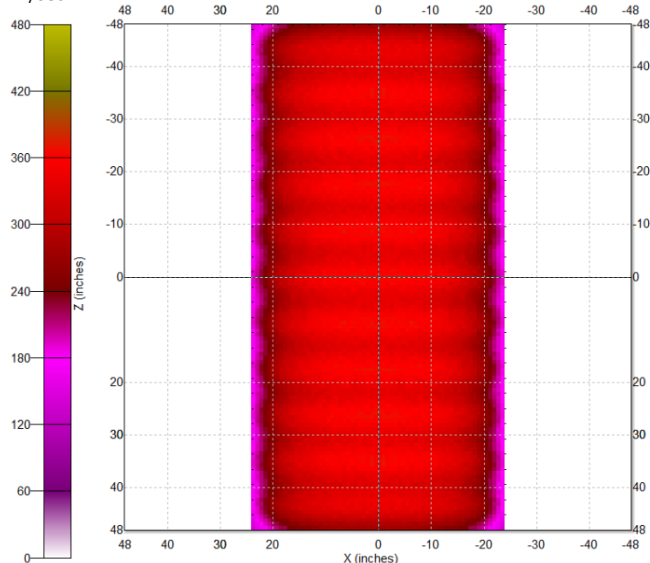


Light Intensity Map on 4' x 8' Canopy

PPFD = 350 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 17.5 mols with 14-hr photoperiod, DLI = 23 mols with 18-hr photoperiod, DLI = 25 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

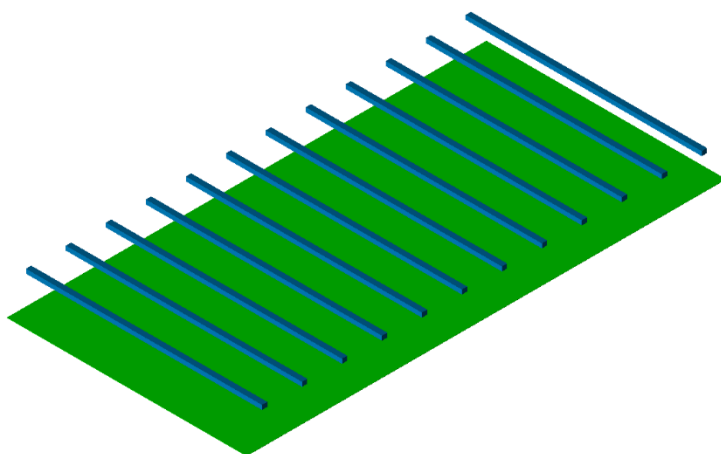
800-205-7216

400 ppfd
Strata with BRFR Spectrum

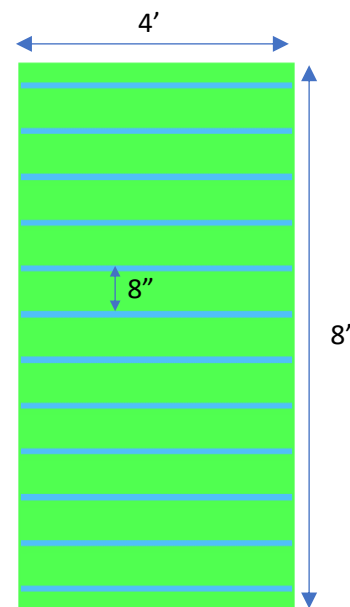
Lighting Design

- Number of Strata LED lights with Blue, Red, Far Red Spectrum: 12
- Mounting Height: 6" above the canopy
- Light Bar Spacing: 8"

Isometric View



Top Down View

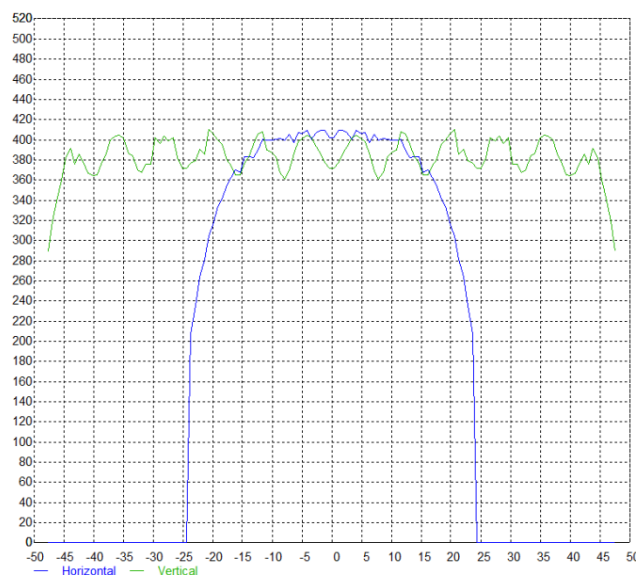
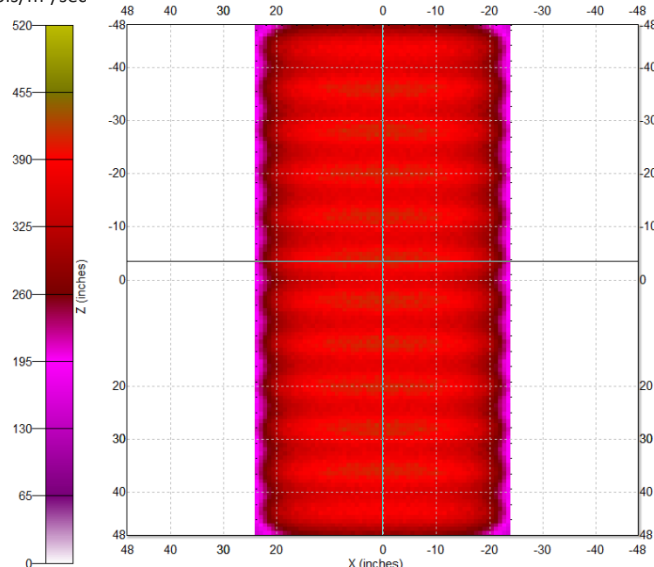


Light Intensity Map on 4' x 8' Canopy

PPFD = 400 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 20 mols with 14-hr photoperiod, DLI = 26 mols with 18-hr photoperiod, DLI = 29 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

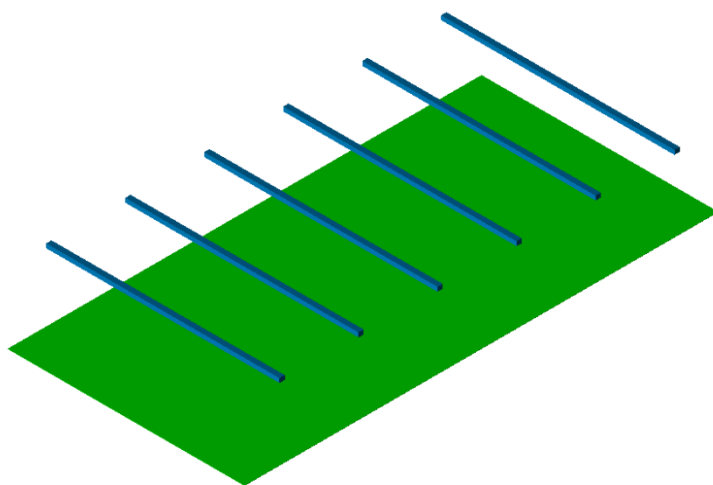
800-205-7216

150 ppfd
Strata with White Spectrum

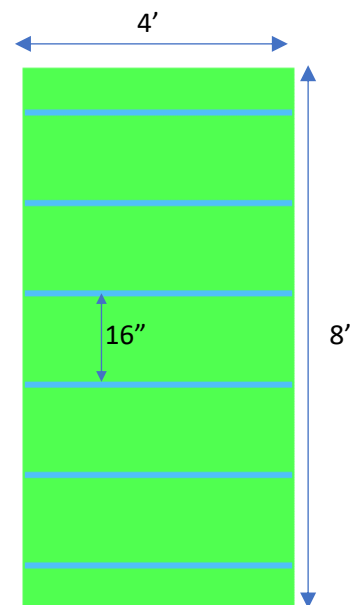
Lighting Design

- Number of Strata LED lights with White Spectrum: 6
- Mounting Height: 13" above the canopy
- Light Bar Spacing: 16"

Isometric View



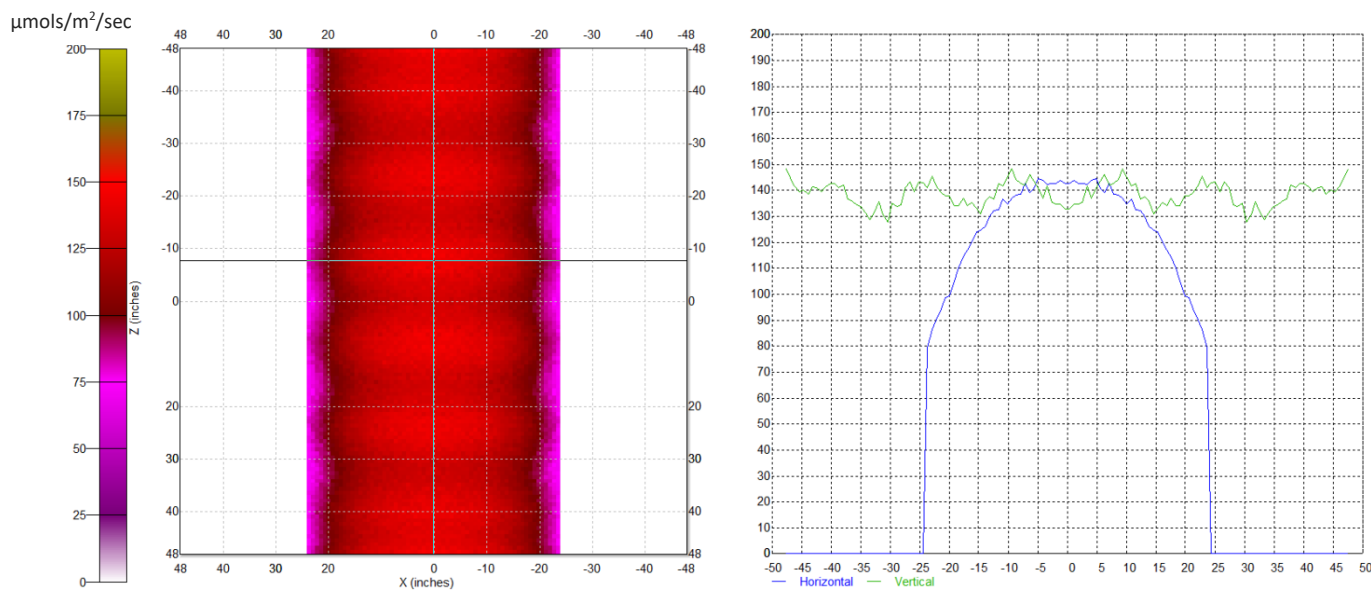
Top Down View



Light Intensity Map on 4' x 8' Canopy

PPFD = 150 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 7.5 mols with 14-hr photoperiod, DLI = 10 mols with 18-hr photoperiod, DLI = 11 mols with 20-hr photoperiod

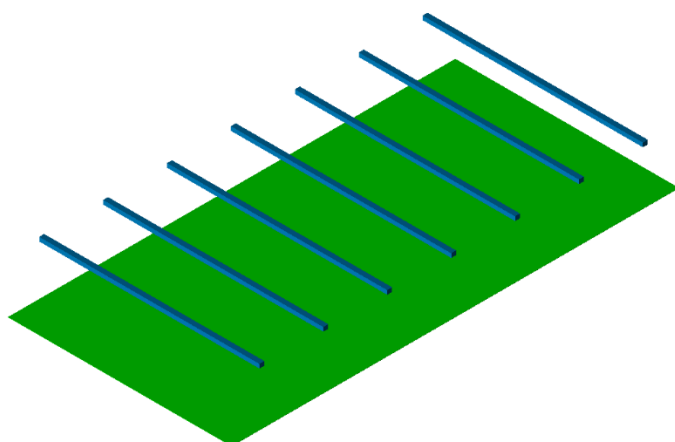


175 ppfd
Strata with White Spectrum

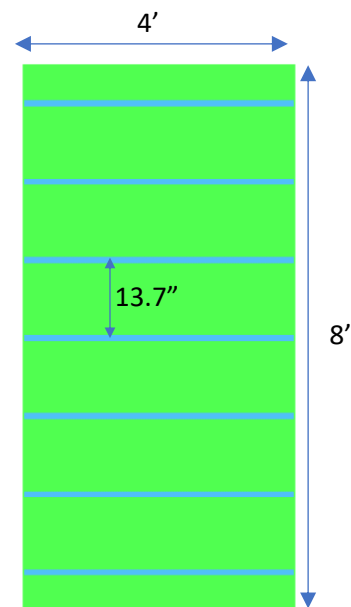
Lighting Design

- Number of Strata LED lights with White Spectrum: 7
- Mounting Height: 11" above the canopy
- Light Bar Spacing: 13.7"

Isometric View



Top Down View

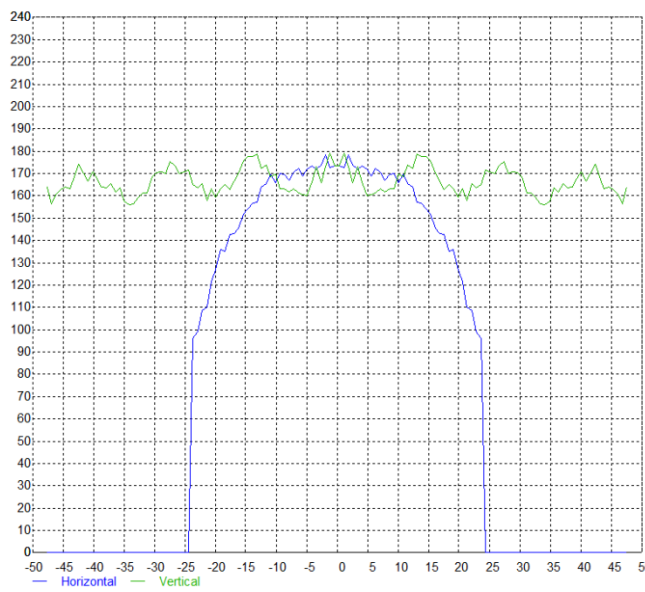
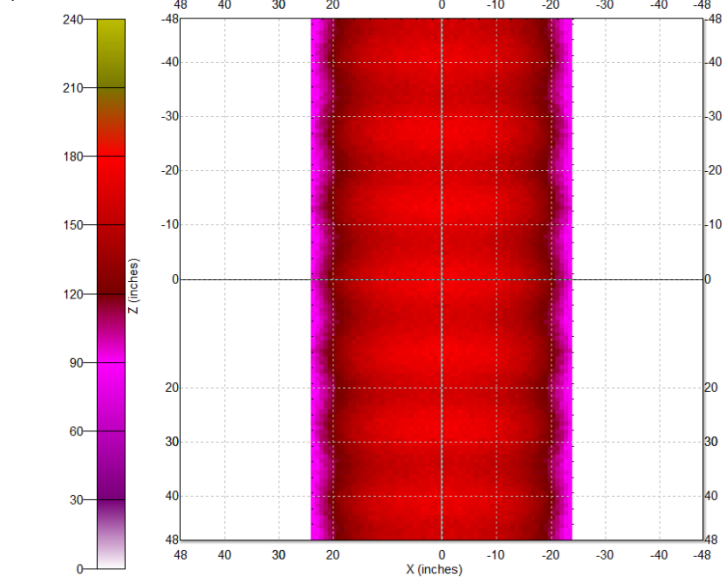


Light Intensity Map on 4' x 8' Canopy

PPFD = 175 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 9 mols with 14-hr photoperiod, DLI = 11 mols with 18-hr photoperiod, DLI = 12.5 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

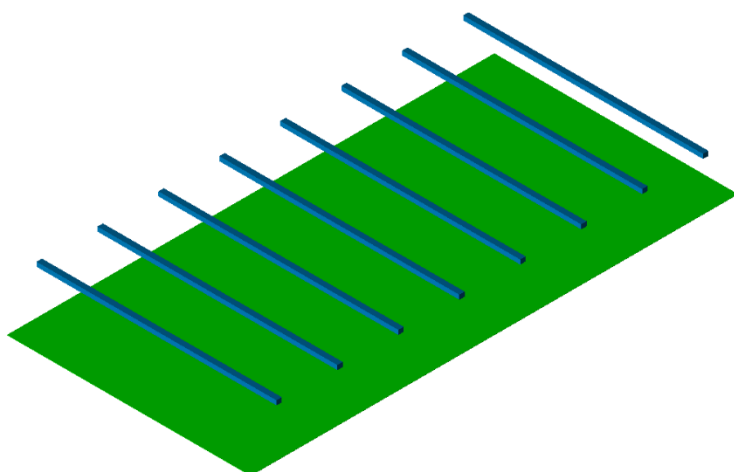
800-205-7216

200 ppfd Strata with White Spectrum

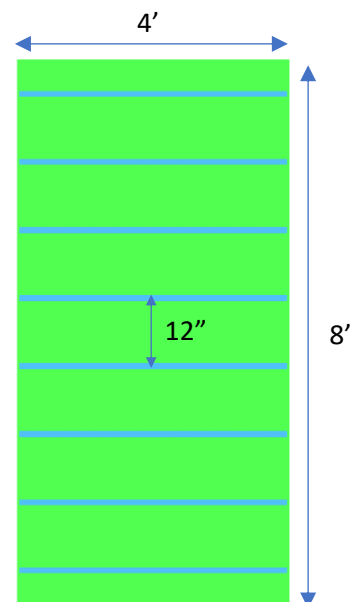
Lighting Design

- Number of Strata LED lights with White Spectrum: 8
- Mounting Height: 9" above the canopy
- Light Bar Spacing: 12"

Isometric View



Top Down View

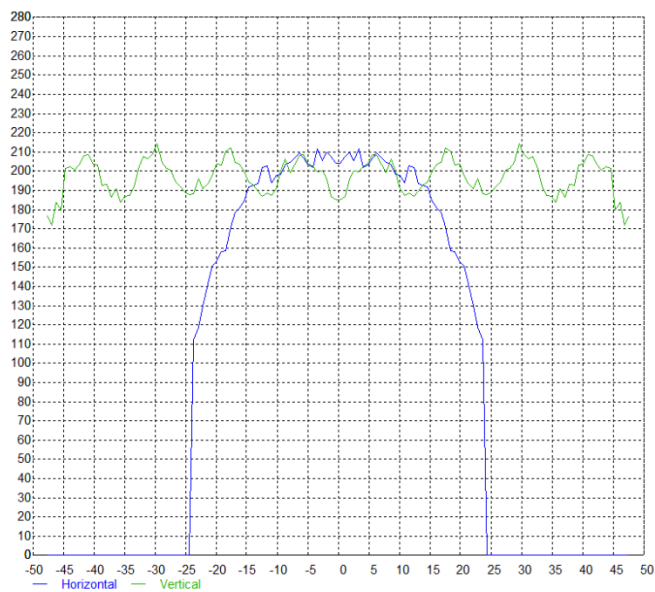
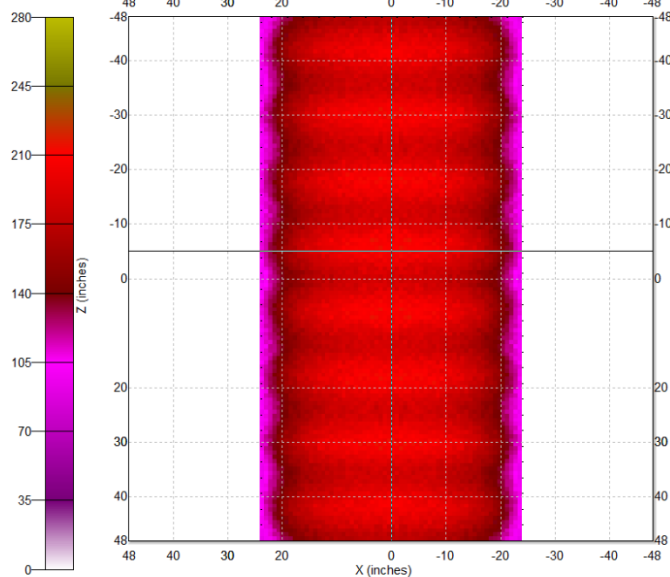


Light Intensity Map on 4' x 8' Canopy

PPFD = 200 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 10 mols with 14-hr photoperiod, DLI = 13 mols with 18-hr photoperiod, DLI = 14.5 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

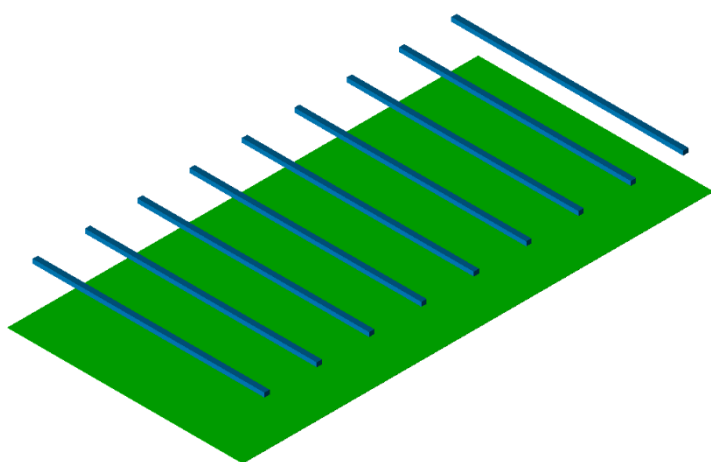
800-205-7216

225 ppfd
Strata with White Spectrum

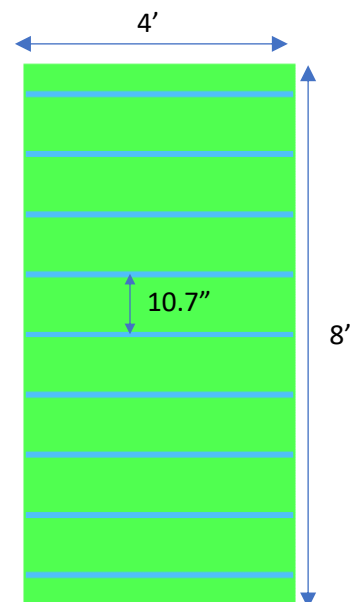
Lighting Design

- Number of Strata LED lights with White Spectrum: 9
- Mounting Height: 9" above the canopy
- Light Bar Spacing: 10.7"

Isometric View



Top Down View

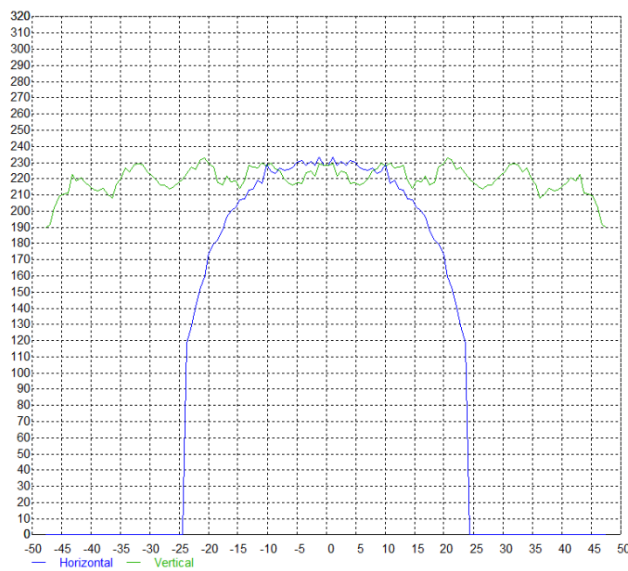
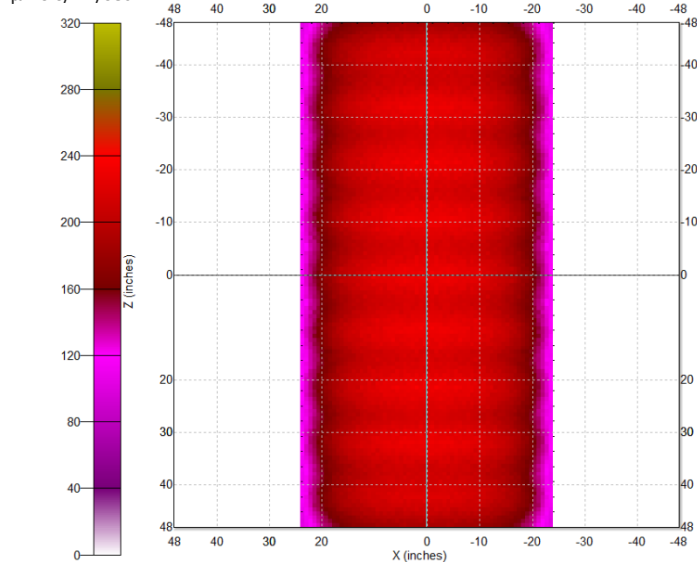


Light Intensity Map on 4' x 8' Canopy

PPFD = 225 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 11 mols with 14-hr photoperiod, DLI = 14.5 mols with 18-hr photoperiod, DLI = 16 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

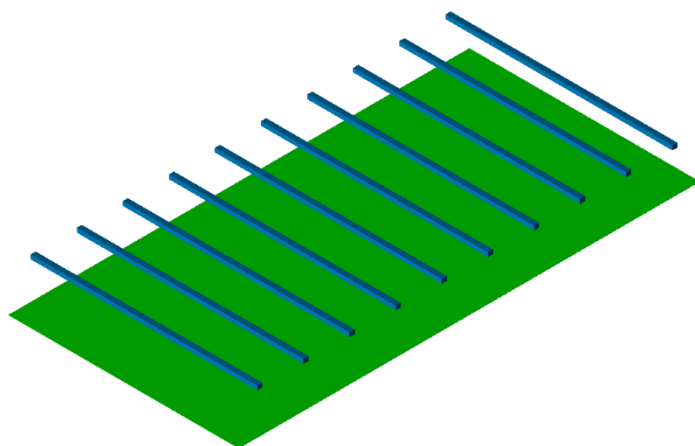
800-205-7216

250 ppfd Strata with White Spectrum

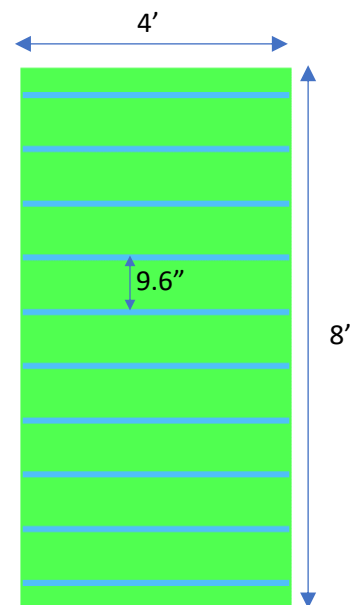
Lighting Design

- Number of Strata LED lights with White Spectrum: 10
- Mounting Height: 8" above the canopy
- Light Bar Spacing: 9.6"

Isometric View



Top Down View

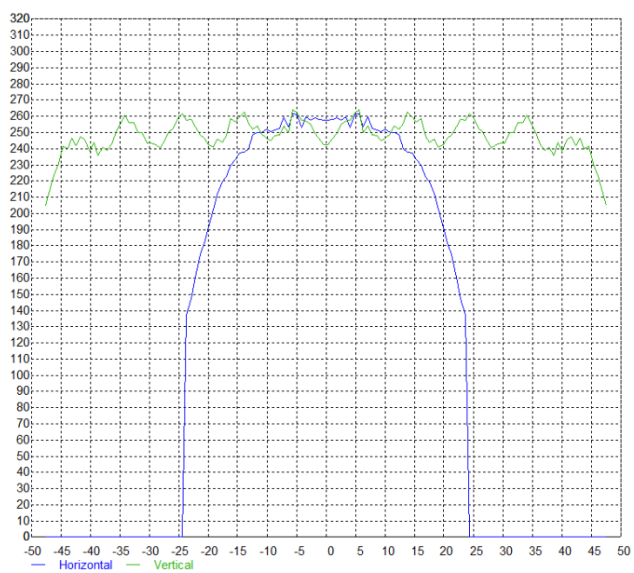
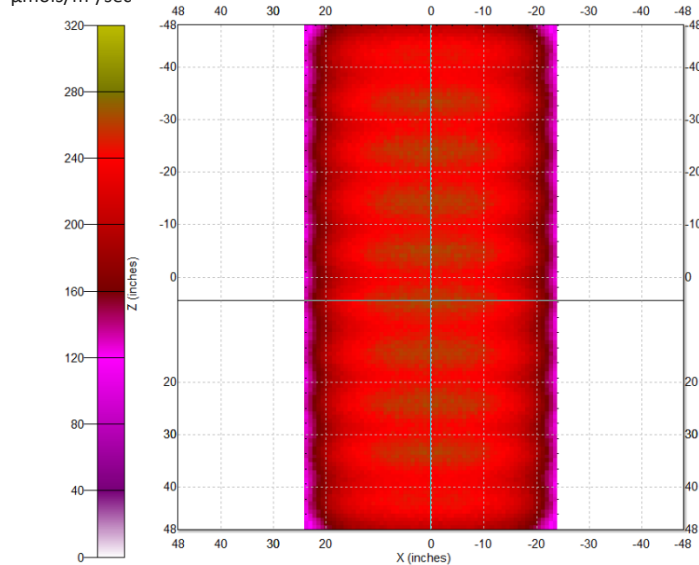


Light Intensity Map on 4' x 8' Canopy

PPFD = 250 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 12.5 mols with 14-hr photoperiod, DLI = 16 mols with 18-hr photoperiod, DLI = 18 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

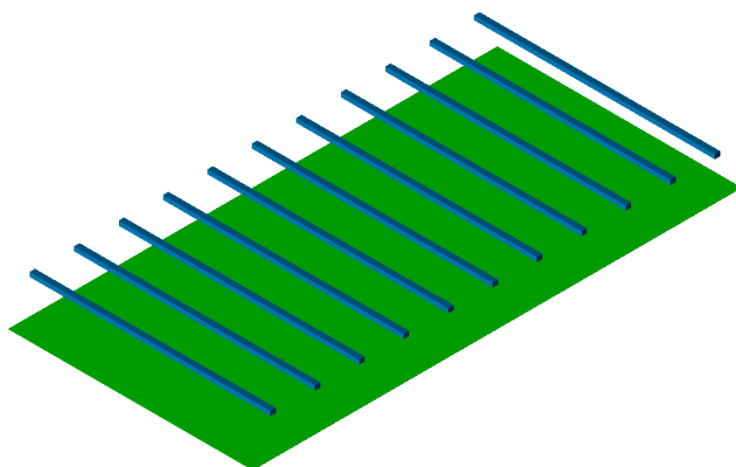
800-205-7216

280 ppfd
Strata with White Spectrum

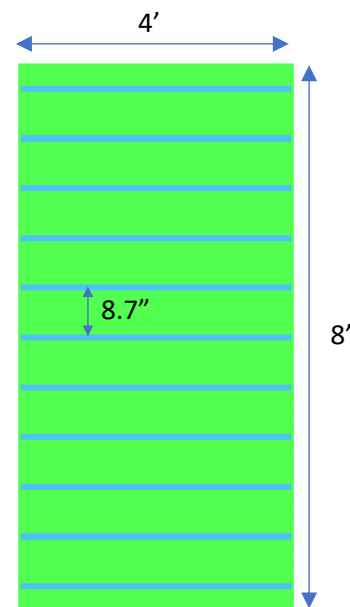
Lighting Design

- Number of Strata LED lights with White Spectrum: 11
- Mounting Height: 7" above the canopy
- Light Bar Spacing: 8.7"

Isometric View



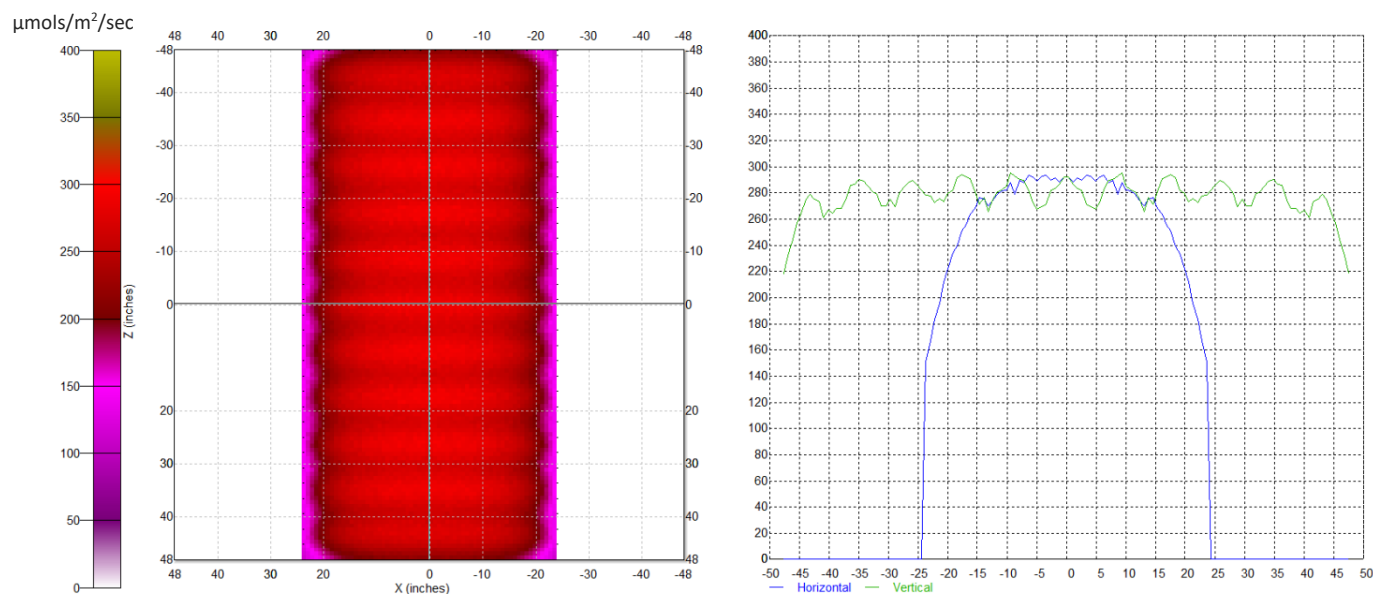
Top Down View



Light Intensity Map on 4' x 8' Canopy

PPFD = 280 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 14 mols with 14-hr photoperiod, DLI = 18 mols with 18-hr photoperiod, DLI = 20 mols with 20-hr photoperiod

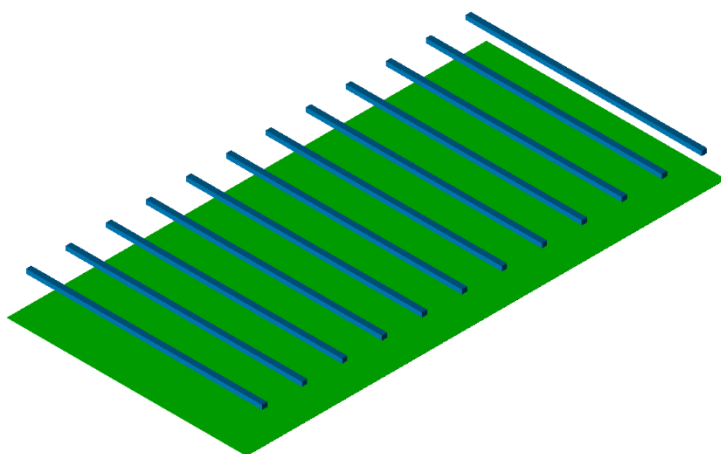


320 ppfd Strata with White Spectrum

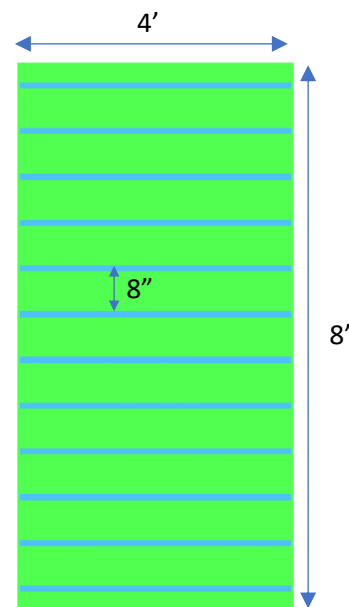
Lighting Design

- Number of Strata LED lights with White Spectrum: 12
- Mounting Height: 6" above the canopy
- Light Bar Spacing: 8"

Isometric View



Top Down View

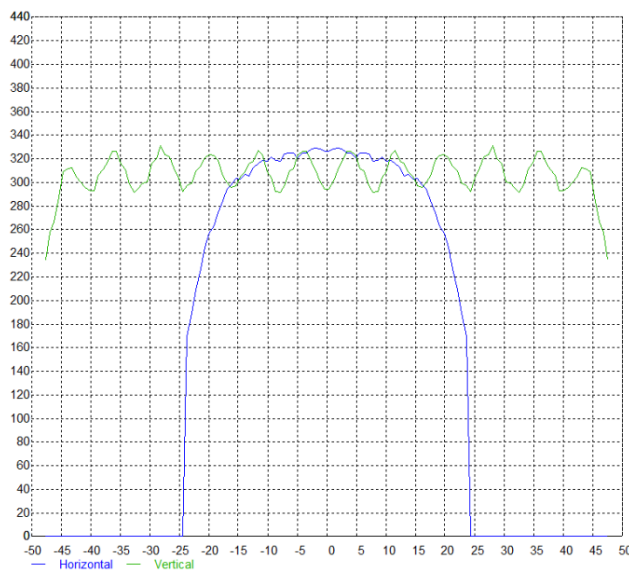
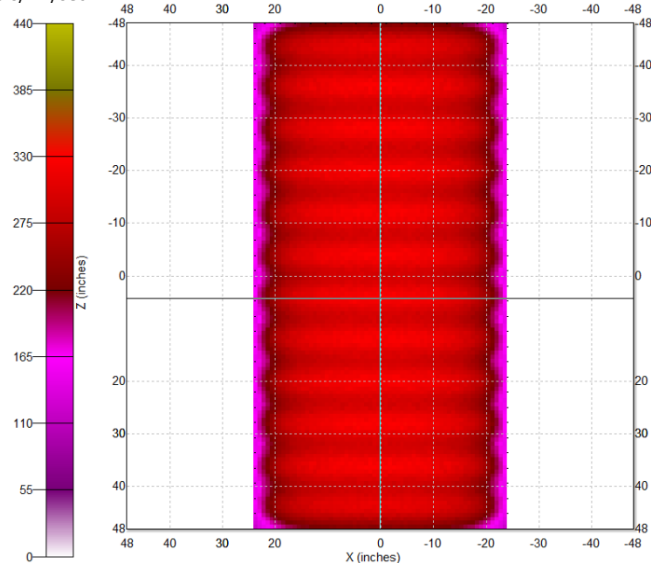


Light Intensity Map on 4' x 8' Canopy

PPFD = 320 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 16 mols with 14-hr photoperiod, DLI = 21 mols with 18-hr photoperiod, DLI = 23 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

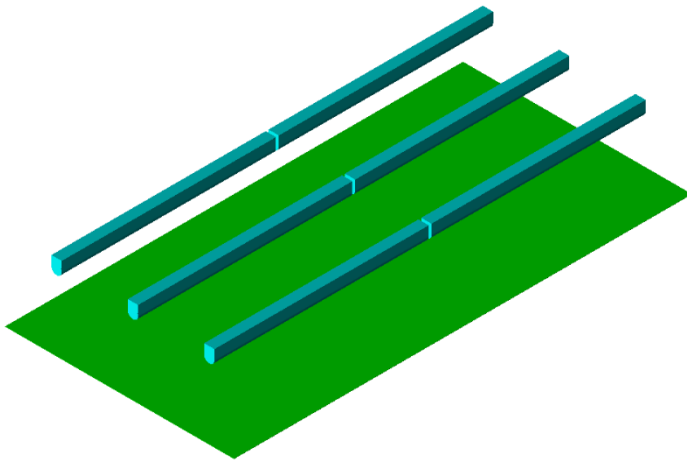
800-205-7216

300 ppfd *Infinity XE with White Spectrum*

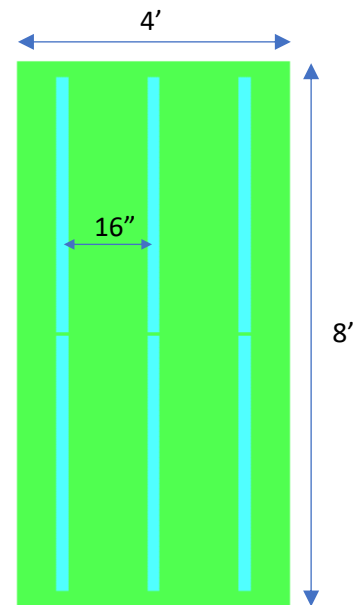
Lighting Design

- Number of Infinity XE LED lights with White Spectrum: 6
- Mounting Height: 12" above the canopy
- Light Bar Spacing: 16"

Isometric View



Top Down View

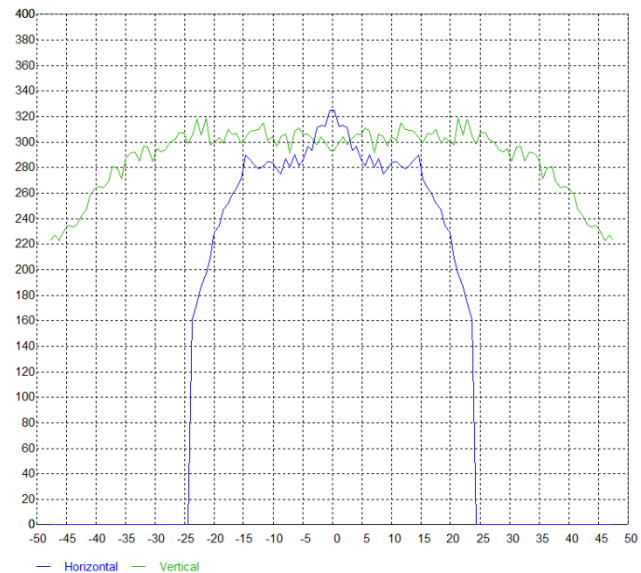
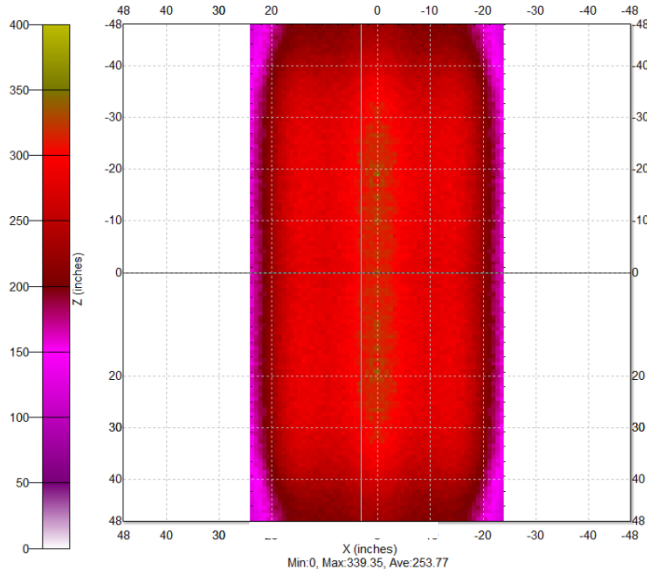


Light Intensity Map on 4' x 8' Canopy

PPFD = 300 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 15 mols with 14-hr photoperiod, DLI = 19.5 mols with 18-hr photoperiod, DLI = 21.5 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

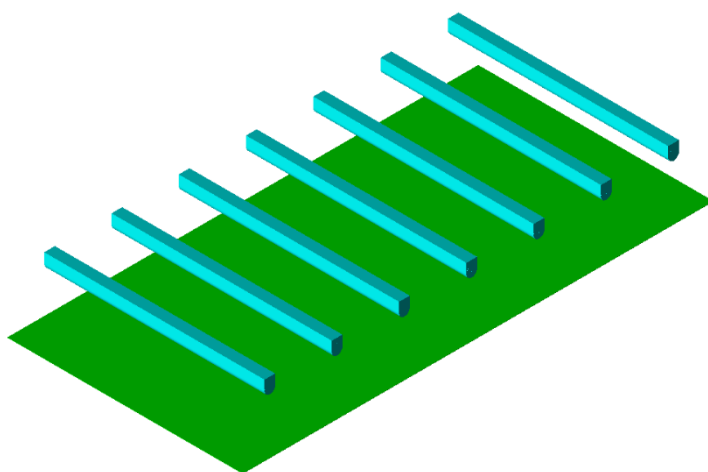
800-205-7216

360 ppfd Infinity XE with White Spectrum

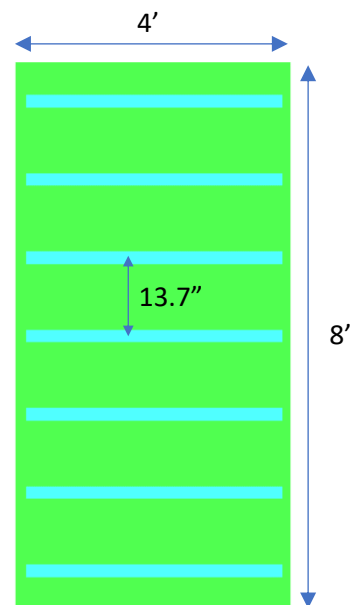
Lighting Design

- Number of Infinity XE LED lights with White Spectrum: 7
- Mounting Height: 10" above the canopy
- Light Bar Spacing: 13.7"

Isometric View



Top Down View

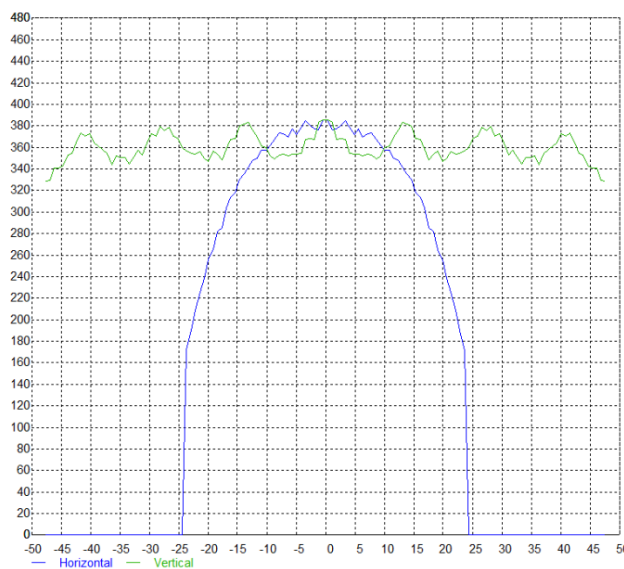
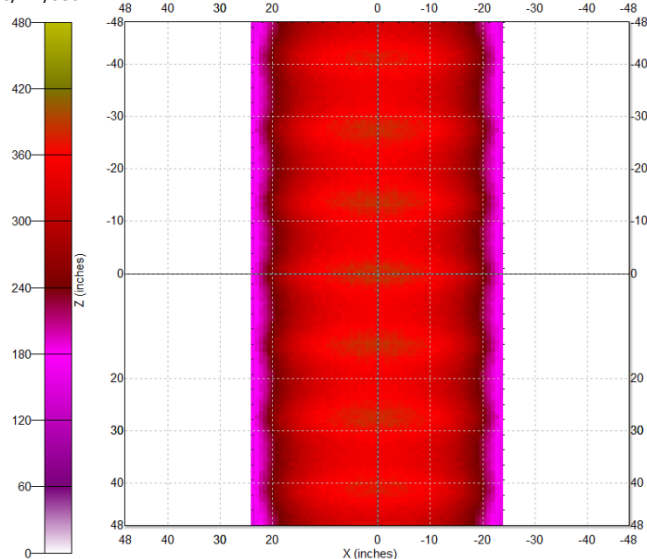


Light Intensity Map on 4' x 8' Canopy

PPFD = 360 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 18 mols with 14-hr photoperiod, DLI = 23 mols with 18-hr photoperiod, DLI = 26 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

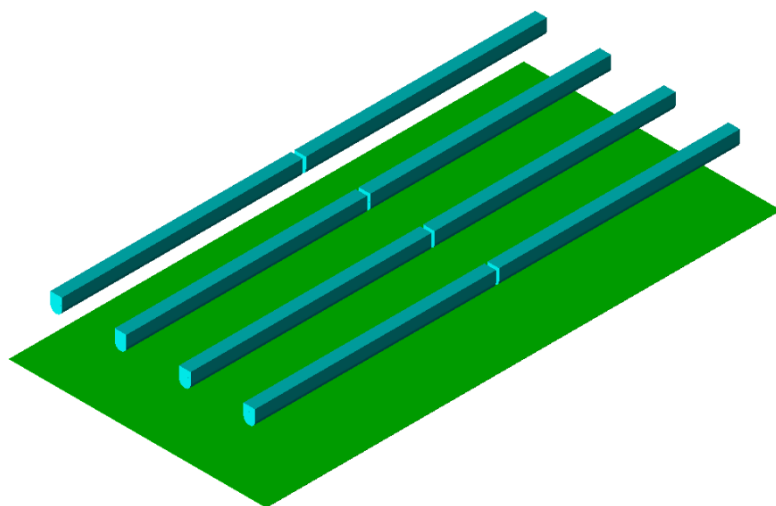
800-205-7216

400ppfd
Infinity XE with White Spectrum

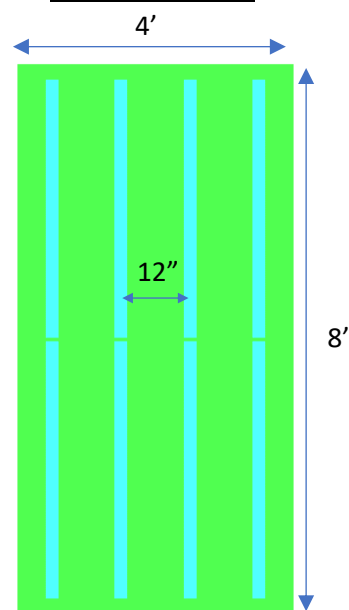
Lighting Design

- Number of Infinity XE LED lights with White Spectrum: 8
- Mounting Height: 9" above the canopy
- Light Bar Spacing: 12"

Isometric View



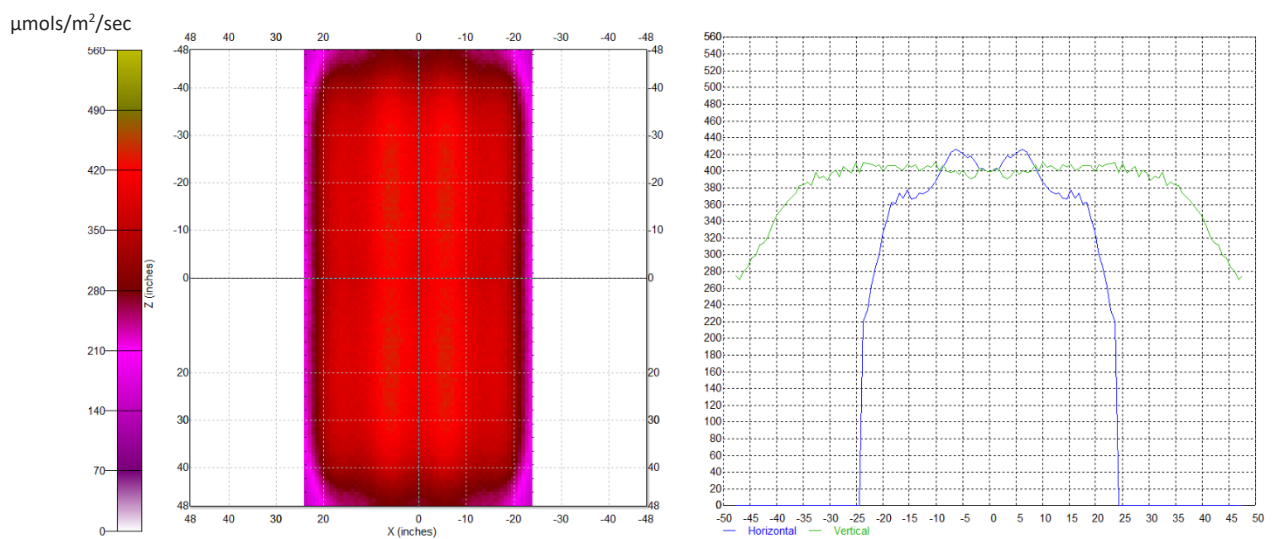
Top Down View



Light Intensity Map on 4' x 8' Canopy

PPFD = 400 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 20 mols with 14-hr photoperiod, DLI = 26 mols with 18-hr photoperiod, DLI = 29 mols with 20-hr photoperiod



www.thriveagritech.com

info@thriveagritech.com

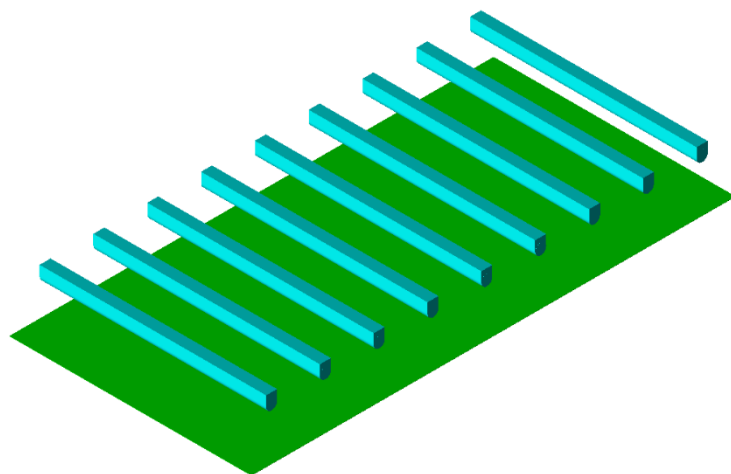
800-205-7216

475ppfd *Infinity XE with White Spectrum*

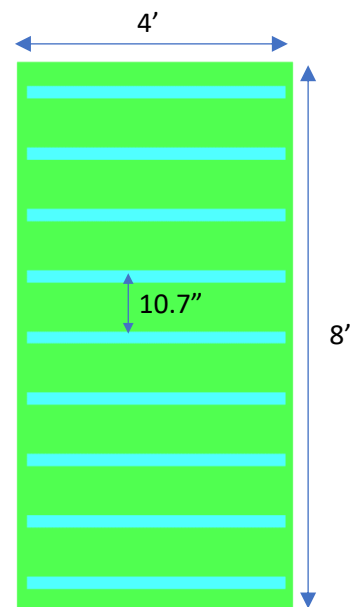
Lighting Design

- Number of Infinity XE LED lights with White Spectrum: 9
- Mounting Height: 8" above the canopy
- Light Bar Spacing: 10.7"

Isometric View



Top Down View

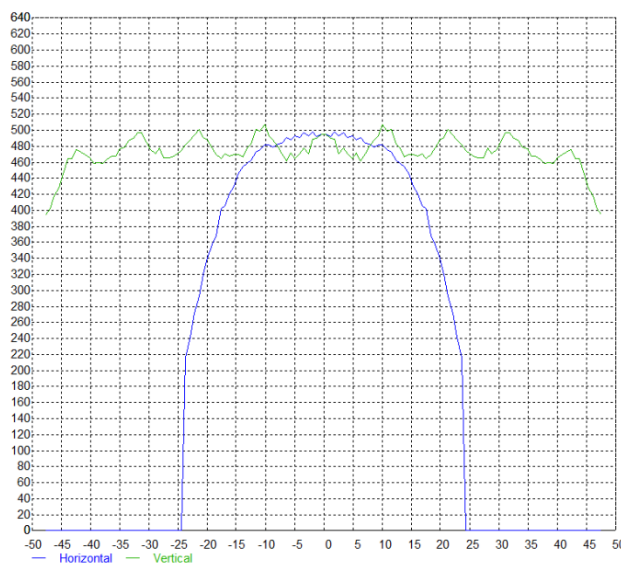
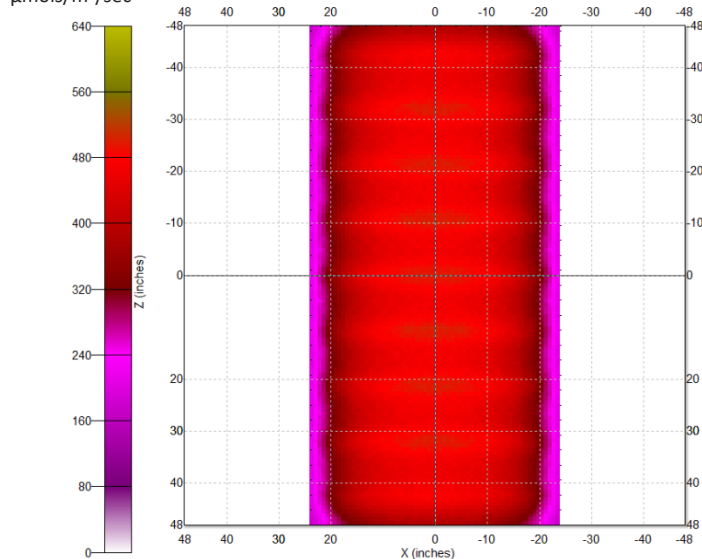


Light Intensity Map on 4' x 8' Canopy

PPFD = 475 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 24 mols with 14-hr photoperiod, DLI = 31 mols with 18-hr photoperiod, DLI = 34 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

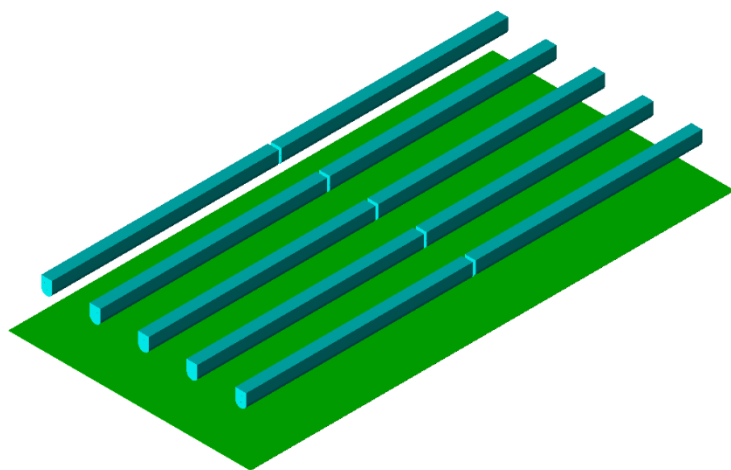
800-205-7216

550ppfd
Infinity XE with White Spectrum

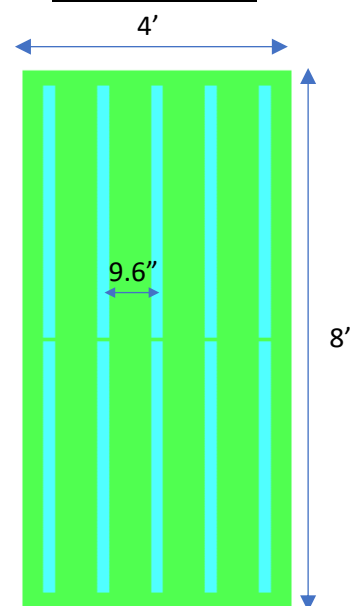
Lighting Design

- Number of Infinity XE LED lights with White Spectrum: 10
- Mounting Height: 7" above the canopy
- Light Bar Spacing: 9.6"

Isometric View



Top Down View

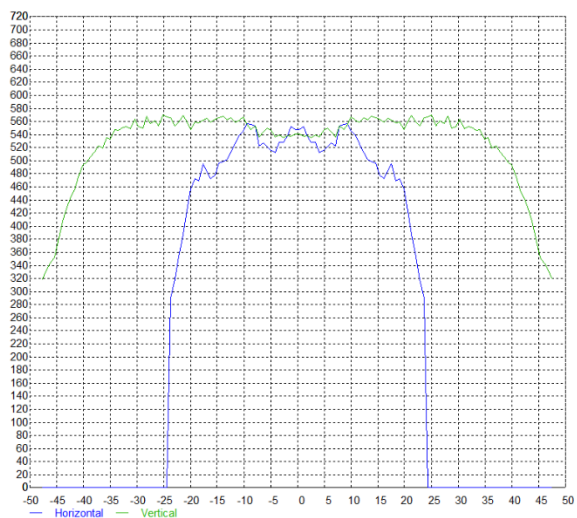
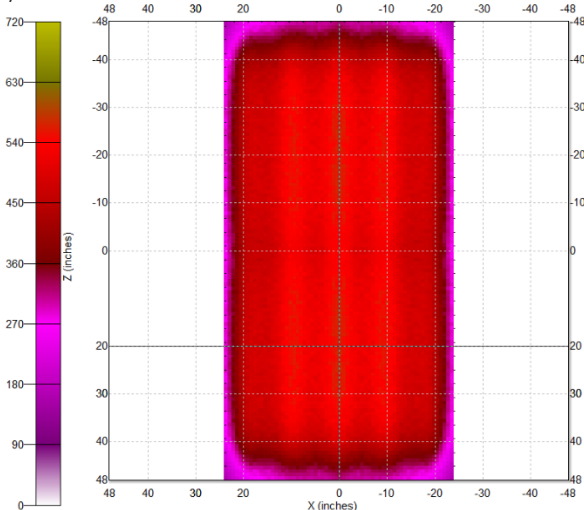


Light Intensity Map on 4' x 8' Canopy

PPFD = 550 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 28 mols with 14-hr photoperiod, DLI = 36 mols with 18-hr photoperiod, DLI = 40 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

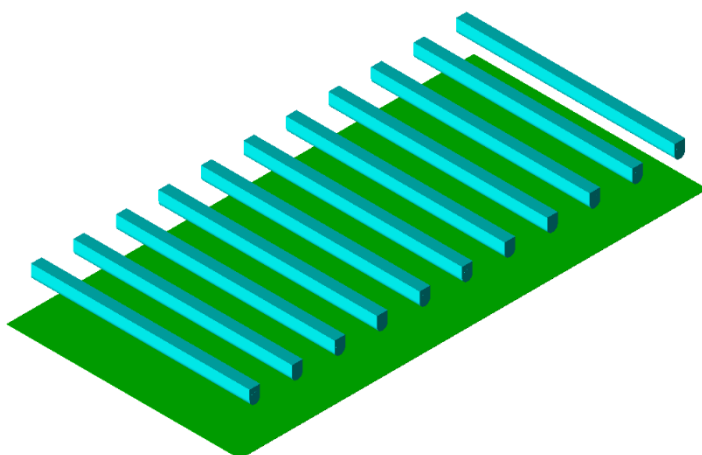
800-205-7216

600ppfd
Infinity XE with White Spectrum

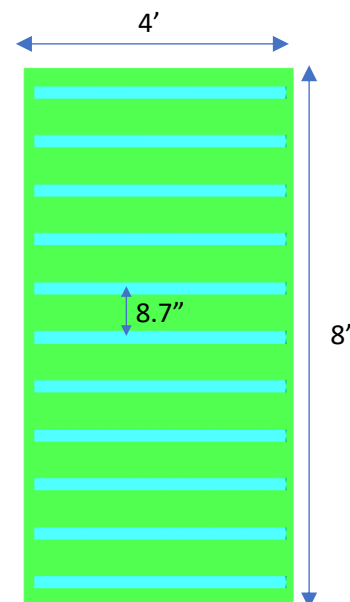
Lighting Design

- Number of Infinity XE LED lights with White Spectrum: 11
- Mounting Height: 7" above the canopy
- Light Bar Spacing: 8.7"

Isometric View



Top Down View

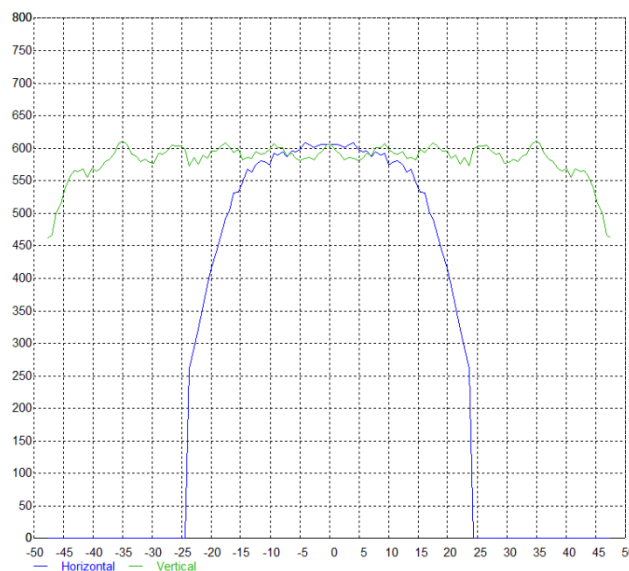
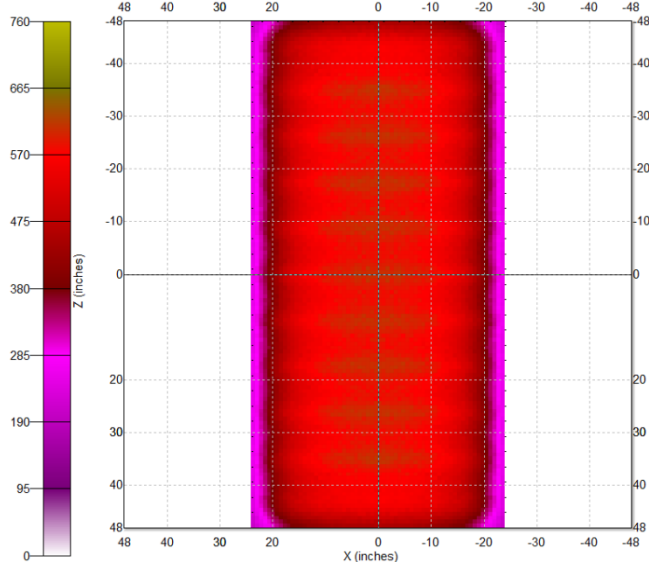


Light Intensity Map on 4' x 8' Canopy

PPFD = 600 $\mu\text{mol}/\text{m}^2/\text{sec}$

DLI = 30 mols with 14-hr photoperiod, DLI = 39 mols with 18-hr photoperiod, DLI = 43 mols with 20-hr photoperiod

$\mu\text{mol}/\text{m}^2/\text{sec}$



www.thriveagritech.com

info@thriveagritech.com

800-205-7216