



48" Full Spectrum Horticulture Linear Fixture 2022 Lightfair Edition

(2835G Photophyll Select White, XP-G3 S Line
Photo Red)

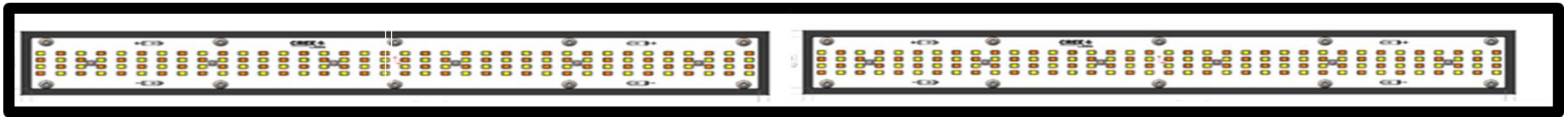
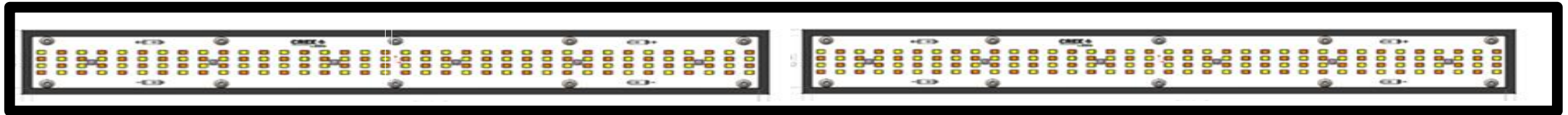


Purpose

The purpose of this reference design is to showcase the efficiency of using the J series 2835 G class Photophyll white LEDs working together with the XLamp XP-G3 S Line Photo Red LEDs for high-efficiency broad-spectrum grow lights.

Rendering & PCB Orientation

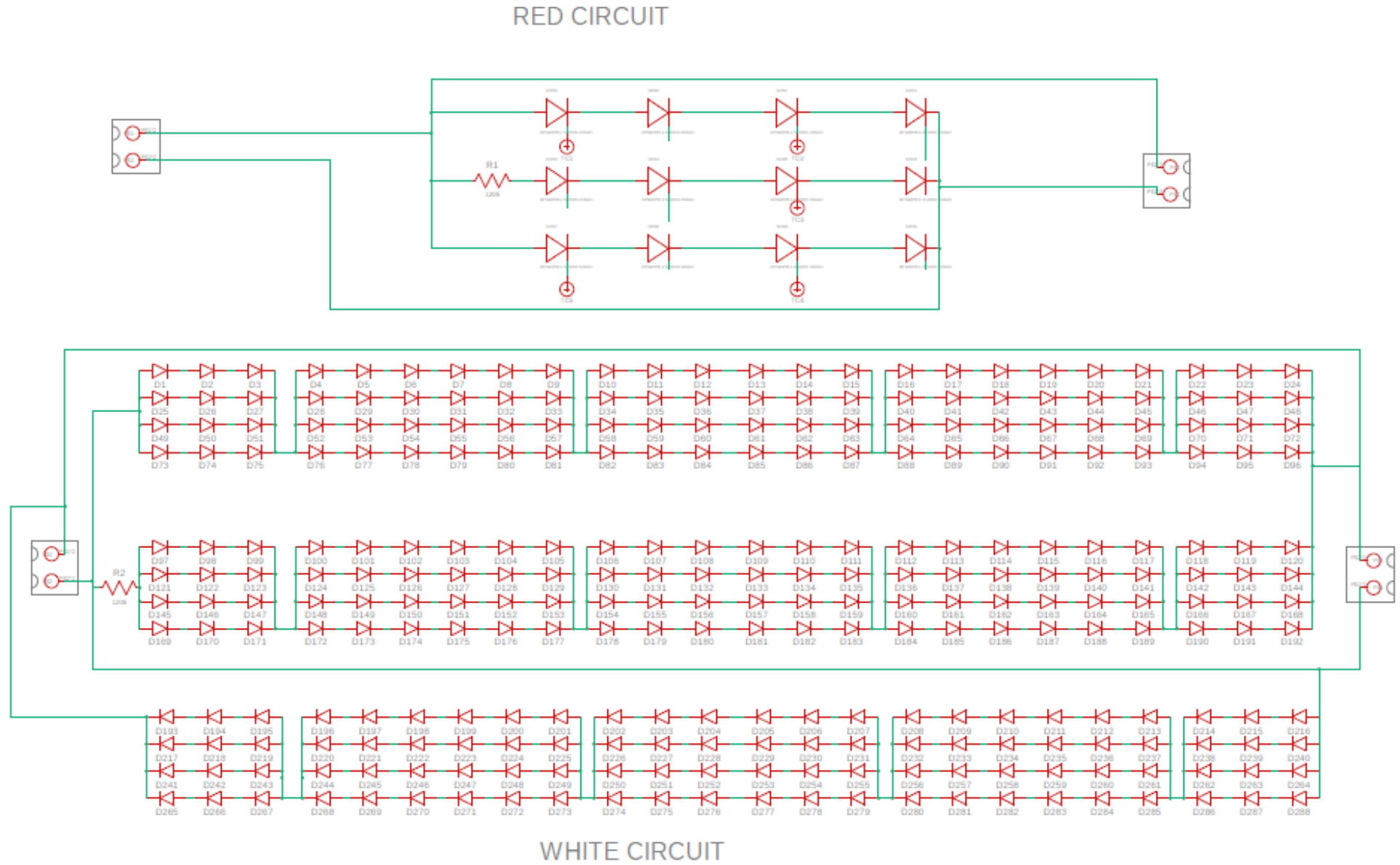
NE, Update board images



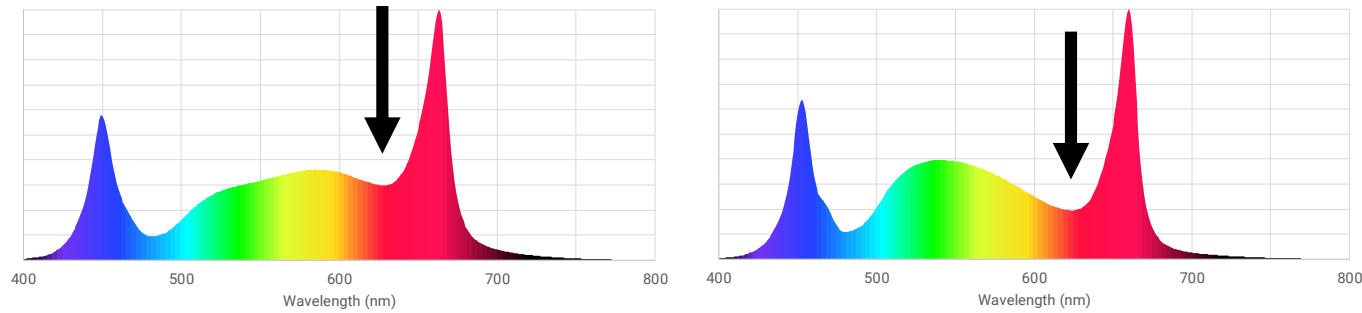
48"

- 1200 LEDs total (1152 white, 48 red)
- (4) 22" populated PCBs in total
- (2) PCBs mounted to 48"L heat sink extrusion
- Heatsinks mounted to black anodized 80/20 material

Schematic



System Test Results



Photophyll™ Select Luminaire:

- Reduced short Red (590-640nm) – Basically trading low-efficiency short-red photons for an increase in green content which helps growers operate while still providing deep canopy penetration.
 - Allows for much higher currents from efficient 660 nm Photo Red LEDs for the same Red PAR % target
- Outperforms White + Red with same LED count
 - 6% higher PPF & PPF/W
 - 17% higher lumens & LPW

Parameter	Baseline Recipe Luminaire		New Photophyll Select Recipe Luminaire	
LED 1	1,152 pcs J Series® 2835 G Class LEDs 50% 6500K 70 CRI & 50% 3500K 80 CRI		1,152 pcs J Series® 2835 G Class LEDs Photophyll Select	
LED 2	48 pcs XLamp® XP-G3 Photo Red S Line LEDs		48 pcs XLamp® XP-G3 Photo Red S Line LEDs	
Output Mode	Low	High	Low	High
LED 1 Current	58 mA	117 mA	59 mA	119 mA
LED 2 Current	233 mA	466 mA	473 mA	928 mA
PPF (µmol/s)	695	1,294	734	1,350
Power (W)	225	472	226	466
PPF/W (µmol/J)	3.08	2.74	3.25	2.90
Green/Blue Ratio	2.2	2.1	2.3	2.2
Red PAR %	49%	48%	41%	41%

* Values presented do not include driver loss

Reference Design Photos



Parts List

Item	Description	Manufacturer	P/N	Qty
LED	J series 2835 G class Photophyll Select	Cree LED	Engineering Samples Used – Order Codes Coming Soon...	1152
LED	XLamp XP-G3 S Line Photo Red	Cree LED	XPGDPR-LS-P20-33-Y-01	48
PCB	22" PCB	New Energy	New Energy	4
PCB Connector	Wire-to-board Terminal Block	WAGO	2059-302/998-4031	16
TIM	3W/mK, 22" long	New Energy	2000-1033	4
Heatsink*	48" black Al extruded	New Energy	New Energy	2
Driver (White Channel)	Constant current, 0/10 dimmable	Meanwell	HLG-320H-C2800B	2
Driver (Red Channel)	Constant current, 0/10 dimmable	Meanwell	HLG-185H-12B	1
Dimmer	0/10 Dimmer, one for red channel, one for white channel	LEDdynamics LUXdrive	A019	2

* Heat sink was designed to operate fixture in low power mode for demonstration purposes only.

