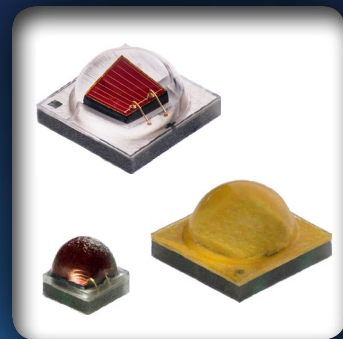
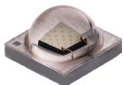
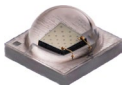
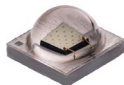
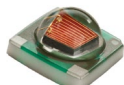
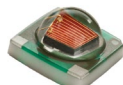
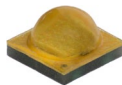


CREE® XLAMP® LED HORTICULTURE LIGHTING PORTFOLIO

- Industry's highest $\mu\text{mol/s}$, efficiency and reliability to enable the replacement of MH and HPS at radically lower power
- Consistent package footprints and drive levels allow easy tuning of spectral content at the luminaire level
- Excellent R90/L90 lifetimes, even in extreme conditions
- Achieve the full spectrum of light to mimic natural sunlight with Cree white LEDs



Greenhouse Farming

Color	Royal Blue		Green	Red	Photo Red	Far Red	White (6500-2700 K)	
Wavelength (nm)	450		525	625	660	730	Full Spectrum	
XLamp								
	XP-E2		XT-E	XP-E2	XP-E High Efficiency	XP-E	XP-G3	MHB-B
Footprint (mm)	3.45 x 3.45							5.0 x 5.0
Maximum Current (mA)	1000	1500		1000			2000	700 (9 V) 350 (18 V) 175 (36 V)
PPF Range @ 85 °C ($\mu\text{mol/s}$)*	0.7 - 4.9	0.7 - 5.3	0.4 - 1.8	0.4 - 3.7	0.8 - 5.5	N/A	1.0 - 10.6	3.6 - 12.4
Lifetime @ 85 °C (hrs)	R90=79k	R90=73k	L90>100k	L90=69k	R90>100k	L90>100k	L90=73k	L90>60.5k

Information on other wavelengths available upon request

- 400 - 700 nm

Vertical Farming

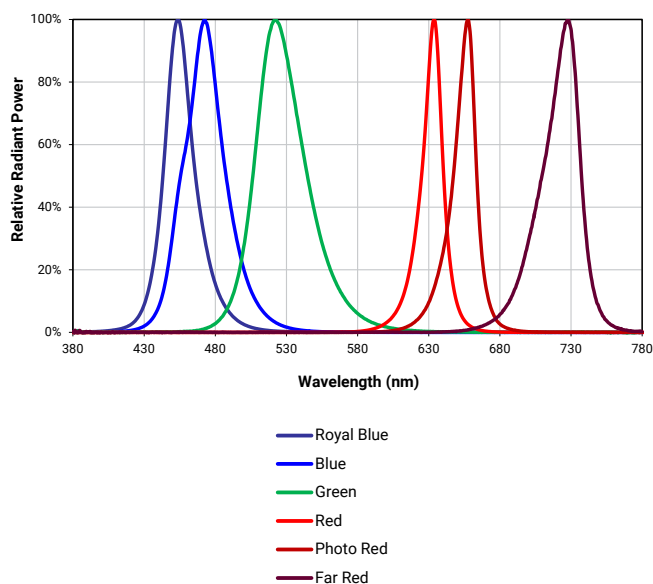
Color	Royal Blue		Green		Red	Photo Red	White (6500-2700 K)		
Wavelength (nm)	450		525		625	660	Full Spectrum		
XLamp									
	XQ-A		XQ-A	XQ-E	XQ-A	XQ-E	XQ-E High Efficiency	XQ-A	XQ-E
Footprint (mm)	1.6 x 1.6								
Maximum Current (mA)	300	1000	300	1000	300	1000	1000	300	1000
PPF Range @ 85 °C ($\mu\text{mol/s}$)*	0.3 - 1.1	0.6 - 4.8	0.1 - 0.4	0.40 - 1.5	0.2 - 0.7	0.6 - 3.3	0.7 - 4.9	0.3 - 1.2	1.0 - 3.9
Lifetime @ 85 °C (hrs)	R90=45k	R90=64k	L70>35k	L90>100k	L70>100k	L90>72k	L70=103k	L90>60.5k	L90>60.5k

Information on other wavelengths available upon request

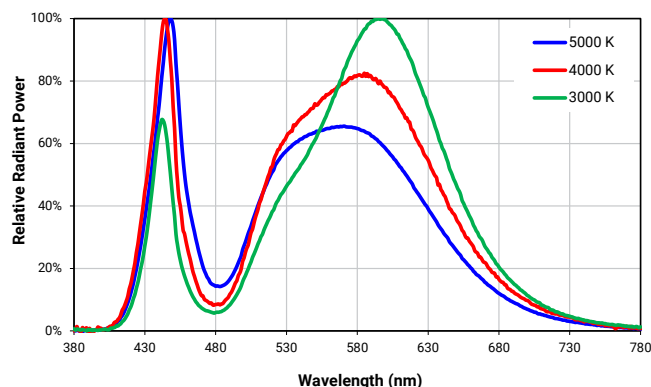
- 400 - 700 nm

Spectral Information

Color



White (70 CRI)



Wavelength (nm)		3000 K		4000 K		5000 K	
Minimum	Maximum	PPF%	RF%	PPF%	RF%	PPF%	RF%
400	500	11	14	17	21	23	27
501	580	32	32	37	37	38	27
581	700	57	52	46	40	39	34
701	780	0	3	0	2	0	2

Reference Design

Greenhouse Full Spectrum High Bay (MHB-B)

LEDs (Count)	XLamp MHB-B 4000 K, 70 CRI (80)	
PPF Output	328 $\mu\text{mol} / \text{s}$	
PPF/W Efficiency	1.8 $\mu\text{mol} / \text{J}$	
Output	24,451 lm	
Efficacy	134 LPW	
Power	183 W	
Dimensions	8 in (length) x 7 in (width) x 9 in (height)	
Weight	6.75 lbs	
Reported TM-21	L90(10k) > 60.5k hrs	

- Full spectrum light
- PPF efficiency matching that of HPS
- Passively cooled to $T_{sp}=67^{\circ}\text{C}$, supports ambient operating $> 55^{\circ}\text{C}$
- Would qualify for DLC 4.0 Premium

