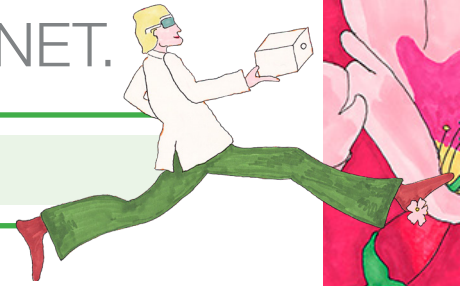




light engines for a

**BRIGHTER.** GREENER. PLANET.



LIGHT **BYTES:** March 2019

## SPECTRA III light engine versus SPECTRA X light engine: INCREASED BRIGHTNESS FOR FASTER IMAGE ACQUISITION

The metric most important when evaluating light intensities required for widefield fluorescence microscopy is the irradiance (or power density) at the sample plane, expressed in mW/mm<sup>2</sup>.

Our data table shows irradiance generated by **SPECTRA III**<sup>®</sup> and **SPECTRA X**<sup>®</sup> light engines in the four principle excitation bands used in multicolor fluorescence microscopy. Irradiance required for widefield fluorescence microscopy is typically on the order of 10–100 mW/mm<sup>2</sup>. Clearly, such levels are provided by the **SPECTRA X light engine**; prompting the question, why would the higher irradiance levels provided by the **SPECTRA III** be useful?

Higher irradiance allows exposure times to be shortened while maintaining the number of fluorescence photons detected. Shorter exposure times provide increased temporal resolution in time-lapse image sequences and reduce the time required to acquire multicolor z-stacks or slide scans.

Lumencor's **SPECTRA III** light engine provides the best of spectral breadth, brightness, and speed for even the most demanding imaging and high throughput applications.

Objective	SPECTRA III light engine <sup>®</sup>		SPECTRA X light engine <sup>®</sup>	
	10X/0.5 NA	40X/0.75 NA	10X/0.5 NA	40X/0.75 NA
Excited Fluorophore	Irradiance (mW/mm <sup>2</sup> )		Irradiance (mW/mm <sup>2</sup> )	
DAPI	53	129	21	48
FITC	57	161	24	65
TRITC	47	145	43	129
Cy5	36	113	12	32

#### MEASUREMENT CONDITIONS

- Power measurements made with Coherent FieldMax II–TO power meter with PM3 thermopile detector. Nikon Ti microscope with Semrock FF409/493/573/652-Di02 quad dichroic.
- Excitation filters (CWL/FWHM, nm): DAPI = 390/22; FITC = 475/28; TRITC = 555/28; Cy5 = 635/22.
- Light engine output coupled to microscope using Lumencor 3 mm diameter liquid light guide (PN 10-10589) and collimating adapter (PN 82-10121).

Learn more at [www.lumencor.com](http://www.lumencor.com)

