Filter Recommendations
SPECTRA X Light Engines®

lumencor®

SINGLE-BAND DICHROICS AND EMISSION FILTERS

Lumencor's SPECTRA X light engine provides six independently controllable light sources that span the visible spectrum from 380–680 nm. Each SPECTRA X light engine comes equipped with a set of seven optical bandpass filters, providing the capacity to refine and tune the source outputs to meet experimental requirements. The filters are user-exchangeable and are installed in removable paddles. One filter is applied to each of the six solid state-light sources (violet, blue, cyan, teal, green+yellow and red). Optionally, the SPECTRA X can be ordered with a near infrared (Cy7 excitation) source in place of the teal (YFP excitation) source.

Below find a list of single-band dichroic and emission filters that are recommended for imaging widely used fluorophores and fluorescent proteins on microscopes equipped with SPECTRA X light engines. Please speak to your Lumencor sales representative or contact techsupport@lumencor.com to confirm the best filter prescription for your application and experiment design.

Single-band dichroic and emission filter recommendations for Lumencor SPECTRA X light engines.

Fluorophores	SPECTRA X bandpass filters[1]	Chroma dichroic Chroma emitter	Semrock dichroic Semrock emitter
DAPI, Hoechst	390/22, 395/25	T425lpxr	FF409-Di03-25x36
		ET460/50m	FF02-447/60-25
CFP	438/29, 440/20	T455lp	FF458-Di02-25x36
		ET480/40m	FF01-483/32-25
GFP, FITC	470/24, 475/28	T495lpxr	FF495-Di03-25x36
		ET525/50m	FF01-525/45-25
YFP	511/16, 510/25	T525lpxr	FF526-Di01-25x36
		AT545/30m	FF01-544/24-25
TRITC, Cy3	542/33, 555/28	T565lpxr	FF573-Di01-25x36
		ET605/70m	FF01-609/54-25
mCherry	575/25, 575/35	T585lpxr	FF596-Di01-25x36
		ET630/75m	FF01-641/75-25
Cy5	631/28, 635/22	T660lpxr	FF652-Di01-25x36
		ET700/75m	FF01-680/42-25
Cy7+	730/40, 740/20	T760lpxr	FF757-Di01-25x36
		ET810/90m	FF02-809/81-25

Chroma filter sets are supplied by Chroma Technology Corporation, www.chroma.com. Semrock filter sets are supplied by Semrock, Inc. (a subsidiary of IDEX Corporation), www.semrock.com. [1] For a full list of Lumencor's standard bandpass filters for SPECTRA X light engines see www.lumencor.com/filters-for-spectra-x-light-engines. Bandpass filters are identified by center wavelength (CWL)/full width at half maximum (FWHM) in nm. [+] Requires SPECTRA X with near-IR source option.

Filter Recommendations (Cont.)
SPECTRA X Light Engines®

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MULTI-BAND DICHROICS AND EMISSION FILTERS

Use of multi-band filter sets for fluorescence microscopy inevitably requires compromises in terms of discrimination between individual fluorophores. Simultaneous excitation of two, three or four fluorophores using a full multi-band filter set (i.e. multi-band exciter, multi-band dichroic and multi-band emitter) may produce unacceptable levels of detection channel cross-talk, particularly in applications involving colocalization analysis. When higher levels of inter-channel discrimination are required, the most common technical solution is sequential excitation through filter sets with multiple single band exciters feeding into a multi-band dichroic and a multi-band emitter (often referred to as Pinkel sets). The facility to selectively turn the SPECTRA X light engine's six solid-state light sources on and off allows users to excite two, three, four or more fluorophores in a multi-labeled specimen one at a time. Thus the functionality of a Pinkel filter set can be obtained without the need for mechanical filter interchanges using filter wheels or other positioning devices. Higher switching speeds are attainable and variances associated with moving parts are eliminated. Below find a list of multi-band dichroic and a multi-band emitters that are recommended for imaging widely used fluorophore and fluorescent protein combinations on microscopes equipped with SPECTRA X light engines.

Multi-band dichroic and emission filter recommendations for Lumencor SPECTRA X light engines.

Bands	Fluorophores	SPECTRA X bandpass filters[1]	Chroma dichroic Chroma emitter	SPECTRA X bandpass filters[1]	Semrock dichroic Semrock emitter
2	GFP/mCherry	475/28, 575/35	59022bs 59022m	475/28, 585/35	FF495/605-Di01-25x36 FF01-527/645-25
3	CFP/YFP/mCherry	438/29, 511/16, 575/25	89403bs* 89403m*	438/29, 510/25, 575/25	FF459/526/596-Di01-25x36 FF01-475/543/702-25
4	DAPI/FITC/TRITC/Cy5	390/22, 475/28 555/28, 635/22	89402bs 89402m	390/22, 475/28 555/28, 635/22	FF409/493/573/652-Di01-25x36 FF01-432/515/595/730-25
5	DAPI/FITC/TRITC/ Cy5/ Cy7	-	- -	390/22, 475/28, 555/28, 635/22, 730/40	FF409/493/573/652/759-Di01-25x36 FF01-432/515/595/681/809-25

Chroma filter sets are supplied by Chroma Technology Corporation, www.chroma.com. Semrock filter sets are supplied by Semrock, Inc. (a subsidiary of IDEX Corporation), www.semrock.com. [1] For a full list of Lumencor's standard excitation bandpass filters for SPECTRA X light engines see www.lumencor.com/filters-for-spectra-x-light-engines. Excitation filters are identified by center wavelength (CWL)/full width at half maximum (FWHM) in nm. *Chroma filter set also includes Cy7, compatible with Lumencor 730/40 excitation filter.

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