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Multiband Optical Filters Are Telecom Networks' Multitaskers

Dual- and multiband optical filters are helping to enhance the complexity, footprint, performance, and cost of fiber network components.

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IRIDIAN SPECTRAL TECHNOLOGIES

Multiband optical filters have long been used in applications such as fluorescence spectroscopy, astronomy, and 3D cinema, to name a few. The ability to combine more than one optical band into a single optical filter can enable the ability of system design and reduce the number of components and the costs needed to achieve a desired functionality.

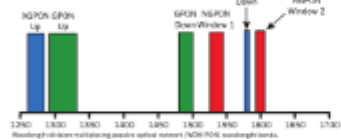
Optical filters have always played a key role in fiber optic systems. They provide the wavelength selectivity needed for optical add-drop multiplexers (OADM) and wavelength division multiplexing (WDM) functions, and act as band-pass filters to enable gain-flattening fiber amplifiers (GFAs) to reduce signal-to-noise ratio (SNR) penalties.

Recent advancements in multiband and multichannel optical filters have expanded the benefits to network components. Such filters not only supported the development of dual- and multiband

filters for use in the backbone WDM architectures associated with wireless networks, they also enabled hybrid GFAs that couple gain-flattening functionality with self-laser pump blocking. These component advancements leverage the power of multiband filters to improve performance and save module build costs.

Dual WDM with GFA

WDM technology has been around since the late 1980s, when it emerged from and enabled the massive growth in demand for greater network capacities for which to support the World Wide Web. By using dual-band filters, modules and systems can be used to split or add or drop individual channels in a single filter. Coarse WDM (CWDM) with 20-nm band spacing was followed by dense WDM (DWDM), which allowed narrower band spacing to support multiple signal bands simultaneously along the fiber optic highway. The dual-band filters at the core consist of a single-band WDM channel that transmits or reflects a single signal channel, or sometimes a group of channels using an X-drop CWDM chip filter.



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