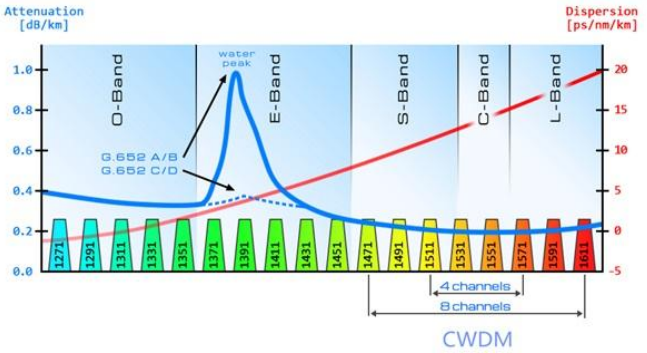
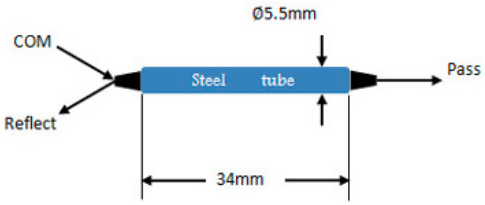
Red Blue Optical Filter in DWDM Systems

The optical wavelengths transmission loss show as below picture, the CWDM 1470 to 1610 channels are suitable for long distance transmission. In common we integrage DWDM 8 channels (Blue band) into CWDM 1530 channles and DWDM 8 channels (Red band) into CWDM 1550 channels to increase the transmission capcity for long distance networks.





Like DWDM filters, the Red Blue filter is a thin-film filter device. It is a three-port device. One port is called the "COM" port, The other two ports provide the conduit for the two wavelength "bands." The two bands are the Blue (λ 1530 to 1543nm) and the Red (λ 1547 to 1561 nm). One band goes thru the Reflected port, and the other band goes thru the Pass port.

How to use Red Blue filter for DWDM single fiber transmission system? As we know, DWDM Optical Transceivers are all duplex LC package, Tx port and Rx port. We can use Red band channel as Tx and Blue band channel as Rx, combine Tx and Rx into single fiber by using Red Blue filter. In a DWDM module, which uses a Red Blue filter, a Mux may be combined with a Demux. For example, the Mux combines DWDM channels in the Red band, while the Demux separates DWDM channels in the Blue Band. Using a Red/Blue filter, it can combine the Red Transmit channels and the Blue Receive channels onto a single fiber.