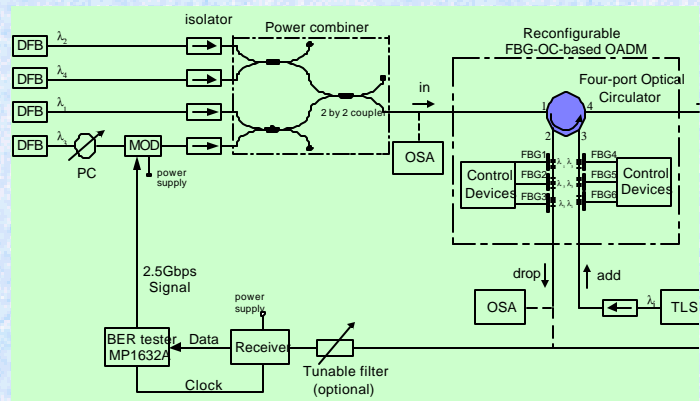




## Fibre Bragg Grating Based WDM Reconfigurable Optical Add/Drop Multiplexer (OADM)

### Introduction

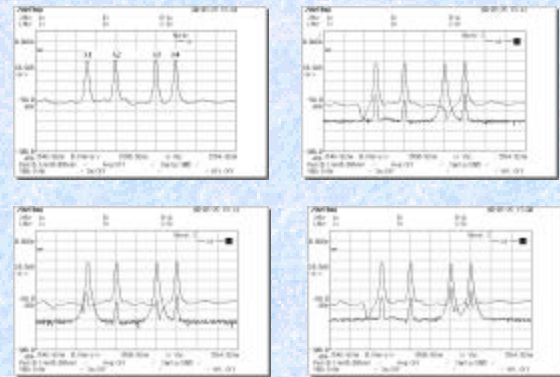
OADM is an important component in all optical network. It can be classified as fixed or reconfigurable OADM. Commercial OADM can only add/drop fixed channels. The use of tunable FBGs for the implementation of DWDM reconfigurable OADM has been proposed and successfully demonstrated.



Experimental setup.

### Studies

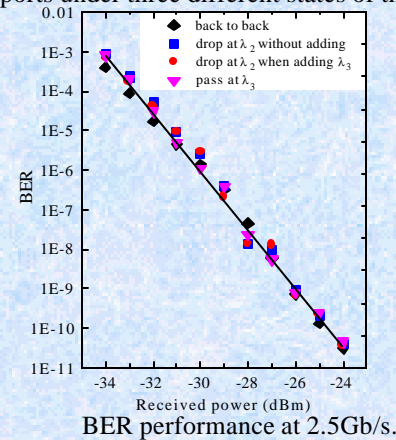
We proposed the use of one four-port optical circulator and two sets of tunable FBGs for the implementation of reconfigurable DWDM OADM. This scheme provide good cascability, good loss uniformity, low insertion losses and low intraband crosstalk between the add/drop ports.



Spectrum of WDM signals and spectra of drop- and pass through-ports under three different states of the OADM.

### Results and Discussion

Depending on the tuning states of corresponding FBGs, multichannel reconfigurability is demonstrated in a four-channel 2.5Gb/s OADM system. The average insertion loss for pass through, drop, and add channels are 2.8 dB, 2.0 dB and 2.0 dB, respectively. Power equalization is realized without additional components. The optical crosstalk of  $-34 \sim -41$  dB and  $-25 \sim -40$  dB are attained for intra-channel and inter-channel between drop-channels and pass-through channels. It can be improved by improving the quality of fiber gratings used in the system. Bit error rate (BER) performance test shows that no measurable crosstalk between the add/drop ports.



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