

Performance improvement for hybrid L-band remote erbium doped fiber amplifier/raman using phase modulator

ABSTRACT

We have demonstrated the performance improvement of L-band hybrid remote Erbium-doped fiber amplifier by introducing a phase modulator to suppress the stimulated Brillouin scattering (SBS) effect in the transmission. The transmission gain has improved by 12.65 dB while the noise figure has reduced by 47.1 dB when 0 dBm signal power is generated at 1590.05 nm wavelength. Furthermore, the optical signal-to-noise ratio has improved from 7.81 dB to 29.72 dB when the signal power is varied from -30 dBm to 0 dBm. By implementing a phase modulator to the input signal somehow able to produce better performance regarding gain, noise figure and optical signal-to-noise ratio, especially at the higher signal power as the gain, has been transferred to the Stokes signal and the amplified signal.

Keyword: Hybrid remote erbium-doped; Fiber amplifier; L-band; Phase modulation technique; SBS suppression