

Multiple access interference elimination with enhanced chromatic dispersion tolerance in SAC OCDMA

ABSTRACT

We demonstrate a direct decoding scheme to eliminate multiple access interference in optical spectral-amplitude-coded, multiple access networks. By detecting only the non-overlapping spectrums, our scheme shows a better BER of eight orders of magnitude over the conventional complementary subtraction scheme, when 16 simultaneous channels with 10Gbps bit rate per channel are transmitted over a simulated 70km dispersion-compensated fiber span. Our direct decoding technique is also tolerant to chromatic dispersion, where the maximum achievable distance of 67km was obtained in a dispersion limited system with standard 16ps/nm.km dispersion of single mode fiber.

Keyword: Optical CDMA; Multiple access interference; Chromatic dispersion