

Broadband radio over fiber communication employing SCM/WDM system

Abstract

Optical microcellular systems, in which microcells in a wide area are connected by optical fibers and radio signals, are transmitted over an optical link among base station and control station. The main idea in this chapter is to combine the SCM model of RoF with WDM. The integration of the two systems is responding to the demands for high data rate applications and reasonable mobility. The employment of the SCM-RoF in the WDM architecture allows reduction in cell size that increases the bandwidth, thus improves the spectrum efficiency. This is because of the low loss and enormous bandwidth of optical fiber, increasing demand for capacity, coverage and the benefits it offers in terms of low cost base station deployment in microcellular system. The system has initiates setup 1.8 Gbps for high bit rate of the 16 SCM channels through modulated by MZM and carrying in single wavelength of CW laser then utilized in WDM, significantly was increased of the bandwidth capacity. The result is present higher bandwidth for long distance communication system (SMF, 150 km) by using SCM/WDM for Radio over Fiber is 60 GHz. Therefore, the efficiency of bandwidth utilization of SCM is expected to be much better than conventional optical WDM.