

Dynamic link adaptation for filterband multicarrier in networks with diverse service quality and throughput requirements

ABSTRACT

The fast evolution in wireless communication standards and enhancement in cellular applications has created an exponential rise in the data rate requirement over the past few decades. The next generation wireless standards, therefore, need not only to provide ultra high data rates with minimum latency, but also to support diverse quality-of-service (QoS) requirements. Filterbank multicarrier (FBMC) scheme provides quite a few advantages over the conventional orthogonal frequency division multiplexing (OFDM) for future wireless networks. In order to achieve adaptive throughput and diverse service quality requirements under varying channel conditions, a link adaptation algorithm for FBMC scheme is proposed in this paper. The aim is to provide the dynamic selection of optimum parameters resulting in diverse modes of operation to ensure the desired and/or best available communication service quality. The proposed link adaptation algorithm incorporates the parameters of required data rate, available channel condition and QoS demand, and dynamically allocates the appropriate FBMC transmission parameters. The proposed scheme has been evaluated for AWGN as well as multipath fading SUI channel models. Simulation results indicate that the proposed algorithm successfully achieves the desired service quality subject to the availability of suitable channel conditions and is also superior to the existing algorithms in terms of block error rate and effective throughput.