

Channel Estimation/Equalization with Adaptive Modulation and Coding over Multipath Faded Channels for WiMAX

Authors : B. Siva Kumar Reddy, B. Lakshmi

Abstract : WiMAX has adopted an Adaptive Modulation and Coding (AMC) in OFDM to endure higher data rates and error free transmission. AMC schemes employ the Channel State Information (CSI) to efficiently utilize the channel and maximize the throughput and for better spectral efficiency. This CSI has given to the transmitter by the channel estimators. In this paper, LSE (Least Square Error) and MMSE (Minimum Mean square Error) estimators are suggested and BER (Bit Error Rate) performance has been analyzed. Channel equalization is also integrated with with AMC-OFDM system and presented with Constant Modulus Algorithm (CMA) and Least Mean Square (LMS) algorithms with convergence rates analysis. Simulation results proved that increment in modulation scheme size causes to improvement in throughput along with BER value. There is a trade-off among modulation size, throughput, BER value and spectral efficiency. Results also reported the requirement of channel estimation and equalization in high data rate systems.

Keywords : AMC, CSI, CMA, OFDM, OFDMA, WiMAX

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