Abstract

The objective of this study is improving channel estimation accuracy in OFDM system because channel state information is required for signal detection at receiver and its accuracy affects the overall performance of system and it is essential to improve the channel estimation for more reliable communications. OFDM system was chosen in this study because it has been widely used today due to its high data rate, channel capacity and its adequate performance in frequency selective fading channels. The pilots were inserted among subcarriers in transmitter with distances emerged of sampling theory then Least Square (LS) method & minimum
mean-square error (MMSE), was chosen for initial channel estimation in pilots at receiver, using applicable proposed receiver, which has simple and usable structure, then channel state information was estimated by linear interpolator in information subcarriers, which uses two adjacent channel estimation in pilots to compute channel in another subcarriers and an LMS iterative algorithm, including a feedback of output is added to system. This algorithm uses the channel estimation of last iteration in current estimation. Adding a LMS iterative algorithm to system, improves the channel estimation performance. Simulation results proved the acceptable BER performance of iterative channel estimation algorithm, which is closed to the ideal channel. The low complexity proposed receiver including LMS algorithm, has a higher efficiency than conventional methods (without channel estimation & LMMSE ) and it can work in lower amount of SNRs.

Reference

IEEE P802.16 (Draft 8, May 2005), WiMAX Specification.

**Index Terms**

Computer Science  
Wireless Communications

**Key words**

OFDM  
AWGN  
Rayleigh  
LS Channel

Estimation  
LMMSE Channel Estimation