Estimation of highly selective channels for downlink LTE system by a robust neural network

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In this paper we propose a robust channel estimator for the downlink of a Long Term Evolution (LTE) system using a highly selective neural network. This method uses the information provided by the reference signals to estimate the total frequency response of the channel in two phases. In the first phase, the proposed method learns to adapt to the channel variations, and in the second phase it predicts the channel parameters.

The performance of the estimation method in terms of complexity and quality is confirmed by theoretical analysis and simulations in an LTE/OFDMA (Orthogonal Frequency-Division Multiple Access) transmission system. The performance of the proposed channel estimator is compared with those of least-square decision feedback and modified

Wiener methods. The simulation results show that the proposed estimator performs better than the above estimators and it is more robust at high-speed mobility.