

# Implementation Aspects of channel Estimation for 3GPP LTE Terminals

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Michal Simko and Christian Mehlhuhner  
Institute of Communications and Radio-Frequency Engineering,  
Vienna University of Technology

Johan Eilert\*, Di Wu and Dake Liu  
Department of Electrical Engineering  
Linköping University

## Abstract

In this paper, hardware implementation aspects of the channel estimator in 3GPP LTE terminals are investigated. A channel estimation ASIC, which handles the real-time channel estimation, is presented. Compared to traditional correlator-based channel estimators, the channel estimator presented boosts the throughput at feasible silicon cost by adopting a recently proposed estimation method named Approximate Linear Minimum Mean Square Error (ALMMSE). In this paper, both the architecture and VLSI implementation of the estimator are elaborated. Implemented using a 65nm CMOS process, the channel estimator supports the full 20MHz bandwidth of 3GPP LTE and consumes only 49k gates.

\* Johan Eilert is now with ST\_Ericsson AT AB, Lund, Sweden