

Dissertation press release

13.9.2019

Wideband and Tunable Software Controlled Receivers for Emerging Mobile Communication Standards

Title of the dissertation	Integrated Radio-Frequency Receivers for RF-to-Digital Converters
Contents of the dissertation	The emergence of new mobile communication standards demands a mobile receiver to operate over a wider frequency range with a smaller size and cheaper production costs. This requirement leads to the direction of wideband receivers which are tunable through software-control. This thesis covers the challenges faced towards the implementation of completely integrated software-defined wideband radios. In particular, the thesis covers following research outcomes. First, the thesis details a new technique to implement wideband interferer tolerant on-chip filtering. The technique aims to achieve completely integrated wideband receivers. Second, a novel technique to reduce transmitter signal leakage is implemented for full-duplex reception. Third, blocker rejection and sensitivity issues in a direct delta sigma receiver architecture are analyzed to improve its performance.
Field of the dissertation	Micro- and Nanoelectronic circuit design
Doctoral candidate	Faizan Ul Haq, MS in Electrical Engineering
Time of the defence	17.10.2019 at 12:00
Place of the defence	Aalto University, School of Electrical Engineering, TUAS building, lecture hall TU1 Maarintie 8, Espoo
Opponent	Professor Dag T. Wisland, Research group for Nanoelectronic systems, University of Oslo, Norway.
Custos	Professor Jussi Rynänen, Aalto University, School of Electrical Engineering, Department of Electronics and Nanoengineering.
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