Notice of dissertation defense 27.02.2018

Next Generation Wireless Receiver Circuits

Title
RF-to-Digital converters: The Direct Delta-Sigma Receiver
RF-digitaali -muuntimet: Suora delta-sigma vastaanotin

Content
Wireless communication circuits have a key role in current and upcoming technologies, such as mobile phones, internet of things, and self-driving cars to name a few. This has led to a rapid growth in the number of wireless data transmissions. Highly versatile, programmable, and digital-intensive communication circuits are required to navigate this never-ending wireless rush hour. Ultimately, the receiver and transmitter will be reduced to RF-to-digital converter and digital-to-RF converter, respectively.

This thesis presents a next generation RF-to-digital architecture, the direct delta-sigma receiver, which enables versatile, programmable, and compact receiver implementations by combining a direct downconversion receiver and delta-sigma analog-to-digital converter. The prototypes designed as a part of this thesis demonstrate state-of-the-art sensitivity and adaptability compared to previously reported RF-to-digital converters.

Field of research
Micro and Nanoelectronic Circuit Design, RF-to-Digital Converters

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