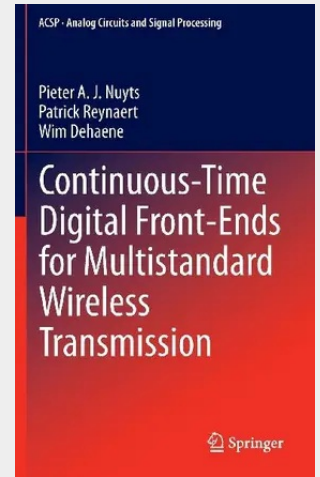


Continuous-Time Digital Front-Ends for Multistandard Wireless Transmission

This book describes the design of fully digital multistandard transmitter front-ends which can directly drive one or more switching power amplifiers, thus eliminating all other analog components. After reviewing different architectures, the authors focus on polar architectures using pulse width modulation (PWM), which are entirely based on unclocked delay lines and other continuous-time digital hardware. As a result, readers are enabled to shift accuracy concerns from the voltage domain to the time domain, to coincide with submicron CMOS technology scaling. The authors present different architectural options and compare them, based on their effect on the signal and spectrum quality. Next, a high-level theoretical analysis of two different PWM-based architectures – baseband PWM and RF PWM – is made. On the circuit level, traditional digital components and design techniques are revisited from the point of view of continuous-time digital circuits. Important design criteria are identified and different solutions are presented, along with their advantages and disadvantages. Finally, two chips designed in nanometer CMOS technologies are described, along with measurement results for validation.

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