**IEEE Transactions on Circuits and Systems-II: Express Briefs**

**Special Issue on**

# Software Defined Radio Transceivers and Circuits for 5G Wireless Communications

## Call for Papers

Wireless communications is one of the fastest growing technologies, which has a huge impact on our daily life, society and economy. A plethora of wireless communication standards have been developed to date and more new standards are also emerging. For universal global communications anytime and anywhere, one smart mobile phone should ideally support at least five different standards: 2G or 2.5G (GSM, GPRS, EDGE), 3G (WCDMA, CDMA2000 or TD-SCDMA), WiFi (802.11x), Bluetooth and Navigation (GPS, Galileo or Compass), and more advanced mobile phones would also support 4G LTE. As research has already started to define 5G communications, more standards will be developed, for example to include new wireless and mobile technologies such as using massive MIMO and millimetre wave bands. If each communication mode is implemented with one set of special hardware, the phone cost would be expensive and the volume would be large since multiple sets of hardware in parallel would be needed. Since various communication applications are not used at the same time, it would be cost efficient to reuse the same hardware and dynamically reconfigure its communication mode according to the user's command. The most challenging part of the dynamically reconfigurable transceiver hardware, that is, software defined radio hardware, is the RF, analog and mixed-signal circuits and systems located between the antenna and digital baseband as the digital baseband can easily be programmable by FPGA and DSP technologies. A universal software-defined and digitally-controlled RF transceiver on a single chip would be desired for accommodating various bandwidth and power requirements of different standards, reducing phone size, and adapting to environmental changes.

The aim of this special issue is to publish technical papers reflecting the most recent research and application results in software defined radio frontend architecture, circuits and systems for wireless and mobile communications, and identify new challenges in software defined radio research for 5G communications. The following topical areas will be covered in this special issue:

Reconfigurable wireless transceiver architectures
Single chip transceivers/transmitters/receivers
Low power transceivers/transmitters/receivers
Multiband/multimode/multistandard transceivers
Tuneable and programmable RF and analog circuits
Energy-efficient and low power RF and analog circuits
Digitally assisted RF and analog circuits
Wideband analog, mixed-signal and RF circuits
Digitization at RF and bandpass sampling circuits
Adaptive ADCs and DACs at RF, IF and baseband
MIMO RF transceiver architectures, circuits and systems
Millimeter wave transceivers, circuits and systems for 5G

Authors should follow the normal IEEE Transactions on Circuits and Systems-II guidelines for their submission (http://tcas2.polito.it/authors.htmls), but please choose "Special Issue Software Defined Radio Transceivers and Circuits for 5G Wireless Communications". Original research with significant novelty and experimental results is sought. Papers already published in conferences will not be considered for this special issue.

**Schedule:**

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| Submission Deadline: | **21 April 2015 (extended)** |
| Notification of First Review: | 30 June 2015 |
| Completion of Final Review: | 30 September 2015 |
| Publication: | December 2015 |

**Guest Editors**

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