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International Journal of RF and Microwave Computer-Aided Engineering

SPECIAL ISSUE ON

COMPACT AND EFFICIENT RF ENERGY HARVESTING SYSTEM DESIGNS

Increasing power requirement for the reliable and robust operations of large amount of multifunctional electronic components in commercial products has initiated a promising research area for alternative free available "green" energy sources. The required amount of energy level to be used for low-power electronics in smart environments can be conveniently harvested from the ambient sources such as solar energy, wind energy, thermal energy, mechanical energy, and RF energy. The targeted power for clean, ''green'', self-sustainable operation of low power electronics components can be extracted by the propagating RF energy, which has been originating from the available surrounding wireless RF energy sources such as GSM cell towers, base stations, WLAN routers, Wi-Fi hotspots, TV, radio broadcast stations, and some unknown RF transmitters. The motivating scientific interest on the RF energy harvesting systems has been initiated by Nikola Tesla and Heinrich Hertz more than 100 years ago due to the scientific technical and experimental work on the wireless power transfer concept. The fundamental technical design approach in RF energy harvesting systems is based on the rectifying antenna design, which is composed of a radiating element and an RF electronic circuit capable of converting incoming RF signals into DC voltage in order to replace DC power requirement in electronic components. Because of the input power and DC load dependent operation of nonlinear RF rectifying electronic circuit, the energy harvesting system has to be designed under a predetermined load and input power level in the broad range. In order for this kind of radiating RF electronic circuits to be commercialized with high integration into the available low power, low voltage electronics components, the complete RF energy harvesting module has to be realized in compact physical size with high RF-DC conversion efficiency.

This special issue focuses on the current state of the art of RF energy harvesting system design consisting of compact electrically small antenna and nonlinear RF electronic circuit topological models. Single and multiple band RF energy-harvesting systems with high RF-DC conversion efficiency under variable input power and DC load conditions with compact physical size are included in this special issue. Papers dealing with electrically small antennas designs, zero bias Schottky diode/MOSFET based Villard voltage multiplier circuits or alternative rectifier electronics topologies operating at low power levels and band pass filters for the suppression of higher order harmonic components generated by the RF diodes in the general framework of RF energy harvesting system and related to potential practical applications, are solicited. Suitable topics include but are not limited to:

- Electrically small RF energy harvesting antenna designs
- AC-DC rectifier RF electronics circuits
- Higher order harmonics suppressing bandpass filter designs
- Multiple stacked layer energy harvesting antenna designs
- Wide-beam with high gain RF energy harvesting antenna designs
- Compact circularly polarized RF harvesting antenna designs
- Broadband/multiband RF energy harvesting system designs
- MOSFET and diode based Villard voltage multiplier and efficient rectifier architectures

- AC-DC rectifier RF electronics circuits with broad low input power levels and DC output load values

This special issue will appear in January 2019. Manuscripts should conform to the requirements for regular papers to the journal. Authors wishing to have their contribution considered for this issue should submit their contribution in pdf format before **June 30, 2018**, using the following Scholar One "online" address:
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In the "Author-Supplied Data" block, the contact author is advised to enter "yes" in the Special Issue column as well as the special issue title, "Compact and Efficient RF Energy Harvesting System Designs". Any further enquires may be made to the Guest Editors:

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