

## **A novel rectifying circuit for microwave power harvesting system**

Many researchers continue to look for novel means to harvest energy and generate power using existing sources thus eradicating the need of batteries and power supplies which only add up to the cost of the system. A rectifier is the main component in energy harvesting circuits as it converts RF energy from available sources to DC power. This article aimed at developing a novel rectifying circuit to be used in harvesting applications at a frequency of 900 MHz. Besides, it is also aimed to enhance the output voltage of Cockcroft Walton rectifier circuit and Dickson rectifier. The design is built by integrating the Cockcroft Walton rectifier, arranged in series, with the Dickson rectifier, arranged in parallel. A Schottky diode HSMS 285C is selected for designing the rectifiers circuit. A simulation of the circuit was optimized utilizing ADS 2009. The rectifiers had been fabricated on an RT/Duroid 5880 (RO5880) printed circuit board (PCB) substrate with a dielectric constant and loss tangent of 2.2 and 0.0009, respectively. Simulation and experimental results show great output thresholds for the three models. The novel rectifier had the highest efficiency and output voltage.

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