

A New RF Rectifier Topology with Enhanced Operable Power Range

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Abstract: In this paper, a new reliable radio frequency (RF) rectifier topology with an enhanced operating power range is proposed. The presented RF harvester possesses an efficient RF to DC conversion ratio over an enhanced power range. A typical RF rectifier is initially optimized, and then the RF input is equally split into two branches. Splitting the input RF power improved the reliability and breakdown performance of the rectifier. This has the effect of increasing the power rectification range by approximately a factor of three. The design presented herein aims at avoiding any efficiency degradation in scenarios, where the RF power fed into a typical harvesting circuit varies. The proposed rectifier circuit is fabricated and the measured results show good agreement with simulated data.