

Design of a Rectifier with Enhanced Efficiency and a High-gain Antenna for Integrated and Compact-size Rectenna Circuit

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Abstract : In this paper, a compact, high-efficiency integrated rectenna is presented to operate in the 2.45 GHz band. A comparison between two rectifier topologies is performed to verify the benefits of removing the matching network from the rectifier. A rectifier high conversion efficiency of 74.1% is achieved. To complete the rectenna system, a novel omnidirectional antenna with high gain (3.72 dB) and compact size (25 mm * 29 mm) is designed and fabricated. The same antenna is used with a reflector for raising the gain to nearly 8.3 dB. The simulation and measurement results of the antenna are in good agreement.

Keywords : internet of things, integrated rectenna, rectenna, RF energy harvesting, wireless sensor networks(WSN)

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