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Demonstration of Powering up Low Power Wireless Sensor Network by RF Energy Harvesting System

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Abstract : This work presents discussion on the possibility of merging two emerging technologies in microwave; wireless power transfer (WPT) and RF energy harvesting. The current state of art of the two technologies is discussed and the strength and weakness of the two technologies is also presented. The equivalent circuit of wireless power transfer is modeled and explained as how the range and efficiency can be further increased by controlling certain parameters in the receiver. The different techniques of harvesting the RF energy from the ambient are also extensive study. Last but not least, we demonstrate that a low power wireless sensor network (WSN) can be power up by RF energy harvesting. The WSN is designed to transmit every 3 minutes of information containing the temperature of the environment and also the voltage of the node. One thing worth mention is both the sensors that are used for measurement are also powering up by the RF energy harvesting system.

Keywords : energy harvesting, wireless power transfer, wireless sensor network and magnetic coupled resonator
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