Student Project Proposal

Project title: Rectifier simulation for mm-Wave application

Project type: **Bachelor Semester Project** (8 credits)

Faculty and Laboratory: STI, Microwaves and Antennas Group

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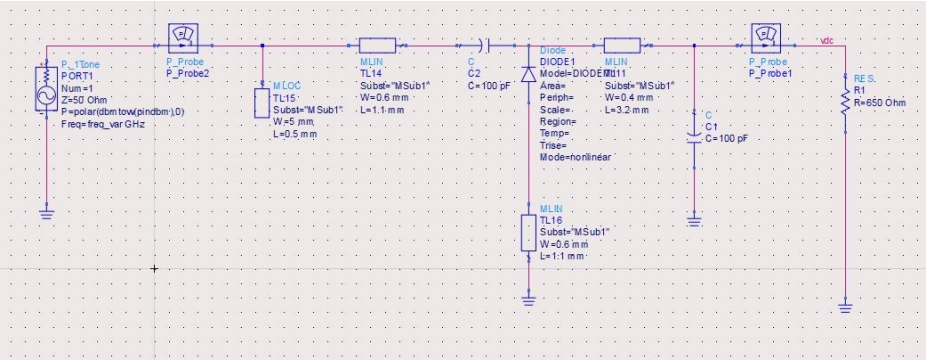
Project Description

In the wireless power transfer application one of the key features is the power conversion efficiency of the rectifier on the receiver unit of such system. In the mm-Wave domain this becomes more sensitive as the amount of power level received from the receiver will be relatively lower than what can be picked up in for instance sub-6 GHz frequencies. Hence, it is necessary to improve the power conversion efficiency of these elements. While there are variety of factors which need to be considered, one that cannot be omitted is the proper matching network to be designed for an appropriate impedance match between the antenna of the rectenna system and rectifier input.



Project Goal

In this project student will grasp general knowledge about the RF wireless power transfer and get familiar with rectenna unit and the corresponding rectifier. Students will focus on learning different matching networks and learn how to match the input impedance of the RF system with passive components. Student will also learn the design procedure in the ADS or similar simulation environment.

Student Task

- Study of wireless power transfer.
- Study of rectifier and matching networks.
- Design and simulate the appropriate matching network.
- Fabrication and measurement (if time permits).

Outcomes

- Student will learn matching networks.
- Student will learn simulation environments.

Type of Work

- Theory 35%
- Simulation 40%
- Measurement 5%
- Documentation & Reporting 20%

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