

## Student Project Proposal

Project title: Power distribution network design for mm-Wave 5G array

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

Faculty and Laboratory: STI, Microwaves and Antennas Group

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### Project Description

One of the essential parts in the antenna array systems are the power divider and distribution network. These offer the foundation for accurate signal control among the array elements. To achieve desirable beamforming qualities and improve the overall signal integrity of the array, a well-designed distribution network is essential. Furthermore, the loss created due to these elements has a crucial effect on the final power level which will be transmitted. The power divider or distribution network directly affects the array radiation pattern and uniformity of the transmitted signal, hence guaranteeing a coherent phase and amplitude distribution is mandatory.

## Project Goal

In this project student will grasp the general principles about the planar phased array architecture and pursuit availabilities of distribution network to be utilized in mm-Wave array architecture.

## Student Task

- Study of array theory.
- Study of available distribution network solutions.
- Design and simulate the appropriate solution.
- Comparison of distribution networks.
- Fabrication and measurement (if time permits).

## Outcomes

- Students will learn array theory.
- Students will learn distribution networks and power dividing mechanisms in the RF regime.
- EM Simulation and measurement techniques will be learned.

## Type of Work

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