

Fachbereich Ingenieurwissenschaften
Abteilung Elektrotechnik und Informationstechnik
Institut für Nachrichten- und Kommunikationstechnik

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Studienarbeit / Bachelorarbeit

Topic: Realization of a vectorial network analyzer for the frequency range 1 MHz-60 MHz

Description: The commercial measuring station in our department covers the frequency range above 50 MHz. But for certain applications it is also necessary to be able to measure vectorially below this boundary. For this reason, a computer controlled vectorial network analyzer should be constructed, in order to complete the measuring equipment in the department. The design should be based on DDS(direct digital synthesis)-AD9851 (or comparable) chip and comparator AD8302 of Analog Devices and hence as compact as possible. This measurement device should have a USB connection to the controlling PC. A software program needs to be developed (matlab code), which controls the measurement device. Finally make measurements at the calibration elements in order to determine the error tolerance of the equipment and then eventually correct it using a calibration algorithm. Apart from the theoretical description of the measurement principle, this project mainly consists of hardware development and some software development.

Prerequisites:

- Soldering and hardware experience (SMD elements)
- Basic knowledge of high frequency techniques
- Skills to handle standard software packages (e.g. text processing, graphic tools, CAD, etc.)

Further information will be available in the department.