

**Aufgabe der Abschlussarbeit im
EIT Bachelorstudiengang**

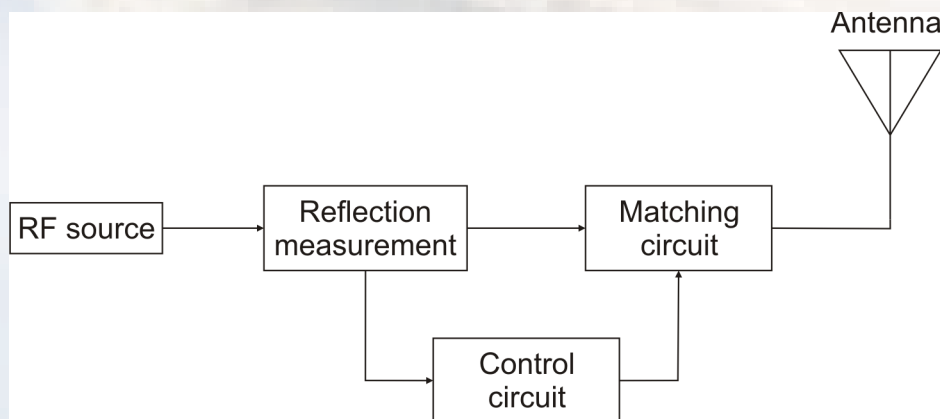
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Thema: **Control and Matching Circuit for Adaptive Impedance Matching System**

Beschreibung:

Radio frequency waves can penetrate into the body when an antenna is positioned above the skin. Reflected waves are created by the air-to-skin interface and by objects inside the body. By placing the antenna on the body the antenna becomes mismatched. The amount of mismatch is dependent on the body structure and differs for various individuals. A method to reduce the reflection is known as adaptive impedance matching. The system consists of antenna, controllable matching circuit, mismatch measurement circuit and control circuit (analog or digital).

**Task:**

The task of the thesis is to build and investigate a control and a matching circuit. The control unit adaptively adjusts the matching circuit in order to reduce the reflection of a given antenna. The control unit is based on a microcontroller which has to be programmed.

In particular, the task entails the following steps:

1. Search the literature for information on existing concepts
2. Select a suitable circuit concept and design and assemble an appropriate matching circuit in printed circuit technology
3. Design a control circuit (Hardware & Software)
4. Experimental verification of the system performance

At the end of the work, a public presentation of results is to be given.