Design and implementation of portable impedance analyzers

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Abstrak

The increasing interest in the bio-impedance analysis in various fields has increased the demand for portable and low-cost impedance analyzers that can be used in the field. Simplifying the hardware is crucial to maintaining low-cost and portability, but this is not an easy task due to the need for accurate phase and magnitude measurements. This book discusses different portable impedance analyzers design techniques. Additionally, complete designs using two different approaches are reported. The first approach utilizes a commercially available single chip solution while the second one is based on a new measurement technique that eliminates the need to measure the phase by using a software algorithm to extract it from the magnitude information. Applications to the measurement of fruit bio-impedance are emphasized and compared with measurements from professional stand-alone impedance analyzers.