

Abstract

My Thesis is about a testing program for analog-to-digital converters in LabView development environment. The program is able to identify the transfer characteristic of the ADC by the estimation of the transition levels. Once the transfer characteristic is known, the error of the converter can be described using the standard quantities. The transition levels are determined using the sinewave histogram test. In this method, the ADC is excited with a sine wave input, then a histogram is created from the digital codes. Accurate estimation of the transition levels requires precise information about the sine parameters, so the program is able to estimate amplitude, frequency, initial phase and DC offset component of the input signal. Once these steps are done, the offset and gain error, and the nonlinearity errors of the ADC can be evaluated. The development took place in LabView environment. I have learnt the development environment during the preparation of the thesis by solving practical problems with it. After the development and testing with simulated data was done, I have tested the program with real measurements. The program is still under development, once its final version is ready, it will be published for research and educational purposes.