

Abstract

The oscilloscope is the most versatile electronic instrument one can have on one's worktable today. It is a very expensive instrument however. I propose a new kind of an oscilloscope. A box of electronics, with a CPLD at its heart and VGA monitor as its visual output, that provides the functionality of an oscilloscope. This instrument should also be a fraction of the cost of conventional oscilloscopes.

This thesis produces an instrument that fulfills this objective – A cheap oscilloscope that uses a VGA monitor as its output. It does not have the complete functionality of conventional scopes, but it can be significantly improved. It can be used in educational laboratories where financial resources do not permit the purchasing of the commercial oscilloscopes.

During the design process, literature was read of the various parts of the prototype system. The UP2 Development Board and QuartusII were the primary tools used in the design.

Experiments, Simulations and Research were the primary methods used to facilitate the design process.

The prototype design consisted of 3 main processes. These processes could however be broken down in many other processes. This is an indication of the top-down design process followed.

The thesis was successful in that it produces a trace of the input signal on the VGA monitor. The input signal was a saw-tooth waveform.