

Implementation of a Color VGA Game Using PWM on a FPGA Board

Botoş ANGHEL

Abstract

This document presents the design of a color VGA ping-pong game for 2 players. The game extends the usual 8-color palette that the development board is able to display to a 125 color palette using a PWM (Pulse Width Modulation) technique. Input from the users is taken directly from the FPGA development board buttons, or from PS/2 keyboards. The game is displayed on a VGA monitor. The design is complete, meets all requirements, and it has been verified through simulation and physical implementation. The circuit is defined in VHDL, and it targets a Xilinx XC2S200E FPGA on a Digilent D2SB development board. Since all source files are VHDL, they can be generally used on any similar FPGA development board. The circuit was designed on a Windows XP PC using the Xilinx WebPack 7.1.04i CAD tool.