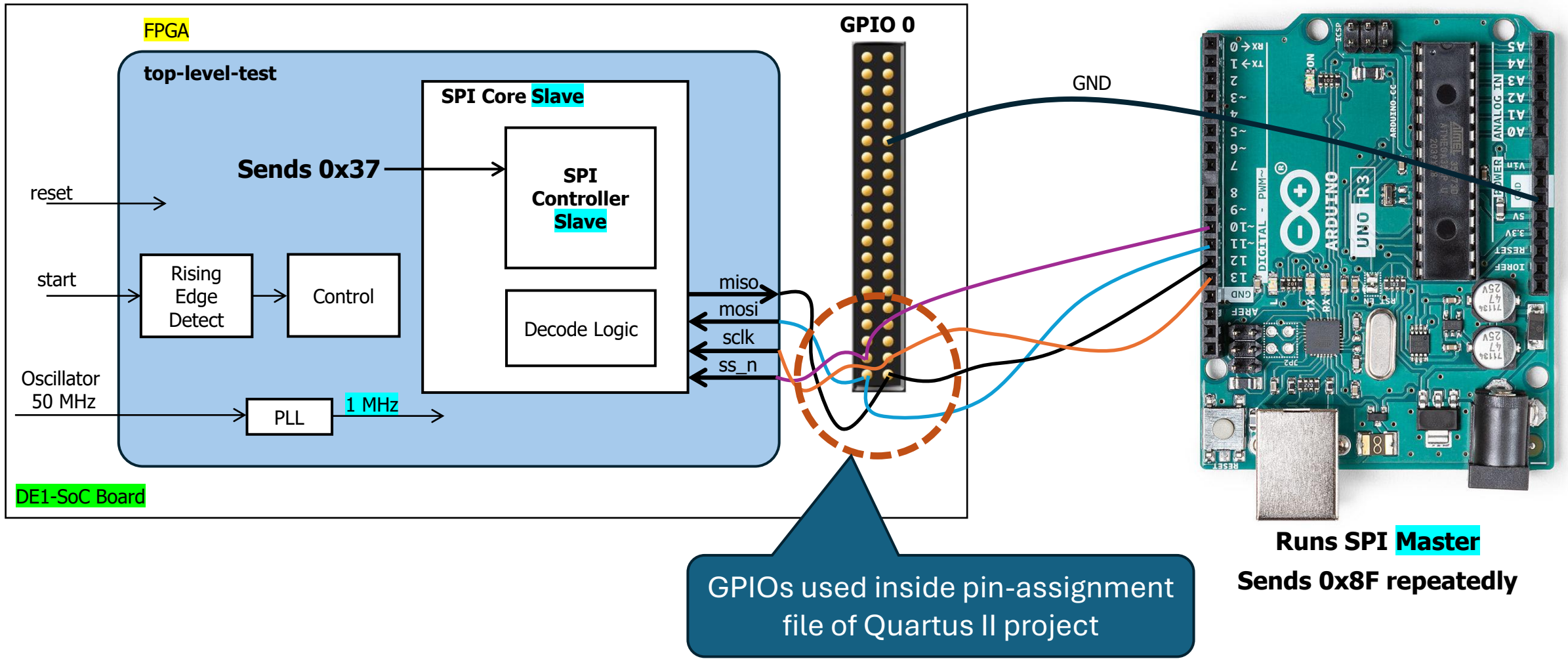
SPI Controller Slave in VHDL – Test Project

- FPGA Board
  - DE1-SoC board
  - Implements a test application that uses SPI Core Slave mode to receive repeatedly a byte 0x8F sent by an Arduino Uno board and to send byte 0x37 continuously to the Arduino.
  - SPI Core is a wrapper around an SPI Controller.
  - The test project is a wrapper around SPI Core. This would need to be changed to implement any fancier communication you would like; for example if this SPI Slave would be inside a sensor module and you wanted it to send back say temperature readings, this could be achieved with implementing the right FSM to understand commands read/write from the Master.
- Arduino Board
  - Runs a simple sketch that uses SPI configured as Master to send the 0x8F byte and to also receive what FPGA SPI Slave returns at the same time and print to the Serial terminal.

Simplified Block Diagram of the Test System



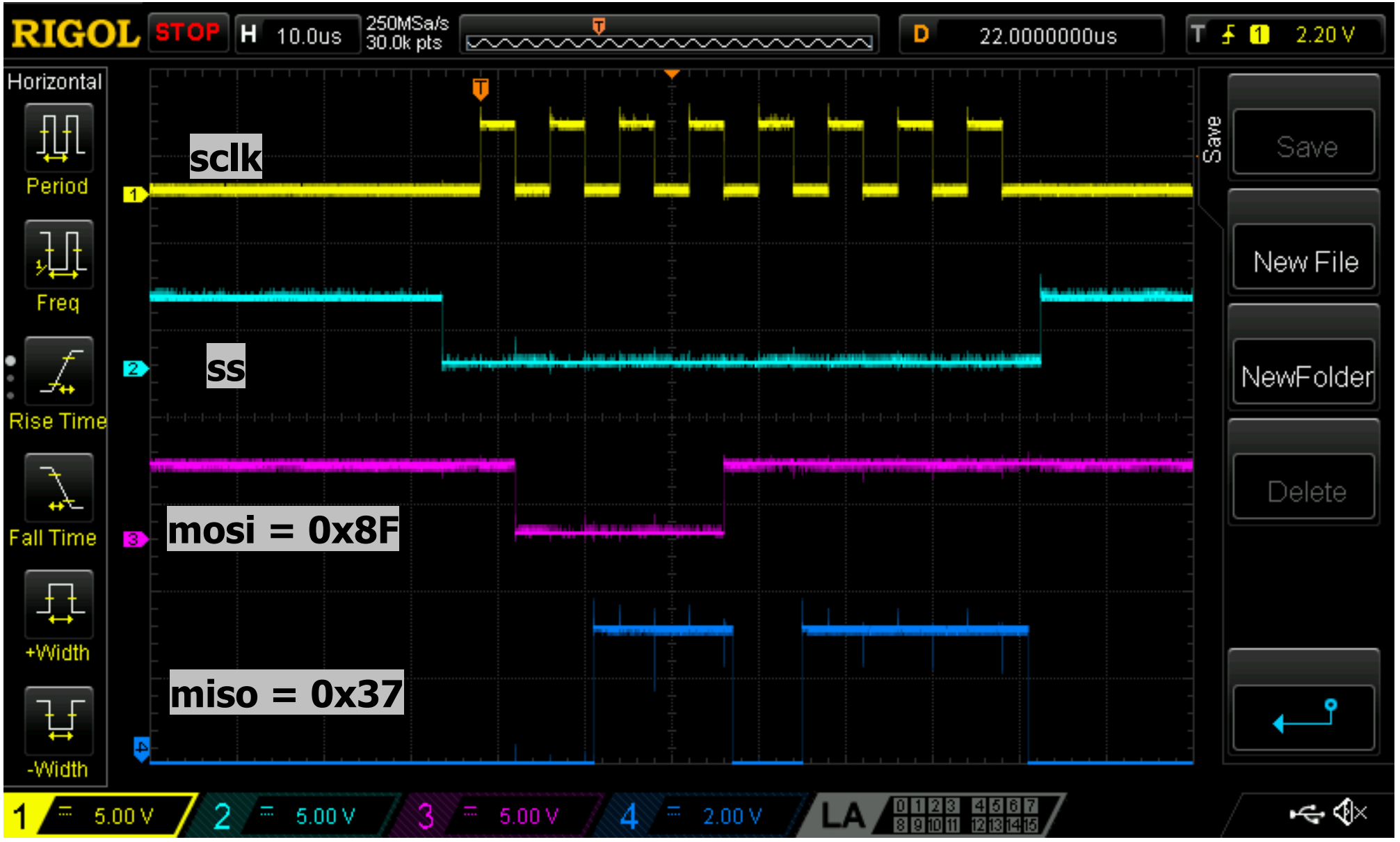
Oscilloscope – Sending Repeatedly 0x8F

Sent by Arduino Uno (Mode-0)

Sent by Arduino Uno

Sent by Arduino Uno

Sent by FPGA (3.3V level)



References – SPI Master to SPI Slave Connections