Red Pitaya

Thesis

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CHAPTER 1

Introduction

- Rationale (Why?)
- What is the general approach to solve this problem?
- What has been done so far?
- Results of previous work
- What are we going to do?
- What are the contents of this report?

Part I System Analysis



Requirements

• Detailed List of Specifications



Existing Solution

3.1 Previous Work

3.2 Red Pitaya Platform

General Info about Red Pitaya Project:

- How is the PITA project structured? (logically, license-wise, philosophically)
- Why do we care about this?
- 3.2.1 FPGA
- 3.2.2 Linux



Decision matrix

Part II User Guide

Part III

Developer Guide



Documentation of our FPGA Project (structure, interfaces, registers ...)



Kernel module, server



Vivado, Build Box, ARM Linux, TCL, Makefiles, Libs for building server application

Part IV

Implementation



Data Acquisition System

- 8.1 FPGA
- 8.2 Kernel Module



10 CHAPTER

Graphical Front End



Part V

Theoretical Background



FIR, IIR, CIC, Half-band, ...

- downsampling: Aliasing into passband
- FIR, IIR: Pros, Cons, not much detail
- CIC, half-band: More detailled