Contents

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

CHAPTER 2

Requirements

- Detailed List of Specifications

CHAPTER 3

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

CHAPTER 4

Conclusions

Decision matrix

Part II

User Guide

Part III

Developer Guide

CHAPTER 5

IP Core

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

CHAPTER 6

Linux

Kernel module, server

CHAPTER 7

Tool Chain

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

Part IV

Implementation

CHAPTER 8

Data Acquisition System

CHAPTER 9

Filters

CHAPTER 10

Graphical Front End

CHAPTER 11

Server

Part V

Theoretical Background

CHAPTER 12

Filters

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

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