

# Abstract

Nowadays, Software Defined Radios (SDR) are becoming more and more popular. The main feature of these devices, that some of the physical layer function are replaced by software. Therefore, SDRs can be easily reconfigured and there are several ways to utilize them. With SDR, one can easily create prototypes or reconfigurable radio systems.

The goal of my thesis is to create a signal processing application using a chosen SDR platform. This application should be capable of measuring a given frequency band and collecting information about its utilization. Based on the utilization, the application should evaluate which bands are not allocated.

In this paper, I studied the mathematical background of the complex envelopes and various SDR architectures. Using this knowledge, I designed and implemented a spectrum analyzer using an RTL2832U chip-based receiver and MATLAB. After the implementation, measurements were performed using the application. Based on these measurement results, I validated the operation of the spectrum analyser.