Walla Walla University

SDR Receiver Project

ENGR 357 – Electronics II
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Professor: Dr. Rob Frohne
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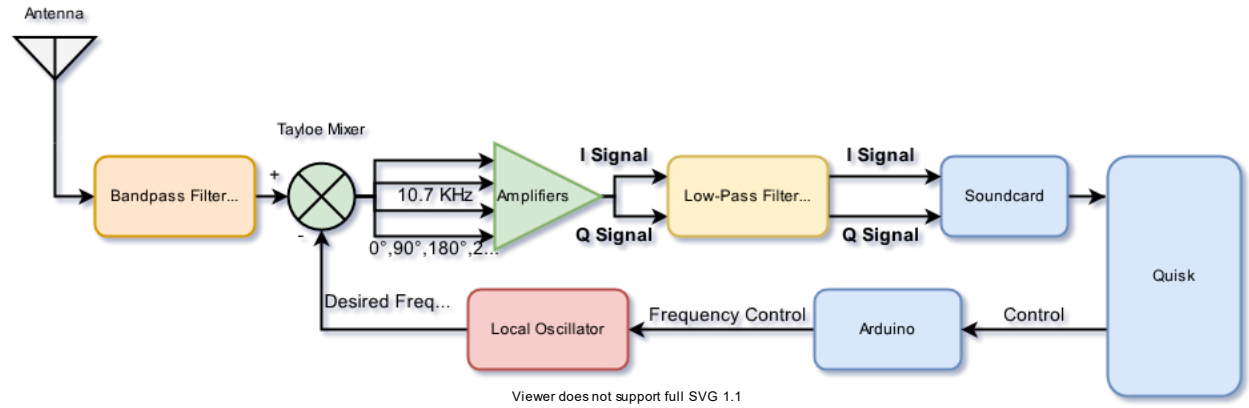
Abstract

The goal of this project was to design a low-cost software-defined radio (SDR) receiver in a team of two. The SDR receiver connects to an antenna and covers the filtering, mixing, and amplification of the desired signal. It then connects a sound card within a computer and software handles the demodulation of the signal into playable audio. The mixing is handled using an Arduino Nano running code provided to us by Professor Frohne, which interfaces with Quisk, an SDR radio program that controls the receiver through the Arduino. Using Quisk, the radio can be tuned to a certain frequency by adjusting the speed of the local oscillator used in the mixing process. Our budget on this project to keep with the low-cost aspect was about $30 including fabrication of the PCB and the required components.

Circuit Description



Schematic

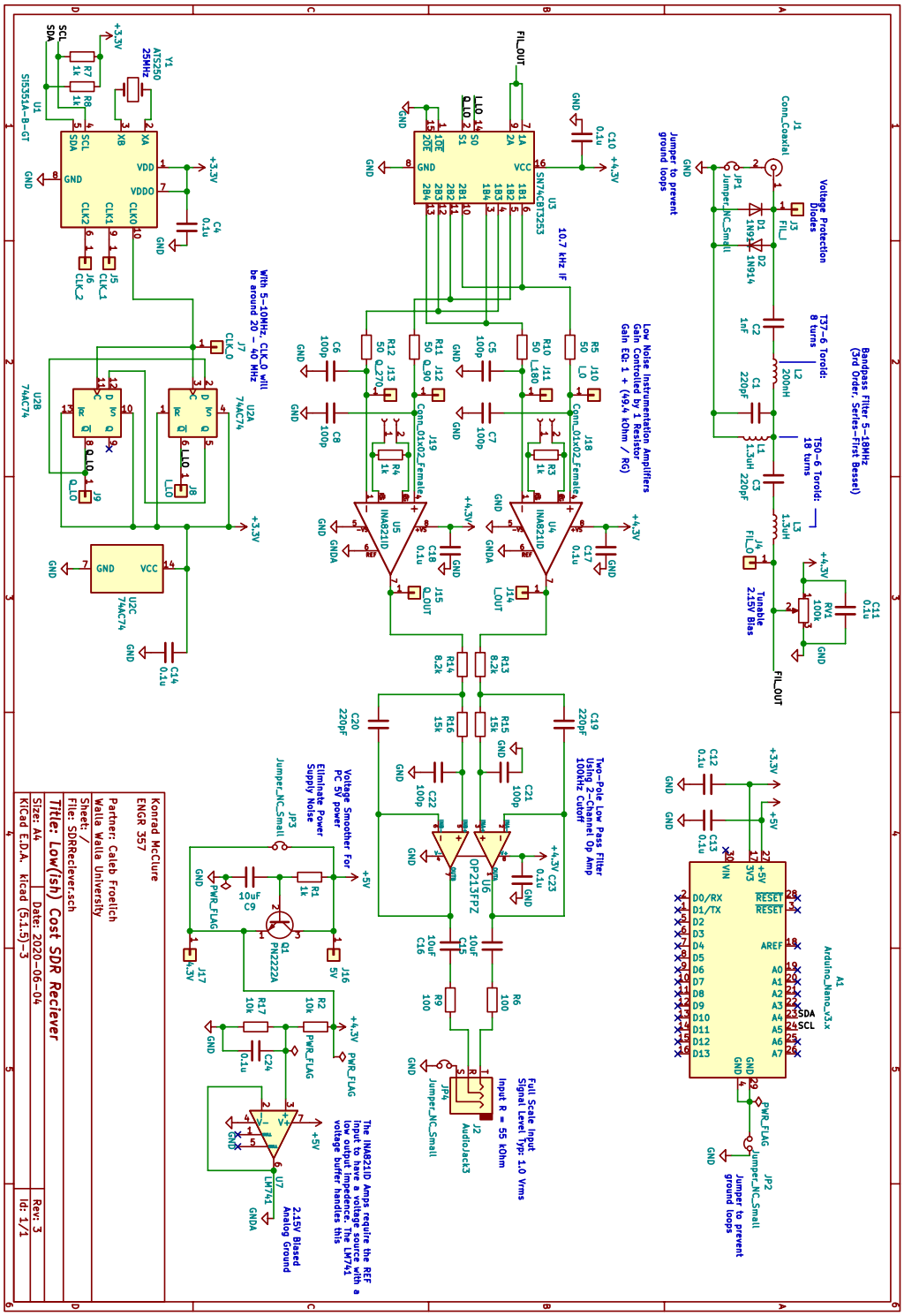


Figure 1 - Rev 3 Schematic for the SDR Receiver. Since Rev 2, the voltage follower for GNDA and pull-ups for the I2C lines have been added

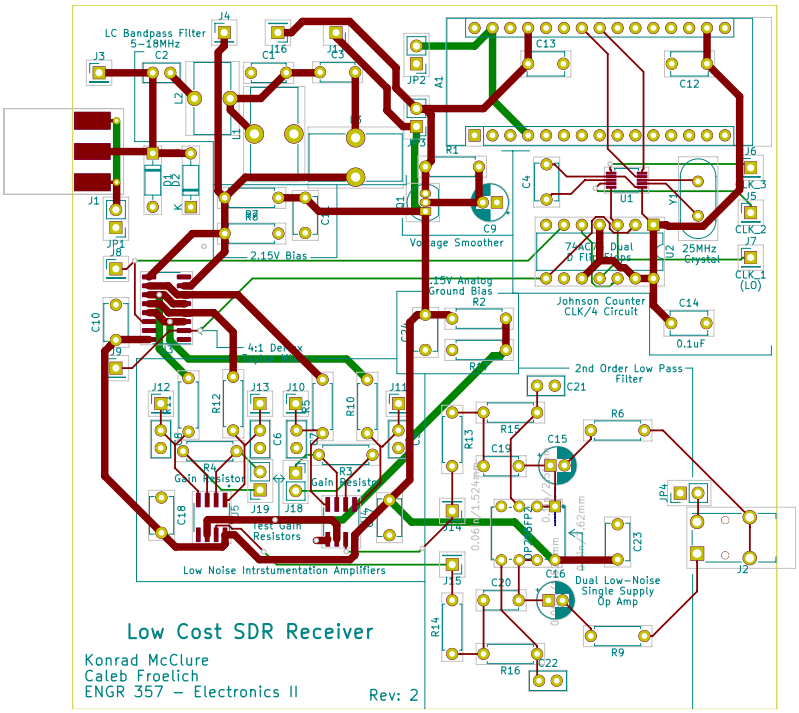


Figure 2 - PCB Layout for Rev 2 of the SDR Receiver. Rev 3 has not been lain out at this time

Links

Quisk Main Site: Here

Build Instructions

Kicad Files

Test Results