

For our circuit we used a 3rd order shunt first Butterworth bandpass filter, a Tayloe mixer, a local oscillator using the Si5351A, a differential summation amplifier, and a sound card that is to be used with computer SDR software like Quisk. The bandpass filter is configured to operate from 10-15MHz to allow for better quality. The main purpose of choosing these is simplicity and price. The filter between the antenna and the mixer is the 3rd order shunt-first Butterworth filter. The mixer we used is the Tayloe mixer. The amplifier we are using that goes from the mixer to the soundcard is the differential summation amplifier. The values for the bandpass filter were calculated from the website <https://rf-tools.com/lc-filter/>. Other values are based on previous work. The simulations aren't totally complete. We have each part individually, aside from the mixer, just not the complete LTSpice model for simulating the entire circuit.