

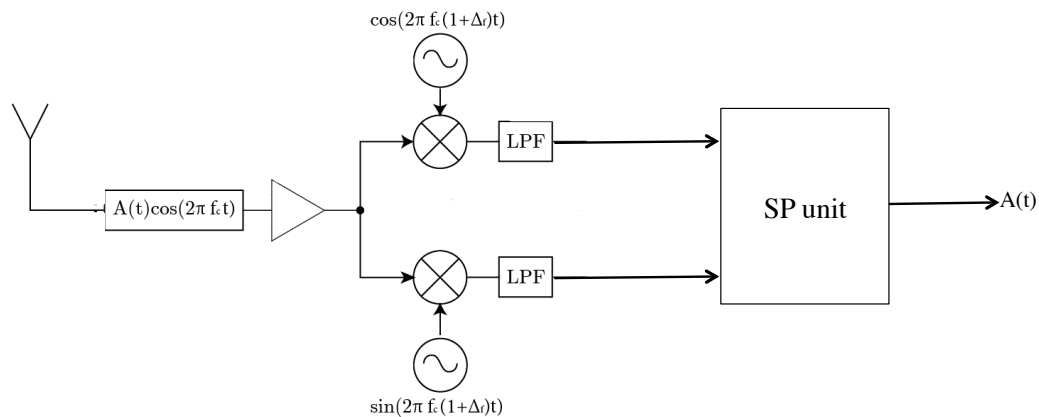
Software defined radio

A software-defined radio (SDR) is a communication system whose goal is to remove all the analog parts of a traditional radio and do them in software. The hardware of an SDR mostly comprises of a DSP chip and the software defines the filters, the frequency coverage, the mode (AM, FM, etc), the attenuators, etc.

What can an SDR do?

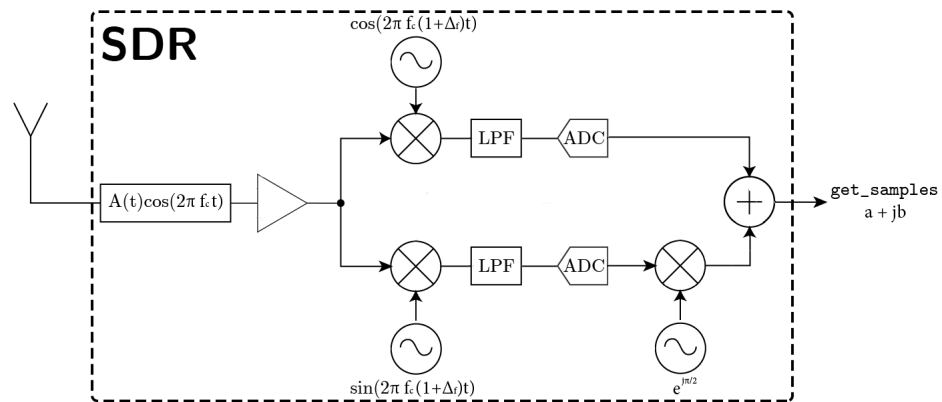
- They can perform modulation/demodulation; support any future mod/demod with just a software update!
- They can perform various RF measurements which help in figuring out interference patterns, evaluate antennas etc.
- They can help with various experiments/advances without having to physically build circuits.
- They can work satellite data with ease.
- They can help in visualizing large portions of the RF spectrum. This is useful for scanning bands, contesting (FCC TV white spaces) etc
- They can plot airplane flight paths along with weather and other sensor data using ADSB.

Block diagram of a traditional AM receiver



Most components are hardcoded. Will need to physically tune the tuner to the frequency of interest.

Block diagram of an SDR



The frequency which you want to tune into is a variable and it can easily be done on a computer as you have already seen in the labs!