

Trips-page

A basic introduction to software defined radio!

Software defined radio (SDR) is a radio communications technology aimed at implementing typical radio components, such as filtering and modulation, in software rather than hardware. A general purpose processor or FPGA can be utilized to perform complex digital signal processing. The Universal Software Radio Peripheral (USRP) is one such SDR with the intent that it acts as general purpose hardware to convert between high frequency RF and digital baseband signals (and vice versa).

In-Phase (I) and Quadrature (Q) sampling allows us to represent each sample point in components to form a phase vector. I/Q sampling offers many advantages including the ability to discriminate between positive and negative frequencies (which is important for an SDR which operates at baseband) and perform complex modulation schemes.

There should be a test image below:

<http://imgur.com/GGXAYvE>

Lets try some math:

$$A_c \cdot \cos(2\pi f_c t + \phi)$$