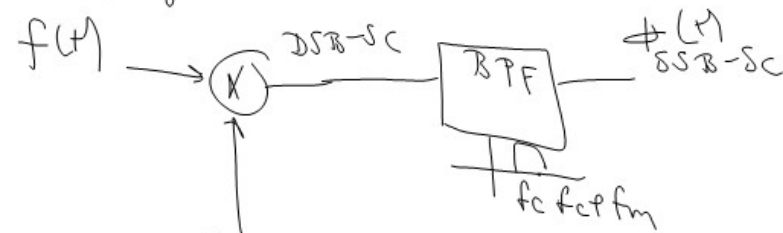


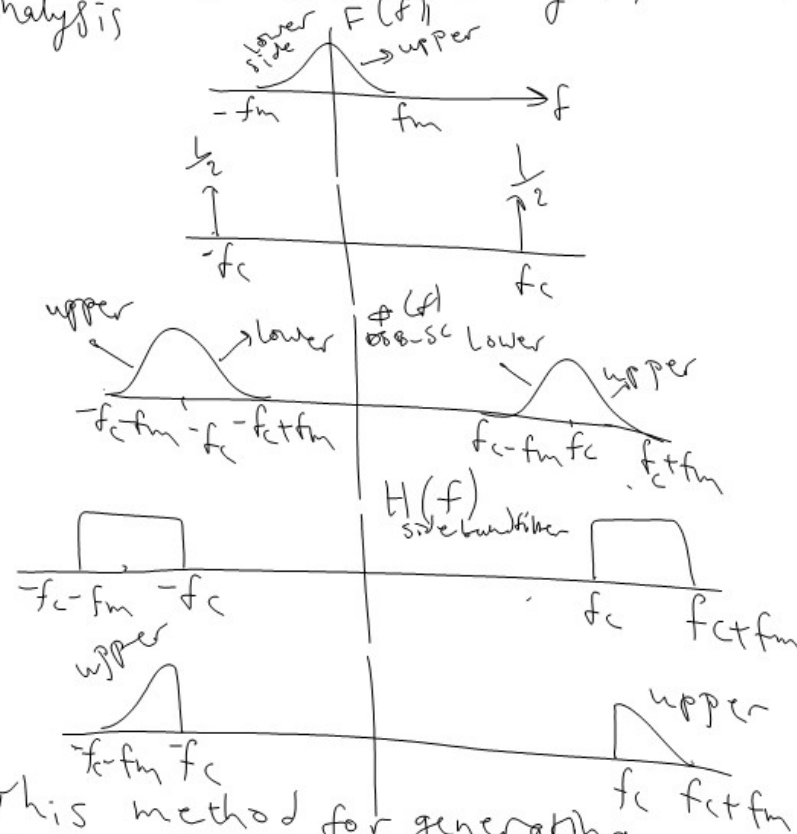
5.4.1 Generation of SSB-SC

* There are two ways to generate a single side band signals

1. Generate a double side band signal followed by a side band filter as shown by the following block diagram

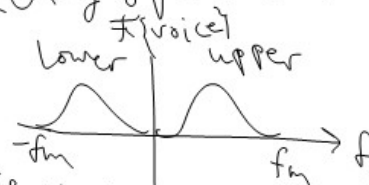


* The principle of operation of this method is best illustrated by spectrum analysis

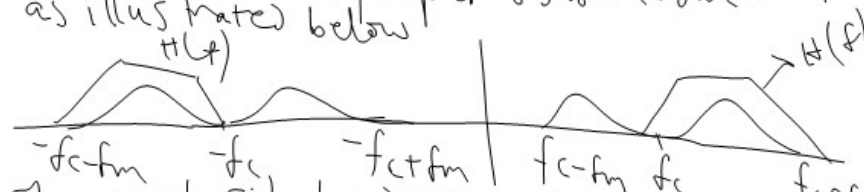


* This method for generating SSB modulation is suitable for signals that does not contain frequency down to zero because the side band filter is not ideal

* for example voice signals have frequency spectrum as the one shown below



* for this of signals If the filter is not ideal we can still have a proper SSB-modulation as illustrated below



* The single side band signal can be described mathematically by the following equations

$$\phi_{SSB-SC}(t) = f(t) e^{j\omega_c t}$$

$$\phi_{SSB-SC}(t) = e^{j\omega_c t}$$

by taking the real part of $\phi_{SSB-SC}(t)$ we have the following equation

$$\text{Re} \left\{ e^{j\omega_c t} \right\} = 1$$