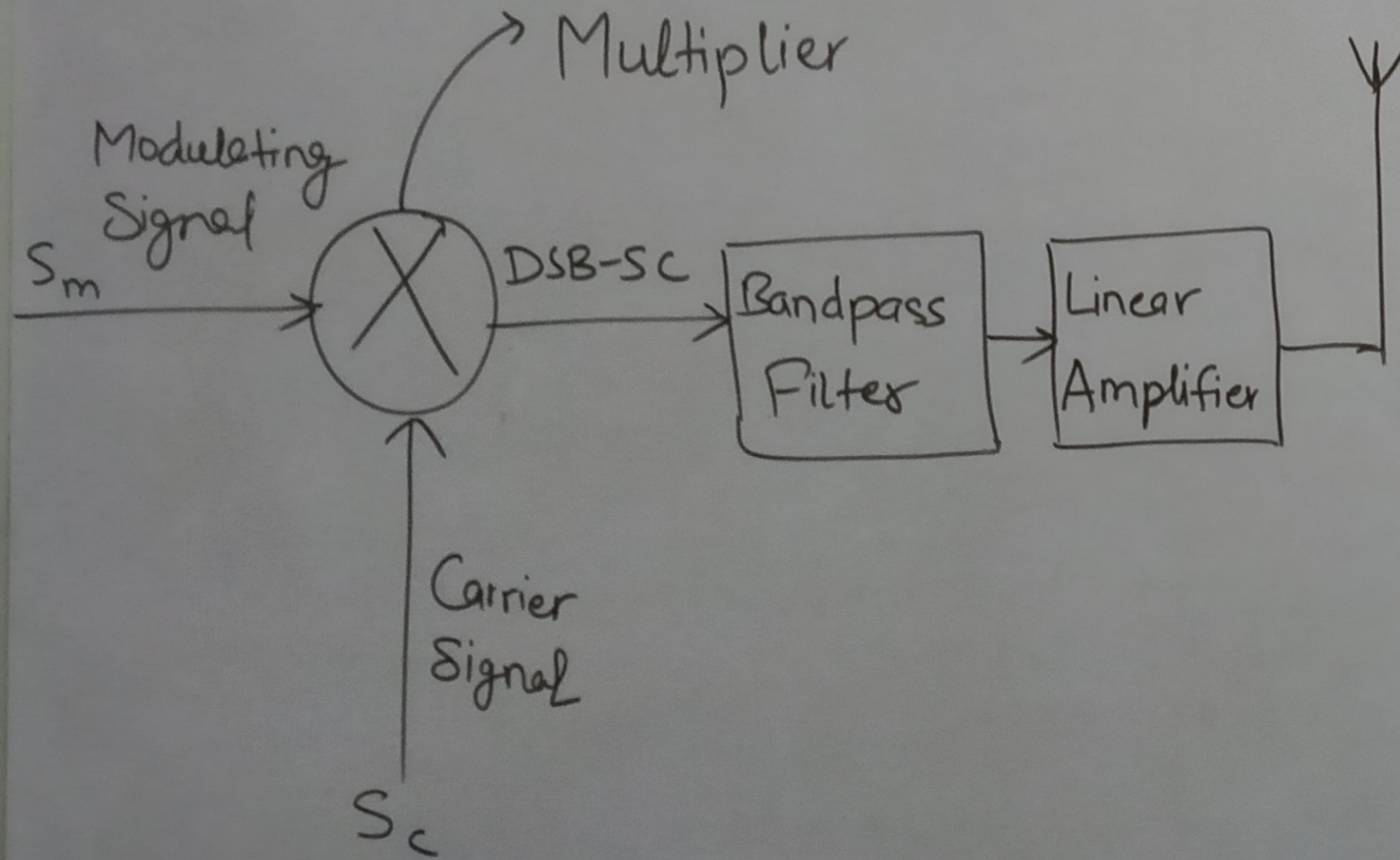


SSB-SC (S

→ The modulation system in which only one side band is transmitted and carrier are eliminated, the modulation system is called SSB-SC.



Block Diagram to generate SSB

The DSB-SC signal is given by:—

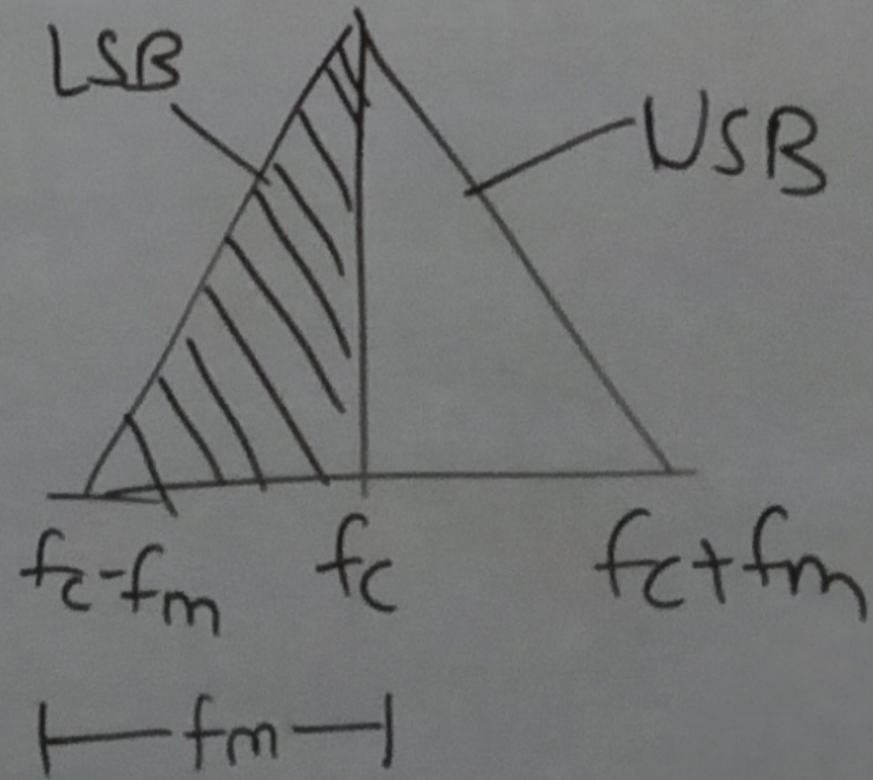
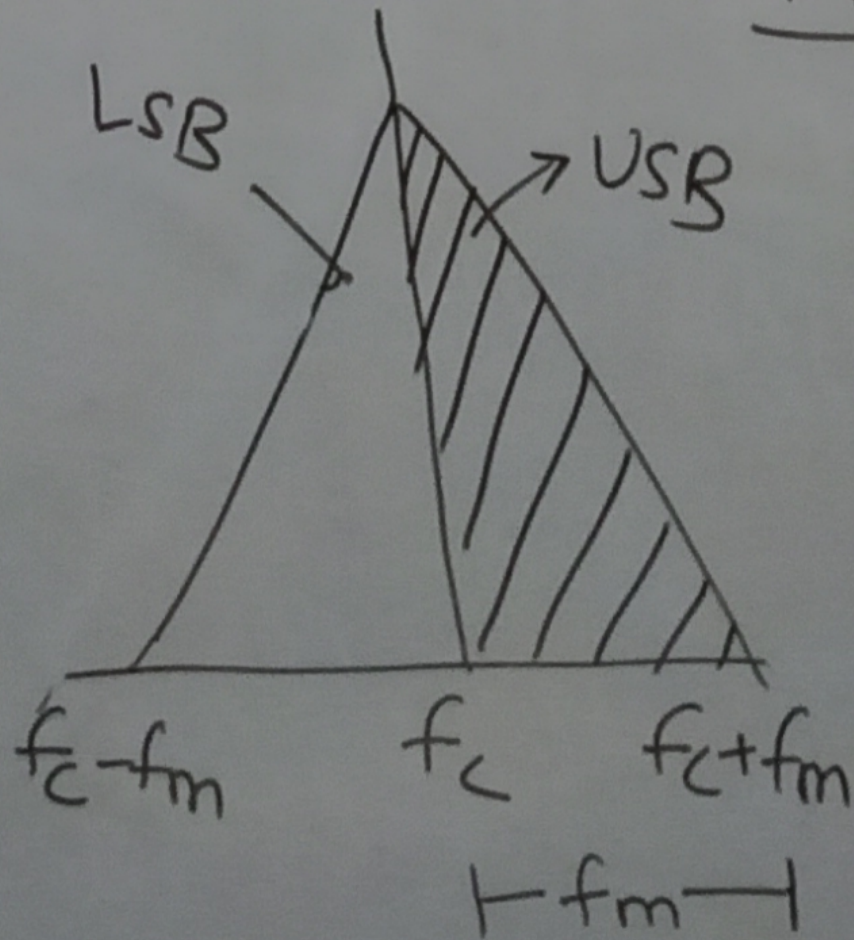
$$X_{\text{DSB-SC}}(t) = \frac{A_m A_c}{2} [\cos(\omega_c - \omega_m)t + \cos(\omega_c + \omega_m)t]$$

In single sideband, only one sideband is used.
Therefore,

$$X_{\text{SSB (USB)}}(t) = \frac{A_m A_c}{2} \cos(\omega_c + \omega_m)t$$

$$X_{\text{SSB (LSB)}}(t) = \frac{A_m A_c}{2} \cos(\omega_c - \omega_m)t$$

Frequency Spectrum



ADVANTAGES —

- ① Reduced bandwidth requirement
- ② Power requirement is low in this system & efficiency is high.

DISADVANTAGES | —

- ① SSB-SC system is expensive.
- ② Design circuit of SSB-SC is very complex.

APPLICATIONS

- ① Used in mobile phone handsets.
- ② Point to point communication.
- ③ Air and Marine.
- ④ Television
- ⑤ Radio Navigation & Military Communication.