**Experiment No.: Date:**

**Aim:** To study FM modulation using Matlab

**Theory:**

Modulation is the process by which some characteristics of a carrier are varied in accordance with a modulating frequency. Frequency modulation is the process of changing the frequency of a carrier signal in proportion with the instantaneous value of modulating signal. This is called as frequency modulation. Modulation Index is defined as the ratio of frequency deviation to the modulating frequency.

mf = δ

fm

The equation of FM is given by:

eFM= Ec sin(ωct +mf sinωmt)

**Advantages:**

1. Improved noise immunity.
2. Low power required for to obtain same quality of signal at receiver.
3. Transmitted power remains constant.
4. All the transmitted power is useful.
5. Covers a large area with same amount of power.

**Disadvantages:**

1. Very large bandwidth is required.
2. FM transmission and reception equiments are complex.
3. Space wave propagation is used, so the radius of transmission line is limited due to line of sight.

**Applications:**

1. Radio broadcasting.
2. Sound broadcasting in a TV.
3. Satellite communication.
4. Police wireless.
5. Point to point communication.

**Conclusion:**