AM, PM and FM

- All these modulation types are analog modulation techniques. All the modulation types are used to transmit information from one place to the distant place. Mostly this techniques are employed in wireless communication.

- For any analog modulator type, there are two inputs and one output. The two inputs are modulating signal (i.e. analog information to be transmitted) and carrier signal waveform. The output is referred as modulated waveform.

Amplitude Modulation(AM)

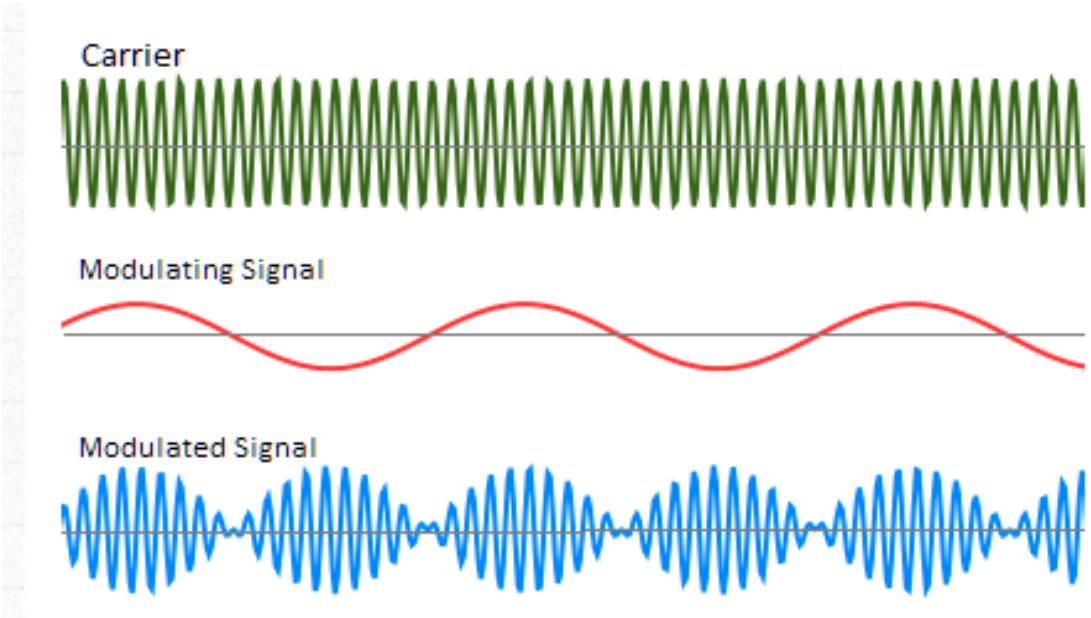
- Amplitude Modulation(AM) is the modulation technique in which carrier amplitude varies based on analog baseband information signal to be transmitted using wireless. One of the application of amplitude modulation is radio. AM broadcast signals are mainly propagated by ground waves during the day and by sky waves at night time.

AM Advantage

- AM is the simplest type of modulation. Hardware design of both transmitter and receiver is very simple and less cost effective.

AM Disadvantage and Application

- AM is very susceptible to noise.
- AM radio broad cast is an example.



Frequency modulation (FM)

- Frequency Modulation(FM) is the modulation technique in which carrier frequency varies based on analog baseband information signal to be transmitted using wireless device. Frequency modulation is considered to be superior compare to the Amplitude modulation due to better noise immunity and its ability to reject the interfering signals due to the capture effect.

FM Advantage

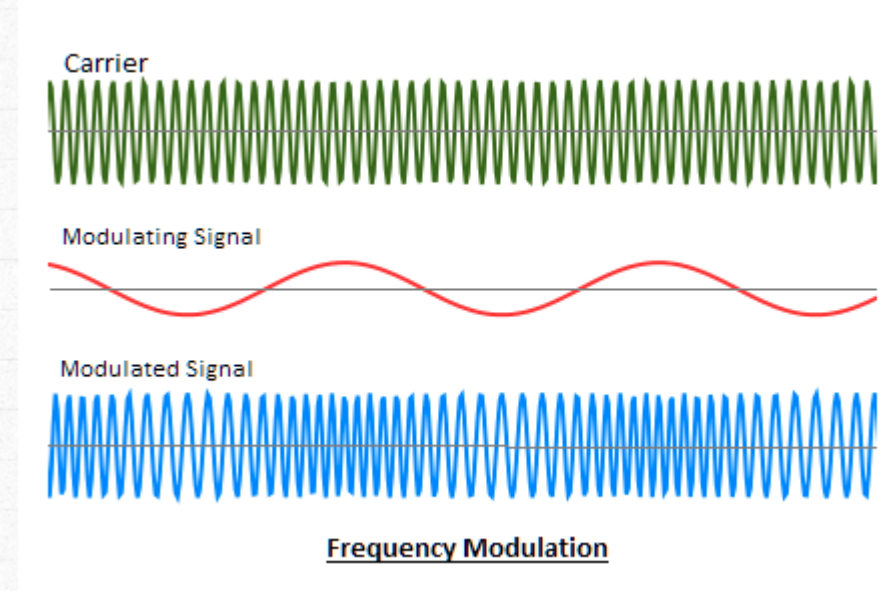
Modulation and demodulation does not catch any channel noise.

FM Disadvantage:

Circuit needed for FM modulation and demodulation is bit complicated than AM.

Application:

1) FM radio broad cast is an example.



Frequency Modulation

Phase Modulation(PM)

- It is the modulation technique in which carrier phase varies based on analog baseband information signal to be transmitted using wireless device. Phase modulation is referred as indirect frequency modulation due to the fact that phase modulation produces frequency modulation. The effect of variation in amount of phase shift is proportional to change in the carrier frequency.

- **PM Advantage**

  Modulation and demodulation does not catch any channel noise.

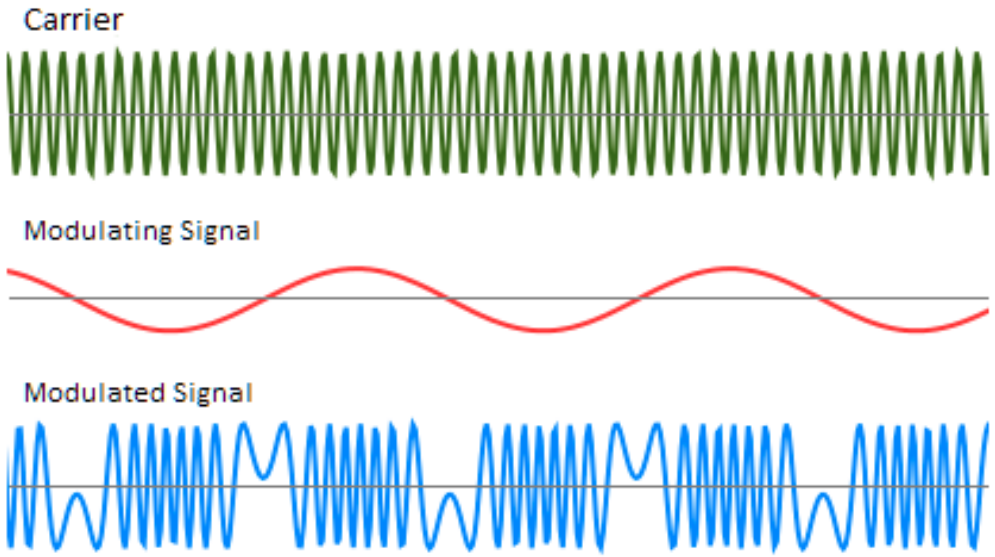
- **PM Disadvantage:**

  Circuit needed for PM modulation and demodulation is bit complicated than AM and FM

- **Application:**

  Satellite communication.

Phase Modulation(PM)



Phase Modulation