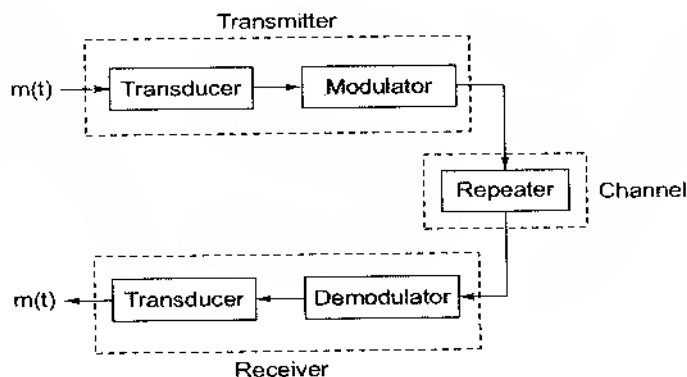


Communication System

A communication system is used to transfer or exchange the information between two points.

Basic Elements of Communication System



Communication system basically consists transmitter, channel and receiver.

1. **Transducer:** It is a device which converts one form of energy to another form. The input transducer convert the message signal into a time varying electrical signal.
2. **Modulator:** It is used to perform the modulation.
3. **Channel:** It is a physical medium that carries the electrical signal. It is used for connection between transmitter and receiver.
4. **Repeaters:** These produce a fresh copy of transmitted signals.
5. **Demodulator:** It performs reverse operation of modulator i.e. it converts high frequency signal to low frequency signal.

Modulation

Modulation is a process that causes a shift in the range of frequencies in a signal.

Need of Modulation

1. To decrease the length of transmitting and receiving antenna.
2. The low frequencies are attenuated fast and therefore low frequency signal can not be transmitted over a large distance. By translating the low frequency component to high frequency component, long distance communication is then possible.
3. By varying the signal power which is being transmitted, required signal to noise ratio (S/N) can then be obtained.
4. Frequency division multiplexing (FDM) is possible and therefore large number of signals can then be transmitted with different carrier frequencies over a common communication channel.

Note:

- Message signal is modulating signal and it modulates carrier signal.
 - In modulation some properties of carrier signal are varied in accordance with the message signal.
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Base Band Signal

The message signal generated from the information source is called base band signal. Base band signal has significant frequency component near to zero or low frequencies.

Band Pass Signal

It is a signal having significant frequencies component for range of frequencies away from zero frequency or low frequency.

Spectrum

It is frequency domain representation of a signal.

Bandwidth

It is defined as band of group of frequencies for which amplitude of signal is not zero.

Note:

- Carrier frequency is much higher than message signal frequency.
 - Noise mainly added to signal in the channel.
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