Digital Modulation Techniques

INTRODUCTION

• In a digital communication system, the source to be transmitted is discrete both in time and amplitude

The source information is normally represented as a baseband (low-pass) signal

• In digital modulation a high frequency analog carrier signal is modulated by digital bit stream

What is modulation?

• Modulation = Adding information to a carrier signal

• The sine wave on which the characteristics of the information signal are modulated is called a carrier signal

Modulations systems

Types of digital modulation technique

• Coherent

• Non coherent;

In coherent modulation technique process received signal with a local carrier of same frequency and phase.

Non coherent; In Non coherent digital modulation technique there is no requirement of reference wave.

Digital modulation technique

• ASK (Amplitude shift keying)

• PSK (Phase shift keying)

• FSK (Frequency shift keying)

Amplitude shift keying

In ASK, the amplitude of the signal is changed in response to information.

Bit 1 is transmitted by a signal of one particular amplitude to transmit 0, we change the amplitude keeping the frequency constant.

Phase shift keying

In PSK, we change the phase of the sinusoidal carrier to indicate information.

To transmit 0, we shift the phase of the sinusoidal by 180 phase shift represents the change in the state of the information.

Frequency shift keying.

In FSK, we change the frequency in response to information one particular frequency for 1 and another frequency for a 0.

Advantages

• Digital modulation can easily detect and correct the noise.

• Security is more in digital modulation.

• Digital modulation signal can travel a long distance.