NIT Silchar

COMPUTER SCIENCE AND ENGINEERING
Section : B
Semester : IV
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Subject : Signals And Data Communication(Mini Project)
Code : CS-207

Project Description

Group Number - 16

Group Members :

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Project Details

Project Name : Study of Modulation and Demodulation in Data Transmission

Used software/language : MATLAB

Development using : LaTeX Open source software

Aim of the Project :

Data transmission analysis and simulation applying AM/FM and effects of attenuation on the transmitted signal.

Objectives of the Project :-

To study the :

- ❏ Detailed study of various modulation techniques.
  - Analysis and simulation of Amplitude modulation
  - Analysis and simulation of Frequency modulation.
- ❏ Detailed analysis and simulation of demodulation.
- ❏ Effects of Attenuation on transmitting signal

Covering Module in the syllabus for the Project :

- ➢ Amplitude Modulation
- ➢ Frequency Modulation
- ➢ Demodulation
- ➢ Data transmission
- ➢ Attenuation

Abstract

In this project we account for and study the area of data communication, the technical aspects, theory governing the transmission of signal, simulation of different modulations, transference of the signal across the transmitting channel, effects of attenuation on the transmitting signal and finally aspects of demodulation.

Rigorous mathematical analysis of the different signals are done using powerful mathematical tools such as Laplace and Fourier transforms for ease of analysis of different signals as well as in application. Simulations of transmission of different kinds of signals in MATLAB are shown in this project with exquisite detail.

We have covered different types of modulation in theory additionally, Amplitude and Frequency in particular for this project. The process of modulation with carrier signal and input/message signal is examined thoroughly.

We try to cater to the power of computer softwares such as MATLAB, open source software such as LaTeX to develop this project

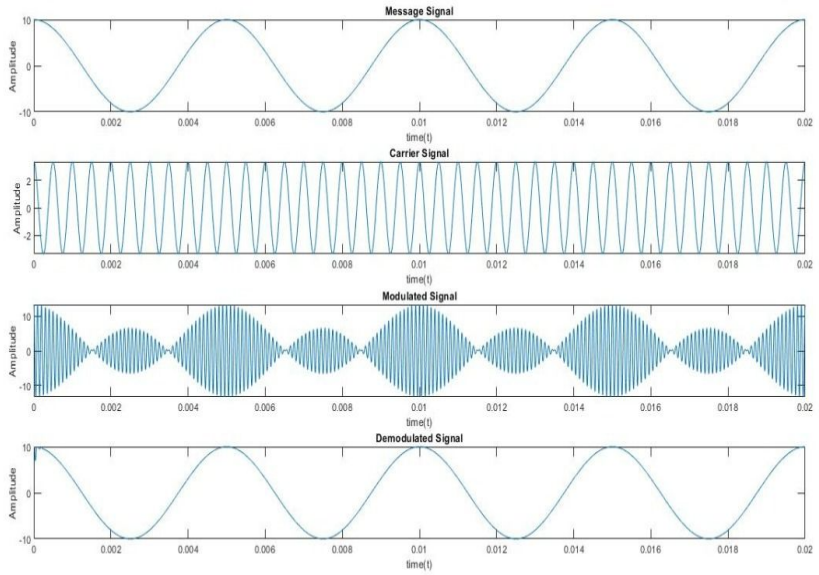

Fig. Depiction of modulation and demodulation of a sinusoidal wave

Details

As we can see in the example given aside, the signal to be transmitted is modulated with a high frequency carrier wave, which is then demodulated at the receiver's end.In our project, we shall be dealing with attenuation and other related matter of subjects.

References of source

- https://in.mathworks.com/matlabcentral/fileexchange/49896-modulation?s_tid=srchtitle
- https://en.wikipedia.org/wiki/Modulation
- http://web.mit.edu/6.02/www/s2012/handouts/14.pdf
- https://www.allaboutcircuits.com/textbook/radio-frequency-analysis-design