Electrical Communications Systems

Course No. ECE.09.433

Laboratory Project 2

AM and DSB-SC Modulation and Demodulation

Objectives

In this project, you will model AM and DSB-SC communications systems using the Matlab Simulink Communications Systems Toolbox.
In both parts, you will test the system with single-tone AM (w and w/o added Gaussian noise) and multi-tone AM signals (w/o added noise).

Software

Matlab: ***https://www.mathworks.com/help/pdf_doc/matlab/getstart.pdf***

***Matlab Communications Toolbox*:**
https://www.mathworks.com/help/pdf_doc/comm/comm_gs.pdf

Project Requirements

The objective is to observe (in time and spectral domains) & listen as audio tones progresses along a modulation-demodulation system, both in the presence and absence of added Gaussian noise (+/- 3dB).

Develop a Matlab Simulink simulation of an AM system that includes a source, modulator, channel, demodulator and sink. Test the system with single and multi-tone audio frequency message inputs. Note down observations in the time and spectral domains, and listen to the audio signals and the input and output.

Repeat the exercise for a DSB-SC system.

Bonus: Demonstrate the Quadrature-Null effect.
