Birla Institute of Technology & Science, Pilani, Rajasthan
First Semester 2019-2020
Lab-2 (Tuesday)

Course: EEE F311 Communication Systems
Instructor-in-Charge: S M Zafaruddin

Date: 13-08-2019

Objectives

In this task, the objective is to understand the pre-processing of information signal before signal transmission. Specifically, the following objectives can be met:

- Handling of function in Matlab
- Modular structure of codes
- Understand the techniques for signal analysis.
- Input-output signals in time, frequency.

Create a folder named with your Institute ID and first name in the Desktop to save your work. Always write code in *.m file. Keep the codes with you for next week Lab sessions.

Task 1

Create a mainyourIDFirstName.m file. Develop following signals in time and frequency as a MATLAB function with appropriate input and output variables. You are required to call the individual functions from the main*.m file only which will generate required plots.

1. Generate a message signal $m(t)$ which is a sum of two sinusoidal signal of frequency 300 Hz and 600 Hz. Plot the time and frequency representation of the signal.
2. Generate a message signal $m(t)$ which is a rectangular pulse of width 0.6 second and amplitude 2. Plot the time and frequency representation of the signal.
3. Generate a message signal $m(t)$ from the WAV audio file nice-work.wav. Download it from: https://www.pacdv.com/sounds/voices/nice-work.wav. Plot the time and frequency representation of the signal.

Task 2

Design an ideal low pass filter (Hint: use the sinc pulse and rectangular pulse duality) to attenuate the higher frequency content in all of the above generate message signals. Choose an appropriate cut-off frequency of the filter. Plot the impulse response and frequency response of the filter and the frequency response of the signal at the output of the filter. You should run the code from the main*.m file.

Backup Codes

1. Please keep backup of codes and figures by sending to your emails.
2. Make a zip/rar folder of your codes and figures in .jpeg format and upload to (ONLY ONCE): https://www.dropbox.com/request/hk7dKiZtsD6UGjKZSCD2

Project Task

We have started individual tasks with a bigger picture: to design an end-to-end simulator. Study the structure module in Matlab. Create a function of source signal as a structure and field values as the signals discussed so far: sinusoidal signal , rectangular pulse, audio file.