Birla Institute of Technology & Science, Pilani, Rajasthan
First Semester 2021-2022
Lab-Practice (MATLAB): FM Analog Broadcasting

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

21-10-2021 THURSDAY(P1, P3:): MATLAB

Instructions

- Create a folder named Lab in your shared folder.
- Create a Lab Practice Sub-folder in the Lab folder. This folder will be your working directory.
- Develop .m file corresponding to the task.
- You can start the tasks in any order.
- Once all tasks are done, paste your codes and plots/results/observations/conclusions in a word doc and upload through a Dropbox file request link. The link will be shared through Slack.
- Best of Luck

Objectives

In this task, the objective is to study real time transmissions of modulated signals over a channel with additive noise.

MATLAB Task

Download a 30 second song termed as $m(t)$. The message signal $m(t)$ frequency modulates a carrier signal $c(t) = A\cos(2\pi f_c t)$. The modulated FM signal is passed through a wireless channel over a distance of 1 km with AWGN $\sim N(0, 0.1)$. Plot the message signal, carrier signal, modulated signal before channel, modulated signal after the channel with AWGN, and demodulated signal using the envelop detector. Use sound to verify the detected audio signal. Use real-time code and take appropriate values of parameters with justification.

Project Task

We have started individual tasks with a bigger picture: to design an end-to-end simulator for a digital communication system. In this task, we have transmitted modulated signal over band-limited channel with additive noise in real time.