Birla Institute of Technology & Science, Pilani, Rajasthan
First Semester 2019-2020
Lab 8 (Tuesday)

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

Date: 15-10-2019

Objectives

- Line Encoding
- Nyquist pulse
- Digital Modulation

Task 1

1. Binary-encode a random bit stream using an ideal rectangular pulse, sinc pulse, and raised cosine pulse with roll-off factor $\alpha = 0.5$ (use the equation for each pulses). Use polar coding. Show the real-time transmission of the line-encoded data with a rate of 1 bps. Use the same code we shared for real-time display for 30 second data.
2. Plot the PSD of the above line coded waveforms (Full-width rectangular, sinc pulse, and raised cosine pulse). Use the exact equations to plot the PSDs.

Task 2

1. Plot the output signal when the line encoded waveform (sinc pulse, and raised cosine pulse) is passed through a low pass channel of BW (i) 1 Hz and (ii) 1/10 Hz. Observe the effect of channel bandwidth on the output signal.
2. Simulate an ASK bandpass modulation for a On-Off digital signal using a sinusoidal carrier.

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/YyhNdIrG1hLM6Tcb44kJ

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.