EE482 Communication Systems II

Lab Assignment - V†

Professor Sean Kwon, California State University - Long Beach

This Lab is about orthogonal frequency division multiplexing (OFDM). The MATLAB code is the primary one utilized for simulation results in an IEEE Journal as described in the header. The understanding of the code is expected to be helpful for your future work or/and research in Communications.

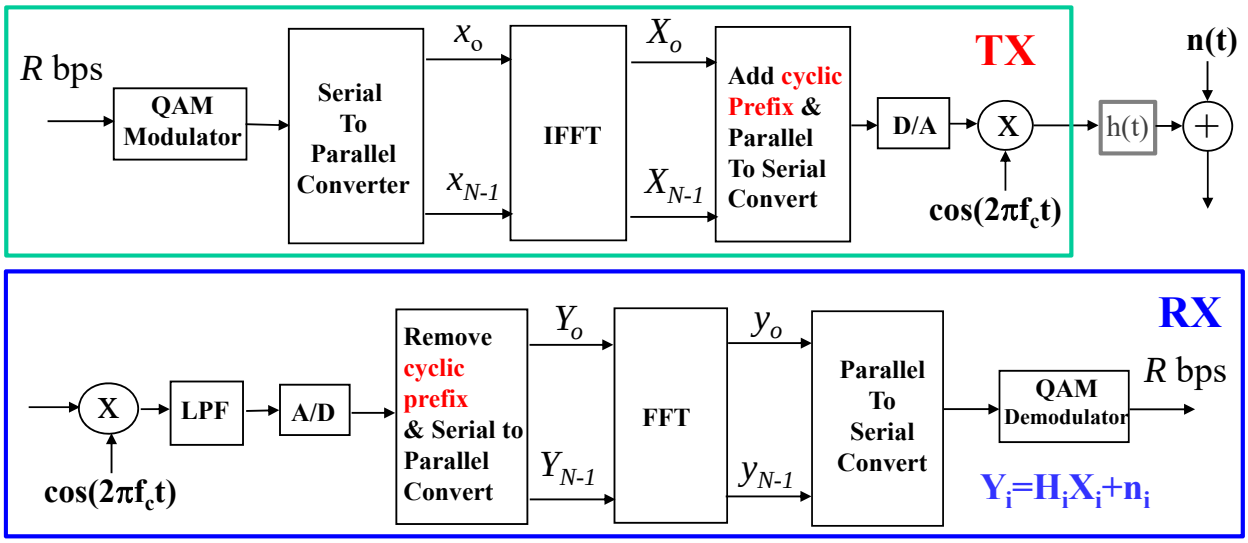

Fig. 1: Block Diagram for OFDM communication system

(1) **[Discrete Fourier Transform (DFT) and Inverse DFT (IDFT)]** Figure 1 illustrates the fundamental components of the OFDM wireless communication system. In the given MATLAB code, find out the parts of DFT and IDFT, and describe (i.e., copy & past) them in your report. What is the number of subcarrier/subchannel? What is the subcarrier spacing?

(2) **[Monte-Carlo simulation]** For the range of SNR set up in the given MATLAB code, plot Bit error rate (BER) curves for QPSK, 8-PSK, and 16-PSK in ONE plot. Describe the behaviors.

(3) **[Discussions]** Could you find out the parts of D/A, A/D and local oscillators in the MATLAB code? If so, describe them in the report; If not, discuss the reasons.