Summary

Nowadays, the wireless communication systems have become an important part of our everyday life. In wireless communications analogue signals used to carry information suffer from distortion as they propagate due to interference, noise, security breach, etc. One way to transmit digital data is to map the information into the properties of the built-in radio frequency waveforms used as carrier signals. Binary phase shift keying (BPSK) is one of those methods in digital communication. This modulation is accomplished by changing the sign of sinusoidal signals according to the information. It is widely used for wireless LANs, RFID and Bluetooth. The thesis focuses on the effect of noise on BPSK modulated signal and simulation of BPSK-based wireless digital communication in embedded systems.

The aim of this work is the simulation of a BPSK-based transmission through noisy channel including the generation and reception of signals, i.e., modulation and demodulation.

To summarize, I generated BPSK modulated signal and transmitted it into a channel characterized by Additive Gaussian White Noise (AWGN). Then, I applied different filtering methods to minimize AWGN and fed the signal into the receiver to detect and recover the binary information. Finally, based on results, I compared theoretical and simulated bit-error-rates of the simulated BPSK wireless digital communication system.