Assignment 6 | Principles of Digital Communications

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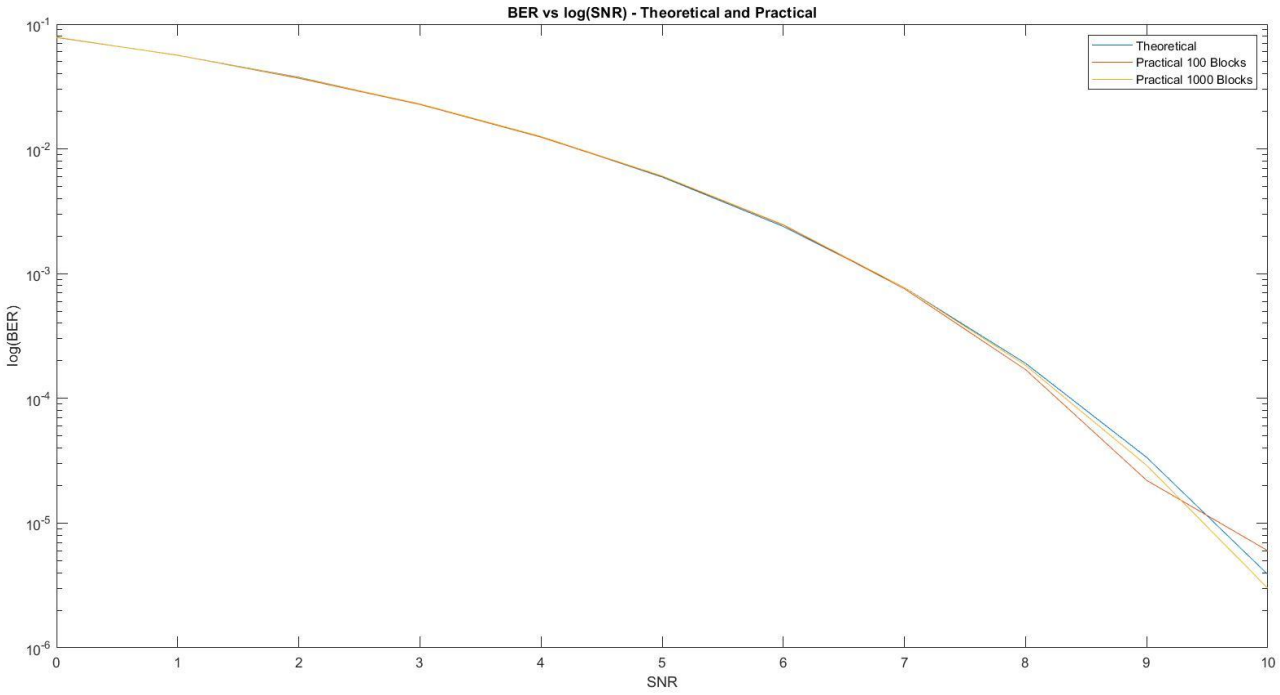

Simulated Results

Above figure shows three curves corresponding to Theoretical Bit Error Rates, Estimated Bit Error Rate for total transmission of 100 Blocks and Estimated Bit Error Rate for total transmission of 1000 Blocks through AWGN Channel with BPSK Modulation.

We can observe that with increasing SNR value, Bit Error Rates decreases **exponentially**. From the above figure, we can say that simulated results are quite close to theoretical values as three curves overlap.

Theoretical SNR = QFunc(sqrt(2*SignalEnergy/N0))

Where, N0/2 = Noise Power Spectral Density

With Binary Phase Shift Keying (BPSK), the binary digits 1 and 0 were represented by the analog levels **-sqrt(SignalEnergy)** and **sqrt(SignalEnergy)** respectively. And since we are sending our bits through AWGN Channel, signal bits are added to randomly generated noise.

To make our computation realistic, we splitted the total bits into a number of blocks and then Txd. Analysis was carried out by keeping unit signal Energy and only varied Noise PSD. This will help to compare various other modulation schemes further.