A STUDY ON DIFFERENT DIGITAL MODULATION SCHEMES

FINAL YEAR REPORT

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ABSTRACT

The objective of this project is to investigate and evaluate the performances of different digital modulation schemes in digital communication systems. They are namely Amplitude shift keying (ASK), Frequency shift keying (FSK), Phase shift keying (PSK), Binary phase shift keying (BPSK), Quadrature phase shift keying (QPSK), Offset QPSK (OQPSK) and Minimum shift keying (MSK).

This paper considers the study of the theory of these modulation schemes. Different types of modulation and demodulation method will be investigated and the advantages and disadvantages are shown. In addition to that, the investigation for the behavior of digital modulation in the presence of noise is carried out. The theory of an optimum threshold detector and error probability, P_e for these modulation schemes is also evaluated.

Lastly an implementation on QPSK is done to show the workings of a QPSK modulator-demodulator (MODEM). The result is compared experimentally and theoretically. Besides practical hardware design, simulation is also done using Mathlab® software.