Error Detection and Correction in QPSK Digital Satellite Receiver

Graduation Project

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STATEMENT

This dissertation is submitted to the Egyptian **Information Technology Institute** for the degree of postgraduate Diploma in Very Large Scale Integration (**VLSI**).

The work included in this project was carried out by the author at the **Information Technology Institute**, under the supervision of **Mentor Graphics Egypt**.

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To the best man I have ever met in my life

Bodies pass away

But souls do stay

You are always in my heart father

ABSTRACT

Error detection and correction system used in satellite links, magnetic recording, cell phones, compact disc players, wireline modems, terrestrial microwave links, and virtually anywhere that errors can be introduced by an imperfect channel is presented using the known Viterbi algorithm for maximum likelihood decoding. The proposed architecture is in a VLSI (or simply in an IC) form, which cab be easily implemented on a microelectronics chip as a stand alone IC or can even be included in a higher design as an intellectual property (IP). This design used AMS CYB 0.8-micron library and tools used are Mentor Graphics'. It's believed that the Viterbi algorithm for error detection and correction is the best algorithm for maximum likelihood decoding. The decoder is fully digital which means that it can be either implemented on an FPGA or ASIC.

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