The Implementation of Berlekamp Massey Algorithm Based on Micro-cpu Design

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ABSTRACT

In this thesis, we devise a micro-cpu, such that Berlekamp-Massey algorithm is performed. A syndrome polynomial computation, an error-location polynomial calculation and its error-location solutions are included. Machine codes are written with iteration structures which can lower the complexity of hardware design. In order to implement Berlekamp-Massey algorithm in a micro-cpu, we design a simple element inversion circuit that performs an inversion in a Galois Field with the least hardware. After simulations are performed correctly by a software ModelSim, a synthesis solution, Synplify Pro-c, is used to synthesize such a micro-cpu circuit. Two kind of error correction capabilities of Berlekamp-Massey algorithm on and are realized, and there is a comparison of cell usage, total Luts, mapping device and so on.

Keywords : Berlekamp-Massey algorithm　Micro-cpu　Element inversion circuit

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