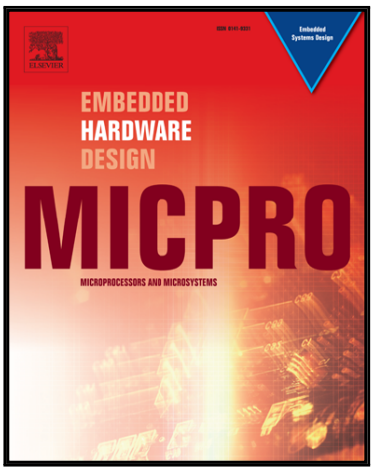

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Joint Algorithm for Burst Detection and AGC Improvement in High Throughput Software Defined Radio Waveform

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Abstract

The SDR networking waveforms mostly use non-constant envelope modulation schemes at the physical layer requiring a stable AGC operation during envelope amplitude variations. Moreover, the size of network packets may vary form a single burst to multiple bursts requiring an AGC with fast convergence to reduce settling time overhead. In this paper, we propose a novel joint algorithm for both the burst detection and improvement of the convergence time and stability of a conventional AGC by using Zadoff-Chu sequence. A specifically designed repeated Zadoff-Chu sequence is used for the detection of burst and fixing the gain for the complete burst duration. The proposed algorithm is implemented on Field Programmable Gate Array (FPGA) on SDR platform. Results of both the simulation and implementation are shown to demonstrate the effectiveness of the proposed technique.

Keywords: Automatic Gain Control, Software Defined Radio, Zadoff-Chu

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