RECONFIGURABLE IP-BLOCK OF TERMINAL NODE CONTROLLER

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Short Paper

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ABSTRACT

In the paper we present reconfigurable IP-block terminal node controller (without processor core) that is based on the SpaceWire protocol. This IP-block includes a two-port SpaceWire routing switch and controllers for two SpaceWire transport protocols: RMAP controller unit and STP (Streaming Transport Protocol) controller unit.

RMAP controller in this IP-block is used for providing remote configuration of terminal node modes of operation. STP controller is used for data stream transfer to hosts.

The embedded in it small routing switch with two SpaceWire ports could be used for terminal node throughput increase, for building of daisy-chain interconnections of terminal nodes structures (if data flows from terminal nodes are not intensive), for fault-tolerant connection to SpaceWire networks.

Possibility of IP-block reconfiguration is considered. The RTL model of this IP-block could be configured as only RMAP or only STP controller. The SpaceWire routing switch external ports number could be vary from one to four.

In the paper we present main features of the designed protocol components, present some research results of RMAP and STP data transfer. We evaluate overhead and delays for same data flows translation with using RMAP and STP, compare power consumption by implementations of these protocols for same data flows transfers.