

Bit-Width Analysis: How Do They Impact Throughput and Energy Dissipation in FPGA-Based Designs?

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Field programmable gate array (FPGA)-based systems provide advantages over conventional hardware in the areas of reprogrammability and hardware reuse. However, these advantages generally come at the expense of increased power demand to the system. This paper examines the feasibility of utilizing FPGA-based systems in a limited-power environment. The ability to achieve power savings by implementing mathematical core functions on FPGA hardware platforms will be reported on with regards to throughput, power, and total energy dissipation utilizing variable bit-width parameters.