

## Energy Saving Techniques for MIMO Decoders

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**Abstract :** Multiple-input multiple-output (MIMO) systems can allow significantly higher data rates compared to single-antenna-aided systems. They are expected to be a prominent part of the 5G communication standard. However, these decoders suffer from high power consumption. This work presents a design technique in order to improve the energy efficiency of MIMO systems; this facilitates their use in the next generation of battery-operated communication devices such as mobile phones and tablets. The proposed optimization approach consists of the use of low complexity lattice reduction algorithm in combination with an adaptive VLSI implementation. The proposed design has been realized and verified in 65nm technology. The results show that the proposed design is significantly more energy-efficient than conventional K-best MIMO systems.

**Keywords :** energy, lattice reduction, MIMO, VLSI

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