The WiGig standard (IEEE 802.11ad) delivers data rates of up to 7 Gbit/s and hence outperforms the current IEEE 802.11n standard by more than 10x. It uses the 60 GHz band to enable short range communication and interoperability between a broad set of applications and platforms.

The Creonic WiGig LDPC decoder is designed in particular to deliver highest throughputs in the multi-gigabit domain with a small footprint. At the same time it provides outstanding error correction performance, resulting in a low energy consumption and increasing range of wireless transmission. Its unique pipeline architecture can be customized at design-time to deliver best performance on any target technology. Insertion, removal and balancing of pipeline stages within the IP core is flexible and allows for optimization of required routing resources, path delays between pipeline stages, throughput, and footprint at the same time.

Benefits

- Unique pipeline architecture allows for perfect customization to customer's target technology.
- Gains up to 3 dB compared to Viterbi decoders.
- Low-power and low-complexity design.
- Block-to-block on-the-fly configuration.
- Early stopping criterion, saving a considerable amount of energy.
- Configurable amount of LDPC decoder iterations for trading-off throughput and error correction performance.
- Collection of statistical information (number of iterations, successful decoding).
- Available for ASIC and FPGAs (Xilinx, Altera).

Performance Figures

- Coded throughput of 2.1 Gbit at 10 iterations (250 MHz).
- BER 10^{-6} with code rate 3/4 at
  - E_B/N_0 = 4.2 dB (BPSK)
  - E_B/N_0 = 7.5 dB (16-QAM)

Features

- Compliant with IEEE 802.11ad (WiGig)
- Support for 672 bits code words
- Support for all LDPC code rates (1/2, 5/8, 3/4, and 13/16)

Applications

- Wireless Local Area Networks (WLAN)
- Ultra-wideband (UWB)
- Microwave Links
- Optical Links
- Further High-throughput Applications

Deliverables

- VHDL source code or synthesized netlist
- HDL simulation models e.g. for Aldec's Riviera-PRO
- VHDL or SystemC testbench
- bit-accurate Matlab, C or C++ simulation model
- comprehensive documentation

Related Products

IEEE 802.11n/ac LDPC Decoder

IEEE 802.15.3c LDPC Decoder

WiMedia 1.5 UWB LDPC Decoder

About Creonic

Creonic is an ISO 9001:2008 certified provider of ready-for-use IP cores for several algorithms of communications such as forward error correction (LDPC and Turbo coding), synchronization, and MIMO. The company offers the richest product portfolio in this field, covering standards like DVB-S2X, LTE-A, DVB-RCS2, DOCSIS 3.1, CCSDS, WiFi, WiGig, and UWB. The products are applicable for ASIC and FPGA technology and comply with the highest requirements with respect to quality and performance. For more information, please visit www.creonic.com.

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