The WiFi family of standards (IEEE 802.11) is used for Wireless Local Area Networks (WLANs). Its first version from 1997 has been extended by many amandments such as IEEE 802.11n-2009 (now part of IEEE 802.11-2012). This amendment was developed in particular for high throughputs of 600 Mbit/s on the air interface. The standard uses convolutional codes for forward error correction as minimum requirement. LDPC codes are optional but because of their superiority over convolutional codes they are widely used today.

The Creonic IEEE 802.11 LDPC decoder is a high performance implementation for WLAN and further applications and supports all LDPC codes as defined by the standard.

Benefits

- Gains up to 3 dB compared to Viterbi decoders.
- Low-power and low-complexity design.
- Layered LDPC decoder architecture, for faster convergence behavior.
- Block-to-block on-the-fly configuration.
- Early stopping criterion for iterative LDPC decoder, saving a considerable amount of energy.
- Configurable amount of LDPC decoding iterations for trading-off throughput and error correction performance.
- Collection of statistic information (number of modified information bits, number of iterations, decoding successful).
- Available for ASIC and FPGAs (Xilinx, Altera).

Features

- Compliant with IEEE 802.11n-2009 and IEEE 802.11-2012
- Compliant with IEEE P802.11ac (draft)
- Support for all LDPC code rates (1/2, 2/3, 3/4, 5/6)
- Support for all LDPC block lengths (648, 1296, and 1944 bits)

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

802.11ad (WiGig) LDPC Decoder

WiMedia 1.5 UWB LDPC Decoder

802.15.3c LDPC Decoder

DVB-RCS2 Turbo Decoder

DVB-S2 LDPC/BCH Encoder and Decoder

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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.