

MIMO (Multiple Input Multiple Output) techniques are being used more and more in recent and upcoming standards since they drastically outperform traditional SISO (Single Input Single Output) techniques in terms of maximum throughput and range. This gain results from an increased spectral efficiency, lowering the overall system costs.

A Minimum Mean Square Error (MMSE) MIMO detector is an integral part of a MIMO receiver. The Creonic MMSE detector offers high throughputs even on low-cost FPGAs and convinces with a low implementation complexity at the same time. Its flexibility at design-time and run-time makes it the ideal fit for all kinds of MIMO applications.

Benefits

- High throughputs even on low-cost FPGAs (hundreds of Mbit/s).
- Usable with space-time block codes and spatial multiplexing.
- Low-power and low-complexity design.
- AXI4-Stream interface for simple integration.
- Consecutive MIMO symbols may have different modulations.
- Can be combined with further IP cores from the Creonic product portfolio.
- Available for ASIC and FPGAs (AMD Xilinx, Intel).

Related Products

- [802.11ad \(WiGig\) LDPC Decoder](#)
- [802.11n/ac \(WiFi\) LDPC Decoder](#)
- [WiMedia 1.5 UWB LDPC Decoder](#)
- [DVB-S2 LDPC/BCH Encoder and Decoder](#)
- [DVB-RCS2 Turbo Decoder](#)

Features

- Adaptable to different transmitter/receiver antenna configurations (e.g., 2x2, 4x2 or 4x4).
- Support for different modulation schemes at run-time (e.g., QPSK, 16-QAM, 64-QAM, 256-QAM).
- QR decomposition included.

Applications

- WiFi (IEEE 802.11n)
- Mobile Data Networks (3GPP LTE, HSPA+)
- Powerline communication (ITU G.9963, Homeplug AV2)
- Internet access (G.993.5 alias G.vector with VDSL Vectoring)
- Further MIMO applications

Deliverables

- VHDL source code or netlist
- HDL simulation model e.g. for Aldec's Riviera-PRO
- VHDL testbench
- Bit-accurate Matlab, C or C++ simulation model
- Comprehensive documentation

About Creonic

Creonic is an ISO 9001:2015 certified provider of ready-for-use IP cores for wired, wireless, fiber, and free-space optical communications. All relevant digital signal processing algorithms are covered, including, but not limited to, forward error correction, modulation, equalization, and demodulation. The company offers the richest product portfolio in this field, covering standards like 3GPP 5G, DVB-S2X, DVB-RCS2, CCSDS, and WiFi. The products are applicable for ASIC and FPGA technologies and comply with the highest requirements with respect to quality and performance. For more information please visit our website at www.creonic.com.

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