PARADISE DATACOM

Evolution/Quantum Series

FastLink LDPC

Product Announcement, 11 September 2009

Low Latency LDPC

FastLink LDPC is a new low-latency Low Density Parity Code FEC from Paradise designed specifically for latency-sensitive applications.

The performance of traditional forward error correction schemes represents a trade off between latency and coding gain. FastLink LDPC has been designed by Paradise engineers from the ground up to optimize latency and throughput while giving coding gain that is close to the theoretical limits.

FastLink LDPC matches or beats conventional LDPC and TPC across the board in relation to both latency and coding gain, meaning potentially that no other FEC may ever be required, *particularly as it is available on all Evolution and all Quantum modems at all data rates*. All Evolution and Quantum modems using FastLink will therefore interoperate up to the maximum data rate for each model.

Performance

A set of 15 modulation and FEC rate options have been designed to give optimal Es/No performance when charted against spectral efficiency. Typically these offer improved coding gains of around 1dB when compared to TPC and are close to the coding gains of conventional LDPC. They also reduce latency when compared to conventional LDPC by up to 90%. FastLink LDPC is therefore well balanced, giving extremely good all round performance.

For particularly demanding applications you can choose to optimise latency or BER performance even further, unlike other low-latency LDPC FECs that are available.

Two optimisation settings are available. A latency optimisation setting guarantees to beat industry-standard TPC latency by between 10% and 50% while giving BER performance that is no worse than TPC and can be up to 0.5dB better. Similarly, if latency is not an issue, BER can be optimised instead to beat that of industry standard conventional LDPC in all cases. This gives unparalleled flexibility designed to meet the needs of even the most demanding applications.

Options

FastLink LDPC is available as a combined hardware add-on and Software Activated Feature (SAF) option:

- Operation up to 1Mbps (provided free with add-on hardware).
- SAF upgrade to 2.5Mbps.
- SAF upgrade to 5Mbps.
- SAF upgrade to 10Mbps.
- SAF upgrade to 20Mbps (PD20 only).
- SAF upgrade to 25Mbps.
- SAF upgrade to 55Mbps (Evolution) or 60Mbps (Quantum).

BPSK, QPSK, 8PSK, 8QAM and 16QAM modulations are all supported. The 8QAM is a new implementation that replaces Paradise's previous 8QAM and has been specifically designed to optimise performance when used with FastLink LDPC.

An Adaptive Coding and Modulation (ACM) option is in development. This uses a feedback path from the receiver to the transmitter to respond to changes in channel conditions to optimise throughput by dynamically varying the modulation and FEC rate as required.

FastLink LDPC is fully compatible with Paired Carrier.

Availability

- FastLink LDPC requires a hardware add-on card along with FastLink LDPC software.
- Available as a field hardware and software upgrade on all existing Quantum modems.
- Available as a field hardware and software upgrade on some existing Evolution modems (please contact Paradise with details of serial numbers) and as a factory upgrade in all other cases.
- For further details including FastLink LDPC detailed performance datasheet, please contact Paradise.
- An ACM whitepaper is available (under 'White Papers') for download from the Paradise web site at http://www.paradisedata.com.
- The outstanding performance of FastLink LDPC has resulted in Paradise's conventional LDPC being discontinued.

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