The ITU-T G.9804.2 Recommendation defines the common transmission convergence (ComTC) layer used in Higher Speed Passive Optical Networks.

The Creonic ITU 25G PON LDPC Encoder and Decoder are part of the Forward Error Correction (FEC) of the ComTC layer. These components are designed to support both the default LDPC(17280, 14592) coding scheme and the optional LDPC(17152, 14592) scheme, providing flexibility and adaptability to meet the specific needs of different network configurations.

The IP cores are available for ASIC and FPGAs (AMD Xilinx, Intel, Microchip).

ITU 25G PON LDPC Decoder

Key benefits of the decoder are:

- Scalable solution allows for deployment on a wide range of target technologies.
- 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.
- Optional fixed number of iterations ensuring fixed latency for blocks with the same code rate and block length.
- Configurable amount of LDPC decoding iterations for trading-off throughput and error correction performance.
- Collection of statistic information (number of iterations, decoding success).

ITU 25G PON LDPC Encoder

Key benefits of the encoder are:

- Coded throughput of 25.4 Gbit/s at a clock frequency of 300 MHz.
- Low-power and low-complexity design.
- Block-to-block on-the-fly configuration.

Features

- Support for code rates 38/45 and 57/67
- Uncoded block size of 14592 bits
- Compliant with “Higher speed passive optical networks – Common transmission convergence layer specification, Recommended Standard, ITU-T G.9804.2, October 2021”.

Applications

- Passive Optical Networks (e.g. residential, business or mobile backhaul).

Deliverables

- VHDL source code or synthesized netlist
- HDL simulation models
- 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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