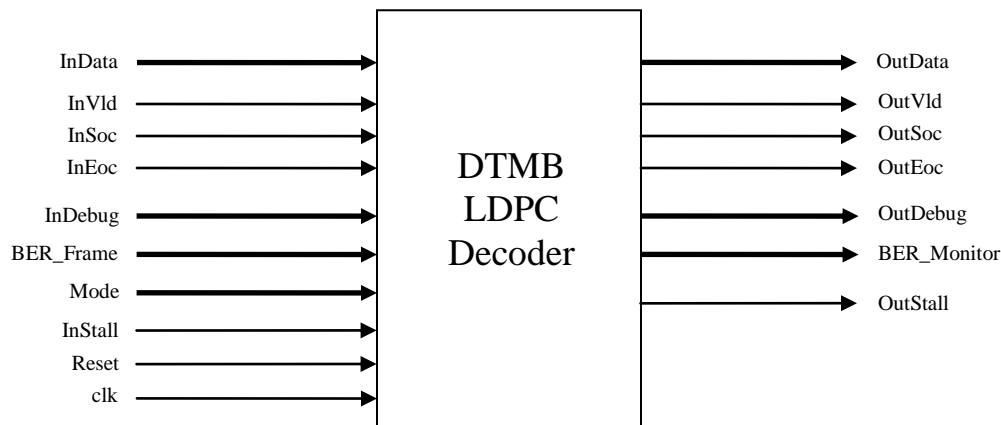


Product Brief

DTMB LDPC Decoder



IP Core Name

R3LDPC-DTMB Decoder for the GB20600-2006 Digital Terrestrial Multimedia Broadcasting standard. The DTMB standard supports both fixed and mobile terminals.

Features

- Soft decision Belief Propagation (BP) LDPC decoder customized for the GB20600-2006 standard.
- Achieves a throughput of up to 41 Mbps depending upon mode of operation.
- Provides decoder metrics to allow dynamic tuning for optimum power control.
- Implements upstream/downstream flow control and data buffering for easy integration.

- Provides the ability to count and report Bit Error Rate (BER) over a user-specified number of decoded frames.

Deliverables

- Synthesizable RTL source code in VHDL or Verilog
- C/C++ system model.
- Comprehensive verification test bench and vectors.

Overview

The R3LDPC-DTMB is an IP Core implemented in RTL that provides a 100% compliant LDPC decoder for the GB20600-2006 Digital Terrestrial Multimedia Broadcasting standard. It achieves excellent decoder performance for reasonable decoder complexity.

RAD3 IP Cores Series: DTMB LDPC Decoder

The DTMB standard specifies quasi-cyclic LDPC codes of length 7493 bits and code rates 0.4, 0.6, and 0.8. The decoder supports all rates as modes of operation.

The R3LDPC-DTMB core allows the user to optimize both power and area by providing a range of decoder parameters. These parameters can either be modified during the design process or even dynamically during normal operation of the decoder.

The design is targeted for use in ASICs and FPGAs.

Performance

The LDPC decoder core provides throughput of up to 41 Mbps and meets the throughput requirements of the standard.

It delivers a Bit Error Rate (BER) of better than 10^{-4} at an input SNR (Eb/No) of 2.35 dB for the rate 0.4 code under Gaussian noise conditions. More detailed performance data can be provided under an NDA.

The design uses approximately 110K gates and 50 KB of memory.

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