Signal Integrity Simulation and Analysis for Next-generation Digital Systems

Highlights

1

With the rapid development of artificial intelligence, cloud computing, big data, 5G and IoTs, the electronics industry is driven by the evolution of semiconductor technology.

2

The functionalities of electronic products are getting more diversified, which benefits from the faster signal speed and higher integration. The development cycle and go-to-market (GTM) time are also becoming short.

3

As electronic products continue to be miniaturized, sophisticated, and high-speed, the channel design needs to fully consider the entire interface link which consists of the transmitter, vias, transmission lines and receivers for accurate simulation.

4

Xpeedic provides a fast, accurate and easy platform ChannelExpert to analyze, evaluate and solve high-speed channel signal integrity problems, and has built-in industry-leading SPICE simulation engine, 2D transmission line solver and advanced analysis modules.

## Dedicated Simulation Platform for Signal Integrity

Xpeedic provides a fast, accurate and easy platform ChannelExpert to analyze, evaluate and solve high-speed channel signal integrity problems.

1. DDR bus analysis including transient, Stateye and PDA
2. SerDes channel analysis with IBIS-AMI models
3. Templated AMI model builder
4. Pre-layout channel analysis for IL_fit, PSXT, ICN, COM and Eye-diagram
5. Support various analysis types: AC, DC, Transient, S-parameter, 2D RLCG solver, Stateye


Advanced analysis: Sweep, Tune, Optimization, DoE
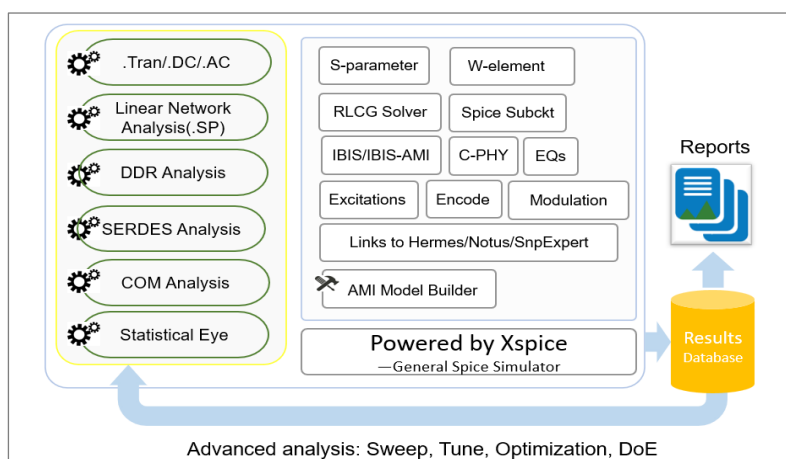
DDR Bus Simulation

- The platform provides a fast schematic creation based on DDR buses.
- Support the transient, Stateye and PDA analysis with a user-friendly GUI and processing flow.
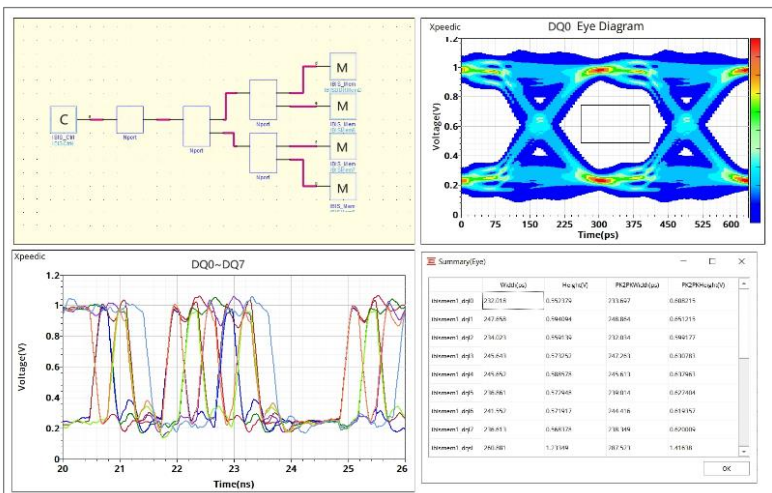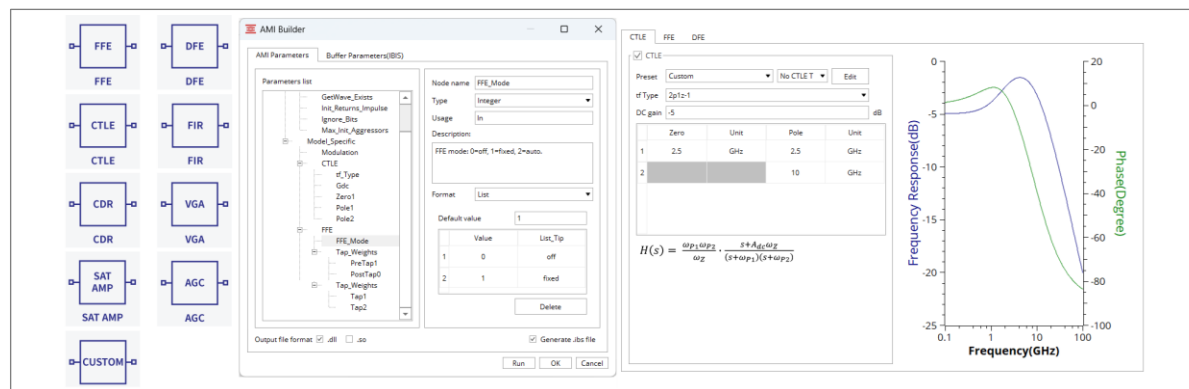
SerDes Channel Analysis

- Support IBIS-AMI and built-in Tx/Rx buffers.
- Support statistical and bit-by-bit simulation modes.
- Provide Eye-diagram, BER, Eye contour, Bathtub and transient waveform results.
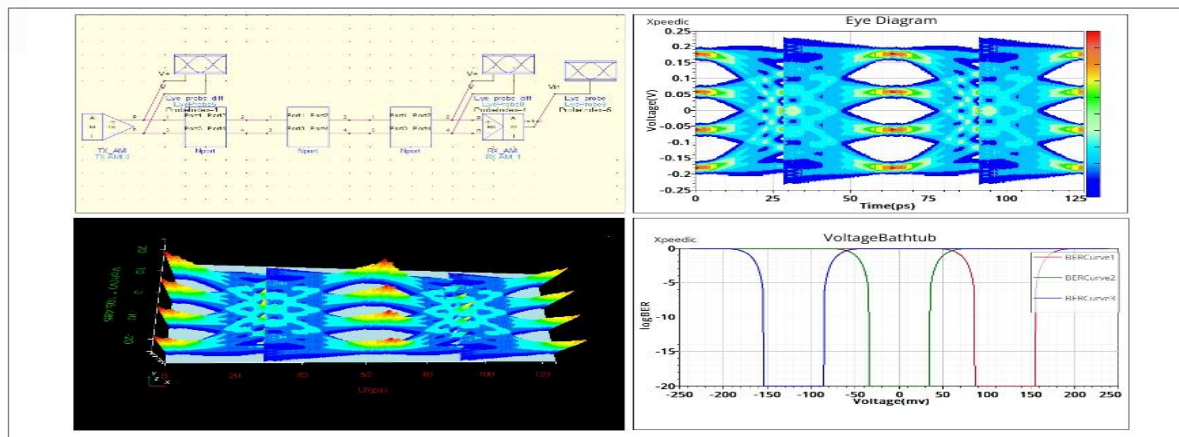
AMI Model Builder

- Various SerDes blocks: FFE, DFE, CTLE, FIR, CDR and SAT AMP.
- Support pre-defined EQ parameter list for AMI models and one-click model generation.
- Built-in automated optimization of equalization parameters based on channel responses.
- Validation of the created models.

$$H(s) = \frac{\omega p_1 \omega p_2}{\omega_Z} \cdot \frac{s + A_{dc}\omega_Z}{(s+\omega p_1)(s+\omega p_2)}$$

Pre-layout Channel Analysis: IL_fit, PSXT, ICN, COM and Eye-diagram

- Advanced channel creation based on S-parameter models of existing structures, such as vias, connectors, fan-out patterns.
- Flexible crosstalk interface creation by cascoding S-parameter models.
- Support various analysis results, including IL_fit, PSXT, ICN, COM and Eye-diagram.