WHAT ARE IBIS-AMI MODELS?

IBIS-AMI models are models based on the IBIS Specification that provide “plug and play” simulation of SerDes behavior using commercial EDA tools. They include conventional analog and algorithmic (compiled code) components and run much faster than traditional SPICE models (up to 1 million bits/minute). This allows designers to explore large design spaces during pre-route analysis and perform comprehensive post-route validation. IBIS-AMI models offer speed and accuracy comparable to semiconductor inhouse simulators while providing the ability to run simulations with different device vendors that proprietary simulators lack. Properly written IBIS-AMI models allow users to trade off speed vs. accuracy and configure equalization settings from the simulator’s GUI.

The IBIS-AMI specification enables standardized, high-performance SerDes models that meet the following goals:

- **Interoperability**: different vendor models work together
- **Portability**: one model runs in multiple simulators
- **Flexibility**: support Statistical / Time-Domain simulation
- **High Performance**: 1 million bits per CPU per minute
- **Accurate**: excellent correlation to measured data

**SIsoft’s IBIS-AMI Model Development Portfolio**

SIsoft has more IBIS-AMI experience than anyone, having developed and validated dozens of models with multiple vendors. SIsoft’s solutions for IBIS-AMI model development and validation include:

- **IBIS-AMI Software Development Kit (SDK)**

  SIsoft’s IBIS-AMI SDK provides a comprehensive library of signal processing functions proven through development and correlation of dozens of models. These functions seamlessly support both Statistical and Time-Domain simulation, allowing users to trade off simulation time vs. accuracy. SIsoft provides extensive training that lets semiconductor vendors develop their own high-quality IBIS-AMI models inhouse.

- **IBIS-AMI Development Services**

  SIsoft will develop custom IBIS-AMI models based upon your device and correlation data. SIsoft collaborates to define the model’s user interface, develop and correlate the model against golden reference data, then provide a Certified Design Kit with associated documentation. SIsoft-developed models typically provide 98% or better correlation. Vendors often enlist SIsoft to develop their first model, then use SIsoft’s tools, training & support to bring future model development inhouse.

- **IBIS-AMI Model Certification and Correlation Services**

  SIsoft works with vendors developing IBIS-AMI models to ensure their models are fully compliant, produce correct results in QCD and work with other vendor models. This ensures that models meet end-users’ expectations of IBIS-AMI model functionality and quality. SIsoft also correlates vendor models against golden reference data.

**“This is the second generation of Virtex technology where we have collaborated with SIsoft to develop and correlate IBIS-AMI models to reference simulations and hardware. The combination of these IBIS-AMI models and SIsoft’s QCD provides customers with accurate simulation results at speeds more than 100 to 1000 times faster than traditional simulation methodologies, allowing customers to quickly optimize their designs for cost, reliability and performance.”**

Xilinx
**IBIS-AMI (continued)**

**CONFIGURABLE TECHNOLOGY MODELS**

SiSoft technology models can be configured to represent new devices in a matter of minutes. They are an ideal way to run simulations when detailed vendor models aren’t yet available.

**Transmitter model configurability**

- Number of FFE taps and limits
- Output swing / voltage / slew rate
- Single-ended and differential impedance
- Broadband characteristics

**Receiver model configurability**

- Number of CTE settings and characteristics
- Number of DFE taps and limits
- DFE control loop bandwidth
- CDR bandwidth
- Single-ended and differential termination

**QUANTUM CHANNEL DESIGNER (QCD) AND QCD DESIGN KITS**

SiSoft’s serial link design and analysis environment offers superior native-mode support for IBIS-AMI models. QCD’s structured analysis methodology determines how key tradeoffs affect voltage and timing margins, providing objective data for making design decisions. Pre-route design space exploration runs thousands of simulation cases automatically to find optimum channel and SerDes equalization settings.

QCD’s automated post-route analysis allows entire multi-board systems to be analyzed overnight, finding and correcting design issues in real-time as PCB layout progresses.

QCD Design Kits provide complete, ready-to-run simulation setups for specific combinations of semiconductor device models. Determine margins for your design by importing your own channel model and re-running simulation - a process that takes less than two minutes.

**Why Choose SiSoft for IBIS-AMI?**

- **Experience** – SiSoft has developed, correlated and delivered more IBIS-AMI models than anyone in the Industry.
- **Leadership and Innovation** – SiSoft coauthored the original IBIS-AMI specification, and continues to extend IBIS-AMI.
- ** Commitment to Open Modeling Standards** – SiSoft’s commitment to working closely with customers and suppliers ensures models meet customer needs and expectations.

“We’ve worked with SiSoft to create IBIS-AMI models across our SerDes based PHY’s in IBM technologies. SiSoft has demonstrated continued leadership in SerDes modeling by first driving the development of the IBIS-AMI standard and then becoming the leading provider of IBIS-AMI model development, correlation and validation services.”

Synopsys

To learn more about SiSoft’s products, contact sales@sisoft.com or visit our website at www.sisoft.com.