Electrical Module Description Introduction

The Electrical Module Description (EMD) format describes electrical interconnectivity between and within modules for multi-chip modules (MCM), interposers, connectors and cables. EMD files support connecting components described by IBIS files and also connecting to other EMD files. This format has more general modeling and connection capabilities than supported by the older Electrical Board Description (EBD) format documented within the IBIS Specification.

For example, the EMD format uses sub-circuits document by the IBIS Interconnect SPICE Sub-circuit (IBIS-ISS) Specification and/or Touchstone files to describe the electrical properties of interconnects. Consequently the EMD format can support coupling between paths and also describe broadband lossy, distributed, frequency-dependent interconnects. Furthermore, parameters values different files can be passed in to support corner analysis based on typical, slow, and fast settings. EMD follows a simplified tree structure as a variation of the Algorithmic Modeling Interface (AMI) format described within IBIS, and the EMD format is easy to implement and expand in the future.

Because the EBD syntax is restricted to uncoupled paths and does not support frequency-dependent losses, it has limited accuracy for some high speed applications. The EBD format also uses an older Fork/Endfork syntax to describe branches in board topology. This syntax is topologically limited and sometimes awkward to implement.

However, the EBD format might be an alternative for lower frequency applications where IBIS-ISS or Touchstone files are not available. L/R/C elements for discrete or distributed networks (for uncoupled transmission lines) are described directly within the format. This avoids management or references to external IBIS-ISS or Touchstone files and the corresponding co-simulation or emulation involving a separate SPICE tool. Most EDA tools already support EBD, and some tools can generate EBD files directly from physical board databases.

The EMD format described in this document is applicable for higher frequency modeling applications and topological generality where the EBD format falls short..