

Reference: **901**



Type:

Technical Brochures

Title:

High-Frequency Transformer and Reactor Models for Network Studies - Part B: Black-Box Models

The reliable and safe operation of the transformer requires that the dielectric stresses imposed by transient overvoltages are kept within acceptable limits. Black-box models are terminal equivalents of the transformer. Such models can be used in general transient studies where the objective is to calculate overvoltages that occur in the system, external to the transformer. CIGRE JWG A2/C4.52 has reviewed the various black-box models with consideration to parameter determination, accuracy and to the possible inclusion of such models in electromagnetic transient simulation programs for use in general transient studies. The model parameters can in principle be calculated via a white-box model, and the accuracy of the model is then limited by the accuracy of the white-box model. The highest accuracy is usually obtained by performing measurements of small-signal frequency sweeps on the transformer's terminals, e.g., of terminal admittance and voltage transfer between terminals. A model suitable for electromagnetic transient simulations can thereafter be calculated by fitting a rational model to the data. The TB reviews alternative measurement setups and methods for model extraction from the measurement data. Often, highly accurate models can be obtained. It is to be observed that such black-box modeling from measurements can be a challenge, even with the use of a dedicated measurement setup and trained personnel. This TB is one of five TBs from the JWG.

More Informations :**File Size:**7,3 MB **Pages NB:**88 **Study Committee :** A2, C4 **WG (TF):**JWG A2/C4.52 **Year:**2023
